KTI
Knowledge Transfer Ireland
Where Research & Business Connect

## Knowledge Transfer Summit 2017

# ACCELERATING IDEAS

# Knowledge Transfer Summit 2017

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This eBook was created and published by Showpiper using original video content from Knowledge Transfer Summit 2017. All presentations are available to watch at showpiper.com/s/c/ktisummit2017.

KTI hosted The Knowledge Transfer Summit – Accelerating Ideas Conference on 14th September 2017. Bringing together keynote speakers from Ireland and further afield, the Summit addressed current issues in commercialising research for the benefit of new and existing businesses. Well-known entrepreneurs and business leaders shared their insights on how to drive innovation and how to maximise the potential of working with Ireland's public research system.

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# Chris Horn in Conversation with Conor Brophy

Entrepreneur and investor Chris Horn reflects on what he has learned over the years – the good and the bad – in creating and developing successful companies and what innovation means for business performance.

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CONOR BROPHY: Chris, we might as well start at the beginning. If could take us back really to late 80s, early 90s. Yourself and the guys are trying to get Iona up off the ground. But it's a very, very different context to the one that would be in situ today.

CHRIS HORN. Yep. Good morning everybody. During the 1980s, I was an academic at Trinity College Dublin in the computer science department and we benefited from some research funds from Brussels through what, at the time, was called the S3 program. It's now the framework series. In 1991 we were looking at the end of our funding and wondering what to do next.

When I say we, there were five of us in a research group, the Distributed Systems Group in the Computer Science department along with a bunch of research assistants and post docs. So somebody came up with the idea of forming a company. So we did in February 1991. That was myself, Sean Baker - Sean was also on the faculty - and then Annraí O'Toole.

Annraí was a research assistant in the department. The three of us founded the company. We were in Pearse Street in what's still the Trinity Tech Transfer Office, the innovation office, on the ground floor there just directly opposite the DART station near the bridge at Pearse Street station. That's where we started in February 1991.

CONOR BROPHY: You make that all sound so matter of fact but I suppose one of the things that's worth remembering is that there was no Knowledge Transfer Ireland. There wasn't even Enterprise Ireland.

CHRIS HORN: No, Enterprise Ireland didn't even exist then. If I remember right, Enterprise Ireland was created in 1993. So there was no EI, there was just the IDA. And at the time there was one gentleman I recall well who was responsible for all of the indigenous hardware and software industry and startups in the country - just one individual.

The rest of the IDA was focused obviously (as it still is) on attracting multinationals. And so this particular gentleman, when we turned up and explained what we wanted it to - for the three of us it was

the first time forming a company, we had no prior commercial experience - and he basically said, "Guys , you're not playing at Croker", meaning that we weren't the big time, we weren't going to land 25,000 jobs in Leixlip tomorrow morning.

We were just three guys with no commercial experience. So we weren't playing the big time.

CONOR BROPHY: One of the things that you've written about in your column in the Irish Times quite recently, you were able to tap into a cluster of multinationals. I pulled out the quote from the piece. You said, "in the same way that the a young company could in 1991 visit Sandyford, Ballybrit, Raheen and other industrial estates, today a multinational can visit the PorterShed, the Digital Hub, Nova UCD and other centres".

It's funny how things have come full circle in that respect.

CHRIS HORN: Exactly. When we started out and we had developed our first product, the first thing we did was literally get into the car and drive up to Sandyford and down to Limerick and across to Galway and talk to some of the companies and individuals that we knew in places like Digital and Hewlett-Pckard and ICL in Sandyford. In some cases they were able to say, "listen this sounds very interesting but don't talk to us, I've my friend Joe in the Chicago office, you should talk to Joe" or "Mary in San Jose". So they made those introductions for us into their company and that was, actually with the exception of ICL, and it turned out that actually in

Sandyford at the time we were talking to the right person in all of ICL worldwide.

The work was actually being done in Sandyford so we got a hit straight away. Then, in the piece that Conor quoted, it's funny how things have moved on. So we have the excellent KTI, we have a number of TTO offices, a number of accelerators in universities and now, the situation has changed and the multinationals are coming, do come, want to come into the universities and find out about what's going on, who could we collaborate with.

Are there are some interesting startups? So the situation is flipped since 1991 when we started out.

CONOR BROPHY: Because there is a phrase that KTI uses a lot which is "signposting". I guess at that time, you were nearly travelling the boreens - there were no signposts. You had to kind of burn it out in shoe leather yourselves.

CHRIS HORN: It's funny, when we started going out to the States to talk to people, part of our deck frankly was a slide, a map which said, you know guys, you're on the west coast, you know all about the west coast, we're on the west coast too, this little place called Ireland, not Iceland, Ireland. And we're on the west coast and actually we had a map of Europe to show where Ireland was, on the west coast of Europe and drawing parallels.

Things have moved on an awful lot but at the time, just getting that recognition was the starting point.

CONOR BROPHY: Am I right in saying that if we could wind the clock back even further that you had taken a trip, if I'm not mistaken, to Stanford at some point? You'd actually met Andy Bechtolsheim at what then wasn't even Sun Microsystems.

CHRIS HORN: When I was a masters student, my supervisor, Dr. Neville Harris (Neville is retired now), he had done a sabbatical at Stanford University, computer science, and as a young masters student he and I flew out on my first trip to California way back in the early '80s. And we visited Stanford computer science department. At that time there was something, a startup called the Stanford University Network and one of the founders of that was Andy Bechtolsheim, a Belgian, who was a post-grad at Stanford and S-U-N, Stanford University Network, became Sun Microsystems and with Scott McNealy became a very successful, multibillion dollar company.

Neville was an extraordinary gentleman but he was really keen on startups so as Sun was being formed he tried to negotiate getting an exclusive licence for distributing Sun's equipment in Europe and so he just, pretty much on the spur of the moment said well, what are you doing about Europe? They hadn't considered Europe so Neville said, okay, well maybe I could be your distributor for Europe.

So I learnt a lot actually from Neville and how you seize the moment and go for it.

CONOR BROPHY: But that Sun involvement and Sun's support

would ultimately prove crucial for Iona in the early days.

CHRIS HORN: It did, yes. We started in 1991. By the summer of 1993, we had our first product, prototype product shall I say. And to launch it we went to a major trade show, the Object Management Group annual trade show in the Moscone Center in downtown San Francisco and the trade show was actually held in the car park of the Moscone.

But we were there with our little booth that we'd airfreighted out from Rathmines and set ourselves up. We showed what we had which was linking Microsoft Windows equipment to Sun's heavy, big Unix servers. And at the time in 1993 this was quite a novel thing to do. We didn't realise it but the individuals who were at the show from Sun Microsystems were really interested in what we were doing, came and saw the demonstration.

We came back to Dublin and then pretty much out of the blue in August, Jim Green from Sun who was a mid-tier manager rang me and said, can we come over and have a discussion? So we sat in the O'Reilly building in Trinity in the main conference room there and Jim basically looked at Sean and myself and Annraí and said, "Boys, have I got a deal for you!" That was his famous quote, "have I got a deal for you." He sat down and talked about how they wanted to license our technology.

Ultimately that led to an investment by Sun. This was August '93. By Christmas Eve in December 1993, Sun invested in us and we then

left the Trinity College campus scheme and moved out of the university as one of the first startups out of Trinity.

CHRIS BROPHY: So that was quite a deal and quite a break at that time. Talk to us about the funding climate.

CHRIS HORN: The funding climate was really different back when we started in 1991. The country was in recession economically and the Guinness Peat Aviation flotation had failed or had been pulled. There was a company called Memory Ireland which was I think one of Ireland's only startup indigenous companies in the IT sector and it was publicly quoted I think on the ISEQ and it had had some difficulties.

It was in that climate that three relatively young people from Trinity College turn up and say, we want to take on the world and, by the way, our competitors are going to be Microsoft and Hewlett-Packard and Digital and IBM. And no, you're right, this is our first company and no, we have no commercial experience and please, would you write us a cheque? And so it was in that environment that we went out and of course we had a business plan, but quite rightly perhaps, nobody would give us any money.

So we failed to raise any risk capital at that time. And so we funded ourselves. We put each 1,000 old Irish pounds each into the company. That was initial balance sheet. We basically traded our way through consultancy and services trying to keep the company profitable until Christmas Eve 1993 when the Sun investment hit

our balance sheet.

CONOR BROPHY: In hindsight, was that something that benefited you in the long term or would you rather have had the funding from an earlier stage?

CHRIS HORN: It's interesting. I think if we'd had funding earlier we would have been in the market earlier. We were slower to market than might otherwise have been the case because we had to trade profitably, we had no choice. So we had to go out and give those training courses and do consultancy work to keep the show on the road.

In the meantime, the spare time, we're trying to create the product. So it did take longer than we thought and the risk, of course, was that we would come into the office one morning and discover a press announcement from some company startup in Silicon Valley that had done exactly what we were doing. So we were kind of terrified that we'd miss the market opportunity.

CONOR BROPHY: That must have been instructive though, at least on the operational side in running the business, keeping the revenue coming in and making sure that you could actually balance the book. I'm sure that probably benefited you later on. You're quite an unusual case study in that, often the person who founds the company isn't the person who goes on to run the company.

CHRIS HORN: We absolutely had to keep the company profitable

every month. We had a payroll every month. The Sun investment - you know we were profitable. In a sense we didn't need the Sun investment financially, but we did need it for credibility. I can talk to that in a minute. But as the company grew, we remained profitable every month. We did month-by-month management accounts.

We were always profitable and so we did a Nasdaq IPO in 1997. One of the reasons we did that was, again, credibility. Although we were profitable, we were an Irish company and under the Irish accounting scheme and Irish pounds as our currency. And in America, our competitors who are US Dollar quoted, were basically saying, well, you wouldn't want to deal with little Iona.

They use the Irish quango bean or corn or something, we don't really know their accounting. They say they're profitable but how do you know? They don't really do American accounting rules so heaven knows how they cook the books. So actually when we did the Nasdaq IPO we had to abide by US GAAPs, the American accounting rules and that showed in fact, because we had to do three years historical accounts prior to the IPO that in fact we were profitable.

So that was really again, a major plus for us in the industry. And as you said it was unusual at the time.

CONOR BROPHY: That's quite a short timeframe to go literally from zero to a NASDAQ IPO in six years. That must have been a big

challenge.

CHRIS HORN: We didn't start out planning to do a Nasdaq IPO. And in fact we hadn't really thought about it until about 1996 when a gentleman from New York, Andy Malik from Lehman Brothers, appeared on our doorstep in Dublin. Lehman came over and met us and said, guys, have you ever thought of bringing the company public? And so we sat down, said no, we haven't but talk to us about it.

So we had a dinner and sat down and planned. So we started planning to bring the company public at the start of 1996. It took us about 12 months to actually get there. We popped the IPO in February '97.

CONOR BROPHY: You've just reminded me actually, the Lehman thread kind of runs through the story. There's a nice symmetry there. Ultimately I think the acquisition is one of the last that Lehman did before it went bust.

CHRIS HORN: Well we did with the IPO with Lehman in 1997. Lehman, at the time, weren't known for high tech IPOs. They were more sort of in steel, construction and railroads and infrastructure but they wanted to change or extend what Lehman was doing. So they wanted to get into IT and Iona was their first ICT-based IPO. And so, we went right up to the Chairman and CEO of Lehman who convinced us that they really did want to change what Lehman was doing and so Lehman pulled out all the stops. They were just

phenomenal in the IPO and selling the company for the IPO. The IPO was wildly oversubscribed and very successful.

But Lehman stayed with us then. We went public as I say in '97. We eventually sold the company in 2008, so 11 years, actually not really 11 years, it's 44 quarters as a publicly quoted company on NASDAQ and Lehman stayed with us throughout that period and when it came to selling the company in 2008, Lehman were our bankers. We always had the banking relationship with them and we went through the process and again, selling a publicly quoted company that was dual-listed on the ISEQ and NASDAQ and under SEC regulations but also under the Irish Mergers and Monopolies Commission, there is a lot of process that you have to go through.

But anyway we eventually got to the day when Lehman confirmed it's all finished, the acquiring company has paid, all of the funds have been transferred to all of your shareholders, everything is done, the transaction is closed. That was a Friday in September I remember. And then we went out and celebrated that Friday evening and then on Sunday we woke up with a hangover and then got an even bigger hangover when we realised that Lehman brothers was bankrupt.

So we escaped that bankruptcy literally by two days. On Friday we closed, on Sunday they went bankrupt. The people we were dealing with in Lehman, truthfully I don't think they had any idea this was coming. But we could have had our shareholder funds in transit from the acquiring company to our shareholders in the Lehman

bank accounts and they were up until at last Friday.

But fortunately we escaped and that is complete luck, completely fortuitous. We had no idea. And we were extremely lucky to escape the Lehman collapse.

CONOR BROPHY: It's interesting when you say that 11 years as a publicly quoted company and you quickly said "44 quarters". That's telling, isn't it, because that is a key thing. The demands on you as a CEO of a NASDAQ listed company are huge.

CHRIS HORN: Absolutely, it can be very stressful. Of course we were public at the time of September 11th. We were public when the Sarbanes-Oxley rules came in in 2004 and we had to bring in Sarbanes-Oxley compliance which was quite quite onerous on the company. Yeah, on the one hand it is a tremendous load on the other hand it's a tremendous discipline and I think until you're public, actually, generally you're not perceived as a real company.

I'm thinking of customers now. We were selling to very major corporations globally and as a private company, you can do that. But as a private company, really you're a teenager. It's only when you go public and you're on NASDAQ that you're considered an adult, a real, proper vendor. And the fact that your customers and prospects can review your quarterly filings and see your financial results every quarter and how you're doing.

And so that treadmill is all about credibility. Your customers and partners, they can see your accounts, they can see how well you're

doing and it's independently audited. And after Sarbanes-Oxley, myself and my CFO have to sign - actually put our signatures - to the accounts every quarter to say, to the best of our knowledge, there's no fraud whatsoever, anywhere in our whole corporation worldwide.

We were 1,200 people in 22 offices. There's no fraud anywhere. Signed, Chris Horn. We had to do that every quarter of course, had that ever been proven wrong, we would have been under perhaps penal, federal consequences but also civil actions from our shareholders, class action lawsuits. Fortunately that never happened. I've always wondered what it would take to take a government, the Taoiseach and Minister of Finance to sign a document every quarter to say there is no fraud whatsoever anywhere in our corporation.

The head of Intel does that every quarter, the head of Boeing does that every quarter and those corporations are bigger than many governments.

CONOR BROPHY: So you managed to avoid the perp walk anyway thankfully. But talk to us about how you managed that transition because it is an interesting one, between being one of the founders of a scrappy, up-and-coming tech company. Then you're into the world of suits and ties and investment banks and quarterly reports. Was that difficult, was it maybe not what you signed up for?

CHRIS HORN: It was a lesson, it was learning every day. I was very

truthful with my board. I said, look, at any time if I'm not the right person, if you feel I'm not the right person, obviously I'll move on. In fact part of the story is I did voluntarily step down in 2000 having been a CEO for nine years at that point. But then the company got into trouble and I came back a second time.

CONOR BROPHY: So you had to "do a Steve Jobs"?

CHRIS HORN: I don't know but I think what got me through this was just a tremendous mentor, Kevin Melia, who was my personal mentor and he was a very, very experienced finance guy. He was from Wicklow, actually originally from Mayo and a strong GAA fan but he became Corporate Controller of Digital in Maynard, Massachusetts. He then became Chief Financial Officer of Sun Microsystems and then moved on to form his own global outsourcing company for which he'd raise money from DFJ in New York and then took the company public on Nasdaq.

Kevin was my mentor and he was the non-exec chairman of our board and just phenomenal. Unfortunately Kevin is now deceased but he was a tremendous mentor and partner for me. All those times when I wasn't quite sure what to do, Kevin would say, well, he's seen the movie before. That was one of his phrases. Talk to people who've seen the movie before and they can tell you what to do.

CONOR BROPHY: And that now obviously is a role that you fulfil yourself.

CHRIS HORN: I hope so. I'm very fortunate in working now with Atlantic Bridge which is an investment firm here in Ireland and specifically we have what's called our University Bridge Fund that was seeded by Trinity and UCD. It's about 15 months now that we've been investing. We've done about eight or nine deals. But I and my colleagues at Atlantic Bridge and the University Bridge Fund are specifically looking for startups, in some sense - don't quote me - looking for the the next Iona or the next company coming out of a university that we can help grow.

And so if I can give back something to the Irish system through helping mentor and work with young companies, that would be a tremendous result. Kevin did that for me and so I hope that I can provide some of that same degree of feedback Kevin gave me to some up and coming young companies today.

CONOR BROPHY: What do you look for in a company and what would excite you about a spinout?

CHRIS HORN: Most of all I think it's the commitment and enthusiasm of the team. You're giving some of the best years of your career, the best years of your life, to this. So are you really in for it? It can be a long haul. I mean in my own case it is 17 years of my life. So you look at the people in the eye and say, are you really up for this? Do you realise what you doing? Do you realise how deep this puddle is before you step into it, because it can be a pretty deep puddle.

And so talking through just expectations and what it means for them and are they really up for it. So the character, the personality of the founding team is really important. Now they may not be a complete team. They may need to bring in extra talent but their enthusiasm and commitment is going to be what drives their ability to attract people to come and join them as part of the overall journey.

So their commitment and belief has to be really, really strong. As well as that, of course they need great ideas and great technology but fundamentally it's the character of the people, do they have that commitment?

CONOR BROPHY: What areas are you enthused about at the moment?

CHRIS HORN: Well I guess my own background is electronics and enterprise software so I'm obviously very interested in the software area in general. We have some exciting things happening there in some of the portfolio companies that we have. But also the interesting thing about the university fund is it's not just software and hardware which were the traditional Atlantic Bridge domains but it's also medical technology, agri-tech, green energy, materials sciences.

So I'm learning a lot about areas that I had no previous experience in and learning about the dynamics of new industries through some of the companies that we're working with and talking to so it

continues to be a learning experience for me.

CONOR BROPHY: You spoke to us about the context in 1991. If you are starting a campus company or a spinout today, what's available to you now that wasn't then? How much easier is it?

CHRIS HORN: Enterprise Ireland - a tremendous organisation, KTI obviously. But more generally, there is much more risk capital available today and there are investors looking for startups. They want to invest, they have money to spend. There are multinationals sniffing around looking for opportunities to collaborate. So the environment here is very, very different.

And Dublin and Ireland is now certainly on the global map. Most people, particularly in the software industry, recognise Ireland. I can remember meeting a guy from Motorola in Arizona and he said listen, here in Motorola there are three I's that we actually fear and we think are competitive and that's Israel, India and Ireland. That was the view in America, a tremendous endorsement about how far the country has come.

So the situation is completely different. I think there's a lot more interest in entrepreneurship, there's a lot more public acceptance of it frankly by the general public and by policy.

CONOR BROPHY: In what way? In what way do you think people are more accepting of the climate?

CHRIS HORN: Because I think that going back to when we started in

the 90s, failure was generally culturally much more of an issue. And even entrepreneurship is slightly a dicey word I think for some people but I think today that situation has changed. And failure is understandable and acceptable just as long as you professionally fail and you're willing to go again.

That's good. And so I think culturally we've moved on an awful lot.

CONOR BROPHY: You mentioned the greater availability of risk capital. Are we where we'd like to be as a country?

CHRIS HORN: No obviously we're not. It is a tremendous improvement but there's still scope for a lot more. I think particularly that gap between seed stage and expansion stage, the Series A, Series B, the last decade or so that has been an issue. It is being addressed. But clearly we could do more. And one only contrasts it with say, Tel Aviv and Israel where I can't remember the latest figures but in 2013-2014, there was more venture capital going into Israel than the rest of Europe combined.

So you added up United Kingdom, Germany, Italy, Ireland, France, Spain, added all of that up. And Israel was even more than the cumulative rest of Europe in venture capital. That may not be quite the situation, I'm not up to date on my figures but still, there's a tremendous amount still going in there. There are more opportunities in this country than there is funding available.

CONOR BROPHY: I know it's a hoary old debate but I'm going to plunge into it. If you look at the greatest hits of spinouts, the likes of

Iona, Norcom, Havok or even more recently the likes of Logentries and FeedHenry. We see this trend whereby, and I know it's far from a national tragedy if your company is sold for €60 or €70 million, but there is a level, there does seem to be a ceiling beyond which companies don't tend to get here, they get taken out.

What do we need to do or do we need to do anything differently to get to the point where you could get a Google or a Sun from Ireland?

CHRIS HORN: It's not a national issue so much as an industry issue. It's not peculiar to Ireland. It happens in many other countries too. Even if you look at Israel, there are comparatively few companies that have gone through that sort of €60 million, €100 million valuation even or revenue. The issue really is the way that risk capital tends to work and the timing of funds.

So if a risk capital or venture company, a seed stage company comes into a firm, they are promising terms to their investors to a particular cycle, typically a 5-10 year cycle. And so, as the investors come to the end of their cycle, they're looking to get returns and realise returns for their investors. And that can sometimes force, perhaps arguably, premature exits for companies so that the secret actually as an entrepreneur is to line up a series of best doors, making sure that they can go for a long time, the ability perhaps to replace one investor with a new investor to replace him in the cycle.

I should have said, by the way, Iona didn't have any venture capital because nobody would give us any. The only investment we had was Sun Microsystems. But nevertheless there is this issue about how to manage your investors as you grow your company is obviously something that a CEO has to wrestle with and be familiar with just what's possible and what the rules of the game are.

It is an international game, it's not a domestic game here.

CONOR BROPHY: That quote you cited, where Ireland, India and Israel were seen as the big threats. You do a lot of travelling obviously. When you go further afield than Ireland you realise that every country bids itself or pitches itself as a knowledge centre, that they have an innovation culture. How does Ireland stack up though really on that score?

CHRIS HORN: Yes. I mean if you go to Singapore in particular or you go to Shenzhen and you go to Bengaluru/Bangalore, go to Melbourne, Australia, it is the same story wherever you go. So if you're a multi-national it's quite a confusing landscape to look at and say, well, where is the action? The action is happening everywhere. The differentiation that Ireland has that not even Silicon Valley has is multinationals.

We have a density of multinationals in this country that not even Silicon Valley has and Silicon Valley is primarily software and ICT. The beauty of Ireland is it's not just software and ICT, it's pretty much everything. It's fintech, it's medtech it's it's agritech. And

that's a tremendous strength that no other location on the planet has.

It's a tremendous asset that we have. And we should never forget that. And as we look about announcements or discussions across Europe on corporation tax and what's the future of European taxation policy, the opportunity in Ireland is to embed our multinationals even further by having greater collaboration between the indigenous sector and the multinationals so that we're doing more and more R&D here, that we're seen as a dynamic hotbed of innovation and creativity and that's what's going to keep the multinationals here.

It's no longer going to be tax. It's going to our ability to innovate, do world class research, and we are by the way, and bed the multinationals even further into the economy than we are already.

CONOR BROPHY: And KTI figures tend to stack that up, that we're seeing collaboration at a much greater level. You spoke about essentially having to bring the mountain to Mohammed in 1991. Nowadays that seems to be happening much more organically and thanks to the likes of Knowledge Transfer Ireland, companies know where to go when they're looking for partners and when they are looking to license technology.

They can get there fairly easily with the help of agencies such as KTI if they want.

CHRIS HORN: I hesitate even to say the words but there's the

infamous perhaps or even famous Innovation Task Force set up by Brian Cowen's administration back in 2008, 2009, 2010. I was a member of that task force. But one of the things that came out of the innovation task force is the lack of sort of a portal of what the heck is happening in Ireland if I'm a multinational or a researcher looking for collaboration.

And at the same time there were different and varying licensing policies across the various universities and Institutes of Technology. So there was a need for something like KTI and then we were delighted that KTI was formed if I remember right in 2013. So KTI has filled a gap. I think if you look internationally, KTI is kind of relatively unique on the global landscape and, talking to American colleagues, they're just astounded that we have KTI.

I mean, trying to get that same perspective on even what's happening in Texas or what's happening in California, it's just not there. You have to go around and shop around. So KTI is part of Brand Ireland, providing tremendous service for those looking for collaboration and research partners.

CONOR BROPHY: We're fast running out of time unfortunately, Chris. I know we could probably talk for a lot longer. I'm just interested in getting your view before we wrap up on Brexit. What impact do you think it's going to have specifically on the third level institutions and on the innovation culture that we have?

CHRIS HORN: I hate to say it because I think we all are sad about

Brexit, truthfully sad, but it is a fantastic opportunity for Ireland, unfortunately for our colleagues in the United Kingdom. Because I think it is already leading to a stronger interest by British nationals and those other nationals in Britain to look to Ireland as an alternative venue for what they're doing. I think it's going to bring more researchers here, more research collaborations.

So I think it's very, very unfortunate. I think it's very very sad. I think it's the wrong thing for the United Kingdom. But I do think it's a huge opportunity and that's proving to be the case, for the Irish economy.

CONOR BROPHY: It could be a pull factor for talent?

CHRIS HORN: Absolutely - and for investment, not just for talent.

CONOR BROPHY: I suppose one of the consequences we're dealing with at the moment is obviously the currency devaluation which I imagine has consequences with your Atlantic Bridge hat on.

CHRIS HORN: It does. Some of our portfolio companies are operating or selling into the UK so certainly they're affected by the exchange rate. But of course you can use natural hedging. If you've got facilities and staff on the ground in UK, you try to organise things so that effectively you're breaking even in the UK, the revenues in the UK are covering your cost and you can manage that.

So that would be a classic technique that's used to manage the risk.

CONOR BROPHY: Before we go, for those who are looking to replicate the journey you've taken, the biggest mistake and what you would have done differently if you could do it all over again.

CHRIS HORN: One of my mistakes, with enormous respect is, remember I was a first time CEO I was learning on the job every day and I thought, gosh, this is just a fantastic opportunity, a fantastic ride, I'm having so much fun. As a result, I tended frankly to over promote my own people so that when I was looking for a new head of this or head of that, rather than bringing in external talent, I said, well listen, I'm not being replaced as CEO, the people are staying with me as the board of directors therefore this person that I already employ can be promoted to this position.

So I tended to over promote in the early days internally whereas perhaps I should have been more balanced, bringing in new talent, fresh talent alongside my team and that was a mistake that I think I made because sometimes people got out of their depth a little bit. But anyway, we recovered. That was one mistake.

CONOR BROPHY: And the key piece of advice for anyone starting out?

CHRIS HORN: You've got to have a business partner. And in my case, I was lucky to have two, Annraí and Sean. I don't think you can do this on your own. Even though you're CEO, at the end of the day you are on your own. But having one or two key business partners, co-founders that you can go and shoot the breeze with

and they'll lift you up when you're depressed you lift them up when they're depressed and keep an even keel.

And most importantly, that business partner or partners should not be your social partner. I think it's just wrong to bring the worries of the business home at the end of the day. So don't confuse your social partner or your life partner with your business partner. In my view, they should be different people.

CONOR BROPHY: I heard a nice line earlier on. I was talking to an entrepreneur who's in NOVA UCD, who said you need two people to start with, the hacker and the hustler, the person who grinds away behind the scenes and the person who goes and sells the business.

CHRIS HORN: That's true too. Gosh I think I think once you're a public company there's another pairing that comes into play and that's the CEO and the CFO. And the CEO is the brash kid, the hustler, selling on Wall Street and the CFO is the mature adult who says, listen guys, let me tell you how it really is. So you've got a bit of theatre almost the actors being the CEO and the CFO.

So there's that relationship as well. So the finance guy as well as the technical guy.

CONOR BROPHY: That obviously casts you as the hustler though, Chris.

CHRIS HORN: I've been known to hustle in my time!

CONOR BROPHY: On that note, Dr. Chris Horn, I think we'll leave it. Thanks very much for chatting to us.

# Building Companies for Future Success

Investors and entrepreneurs share first-hand experience in creating, financing and growing spinout companies, what they look for when investing their money and their time and why the first tranche of investment is only just the beginning.

Mark Felix, Investment Manager, Dow Venture Capital

Fergal O'Brien, Co-Founder, Surgacoll Technologies

John O'Sullivan, Director, ACT Venture Capital

Alan Phelan, Founder & CEO, SourceDogg

Chaired by Brendan Cremen

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BRENDAN CREMEN: I'm Brendan Cremen. I used to work in UCD, still doing some work there. And I'm here just to moderate. Mostly, I want these guys to talk and also you. So if you have any questions,

please be preparing them because we would like to invite you to join us in discussing what we're about to discuss today. So to start, I'd like each of the panel members to give a brief introduction of themselves, maybe put it in the context of the discussion that we're about to have.

So, with that, I'll start straight away with Alan.

ALAN PHELAN: Good morning. My name is Alan Phelan, CEO of SourceDogg. But I'm also involved in two other technology companies. My background was originally engineering, I graduated from Galway, lived in the UK for a good few years prior to going back to Ireland. Myself and my business partner, we grew a technology company in the UK which we sold for a bit over €20 million.

I moved back to Ireland and then decided what to do next. I started looking at the technology landscape and since then I've been involved in three companies. I run a software company and I'm also a shareholder in a waste-to-energy company which we spun out of NUIG and a telecoms company we've based in the UK. So that's what I've been doing for the last few years.

FERGAL O'BRIEN: My name is Fergal O'Brien. I'm co-founder of Surgacoll Technologies but as my day job, I'm professor of Bioengineering and Regenerative Medicine in the Royal College of Surgeons. I graduated from Trinity in Mechanical Engineering and after that, I did a Ph.D. in the area of bioengineering before moving

to the U.S. as a Fulbright scholar where I got involved in the area of regenerative medicine and advanced biomaterials and I returned to Ireland in 2003.

I was one of the initial recipients of the SFI President of Ireland Young Researcher Award. And that allowed me to establish my own lab in the College of Surgeons. And it was from that lab a few years ago that we spun out Surgacoll Technologies. And Surgacoll now has one technology, a bone graft substitute which is a natural based biomaterial which has a regulatory approval and is in patients.

A second technology for cartilage repair is about to enter human clinical trials with hopefully regulatory approval coming in the coming months. I'm currently chairman of the scientific advisory board of the company and as well as that, I'm heavily involved with the Amber Centre which is really developing next generation materials science solutions in partnership with industry.

It's housed in Trinity College and RCSI are a major partner in that. And a lot of my other work at the moment is focused on advanced drug delivery systems.

MARK FELIX: My name is Mark Felix and I work as an investment manager for Dow's Corporate Venture Capital Group, I'm based in Switzerland, having graduated from University College London. I've had a 30 year career in Dow in various sectors from R&D through to commercial roles. It's probably more interesting to tell you a bit more about what Dow Corporate Venture Capital does and

what's of interest to us.

Dow's Corporate Venture Capital Group has been active as an investor since 1993 which probably makes Dow one of the earliest and longest-surviving corporate venture capital groups. We've continued to invest through the good times, the bad times, through the boom and bust, coming up to 2000 and 2008 as well. In terms of what we do and what sectors we look at, Dow Chemicals you probably know has just completed the merger with DuPont and is subsequently going to spin out into three companies.

So there's a lot of uncertainty about where everything is going to end up at the moment. But nevertheless, I would say in the last five years, we focus on four sectors which is, ag sciences, particularly in seeds and trait development, in water and wastewater treatment, electronic materials, particularly in display technology and the fourth sector has been in performance packaging - in smart packaging.

In terms of the stage of investment, there are probably as many flavours of corporate venture capital and how they go and what their rationale is. Our rationale for participation in this industry is that we think we can add value to the investments that we do through our access to markets in science and technology. And so we tend to look at some of the earlier stage companies, seed stage, stage A, stage B, the kind of areas that we think we can add the most value to those enterprises.

Ticket sizes can go from anywhere from half a million up to €25 million in a single entity and multiple rounds of course. I think that's an overview of what we do. Percentage of equity, we have to stick to below 20 percent to make sure that we meet the reporting requirements. And a couple of the recent investments that we've done in Europe - we've been in an ag sector company and in a couple of companies in the water industry - one in Ireland actually and one in Belgium.

JOHN O'SULLIVAN: My name is John O'Sullivan. I'm a partner with ACT Venture Capital. We're an indigenous VC firm based here. We invest here and the UK and we invest primarily for companies expanding out of Ireland. Stage-wise, which is the way VCs normally describe themselves, we invest everything from seed and early stage all the way probably to Series B, writing tickets from €200k up to about €10 million across those journeys.

Sector-wise we offer a very broad definition of technology. Technology has become very wrapped around the word 'internet'. But historically, we would have done everything from materials science to semiconductors, medtech, enterprise software moving towards consumer software and then on to internet and mobile technologies. So we still see the world through those broad set of lenses because the deepest needs are still in those buckets.

The world hasn't fully evolved to a consumer internet world yet. We're pretty active. We've probably done 100 deals in the last 10 years. We have a regular flow of entry points into new companies

and the exit horizon. What companies tend to look like for us, and it's very reflective of what successful SMEs looks like in Ireland, is that we have a journey for companies from zero revenues up to about €30 million.

From the first two people, as Chris referred to, the first two or three people stage, which is the point we can engage with teams, up to about 150-200. So that's kind of what the organisations look like over time.

BRENDAN CREMEN: So, as you can see we have a panel that has different investment scenarios; VCs, corporate VCs and then we have, well I think Alan sits on both sides of the fence, both investing and being involved in the companies themselves on an active basis and then Fergal starting up his own company. I particularly want to recognise the presence of Mark with corporate VC.

I think this is one of the first times at a KTI event that we've had a corporate VC entity up on the panel. I think that is important and it probably is reflective, I would hope, of a maturing situation in Ireland where the corporate VCs are starting to get involved and looking at our companies more and more. And Mark did reference the UCD spinout that Dow have invested in in the last few years.

So we are seeing a maturing of the industry and I think that is that is a positive reflection on what is happening and it echoes a little bit of what Chris was saying earlier.

I'm going to start with some questions. I am going to ask the audience for some questions as we get towards the second half of this. So be thinking about them as you're hearing your answers or hearing the discussion and if you have something you want to ask, you will get the opportunity to do so. I'm going to start actually with Mark because it is a new area for us to discuss.

In financing a venture, and you briefly touched on it, but maybe you can go into it a little bit more, what what would you be looking at? And perhaps, what would be the differences as to how you look at something versus how a VC would look at it in terms of timelines, motivation, time, all those things?

MARK FELIX: Sure. Let me preface my comments by saying that I can only really represent the views of Dow's corporate VC group. Dupont's got its own organisation. As I said, I think there are as many flavours of rationales for participation in corporate VC as there are corporate VC groups. There have been close to I think 1,000 corporate VC groups start up in the last five years which is a huge increase in the number of corporate VCs and they've all got a slightly different rationale. But I think nearly all of them have a sense that this is about innovation and developing new technologies and accessing new technologies.

So I think that's the fundamental difference between what we as a corporate VC look at for companies and conventional financial VCs. So our financial returns on our investments are necessary - absolutely necessary - but it's not sufficient. What we, as Dow, look

for is that strategic alignment with a Dow business. So if you said, what's the most important thing when we look at investment, first, Chris already touched on it, you've got to have a team who is committed.

You've got to have a defensible technology with as big a moat as possible from your competitors. You need to have an attractive market. And the fourth thing that I would overlay on that from a corporate perspective is, it's got to be something that Dow business cares about. Otherwise it's going to be very hard for us to invest without that commitment from a business and a sense that this is something that can have some tangible value and tangible benefit to the corporation.

BRENDAN CREMEN: Again Chris mentioned the classic VC - 5-10 years. Do you have a timeline when you expect to get a return.

MARK FELIX: We operate off our balance sheet so we don't have a fund so we don't have any investment period or return period. Having said that, and again I can only speak for Dow, you may see us as patient capital but we have other things that we bring with us, other baggage that corporate VCs bring with us which have their own nuances about whether it's attractive to an entrepreneur or not.

I think we're patient to the point where it continues to make strategic sense. But, bear in mind that when you're talking about corporate VCs who operate off their balance sheet, with a €1

million or €5 million investment, that can be written off fairly easily. So when it reaches a point where you say, look, this is not adding any strategic benefit to me, then corporate VCs are probably as ruthless as anyone in turning off the tap.

BRENDAN CREMEN: John, just to follow up on that strategic element, there's more and more scenarios now where regular VCs and corporate VCs are starting to work together. How does a regular VC look at that strategic element of the investment compared to the pure return when you're working with a corporate?

JOHN PHELAN: As with a lot of things in VCs and startups, generalisations are dangerous but here we go! I've been doing tech venture for about 20 years and the firm has been doing it about the same. So we've a pretty reasonable dataset now on what our world looks like across a lot of transactions. So we have had a lot of US co-investment, strategic and VC.

I mean, I could give you a long list of names. Mark has hit the nail on the head. The words strategic and corporate, you've got to be very careful of, because they are not all strategic. So that number Mark gave you of 1,000 businesses, and these are large businesses, making a decision to have a VC firm in the last five years. Hold that number in your head.

Now what does that tell you? They can't all be strategic. They can't all be that deeply strategic in that timeframe. To be fair to Mark, he

is being very magnanimous. Dow have been doing it for 30+ years. So it is deeply ingrained in their culture, all the way up and down the organisation, how they do it. Now both teams use the same words, "We are strategic investors." Now, telling what each party means from that is a bit of fun.

So what's happened in VC is essentially, the really, really good strategics have been using their money to send signals into the marketplace to leverage up the money into the companies for certain goals. And there was a period in VC if you go back when we had the last spike in corporate venture about 10 or 12 years ago, where VCs overreacted to those signals, and a lot of them were false because the corporates themselves hadn't worked it out and it was a big washout.

It's very cyclical. It's more cyclical than VC actually because they tend to get in at the tail of a VC cycle. So they're the last lump in. So what's happened is VC has matured in dealing with corporates and we see it in our own portfolio. We spend a lot of time thinking as much as we can, and we all want the money, so if you start with that one, about what strategic means when they use that word and to what extent will our goals be symmetrical and under what circumstances.

And if they were to diverge, what would happen? And the real test, and it's probably in a lot of people's minds, and Brendan's right to bring it up, the real test of this is, the newest strategics have the most complex legals. Because they want to cater for every situation

in terms of what they would do. And the most mature strategics have the simplest but toughest legals.

Because there's only two things or three things that matter. And then you'll know who you're dealing with in the room. This is incredibly difficult for the VC community and the founders to work with together, to filter for. Because if you get it wrong, it can be terminal. You end up with someone with a big part of your cap table who was all very strategic for a brief period and they get something as simple as a CEO change and suddenly it's not strategic anymore.

If they don't have a mechanism internally to deal with how they are going to work with you, you are going to be explaining that and dealing with that for a very long time. And so there's a huge benefit but then you owe yourself the diligence to figure out right, what happens, what happens if? And trying to bring the two of those together is something we spent a lot of time with the CEOs on in terms of, okay, what does this really mean and how would it play out?

BRENDAN CREMEN: Just for the two of you, your time of engaging with companies, the regular VC versus the corporate VC on their path. Your timeline would be fairly early I presume in your case, John?

JOHN O'SULLIVAN: In terms of when we get involved? Well, we're a seed/series A investor ideally so for us it's quite early. But to be fair

to corporates, we see them right across the range. If I segment out all the newbies, people who do it for marketing purposes to people who thought about it, they're up and down the range as well.

Because if their teams are working correctly, they're operating a strategic radar. And they're the ones deciding what's mature or not because they're not looking at the revenue line, they are looking at something else. You can see them up and down the stack which is what makes working with them quite exciting if it all lines up.

BRENDAN CREMEN: In your case, Mark, with Dow, early, late, middle?

MARK FELIX: We focus on the earlier stage because our strategic rationale is that we think we can add value to the company through some sort of collaboration. And so that really, when you're looking for growth or expansion capital, whether the money comes from us or from you or from a corporate or financial VC, it doesn't really matter because you're looking for growth capital at that point.

So where we think we can add value is really in those early stages. So I'd say we look at series A/B probably more than in the other stages.

BRENDAN CREMEN: So for the two lads who have actual companies in play, engaging with a corporate, whether it be through a VC arm or the corporation itself as an investor/partner. Do you have any comments on the the advantages with that or the disadvantages and challenges with that?

ALAN PHELAN: Our companies we funded ourselves from our previous business. I suppose when you start aligning with a corporate for investment, one of the things we found along the journey with corporate VCs, in the end they buyout a very small amount of the companies that they invest in. So they're investing from a corporate point of view because they see some kind of strategic alignment but that alignment may not pan out.

I suppose the fear factor from a company when you take corporate VC money is whether that causes any issues down the line when you eventually maybe sell the business or are about to sell the business because you always, as a company, have the thoughts that, well, why isn't the corporate VC buying you out? Or, why are they not following their money or why aren't they doing something? That's the fear factor from a from a company point of view.

FERGAL O'BRIEN: When we were trying to bring out the technology, the challenge in our area, because we're working in implantable medical technologies is, I thought it was fascinating to hear Chris talk about taking something all the way to IPO in that length of time. The challenge we have is that we need to put that through trials, a series of different trials because of the strict regulatory challenges that are in place before technology can be put into humans.

So many of the VCs we spoke to in the early days would have said to us, really exciting technology, really, really great science but come back to us when you're a little bit further along the line. Many of

the VCs we spoke to said that at that stage. And we've been fortunate that there was a number of private investors have stayed with Surgacoll all throughout the path to bring the first technology into clinical, into humans, into patients and so on.

But I think for a medical technology like that you really need to have some real, good seed fund available. I think when Chris mentioned the Atlantic Bridge seed capital fund, I think funds like that can be absolutely invaluable for a university type spinout that's trying to grow to the next stage.

BRENDAN CREMEN: Switching now to managing and choosing an investor which is a huge challenge for any any startup. So, this time, I'll start with you Alan first. What should a venture be aware of, watchful for when choosing, engaging, developing a relationship with an investor?

ALAN PHELAN: I think when you're starting out in a business, you think it's going to be easy. Often, people think it's going to be quick and it never is. I suppose in my experience, and I've been involved in a number of companies, it's always taken me kind of five to seven years to get a product to a point where it's about ready to scale.

And scale to me is when you're fit to take on a decent number of decent sized customers and go faster and faster and faster. And every time I've done it, I've thought, this is going to be easier and it never has been. So if you think you've got a five to seven year

journey before you're fit to scale, you have to fund that five to seven year journey.

And I suppose, again, in my experience, you're looking at €5 million to get a company to that scale position and maybe more in medtech, I'm not in medtech. You need to think of that journey, of how am I going to get €5 million to get me to a position where I'm out of the valley of death and that's a clichéd term. You see this a lot in Ireland.

Seed capital has become more readily available. I'm definitely not saying it's easy but it's more readily available. And scaling capital is there in the market. Scaling capital is when you have a product, you have customers, you have bite, you can see that, if you put gas in the tank, this will go fast. The bit in the middle is the tough bit.

The bit in the middle is when you're there sweating the long nights and hopping on a plane yourself and out there trying to sell the products and you need to keep the payroll paid and all that kind of stuff. So you know getting to your first few million of revenue is the tough bit. When you have a really proven product and it's obvious that the thing is going to scale, you'll have people knocking on your door rather than you knocking on their doors.

In Ireland I think the bit in the middle is very tough.

BRENDAN CREMEN: Fergal, In your experience dealing with investors, do you have examples of challenges that you met, in choosing them and dealing with them?

FERGAL O'BRIEN: I think when you're at the stage when you're looking to spin out, there's a kind of a feeling that somebody has money on the table, let's jump and run with them immediately. But I think, especially in the medtech area, it's really important to look at the track record of the investors and what they've done in the past and understand the space.

Again, the best example of that is the regulatory environment. We're in a state of development and flux in medical device technology, where the guidelines that the FDA and the guidelines of the European Medicines Agency, they're shifting all the time. So as we began to move forward with a technology, suddenly the regulatory landscape changed and required that we would now need to do an extra animal trial before that technology would be able to get approval.

Straight away, that shifts everything in terms of your original business plan, in terms of when you proposed that you were going to go into market entry, when you would propose that technology would be beginning to be generating revenue. And again we were fortunate that we had investors on board that understood that, and understood that some of these issues that had arisen were completely outside of our control and stuck with us for another stage of funding so that we could bring that and carry out the extra study that needed to be done and eventually get to success and success being when it's regulatory approved while all the time we're trying to grow the concept of the technology we were marketing, plan and reach out to clinicians worldwide.

BRENDAN CREMEN: So that's the company point of view. As investors, what do's and don'ts, in terms of choosing partners, for the companies, from their perspective? John, do you want to start on that.

JOHN O'SULLIVAN: There's a couple of things to touch on without sounding too vague. The first one isn't vague, is you got to make sure they have the money. That sounds a bit trite but actually really have the money. Against all those what-ifs that could happen. It's one thing investors being very understanding when the things change.

The question is, that's very nice because it means you have a nice coffee, they nod and they were very understanding. But really what it means is they were very understanding and they wrote another cheque. That's the true definition of understanding. Now we can be as understanding as you like but if you don't have a cheque to write, it's going to completely adapt your view as to what strategically the next options are for the company.

So now someone is sitting at the table with you, who's very understanding, but they're filtering everything you're saying by, can I write a cheque/ can't I write a cheque. So it isn't like all strategic options are on the table. There's a whole set of strategic options that are now off the table and can't even be discussed in a 'what if' scenario.

So that trite comment opens up the door to lots of other stuff. We

could spend days on it. This is going to sound like truisms and they're truisms because it turns out over time they're true. The standing one is, if you do not think that that person on the other side of the table (and it's a two-way street) respects you, and it's really hard to get your radar on that, then you're probably in the wrong room.

Now you've got to ask yourself the question, if they've got the money and they are the only one who's got the money, then you've got to ask yourself the question, how do I gel a relationship in a short period of time and still understand that we can build that relationship or respect over time. Because it is going to go on for five or seven years. It is going to go up and down.

The third thing is, how do they deal with new information, how do they process information. It's all a bit touchy feely. How do they react to information? Are they high oscillation/low oscillation? Because you really don't want your investor to be high oscillation/low oscillation because you've enough roll as the CEO and founder because your whole world is high oscillation/low oscillation.

The last thing you want is an investor who amplifies that on the reaction to the latest bit of information. So their ability to stand back, aggregate large amounts of information, come up with reasoned conclusions. And the only way they can do that is if they make reasonable attempts to be in your marketplace and understanding over time.

So those three points filter down into lots of different things. But if you can build a view that those three things are on the table then you're probably with one of the right people.

BRENDAN CREMEN: Have you anything to add on this, Mark?

MARK FELIX: I think there's an element of self-reflection that also needs to happen on the part of the entrepreneur. I think you need to try your best to understand the motivations and the rationale for the investment syndicate that you're looking at. Why are they investing and what do they want to do? What do they want to achieve out of this investment? But I think you also need to reflect on what you want from an investor as well. Is it just cash? Is it advice? Are there other elements, are there access to markets or are there capabilities that you want to access from an investor? Understand those and be very articulate and clear about those because when the first interactions happen, everyone's happy clappy and "we can do this for you, we can do that for you." But unless you nail it down in some form of agreement, it may not happen and then everyone's going to be disappointed.

So be very clear about what your expectations are. Do you see a corporate investor as your eventual exit? That is going to colour that relationship. There's no point hiding that and pretending that it isn't if that's what you really, truly believe. I think there's an element of really understanding yourself and what you want out of that relationship as well, in terms of choosing investors.

BRENDAN CREMEN: To use John’s term, 'a truism'. There’s no doubt that probably one of the more important elements of the team that Chris was referencing that has to be built up is self awareness. It is critical to any success. You have to know your abilities but also your shortcomings in lots of different areas in order to succeed. No doubt about it.

Another area that comes up as this system in Ireland matures is legacy issues that might have occurred in early stage investments that might cause problems later on. We’re starting to hear more about these things, which is positive in the sense that investments are now coming in at more and more stages. But we need to learn from them.

Again, I’ll start now with the investors this time going back that way. Things that you’ve seen in later, after-the-first-stage investments that have caused problems as you’ve looked at a potential investment?

JOHN O’SULLIVAN. I could come up with long lists and each case is specific. Maybe I’ll just wind back to the starting premise of the question. You’re right, there is a lot of discussion of this at the moment. The difficulty with the discussion is it’s encouraging a debate and I’ve been to a lot of meetings in the last year where people want the perfect list of all the things they shouldn’t do so they can get all of that absolutely nailed down.

And it actually begins to consume them. And they are wrapping

themselves up in chains right from the get go. What investors are really investing in, this is going to sound incredibly simplistic, is the market opportunity and the team and for us, it's in that order. If the new investors think those two things are exciting enough, it's amazing what issues they'll get over.

And it's really important to hold onto that because people's propensity to negotiate and work with people is a function of how exciting those two things are. Now to go back to the things that you should never do. The most difficult one and it's the most emotional subject and I don't have a right answer, because we have to listen very carefully to how people got to the point when they arrive, is when, in attempting to look at what the next three-five years for the company might look like and it's a broad set of scenarios, is that the equity is in the hands of the wrong people.

And too early in this, the word company is a terrible word. These aren't companies, they're projects. And they're not big projects. Think commando type project versus infantry type project. These are very specialist things in very special points in their lives and using company language can sometimes occlude how the nature of what's going on.

So you can have situations, the one we're most concerned about is where actually, the people who are on the front end of the commando force, which is the people with the highest propensity for risk actually, their reward structure looks like they're highly paid employees if it all works out. And if there's any sense in our

heads that that's really disconnected, we absolutely know that down the line there's a bomb in the basement - to continue the military analogy. That is going to come up pretty quickly because they're going to figure that out.

And that asymmetry just builds and builds and builds over time. And we've been in situations where we try to correct it and it's very emotional. And we've tried to correct it and got kicked out of deals because we tried to correct it and lo and behold the next guy did the deal. And because, given the emotion of the correction, that's what was done.

But that's the one where I'd say, hmm, there's a lot of talk about issues around IP, who has what. I think that's posturing for internal negotiations. But the real one is, who's got the incentives?

BRENDAN CREMEN. A classic cap table issue. Mark, from your point of view?

MARK FELIX: I think I would echo that. Try and keep your early investors aware of the fact that they either follow their money or they're going to have a change in their relationship with the enterprise going forward. The people who come in with the big bucks later in the stage will pay the piper and control the game. So I think early investors have to recognise that.

I think for early companies, I say be realistic in your valuation expectations because if you oversell, go out at a too high valuation, you may be able to crack the money but you'll have a down round

and things will get painful later. So, be realistic in what you expect and keep it simple as much as you can. Preference rights and things you can't avoid but don't make it too complex.

BRENDAN CREMEN: Have either of you experienced, Alan or Fergal, any scenarios there in terms of early investors and what happens afterwards?

ALAN PHELAN: Yeah, I think one of the things that you see sometimes in Ireland is you have to be a little bit careful about friends and family investment and angel investment in Ireland. What I've seen here is angel investors at a very small level, like €50,000 angel investors. And they're kind of painful to manage because at some stage, they're going to be diluted down quite a lot, they're probably not strategic and you may need to get them out later.

So I suppose any investor coming in at a small level, think about what is the journey for them along the way, what are they going to get out of it and how are you going to manage that later. Because if you've got a cap table that's got your uncle, five angel investors, a whole stack of people, it's going to scare other people down the line because they have to deal with all these people and get their signatures and all of that.

In the UK and in other countries you see angel investors coming in at half a million or something like that and that's more palatable. Or a few hundred grand. But I think be very careful about taking

very small amounts of money and having a lot of small investors.

FERGAL O'BRIEN: To speak not on behalf of a company but on behalf of the university sector, one of the great things that KTI has done over the past few years is help to standardise the expectations within the university sector, even in the types of agreements with industry, how that's carried back out. But also in terms of equity stakes in companies because I think if you look at the Irish landscape 10 or 15 years ago, many of the universities had unrealistic expectations of how much equity they should have in a spinout as it's begun to evolve and that's changed.

I think there's a far deeper understanding that's begun to evolve with the Irish university sector over the few years. KTI has really helped that, helped to standardise that across the system.

BRENDAN CREMEN: That's a great segue into the last bit that I want to deal with and then I want to open it up to you, the audience, so be preparing your questions. And that is around the relative value of that early stage engagement with universities. In the context today of university spinouts for the most part, the university has spun it out, it has taken its equity.

The journey is quite long after that. So what needs to be added? And how long does it take to go from that university spinout, in order to get to some level of scale? I'll start with you Alan because you've done it a few times

ALAN PHELAN: Well we've successfully spun one company out of a

university and we've spun some other technologies out of universities that have kind of fizzled and died. I suppose our experience is that spinning a technology out of a university, it probably shortcut the scaling time scale. As in, from spinning it out to being fit to scale, instead of taking five to seven years, it took us three to four years.

And that's because we're working in parallel with the university team pre-spinout. So I suppose spinning a technology out of a university, it complicates things a bit because you have another party in there, but it does de-risk it because you've done a lot of work pre putting a lot of money into the company. So certainly, we've found it's been a positive experience, particular with Galway University.

But it is not uncomplicated and I suppose sometimes the universities probably need to understand the flipside of this which is, the company we spun out, we started working with the team back in 2009 and we're now 2017. All of these things take a lot of time and a lot of energy and a lot of effort. Our partnership with the university has been very good so I can't complain.

BRENDAN CREMEN: Any comment from the investor side on that topic?

JOHN O'SULLIVAN: We're back to the very dangerous generalisations on averaging. To try and put some numbers on it. Earlier on, Alan answered some questions and he put timeframes,

five to seven years, things taking longer. And we had similar experiences. What I'm going to say next is is actually going to put Chris's journey in even starker contrast.

He was very magnanimous about it. So if you take that step and use some of the kind of metrics that EI are looking at, that step from - you have to use some metrics you so we're going to have to use revenues in some form as a proxy for success - and again averaging is dangerous but you're talking about that step from, sort of, €0 to €2 million revenues.

And that is very regularly taking good companies three to five years from absolute startup. Lots of caveats around that depending on sectors and stuff. What happens after that is a subset of those companies, you can argue the better ones, certainly for the world that we live in, actually their journeys from €2 to €10 (million) are another four to five years.

And if they do really well, and it's a further subset, they actually start to get faster. And it's an extraordinary phenomenon when you start to see it in action, that sort of zero to five year journey is really about product-market fit. In certain industries like medical devices, it involves large upfront capital. And the FDA helps you to decide product market fit in some respects.

So sales can go faster later. In other industries, product-market fit it is all engaging customers and customers will fund it upfront and you don't need VC which is the way it should be for most

companies. VCs are only right for certain situations. So that €0 to €2 million is not just about the two million, it's about the product-market fit journey and what signals you're getting and being able to adapt to that.

And that's why, if that works, that's why it goes faster. The market, it has fit and the market's pulling it. And it's pulling it faster and faster if you're very good at it. It doesn't happen very often. It's quite hard to do. So these companies that you see that we all talk about as landmark companies and Iona was one of them. Whether they used the language internally at the time in Iona, 'product-market fit', Chris can tell us over coffee but they absolutely had it.

They had that segue, product-market fit and timing. It was an extraordinary period of change in the computer business as that transition to open, integrated systems began. And Iona was sitting there at the right nexus at the right time. So timing plays into this as well. So there's those steps and what plays into it and people should think of these as 10 year journeys.

But it's the step to €2 million is the one.

BRENDAN CREMEN: So I'm going to turn it over now but just to summarise that, I think it's an important point that, from what we've heard there, the university spinout occurs. To get to some level of product-market fit and beyond is still a long journey with a lot of the team, a lot of the fundamentals of companies still have to be built in.

It doesn't start at zero at some point already fully formed when it comes out of the university. I think there's an important lesson there for everybody. And the expectations around that need to be always well dealt with.

DELEGATE: David Murphy, NUI Galway Innovations Office and Technology Transfer: So Alan, delighted to hear some of your positive comments and the experience but to dig a little deeper into that. Working with universities and taking a technology to a project and then the investment side taking the project into a company and investment successfully.

What do we need to do differently? What do we need to do to improve? And also, if there are any positives about what we currently do, that would be received well too.

ALAN PHELAN: Our experience with NUIG was very positive. I'm not saying that there can never be improvement there. I think the work that Alison and the team have done in KTI has helped things a lot as well. I think just standardising the expectations on both sides of the fence from the investor point of view, from the TTO point of view. I think that's helped a lot over the last few years.

I started looking at technology spinouts in Ireland in 2008. And that's pre- a lot of the work that's been done since, it's pre the business partner program and all those kind of positive developments. I suppose from the university point of view and from the EI point of view, it probably would be maybe a bit of

managing the metrics.

I think there's been a big focus on metrics of how many spinouts and all that kind of thing. I think what's more important is how many proper companies are developed out of the technology that's developed in Ireland. I think the figure that John quoted there of €2 million. €2 million is probably not a bad yardstick to say is that a company or not. It's kind pre that point where you're still a product in development and still getting there.

And getting to that €2 million is hard yards a lot of the time getting there. And then when you get there, suddenly things… In my last company, the first two million was definitely the toughest. And then we got to €2 million and getting to €10 million was a different journey and then getting to €25 million was a different type of challenge.

€10 to €25 million felt quite easy to a certain extent. The first €2 million was really tough, the next €10 million, you were hands on, still managing yourself, you're still running around all over the place. You got to €10 million, you could afford to have a team around you and scale it.

BRENDAN CREMEN: Mark, I generalise for you because you probably don't know the Irish situation that well but you probably presumably had dealt with perhaps some university companies from other jurisdictions. What would you have seen that was well done there that perhaps we could learn from?

MARK FELIX: I think one thing. I work very closely with the ETH in Zurich which is one of our strategic universities. We work very closely with several of the Russell Group universities in the UK. I think one thing I would suggest that TTOs should think about is that a spinout or a venture funded company is not necessarily the panacea for every solution.

You need to think about that as one possible solution for extracting value for the university along a continuum. It could be that licensing might be the best option. It could be a collaboration, it could be a joint development agreement, but you need to present that to us as corporates in a way that says, there's a technology here, let's find out what the best way to extract value from this opportunity is.

JOHN O'SULLIVAN: Two sides. Maybe one is a little bit like a bit of a history lesson. And actually to refer to Chris again because Chris has two major waypoints and three now - his Iona time, his innovation task force when there was a big reset here. And then his commitment to innovation and his work with AVB. So if you look at that 25 year continuum at the time I started in the software industry as a graduate up until now as well.

It will be hard for most people in this room to appreciate (Brendan would know some of it as well) the step change in that 25 year period. And we could create a long list of how, if I really showed you, by numbers and by people and by value of investment. It is quite extraordinary because we live in a very small place. So our

state has made in a very large commitment in various forms across that ecosystem over this period and is likely to continue and for our size it is quite extraordinary.

And sometimes we tend not to appreciate that and we tend to criticise the system and I can list you the 155 things pretty easily that if I had a magic wand I'd change and you'd have another 155 with a big list. But that trajectory is amazing. Now despite that, here's the slightly what-if bit and it's going to come across as negative and I can't find better words to say it.

Despite that investment and that likely continuum because as a society we probably don't have a choice. And someone touched on it earlier on, you go to other cities, they say the same words. Innovation economy, knowledge-driven, they list the same sectors. And by the way, you should see them because they're a lot bigger and they have a lot more money.

So other people are at this stuff. I still wonder at the extent to which, because of the institutions in which it's carried out in, that we're interfacing with, that despite this effort, we're still very early, and some people will not like what I'm going to say next, in the culture transformation that you need deep inside universities.

Because they're unusual type organisations. We're on the way. What I think deep, deep, deep down inside then we've still got to crack that. It's like drilling for oil. We've really got to insert this right into that DNA. And I do wonder are there ways to make that

happen faster. And I think it needs to happen faster sooner because the state can't keep rolling this type of open purchase order in the hope that everything will be okay in the future without somebody at some point saying, tell me how that went on? And you can keep saying it's coming in 25 years time unfortunately.

BRENDAN CREMEN: The best solution for everything is culture change no doubt about it. The toughest thing for everything is culture change.

FERGAN O'BRIEN: Ireland's very new. For the university sector, SFI was only set up in the early 2000s and EI not long before that. So Ireland is new from the university perspective. However we have evolved and, like a lot of what we do in Ireland and I think the universities coined on quick, I mentioned KTI helping that process.

But the likes of the big centers of excellence that we now have - the Amber Centre that I'm heavily involved in, that's giving us the opportunity to both focus on taking really world class science and world class technologies out of the universities, not just in terms of spinouts because we're working with many multinationals, with small companies as well, to bring the technologies back out of the university sector.

My only concern at the moment is we're hearing all the time about how Ireland has moved up the rankings and that we're in a really really strong place. My concern is that the governments might start thinking that it's done, we've put the investment in, we just

maintain the status quo. And now that we're breaking into all these top 10 rankings, in my area of material science we're number two in the world in terms of citations which is unbelievable. In immunology, we're similar.

In nanotechnology we're similar. But to stay there, we've heard continually about how this is a global economy. Every country is saying the same thing and now it is absolutely critical that the investment from the government is not just maintained but that it takes actually expanded in order for us to be able to grow what we've done so well so far.

DELEGATE: Keith O'Neill from Abbott. Can I return back to what Conor referred to earlier as 'the hoary old question' and that's the stage at which companies tend to be acquired or sold in Ireland. We sort of go into this self-flagellation mode or at least certain parts of the community go into self-flagellation mode when these companies are sold and the inference is that they're being sold too early and that there was a lot more potential to grow that it's a lack of ambition or for some other reason.

And we jump to discussions on how can we how can we encourage these companies, how can we put supports in place to help them, like Chris' company, to go all the way to a public listing. I'd be interested in the panel's views but in particular, the investors' views on, is there anything wrong with these companies? Do they sell at the right time for the right reasons? Are there things that we can do to encourage them to stick around longer? Is there a

problem that we need to solve at all?

JOHN O'SULLIVAN: The public debate on it is overly simplified. I'd probably tend to agree with your premise about, I don't think it's actually a problem to solve. It's a symptom of another problem. There just aren't enough of those companies. If you have hundreds and hundreds of companies that have the opportunity to exit between €20 million and €50 million or €80 million.

Among all those groups of market participants, some of them will choose to go on and say no. So it's a scale issue because in truth if you go to any other economy that takes it seriously, they sell lots of companies and Chris mentioned that lots of companies are sold below €100 million. You just don't read about them because they don't make the international press.

But they have hundreds of companies. So you get these ones that break through. So why do some breakthrough and not others, is the next question. Again the debate overly simplifies that because it assumes all companies are equal, all opportunities are equal, all people are equal. Each of these situations is so dynamic in its own right.

It's a function of the people's ambition, fear and greed if you want to put it simplistically but it's really a function of market opportunity and their execution. Growth solves all problems. Growth provides many answers. What Chris didn't outline and again he was very magnanimous, is the actual raw revenue growth

in addition to profitability that Iona generated within that market.

So it was the market leader in a market that was exploding. Now they are the two hygiene factors if you want to have a company that goes on to be at that next stage. The other misnomer that's out there somehow is the classic (there is an element of it) "the investors made me do it." "It was all their fault." The truth is, in most situations, it's a hugely human point - Alan would have seen it.

It has been so hard on a deeply personal basis, emotionally, physically to get to a point of value, that when that point of value arrives and someone is prepared to put several million dollars, many millions of dollars on someone's kitchen table. That's actually the discussion that's going on in the room in most cases. That's the truthful, honest discussion and the truth is, in most cases, the management team, who have the best information and the founders, they've got the best data, they're running the business, they should understand this market to their fingertips -they call it.

MARK FELIX: I don't think there is necessarily a problem with companies exiting at those kind of early, €50-€100 million type valuations. I would wonder also whether it's also a reflection of the investor base. When you're looking at investors who've got billion dollar, several hundred million dollar funds, they need to have exits at high valuations to be able to return the capital to their investors.

And so in Europe I would also wonder whether that's also a reflection of the investor base.

DELEGATE: Liam Lewis, Cork Institute of Technology. Just a question maybe for the panel but to throw it out there in general. We've mentioned, as a catch-all term perhaps, or generally the university sector. What about the Institutes of Technology? I think there's a lot of applied research, a lot of good work that's done there. Is it something that's just in the culture now, that we don't look at those or is there more we can encourage to look at the work that's done there.

ALAN PHELAN: When someone is looking to invest in the technology, particularly a university technology or an institute of technology technology, if I can say that, you're looking for something that's protectable, scalable, valuable and that can come from any source. I don't know if there's any particular reason why universities have more spinouts than institutes of technology.

But I suppose that the type of research they are doing is potentially ending up with more technology of that type. My experience of the ITs is that people I've seen come out of ITs are very, very good. People we have recruited from there are excellent. I don't know if I can particularly point to why there isn't the protectable IP type technologies coming out of the ITs versus the universities.

There's no particular reason but those are the type of technologies that people will want to invest in and scale.

# Devising MVPs that Persuade Investors

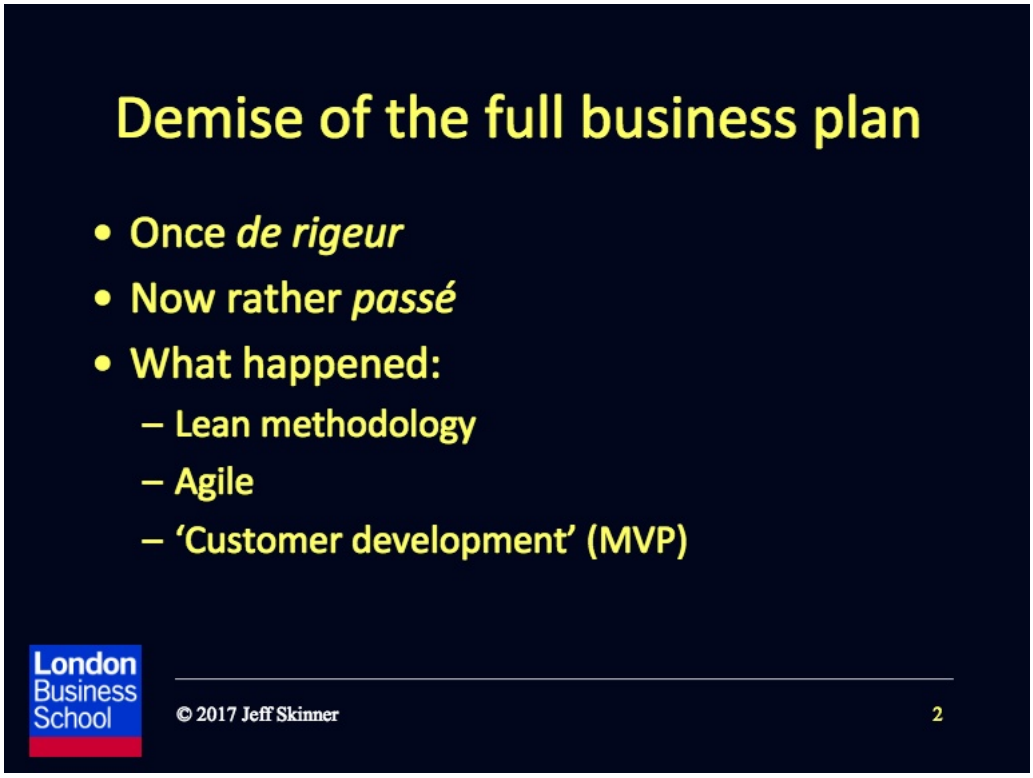

Jeff Skinner, Executive Director, Institute of Innovation and Entrepreneurship, London Business School.


I come here obviously with a little bit of trepidation because there's a danger that what I'm going to say is going to be motherhood and

apple pie. Especially having gone and spent the morning yesterday with Eamon at the Guinness Enterprise Centre and was severely impressed by that. So it's obviously happening. If what I'm about to say, you think, "Yeah, been there, done that", then the message you're going to take away instead is, aren't we doing well, because of the two perspectives that I come from.

What gives me any authority to talk about this at all and where the inspiration, if you call it inspiration, for this talk came from, was that I run a couple of proof of concept funds in Luxembourg. So that's where part of it comes from and part of the outpourings in this talk come from. And secondly, at London Business School, I regularly describe my role as saving MBA students from banking and consultancy and getting them instead into running their own businesses.

It's within the proof of concept fund world. It's technology within the LBS world. It's all about entrepreneurs. So this is what I'm going to say. I'm going to start off by suggesting my observations certainly. So I'm going to put it out there that the full business plan, which when I started in tech transfer back in the 1990s or something was de rigueur.



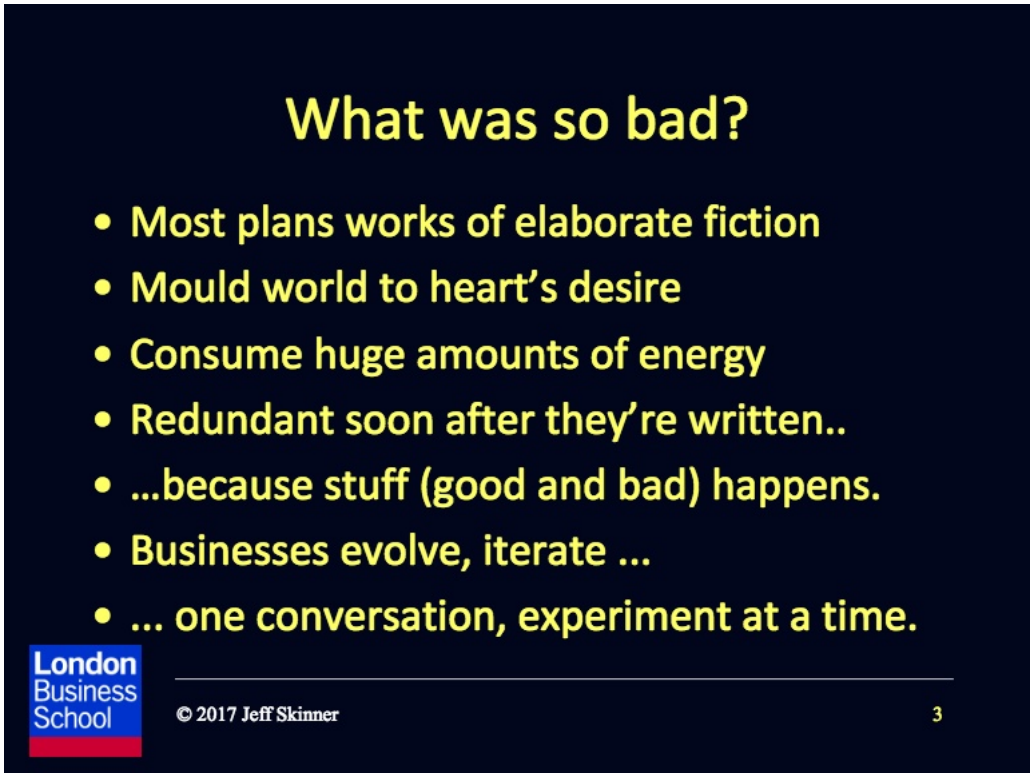

If you were going to be taken seriously by anybody you were going to have this full business plan which turned out to be a tome about that thick. And if you had to take it out to send it to people somehow it was some sort of mark of respectability, authority, rites of passage that you wrote this flipping thing. And I now delight in the fact that it's now rather passé and business plans are far less emphasised by the entire community and certainly at LBS we really don't start talking about business plans until very late on in the process and I'll say a few words about why that might be in a slide or so's time.

What has actually happened which is delightful is that we've had various other methodologies coming in. Obviously we've had the Lean methodology that has come and taken storm with Eric Ries and popularised by Steve Blank. It says basically, just get out there

and do it and learn without the need for huge resources. And we remember that one of the reasons we need a business plan is to raise those large resources. See what you can do without those.

The second, taken more from the corporate is this whole idea of Agile. It's basically the same message but it comes from the different direction which is rather than waterfall development, where you have this great, big plan, let's go Agile, let's see what we can do and what we can learn from what we are doing as fast as possible.

And then you get into the whole customer development which is sort of the MVP movement Steve Blank has popularised which again is saying, you've got the idea, sounds great, don't elaborate, get the hell out of the building and start talking to some people about this idea as soon as you can. So I think that's what's happened. What was so bad? I hate business plan competitions.




I've actually largely scrapped them at LBS in favour of challenges and much earlier stage type competitions. But they are not around business plans. They're around ideas and the development of ideas and how far can you take those ideas over a few days or a boot camp or a month or so. So it's all about progress and learning rather than developing this thing.

And one of the reasons I hated them was because they were works of elaborate fiction. Especially when whole chapters were outsourced to consultants and people to write. There was no ownership and you sometimes asked the people who were putting forward this proud thing and even they didn't believe it. So it was fiction, they were just confections.

They also could be written in isolation. They could be written in the lab, in the dorm, within the team. They could be very inward

looking things. And in doing so they kind of started making assumptions about the world out there and they moulded the world to their hearts' desires. And it was just another way of insulating themselves from the outside world and what they really thought for far too long.

They consumed vast amounts of energy and time and they were redundant very soon after they were written because stuff happens and we all know that even when a man tells the truth he's lying and that's certainly the case in the business plan. Certainly sometimes it turned out right but that was because of more luck than judgment. Things change, the business plan was just put on the side because something happened that derailed that.

Because we know that actually, businesses iterate one conversation, one experiment at a time. And there's this horrible word, pivot, which I hate but it sort of says it, where you come up with a new insight, you come up with a new discovery, you come up with a new result and you decide to change things. And then where was all that wonderful work in the business plan actually gone? So what can it be replaced with? And this is a come on to this whole thing of mentioning the minimum viable product, MVPs.

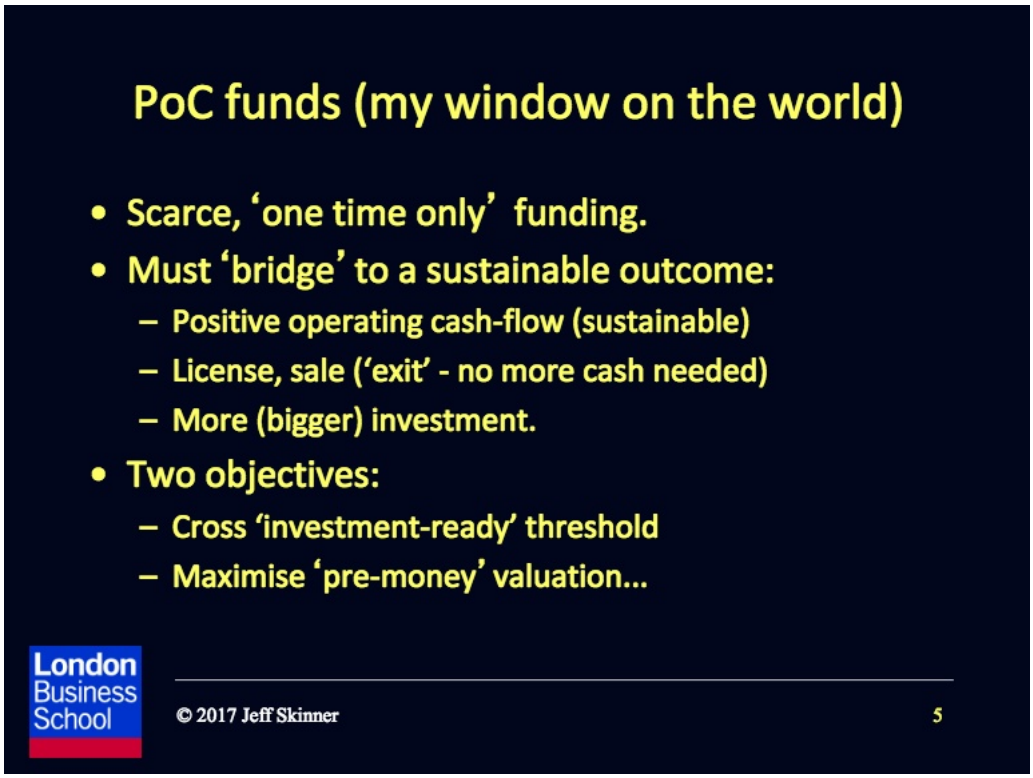

I see that a lot and I see that particularly at business schools. "Let's do the MVP". Now I was intrigued by all this, I've thought about it, I've looked at it. I've been to hackathons, I've judged hackathons and I have deep misgivings about MVPs because they seem by some to be taken as the end rather than some purposeful point on the journey. So, MVPs as and end in themselves.

From my work with proof of concept funds coming out of universities, I observe that there's this thing, TRLs - Technology Readiness Levels. And there's nothing wrong with them but I see scientists particularly taking them as an end in themselves and say, we're going to take this from TRL 2 to TRL 7 and there's the plan, this is how we're going to do it.

Wonderful, give us some money! That again I have come to hate and dislike and mistrust and think is misguided. But then the

alternative is to say nothing - good team, looks like a right market, I can see the trends, trust us, give us the money and we'll do good stuff, which ain't going to convince too many people either. But what's the alternative to this? And as I said, the problem with MVPs, TRLS, they can become ends in themselves.

They somehow assumed self evidently, because somebody read a book on them as opposed to a book on business plans, somehow they seemed to self-evidently add value to a venture and I don't believe that is the case. You can build the wrong TRL and sometimes you get the same old story, especially when people start using Lean Canvasses and stuff, they can get round a little table just like they used to with a business plan and still shake the world to their hearts' desires and not challenge the assumptions of what they're doing, just basically stay in the lab.



So, PoC funds. These are proliferating, they're called all sorts of things on the continent. They're called valorisation funds, development funds, proof of concept, proof of market, seed, pre-seed, all the same sort of thing. What they are is a fantastically wonderful resource but they're a one-off resource. They're a market failure spanning resource, a chasm spanning resource but they are a one-off.

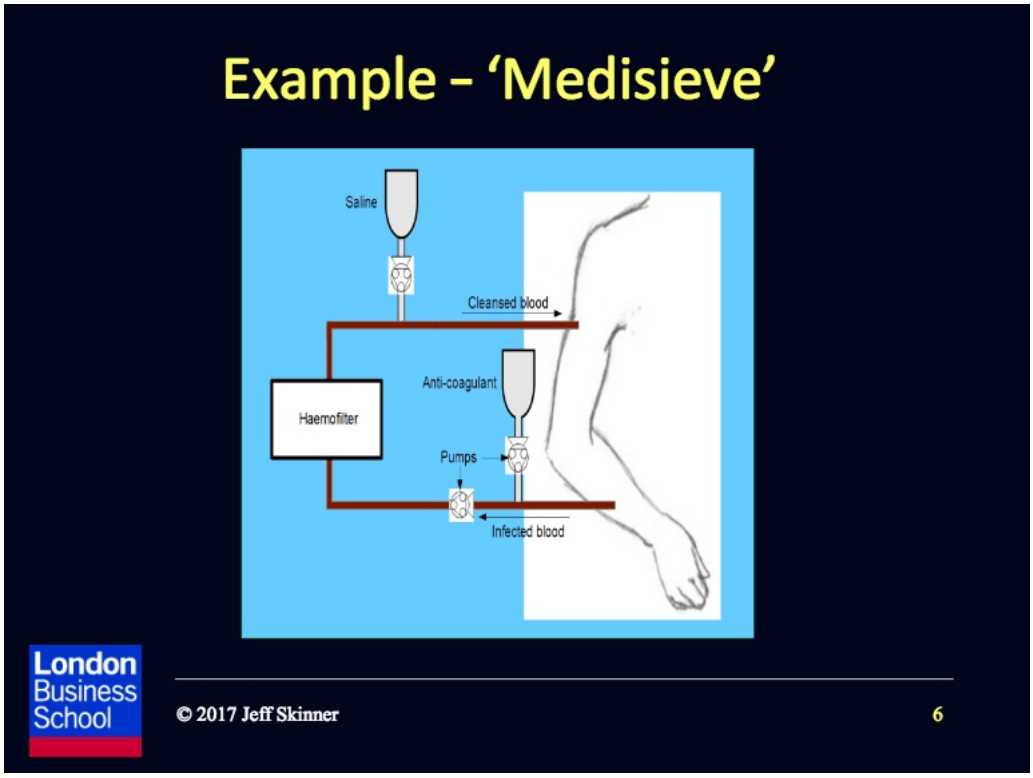
And they have to be used - they can be abused really easily - to bridge to a sustainable outcome. One of those sustainable outcomes is positive operating cash flow which is typically what happens with my students. They have to get to the point where they're actually cash positive and they don't need that further investment for the time being until they're two years down the road.

They need scaling capital or some sort of licence or exit of some kind again where no more cash is needed, also things I hate a lot but there's years of frustration about this. Do we license or do we spin off? There's no such argument. We add value until a sensible exit which might be a licence or it might be to create a business and sell the business a little bit later on.

But whatever it is, can I get enough money to bridge this gap so it is no longer too early for a corporate to come in. Or the third of course is, I'm going to prove something and I'm going to need a bigger investment. That's a third bridge. But at that point, I need to make sure I've developed enough value in that business for the identified next stage investor to want to come in, and not just want

to come in and make it investment-ready for them but preferably at the highest value so you have to cross that threshold that says they will, and then you are gradually trying to say, especially with my ambitious MBA entrepreneurs, we want to maximise the free money value at the next stage.

So those are the two things. Now an example. I could, if I was developing the pure entrepreneurial undergraduate or postgraduate entrepreneurial theme, I would pick a different example. But since this is about technology transfer, let me pick this example of Medicid. It's a company that was founded by someone who is now a good friend of mine.

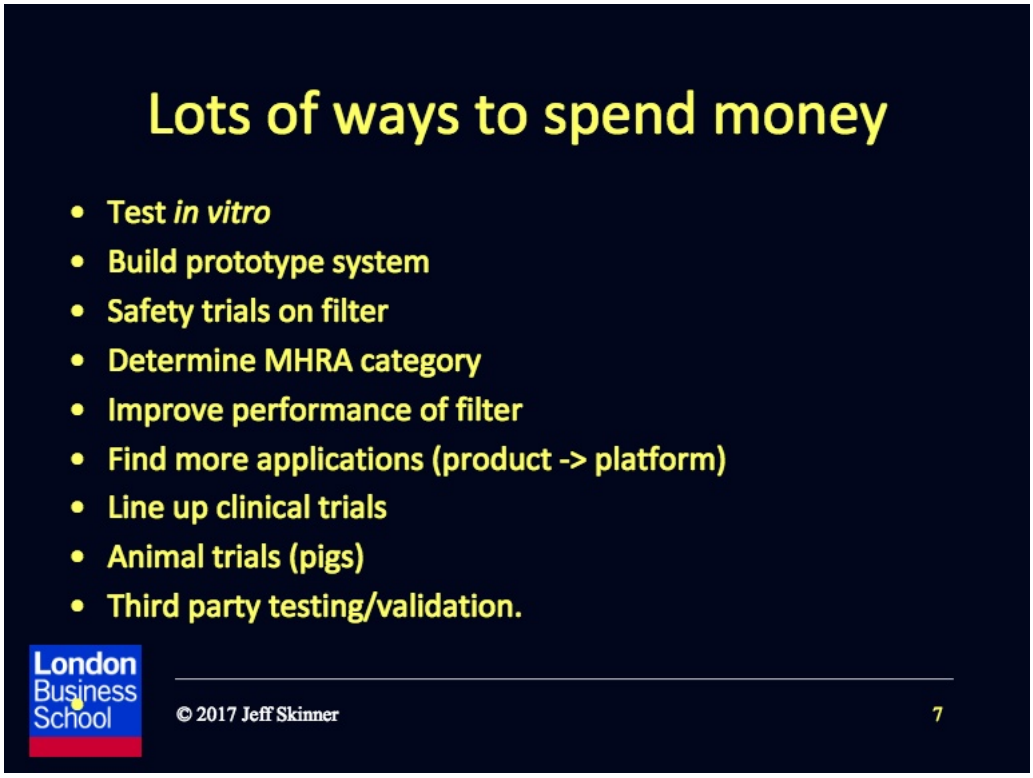



The real thing is that haemofilter. He was a nanotechnologist who had developed a filter that could basically strip out malarial cells from the blood and it was a Lazarus type proposal, it would be a

Lazarus type of cure. You'd fix it up in a dialysis type way and the blood would circulate around and this haemofilter would take out all and only the malarial infected cells, put the rest back into the body and 10 minutes later they'd say, hey, I feel great! That that was the idea, that was the dream and that was what he wanted to develop.

Now the problem is, as we know, that a device like this takes squillions of money to get anywhere. And actually, I don't think he or anybody else was really suggesting that he was going to be the one who was going to take it all the way. He was going to take it so far before he trusted somebody else to take it the rest of the way.

But the one thing he knew is that he needed investment and he and I spoke and sat down and we started talking about what, if he was going to try to get some small scale of investment of £100-£200,000, then what would he spend it on. We came up with all sorts of stuff. We wrote a case study on it. It says test in-vitro, build a prototype, safety trials on the filter, develop which MHRA category it was going to be, 2A, 2B or 3, improve the performance of this filter.

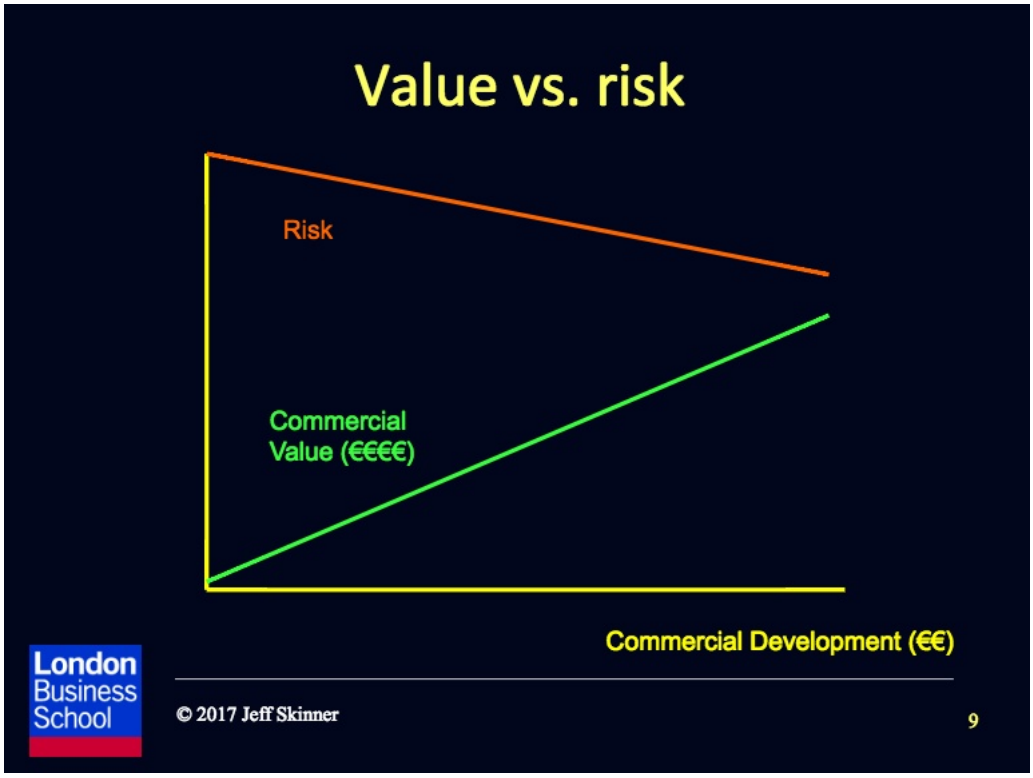



Are we going to find more applications, products and then turn it into a platform rather than a product? Can we do septic shock or something? Line up clinical trials. Do we do animal trials? What do we do? Third party testing? Validation of the results so far? And as we wrote all this stuff down, we were thinking to ourselves, well it's all got to be done some time.


The question is, what do we do first? With the limited sums of money we're going to have, what do we do first? Because they all need doing, they all add value in some ways. But what needs doing first? What can be done with the available funds? There's no point in saying the thing that's got to be done is going to cost £500,000 because you're not going to get £500,000.

So at that point you probably need to pivot and develop something else instead. That makes it almost impossible to take forward. So let's realise it but if there's something useful that can be done, then let's do it. But let's make sure we're spending the money on the right thing. What adds the most value at the other side of that bridge? What is that? Where are the greatest perceived risks? And here, I'm going to get into a little bit of theory because I think it helps me to explain.

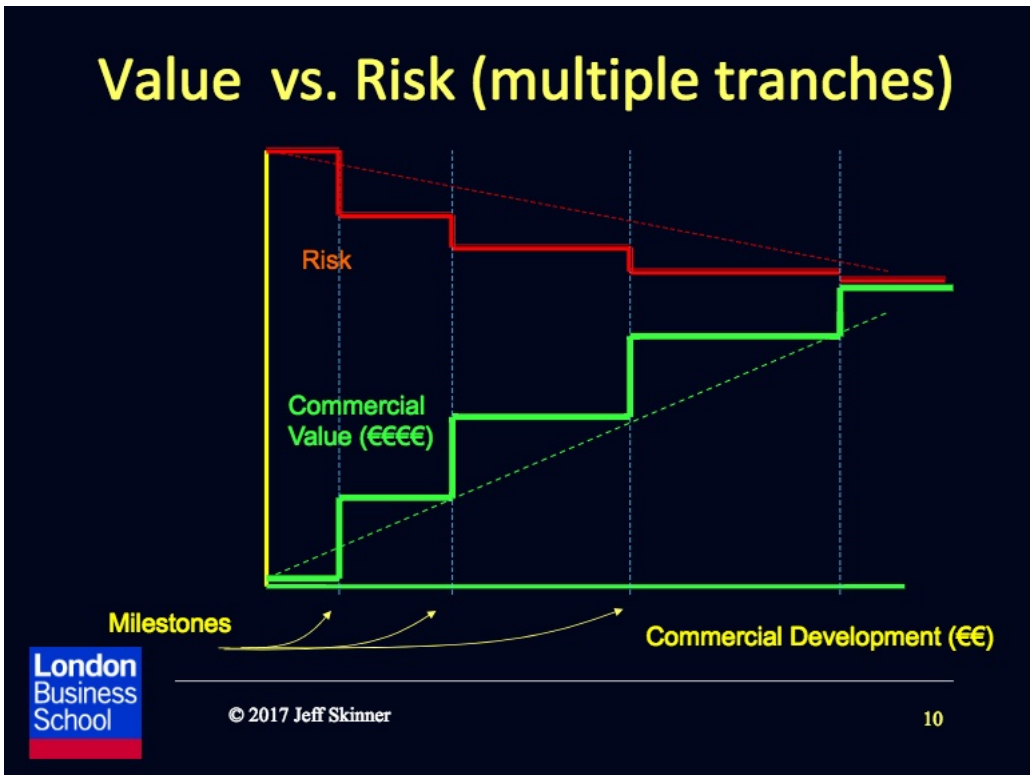
So this is what I drew down for him when I was explaining that this is what I would do, this is the way we need to think. And this is a fairly standard graph. All it's saying is, the value goes up as a risk comes down. That's basically all it's saying. And you take stuff through. Of course it can go horribly wrong because sometimes the risks that you've identified turned out to be things that actually have gone wrong in which case the value goes down to zero.




But let's assume you're are stripping out, you're de-risking it, risk by risk, and this sort of charts out the continuum that the commercial value is going up with development along here. Hopefully four euros here, two euros more there by an order of magnitude or more of value-added bang per buck. And the value is going up purely because the risk is coming down.

If it works and it'll sell, we can do all this wonderful stuff with total

addressable market and we can figure out that it's going to rule the world. The issue is, what are the risks? The value is driven by the risk. Fairly standard stuff. And then it gets cuter because I like to describe it like this. For us we are going to proceed one tranche of investment at a time and each of these is a tranche of investment.




And so, these are sort of the milestones and they are funding milestones and at some point over here we might sell the whole thing in which case the right hand side of that point is completely irrelevant. But up to that point, we are one way or the other getting money from different sources to develop it further. And this is the thing.

If I'm down here at the very bottom left hand, that's where he was now with this project. He doesn't expect anybody to invest in it other than a publicly available proof of concept which is what he

was going for. And so he says, what shall I spend it on? Well the thing that he should be spending it on is the activity that is going to reduce the risk in the eyes of the next investor.

I can get off stage now, I've said it all!

And how do you find out what is of greatest risk to the next investor? The answer is fairly simple. You get the hell out of the building and you talk to them. Now whereas Steve Blank says customer development is about customer for the product, I would emphasise and argue that actually your first customer is the investor because you ain't going to be selling anything for a while yet.

And so the first thing you're going to be selling to anybody is going to be shares in the company for money. So that's the first customers. So get the hell out of the building and start talking to some of those investors, which is scary. It's particularly scary if this is your big thing, this is your idea, this is your beautiful pearl, this is the thing that mustn't be broken.

And you're going to go out and the question you're going to ask to these investors, and I will go out and I did go out with them to see the investor, the first question you ask is so why wouldn't you invest in this now? Not "isn't it wonderful?" but, why wouldn't you invest in this now?" Now, if you're talking to fairly decent investors and I categorise them by being ones who are willing to talk to you in the first place rather than ivory tower lots.

And if they are the right type of investor who can add more value than just money so they know what they're talking about and have done investments like this before, they should be able, if not to give you the actual answer (the danger is that you go to different ones and they all give you different answers but that's just life).

Even if they can't give you the answers, they can say, "Well, you know, my gut is attuned to this, these are the kinds of things and the kind of conversations, why don't you talk to them over there and come back and tell me what you found, because I'll be interested to hear what they think." "I'd be interested in knowing how much a prototype or this sort of thing that you could do and conduct safety trials with, how much would that cost? That's the sort of thing that I perceive as the greatest risk.

Even if I don't know, then I think they would know. I can begin to give you an idea of what the biggest risk-reducing steps are, as perceived by me." So we did that and he then realised that some of the things that he would love to do, you could probably guess what he'd love to do, improve the performance of the filter because that's his comfort zone.

That's what he does. Or zip over to Columbia where he'd like going on holiday anyway and do some more trials in vitro. That's what he'd like to do. The investors were actually saying something completely different. And the stuff that was outside his comfort zone he didn't actually know how to do. But that was the greatest risk. He would have to find other people who could do it. The

investor was thinking "I wonder whether they can do this." "I wonder whether they can actually attract top talent into their business, because that's one of the risks I foresee."

So that is really the the core message, is that these proof of concept funds which you obviously have, they can easily be abused. And they are most abused when the person proposing the project has not gone out and market tested this with investors. And it happens all the time. And I'm going to now come back to two of my pet hates which are the MVP and the TRL, TRL first. An investor once took me aside and he said, "Jeff, you have to understand, we invest in bridges, not piers." And I thought about this for a while.

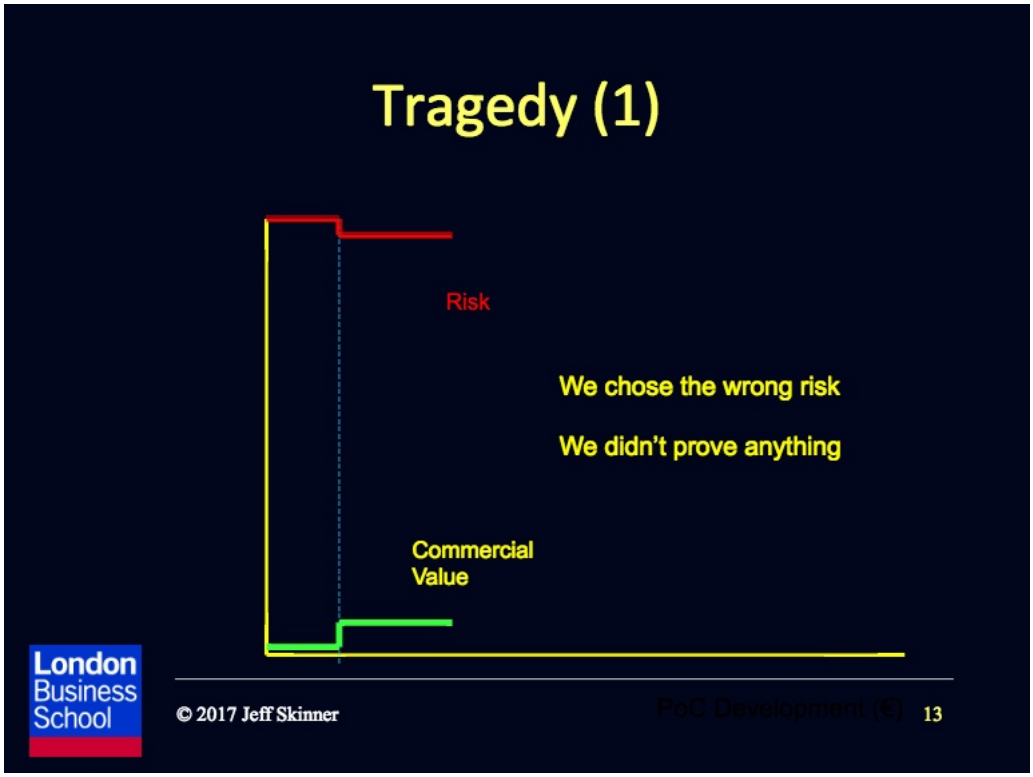
And what he was saying was, we want to build a bridge across to that thing over there where there is a meaningful regrouping and we can build another bridge off with all bridges pointing somewhere towards market eventually. But we need to be able to build a bridge to some value-adding step, in other words, here. And then we want to do that, not one of these.

I show this to my TRL'ers and I say, there we are - TRL 1, TRL 2, TRL 3, 4, 5, 6, whenever it is, splash! And that's when they just develop a greater level of technology readiness level. It may not actually lead to anywhere useful at all. And I have to say the same thing with MVPs. A great frustration, when I attend hackathons, is that people think, "Oh, MVP, good, we can do that!" and they go off and spend a weekend doing an MVP and they come back and they say this is our MVP and I think, well, so what, it's sort of nice but the purpose of

the MVP is to actually to do an experiment.

That's all it is, to do an experiment, to somehow make something that can be visualised by somebody from whom you need feedback, so that they can give you accurate feedback. So the prize always goes (well my prize always goes) to the ones who spent half the hackathon developing the MVP and the other half of the hackathon getting the hell out of the building and testing it and getting meaningful feedback based on the MVP.

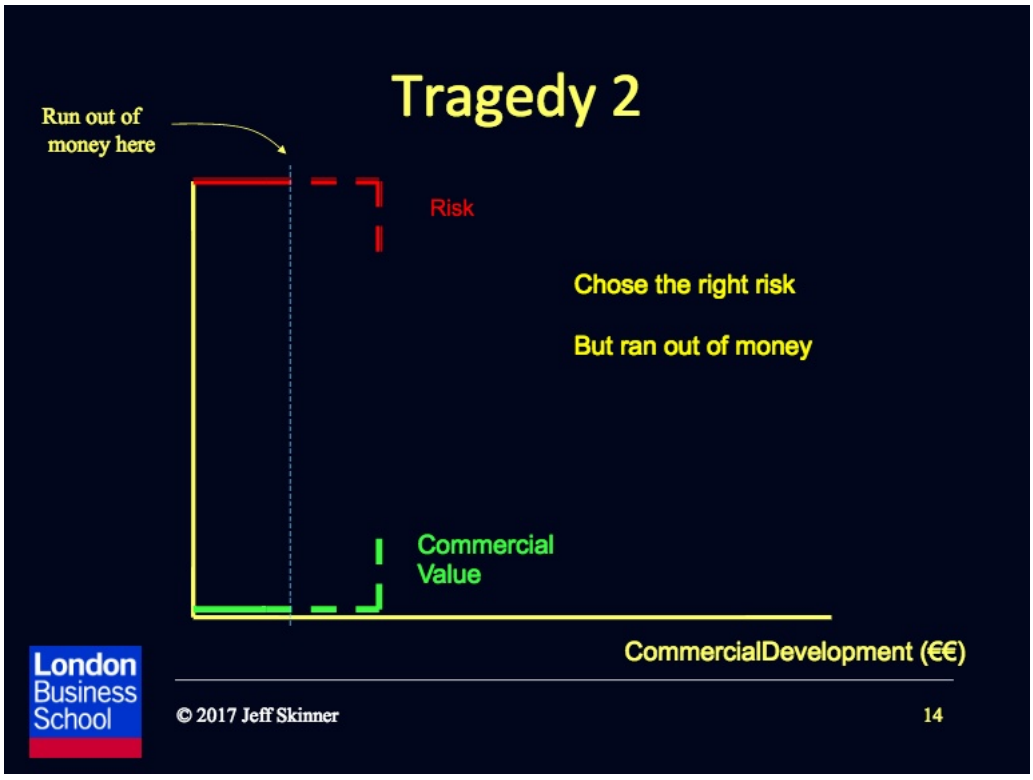
It is a means to an end, not an end.




So there's a number of tragedies. The first tragedy is that they choose the wrong risk. And this is usually death. What they've done here is to think, "Oh, I know, let's do something easy, let's go out and talk to some other scientists. I've heard that investors like

investing in platforms not products so let's go out and find some other products and I can talk to my mate scientists and come back and say, it's not just this, it's this plus cancer plus sepsis. And now look, it's even bigger!" And then the investors say, "Well, yeah, it's kind of important but actually guess what? Your one is going to be the first to market. If you start doing the internal rate of returns, that's what's driving the value in the business.

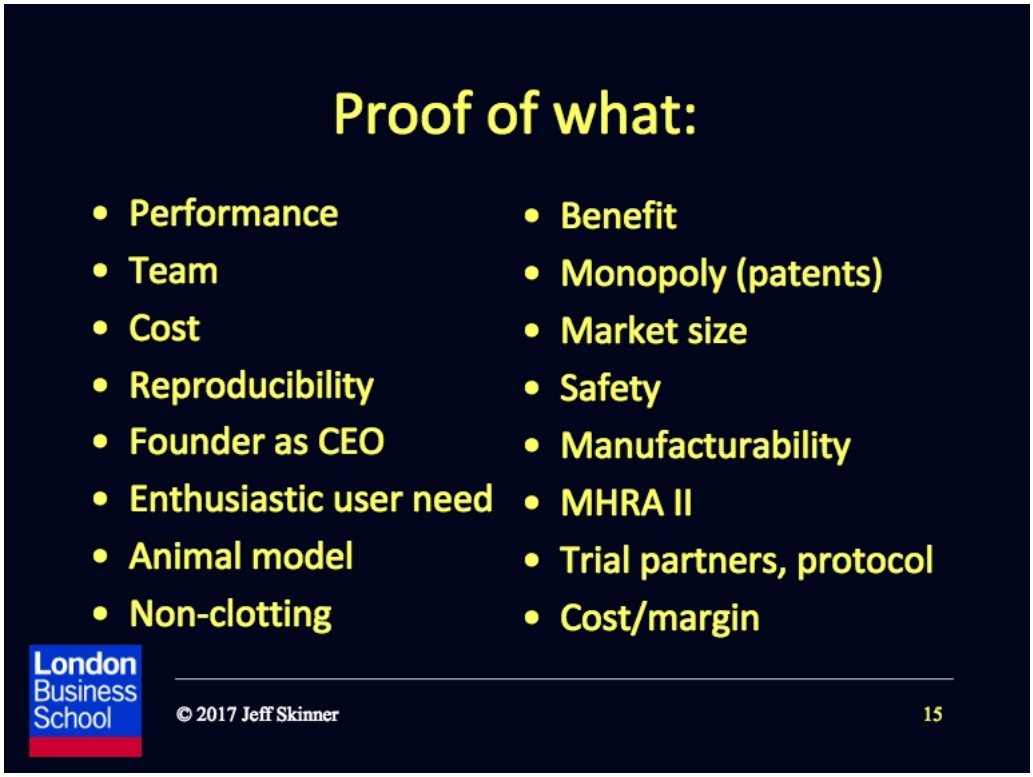
I wish you'd come and spoken to me earlier and I could have told you that was a waste of time and not only have you squandered the seed funds, but in addition to that, you proved to the investor that you are really bad at spending money and you make the wrong decisions." So, lick your wounds, go away, come back in a couple of years time when you figured out what you did wrong.




The other one is this which is beloved by scientists as well, which is

to say, well, we know it's going to cost a bit more money but let's just get as much money as we can for this thing and we'll figure it out some time. And then you run out of money before you actually have anything that you can show to the next stage investor.

And we see this all the time. It's get as much money as we can. In these proof of concept fund applications, the the maximum amount you can ask for is £250,000. So guess how much most people ask for? It's not £250,000, it's a respectable amount smaller than that, maybe £247,000 or something like that. But you are spotting through to say, have you really figured out what's worth doing and then costed that, rather than just say, this is all the good stuff we want to do with the amount of money we have.

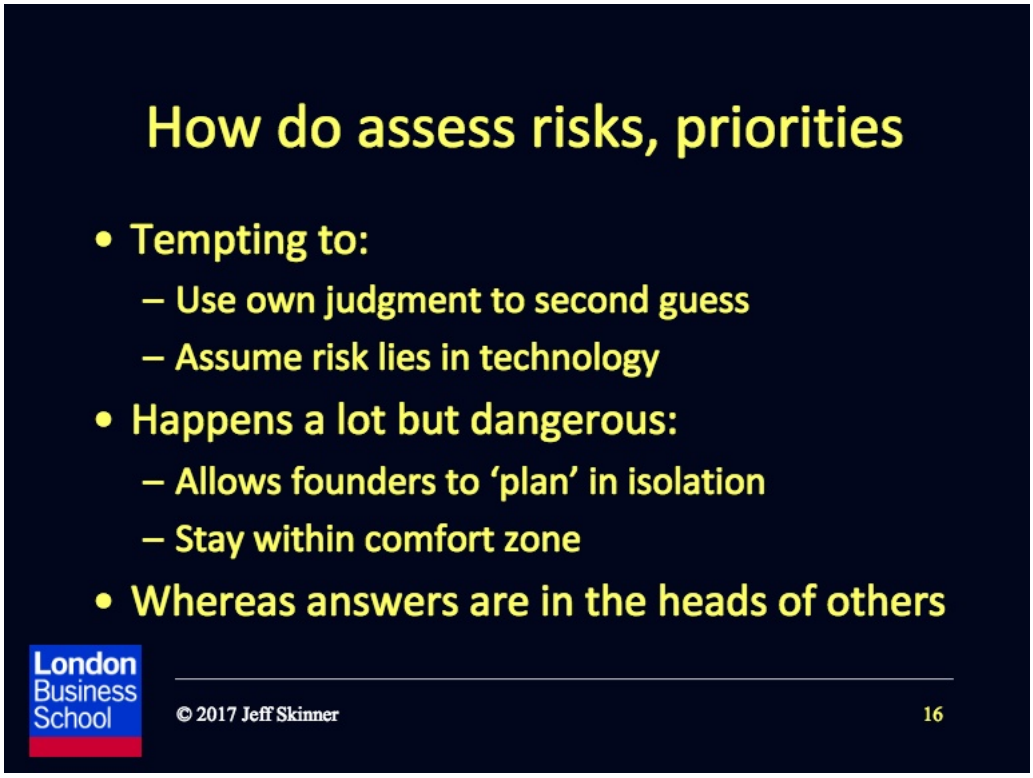



So they can be proof of all sorts of things. And I don't like particularly the words `proof of concept' because it does veer you

more towards the thing itself rather than the market. It could be proof of market but it could be proof of all sorts of things. It could be proof of performance. Importantly, it can be proof of team. Let's get a few people together, let's pressure test them, let's see whether they work together well to produce something really brilliant.

Within six months then I believe it's a team rather than a consortium. It can be the proof of cost - can you make it cheap enough? No, it's a margin. Reproducibility, I did it once. Proof of founder and the ability to attract top talent. Proof of love by people, they want to bite your hand off for this stuff and you've got evidence of that.

Or an animal model or actually what turned out to be the biggest issue of the lot which was that it clotted. Somebody could have told him that and that's where he would have put his effort. Benefit, monopoly, market size, safety, the list goes on and on. But you know these are the other proofs rather than just, "can I make a prototype?" which was his first preference.




Okay, so how to assess risks and priorities. Number one - it's tempting to use your own judgment. "Hey, we're famous, we're good, we are used to knowing everything so why shouldn't we know everything about the market as well." And "we know what needs to be done." Maybe if the outputs are publication, yes, but not otherwise. And the assumption is that the risk lies in technology.

It happens a lot but it's dangerous because it allows the founders to plan in isolation just as they did with a business plan. And it tells them to stay in their comfort zone. And most people perform far better if they've got one foot in the comfort zone and the other foot outside. And the answers are out there. They just lie in the heads of others - and there's a lesson here to putative investors - just as much as the scientists.

You've got to be open to listening to these people, have coffees with

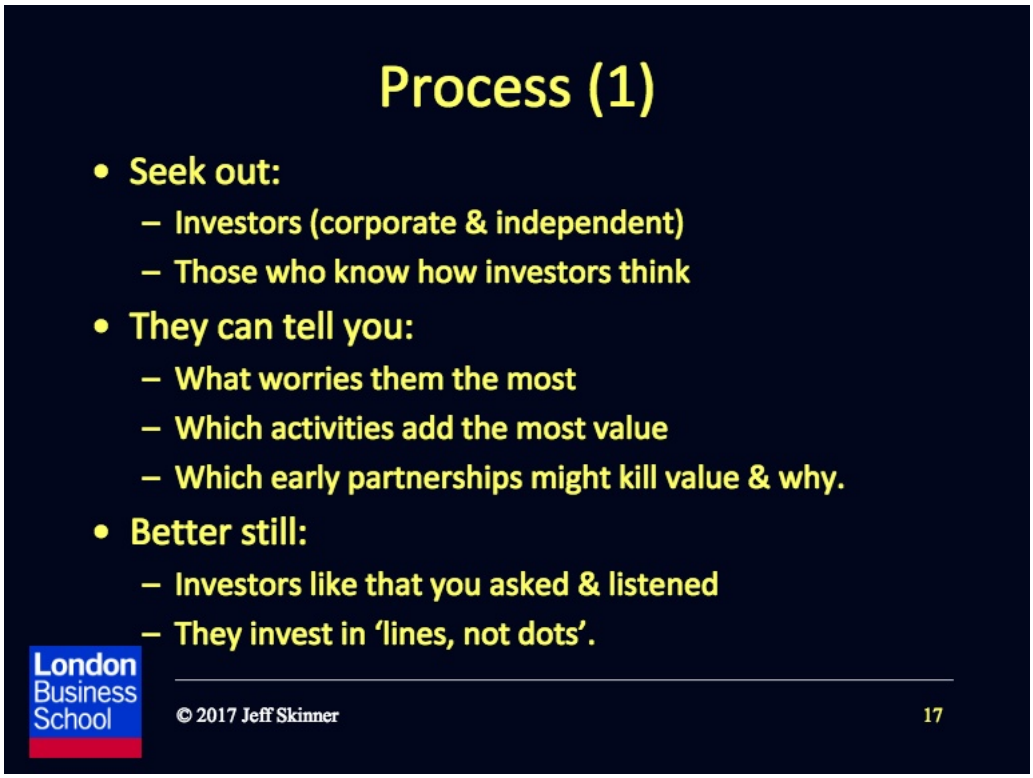
them. The relationship does not start with a pitch. It starts with a conversation much earlier if you're going to be serious. So process, seek out the investors, seek out those who know how investors think which can often be people who've raised money from them before.

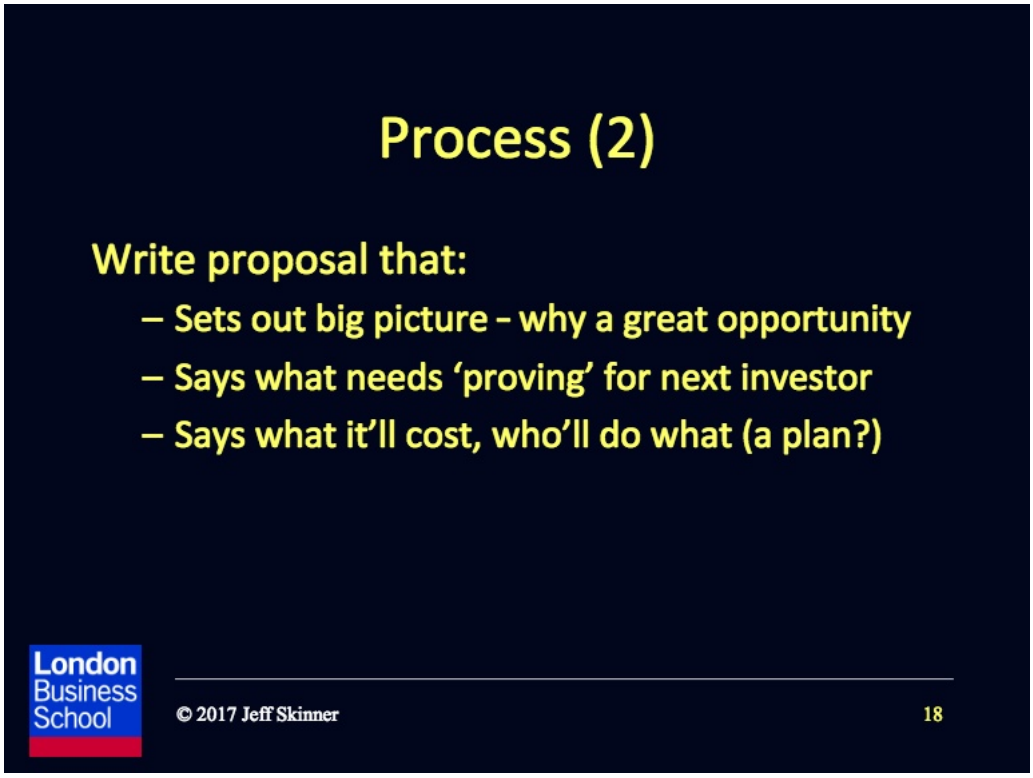
Seek them out. They can tell you what worries them the most. Only they can tell you which activities add the most value. Only they can say which sort of partnerships and people are going to add and destroy value, share equity cap tables as we heard before. And it's better than that still because any investor that I've ever invited up onto a stage, they say they quite like these conversations.

You know what? The best ones, they learn something from these conversations. They never thought like that before. So they learn and they give and it's exchange, even at this early stage. And the other reason they tell me they like it is because it's around relationships. They want to invest in the best deals and they're more likely to invest if they can create that early relationship.

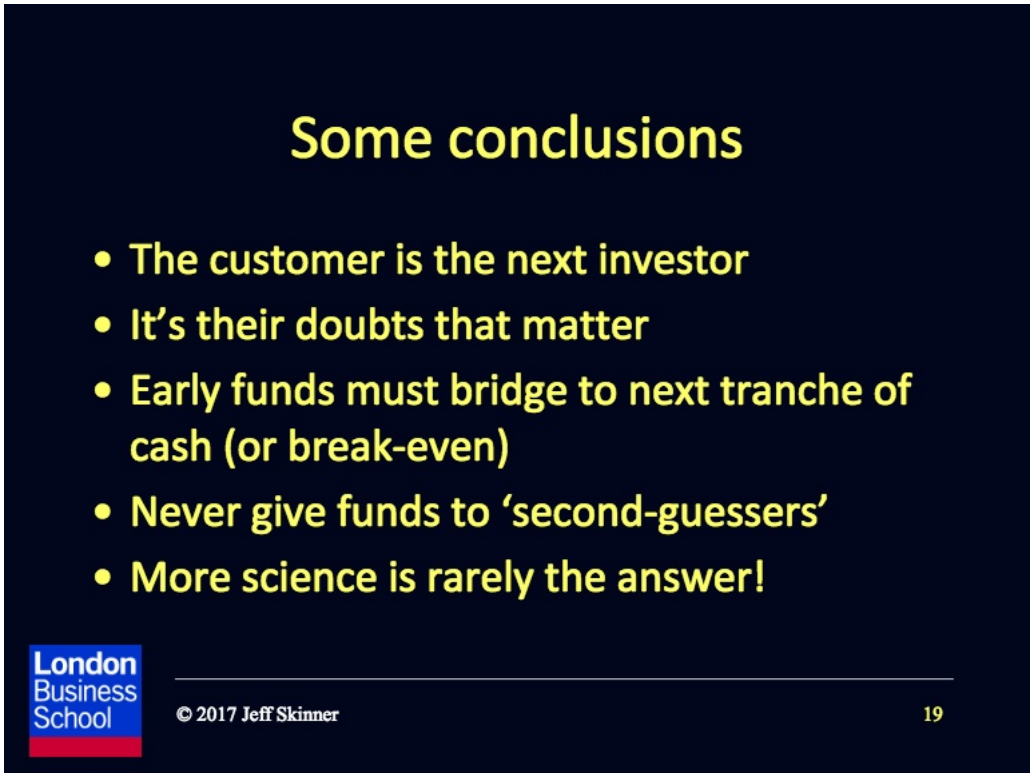
And more than that, they can then identify which people have listened to them, taken their advice and done something meaningful. So they've got two points which they can extrapolate from rather than just one point which they have to guess from. So we say investors invest in lines not dots. Process two: You write the proposal. Now I'm in danger here of coming full circle in saying "you said business plans are bad".

I was very clever, I said full business plans are bad. But obviously some sort of planning is good. If you follow this process of, the issue is how do I maximise the value in the eye of the next investor, that subordinates everything else; MVPs, TRLs, business plans. It means the purpose is, how do I make it investible in the eyes of the people who are going to invest.






So you set out the big picture, the thing that's going to excite, which this guy can do, total addressable market and all this sort of stuff. And then it says what you have told me is that you need me to prove the following. And that's what I'm going to do and here's how I'm going to do it.




So, my conclusions. The customer, surprisingly for a lot of these businesses, is the next investor. It's only their doubts that matter. Early funds have to bridge to that next tranche of cash or break-even, whatever it is. So my rule is that I never approve funds (sounds totally grand doesn't it, that I've got the authority to approve or deny anything) but I vote against anyone who has not got out of the building and figured out what the next investment step is and engaged in dialogue with those people.

And incidentally that can be corporate just as much as it can be venture. And more science is really the answer. They want it to be the answer but as long as you're having the conversations that get truthy back, then more science is really the answer.


And I think to finish, as my colleague John Bates of the school said and I remember him saying decades ago, "the most important thing is to make the most important thing the most important thing." But vast numbers of our clients, put it that way, seem unable one way or the other, to know what that is and to act even if they do know what it is.

So use those proof of concept funds wisely. They are extraordinarily valuable but really easily abused and wasted.

# International Trends in Knowledge Transfer

This session invites leaders in knowledge transfer from Europe and the US to share their insights into current trends in research commercialisation, industry partnership and impact.

Paul van Dun, Director, KU Research & Development, University of Leuven

David Winwood, Associate Executive Director, Pennington Biomedical Research Centre & Immediate Past President, AUTM

James Zanewicz, Chief Business Officer, Office of Research Business Development, Tulane University School of Medicine

Moderator: Tom Flanagan

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TOM FLANAGAN: I have transferred over to NovaUCD. I'm delighted to be there, a great team, just started last week and off and running. But before that, what I was doing last year was

working with PROGRESS-TT which is a pan-European project to look at how to enhance the performance of tech transfer offices all across Europe. And there's some really great practice out there. I was involved in as a mentor and expert in the space, mentoring different tech transfer offices.

One of the things that you find is that while we all sound like we're doing the same kind of things, we're all looking at invention disclosures, we're all looking for somebody to license it to and we're doing startups, the devil is in the detail. The differences in approach that we have, makes huge differences in terms of the impact that we have, makes huge differences in the numbers that we can create and in the economic impact that we have.

I'm delighted to have here three experts that have done all that. They have the expertise. It's very important to listen to them and listen to the subtleties between what they're doing and what you might be doing. The way I liken it is to a menu. Things can look the same in a menu in McDonald's as they do in a high end restaurant.

But experience is quite different and the impact is quite different. So it's really important. And with thatm I'd ask each of them to do a quick introduction for themselves in terms of what they are currently doing. We'll start with you, Paul.

PAUL VAN DUN: I did not change jobs recently. I'm still working at the University of Leuven which is a mid-sized University about 20 kilometres from Brussels, Belgium. A classical tech transfer office -

patenting, licensing, collaborative research and spinout activities.

DAVID WINWOOD: Dave Winwood - I'm at Pennington Biomedical Research Center which is an all-research campus of Louisiana State University. A very small technology transfer in the classical sense - more interested in corporate partnerships. Also, as you will see right up there, I'm assistant executive director of LSU's Innovation Park which has many more corporate contact and incubator setups.

JAMES ZANEWICZ: I'm James Zanewicz from Tulane University School of Medicine in New Orleans, Louisiana. It's a mid-sized private institution just about an hour and a half down the road from Dave. And I do not do tech transfer any more. I did that for years but now I focus on corporate partnerships, corporate engagement and basically any kind of interaction or knowledge transfer that could happen across the spectrum.

TOM FLANAGAN: Just as Brendan said earlier, this is really about your opportunity to ask lots of questions. So as you begin to think up a question raise, your hand, they'll get a mic to you and I'll look out then for them to signal me to stop at any point and ask you your question because your questions are no doubt very important and maybe even better than my questions. But I'll start with my questions.

So first of all Paul, you're doing tech transfer from Leuven. Leuven as as we all know has just been recognised by Reuters as the number one most innovative university in Europe. How did you

achieve that?

PAUL VAN DUN: For a couple of years Reuters, the data and press agency, make up a ranking of those universities that succeed the best in getting their technology into the market because what is innovation? Innovation is not doing inventions but making inventions, doing breakthroughs and applying them in the market. So they use a whole bunch of hopefully scientific parameters like, not only number of patents and patent applications or granted patents but also how many, for example, joint publications do you have together with industry? And how many times is your university referred to or your research institute referred to in publications or patents that are made by industry? So a whole bunch of indicators where they try to estimate who gets their technology out there, let's put it that way.

And they have done that for I think two or three years.

TOM FLANAGAN: And so to be the number one, are you doing something different? And have you had to change how you do things to stay number one?

PAUL VAN DUN: Well let me start by saying that I think a lot of things that help are not under our - and then I mean the tech transfer office's - control. To quote a couple of them, our office exists since 1972. This means that not only did we have a lot of time to make all the mistakes that there are to make but also, in order to achieve a good culture in your university, time is a very, very

important concept.

And by now we have, in some departments, already the third generation of PIs that are used to working with the tech transfer office. So also there it's a little bit unfair to compare us with universities that just started out five years ago or 10 years ago with tech transfer. The second thing that really has helped us is that, and is it luck or something else I don't know, we've had over the last couple of decades a whole bunch of university management people, rectors, vice-rectors, etc., who were extremely entrepreneurial.

Some of our rectors have created companies that went to the NASDAQ . Others have been very active in licensing and in working together. And we should not be, as tech transfer offices, overconfident in stating that we can make researchers start working with industry. We can facilitate it but it is not because of the fact that we as a tech transfer office say you should.

They are not going to do it. One of the things that helps them to do it is if, at the top of the university, somebody is leading by example. If a good researcher who becomes vice rector or rector or whatever, if he's doing this stuff and not only printing glossy brochures but if he is really bringing it into practice, that kind of trickles down over time. Again, time is important.

And last but not least, I think the system that we have is a little bit atypical probably because we also create some kind of, you can

almost call it virtual company per PI, per professor. As soon as a professor wants to do something with industry, he creates some kind of a budget place for him, really almost comparable to a virtual company.

All the income and all the expenses that he achieves in interacting with industry will end up on that account. Legally they are from the university but it is his decision what to do with it. And the point is that as a university, we are no different than all the other universities, meaning that if you want to order a pencil you have to fill out a form in triplicate.

And if you want to hire an additional lab technician that takes you two years because you have to start lobbying with your colleagues because everybody wants another lab technician, then securing budget, etc. The money on these accounts, on these virtual company accounts of the PIs, it's up to them what to do with it. So if they say I have saved X amount of money and I want to hire an additional lab technician, they can hire that additional lab technician as of tomorrow.

So it gives them a very, very big feeling of autonomy. And then, bringing back or closing the loop to tech transfer, what we see is that a lot of our researchers use that money for what you could call proof of concept funding. If there's an interesting project and the PI believes in it he can say, well, I'm going to pay my postdoc another two years in order to enable him to elaborate the (sorry Jeff) business plan or do some proof of concept, etc.

So there is a really really big, how should I put it, feeling of ownership amongst the professors. They really feel it's their project, their money. They do a lot of blue sky research with that money where probably they would find difficulties in getting funding otherwise because its a little bit out of the box or not following the ordinary paths.

And quite a few of our invention disclosures come specifically out of this kind of crazy stuff. Let's put it that way.

You can really consider it as a virtual company because the professors can even pay themselves a private bonus out of the net profit. But the interesting thing is that, out of the about 1,000 accounts we have in that way - about 1000 PIs work on a regular basis with us, less than 5% actually uses the possibility to pay themselves a bonus.

So you can see that the agenda of most of the PIs are really aligned. They live for their research. It's a very small minority that's in there for the quick buck. If they have the choice to finally buy the lab equipment or finally execute a research project that they have been dreaming about already for quite some years or pay themselves a bonus, the vast majority go for the first one and that is some kind of an - I would almost say - automatic alignment of agenda.

TOM FLANAGAN: That's very unique. You guys don't have anything like that, a researcher budget that the researcher has control over,

can be entrepreneurial around, nothing like that? I haven't seen that elsewhere. I think that's extraordinary. But I can see how it works. Can we just reset to overall research funding levels for your university. What size?

PAUL VAN DUN: The research budget you mean? Last year it was about €470 million I think.

TOM FLANAGANS: How many PIs, how many researchers would you engage with?

PAUL VAN DUN: We have 1,500 PIs, of which 1,000 work on a regular basis with us. And by the way thats one of the KPIs we keep track of - how much traction we have within our institution. Of the 500 PIs that do not work regularly with us, theres a big chunk - theology, philosophy, etc. So if you would sort out those professors that are in a domain that is, let's say, fit for tech transfer, the vast majority does work with us.

TOM FLANAGAN: Very good. And in terms of just the raw numbers, number of inventions that you would see, number of patents you would see in a year.

PAUL VAN DUN: Invention disclosures - around 220 a year roughly, sometimes a little bit more, sometimes a little bit less. We file quite quickly. So out of this 214 we file about 100 patent applications but we pull the plug also relatively quickly. So we take the 30 month period that we have in the patent system and we file quickly.

We file ourselves also but we pull the plug also relatively quickly if, within the period of 30 months, we don't really see something materialise.

TOM FLANAGAN: Okay. And then the number of licences and spinouts that you would have?

PAUL VAN DUN: Licences - about 60 last year, I think 68 licences. Spinouts - we have two kinds of spinout. The spinouts that we do not take equity in, we don't really keep track of them. So we don't have separate statistics. You have students spinouts, you have other spinouts where we just give a licence and we don't take equity. The ones that we take equity in, last year we had I think 5 or 6.

TOM FLANAGAN: In terms of your own team, how big is the team that supports that?

PAUL VAN DUN: Also there we probably are a little bit atypical. Our team has 90 people. But we specifically opted for the one-stop-shop concept, meaning that we have the pure tech transfer activities as all of us do. But on top of that, everything dealing with industry and intellectual property we do ourselves, meaning that we have our own finance department, we have our own HR department.

For example, all the people that are to be hired in order to execute industrial contracts or all people that are hired with these funds on these virtual accounts, they get the labour agreement of the tech transfer office. We have our own HR service. So out of the 5,000 researchers in total in our university, about 1,800 are on our

payroll.

So out of these 90 people about 45 people are in what you would describe as non-core tech transfer activities - finance department, HR department, or reception, etc. And about 45 are in patenting, licensing, spinning out. The vast majority is active in all kinds of collaborative research - contract research, consulting activities with industry. That still is, after 45 years, our bread and butter.

Not patenting, licensing, not spinning out. Its really the interactions with industry.

TOM FLANAGAN: And the number of licensing execs or case managers you would have - how many's that?

PAUL VAN DUN: We have a cradle to grave approach, meaning that in our IP Department, those who take in the invention disclosure, they take it all the way up until licensing negotiation, etc. We have eight people in our IP Department and two more that keep an eye on the compliance. They do the trademark stuff and that kind of thing. So not real patent people but they support, they aid other people.

TOM FLANAGAN: And is a lot of what you do pushing of technology? Do you push technology out to companies? Or are you more about collaboration and trying to draw companies in?

PAUL VAN DUN: Collaboration still is our bread and butter and even in the licences that we conclude we see that in about 60% of

all the licences that we conclude, it is a licence that co-happens with a collaborative research. Which is, by the way, also one of the reasons why we pulled the plug out of patent applications. If the PI is not really motivated, even if we feel there could be something in it.

Our experience, which might be wrong and is very subjective, is that it is extremely difficult to bring a technology to the market if the PI doesn't care. If he says here it is and you do your stuff, in a lot of cases, we pull the plug.

TOM FLANAGAN: So you also have proof of concept funds to help?

PAUL VAN DUN: Yes. Well we have two kinds of proof of concept fund. To a large extent again, this is the money under the supervision of the PIs themselves. If you take a look at the number of incubation activities and proofs of concept that are financed by the PIs with their "own money", thats a significant part. Lots of them fail obviously.

And then there's a real proof of concept fund that we have which is established by the Flemish government, our government, I think about seven years ago. It's a closed envelope to be distributed amongst the five Flemish universities according to tech transfer output parameters. So the one amongst the five who has the most patents, licences, collaborations, spinoffs, etc.

And I don't like all these parameters but it is what it is - over a sliding window of five years, that university gets the biggest chunk

of the money. You are obliged to distribute money within your university through a council that is composed half of industry, half of academics where we as an office have an advisory vote. So we are not a voting member but we have an advisory vote.

And that proof of concept fund then exists in all the five Flemish universities but the amounts are different of course and is specifically for proof of concept.

TOM FLANAGAN: And that does not take projects to launch of a company?

PAUL VAN DUN: It can be. Whether it is to file patents or come to a point where a company could be interested in the collaboration or where an investor could be interested to launch the company, everything that that could facilitate bringing products or services to the market.

TOM FLANAGAN: So did you agree with Jeff's commentary about asking the investor what the risks are? Are we seeing any questions yet. I mean there are some pretty earth shattering things that you should have heard there in terms of researchers having their own accounts. And the proof of concepts, the way in which they are managed as well.

DELEGATE: I'm just wondering is the onus then completely on the inventor to provide all the patents.

TOM FLANAGAN: Do you have a patent budget and you make

decisions or do you rely on the inventors and the PIs to cover the patent costs.

PAUL VAN DUN: It's a combination of both. So the first part of the patenting trajectory is taken care of by the office. So we file ourselves so that's at relatively low cost. As soon as the out of pocket costs start to arrive, that has to come out of their own budget, as I mentioned previously, of the PI. Now we do have some kind of an emergency fund for those PIs that don't have their own money yet or any more or are in a segment where there is not a lot of money to make, for example.

But everybody who has the possibility to finance its own out-of-pocket patent costs, we ask them to do so. And for us that's also a token of the buy-in. If that researcher says, oh, this is a great invention but I don't want to pay, that's a first alarm sign for us usually. If we still feel, in spite of the reluctance of the PI to pay, that it is absolutely to be protected in one way or another, we can pay, we have the budget to pay for it ourselves.

But then the part of that will flow back to the PI's account will decrease dramatically.

DELEGATE: Thank you very much. So if I could just ask, it is better to have patents on your products of course. But can a product be licensed without patents?

PAUL VAN DUN: It can be, yes, sure. In most cases companies will prefer patents obviously. But we have had cases of licensing know-

how. We have had cases in cases of licensing, for example, insights in processing techniques where the company or we ourselves says it's better not to not to protect and keep it as a secret because if you protect it, it's very difficult to detect if somebody breaches at one site.

And on the other side, the company will probably not be interested in a patent as such.

DELEGATE: Thank you very much. It's very informative.

TOM FLANAGAN: So Paul let me ask you, in terms of startups. A PI comes along to you and says, look, I've got this great idea, I want to do a startup, I've got some money to put into it myself from my fund. We just need a licence from you. How do you how do you come to an agreement around the equity split between the inventor, the money that they're putting in, the ownership of the IP that you would have.

What's the arrangement?

PAUL VAN DUN: There's no fixed arrangement. There are a couple of rules. The university will never take a majority. We feel that if we are engaged in spinoff companies, it's the market that has to play a role, not us as a university. Or the investors or whatever but not not us. So we will never take a majority - A, B, as to percentage, we try to play it as much as possible along the lines of, what is the technology worth.

Meaning we do not have fixed percentages like we have to have minimum 10% or minimum X or Y. We have spinoffs in which we had to start 0.5% and get spinoffs where we had 45%. So there's a wide range. Do bear in mind that all the shares that we get as a university for contribution of technology or know-how, also these shares will end up in the virtual company account of the professors who generated the spinoff companies.

So if these shares are ever to be sold, it is the professor or professors - lots of professors have joint accounts - is a professor or professors that will benefit from the proceeds of these accounts which also makes the discussions that we have with the PIs themselves on determining the percentage usually relatively smooth because they are at both sides of the table.

TOM FLANAGAN: Which would be a kind of a conflict of interest situation that you have to manage, I presume.

PAUL VAN DUN: Absolutely. And that's also the reason why we want to have buy in from the researchers. But it's our office who decides on the percentage, not the PI who will have the economic benefit of the share.

TOM FLANAGAN: And so Paul, if the university isn't taking anything back from this, if the the equity sale is all going into the fund that the researcher ends up with, why does the university invest in or is the university investing in your office and in tech transfer?

PAUL VAN DUN: Well first of all it's not correct to say the university doesn't take anything back because all these virtual accounts are the university. If the professor uses these proceeds in his virtual account to expand his lab, hire additional people, etc., that is the university. Only the control is not the vice rector or the dean or the head of department, it's the PI himself.

That's one thing. Secondly, we do take something back on everything we do, whether it is licensing, whether it is consulting, whether it is shares or spinouts. We take an overhead of 17%. Half of it goes into the central account of the university, so that we give back to the university in general. The other half is our working budget.

So we do not get any subsidies or fixed budget from the university. No, we get a commission on our turnover. If our turnover grows, we have more budget. Then I can hire people. If the day after tomorrow, there's an economic crisis and our turnover would be slashed down, I will have to fire people probably. The thing I like personally is that, with the budget that we get, it is fully up to the tech transfer office to decide what to do with it.

So as long as the results are there and the professors are happy, I do not have a board or whatever entity that is really looking at what we do with these investments. That autonomy has meant in the past that also, as a tech transfer office, we have been able to set up some interesting structures that probably would not have been possible if we would have to channel them through the ordinary

decision-making systems of the university because the library needs money and that department needs money, etc.

As a transfer office, you are just one of the 500 entities that are crying for money in your university. Probably you will not be at number one.

TOM FLANAGAN: Thanks very much Paul. David, if I can turn to you in terms of the US, as past president of AUTM, you've seen across the whole lot of the US in different operations and so on, what's your perspective in terms of why universities in the US… Let me go back and start, because one of discussions that we had earlier was that universities in the US are segmented somewhat differently than here. So maybe explain that for a start.

DAVID WINWOOD: Yeah. First I just question your wisdom in inviting someone from South Yorkshire to talk about universities in the US but you know, I have actually been there for a long, long time. So yes, they're segmented. Another one of the panellists this morning made a great comment that I had to scribble down about the effect, and it sounds like a downplay it but it's not at all, it's meant as a great compliment because it's something we have not accomplished yet in the US, and that is a sort of standardisation.

Through KTI, what I read, that industry is now able to deal with a standardised set of expectations from the universities in the country. And one of the challenges that Tom referred to that we discussed earlier was the fact that we don't have a national

university system in the US. Our universities are at state level. And even within our small and poor state, there are four university systems, public university systems and then a couple of private schools including the largest, Tulane where James works.

So what that means practically for industry in particular who want to deal with universities, they will come and expect to be able to strike certain agreements. And I will have to say, well, that's against state law. We can't do that. And they'll say, but I just did the same deal with North Carolina. Different state, different laws.

And there may be just nuanced differences but they are sufficient to drive industry crazy from time to time because it really is annoying to say we just can't do that. And I used to, in the old days of the fax machine, when I was in North Carolina, have a page ready to send to the negotiator on the company side when I would tell him no, I absolutely cannot indemnify you and I cannot agree to Illinois law.

And he'd said, why can't you? And I just had my little letter that we had from the Attorney General and put it on the fax and that's it. And that would have been a different letter had you been in a different state. To complicate matters further, James and I operate in a state which doesn't even have a legal code where other attorneys from any other state can practice. We have the Napoleonic Code in Louisiana and it's even more bizarre.

So that is part of the difference I think. Then you have the private

school/public school differentiation as well which is yet another series of stark…

TOM FLANAGAN: One of the interesting things that we talked about earlier was, you know in our Innovation Partnerships where say the project is €100k, the company puts €20k down and then you're discussing whether or not to license or get an option to the IP. And what's the value of that? Do you wait until the end of the project before you assign a value to it? Or would most companies like you to tell them what the cost is going to be upfront? And I realise from the discussions that we had earlier that it's different.

DAVID WINWOOD: It's almost impossible for us to agree to a situation where you are pre-valuing something that has not yet been invented or performed and it's mainly because of the tax code. It's still a problem that we beat around between universities and private sponsors. The tax code basically says that if a particular university has a building that was financed by a tax exempt bond, then any activities conducted in there cannot be for profit basically.

You can't have unrelated business income from that building. And tax bond attorneys are very protective of the tax exempt bond status. It allows them to build more buildings and so on. It's not just the public. Most of our buildings are appropriated so we don't have that. Private schools in my experience, not so much Tulane I guess, but some other schools do. One of the large schools in the southeast, a very successful private university, is mortally terrified of entering into any agreement that would jeopardise their many,

many, many tax exempt buildings so they just won't do it.

So that kind of discussion I was surprised to hear about that, prevaluing before it's been made.

TOM FLANAGAN: But Paul, you would you would have done that before, you would have prevalued.

PAUL VAN DUN: If you have the option, obviously we would prefer to say well, we'll making any arrangement later on. Now, companies absolutely hate uncertainty. So if it is needed to get the technology out and get a partner we have no problem in making an arrangement upfront even though we know that probably we will be at the lower range than if we would have waited.

But I think there you have to balance it out. What is it worth to you to get a partner and get the technology out? Or do you really want the last half percentage or the last percentage additionally and have the technology stay on your shelf?

JAMES ZANEWICZ: In my past when I was at a public university, the way we got around kind of both issues and kind of danced in between was we would actually do a range. We wouldn't say it's going to be 3%. We'd say we can negotiate between 2 and 5 percent. We'd know pretty well we were going to be down at like 2 or 2.5 and you may have a handshake on the side and tell the company you know we're going to be reasonable, value it appropriately.

We can give you this range that makes you more comfortable and

know we're not going to ask for 10% and be unreasonable. But it also allows you to get the deal done and still maintain compliance with any taxation issues that you have.

DAVID WINWOOD: I would put in a numeric range which, as James says, you know you're going to be forced to the bottom end of that range. Or to say it will be consistent with comparable deals in the industry which you know, everybody knows. Again, a handshake is worth as much as - a handshake, if the two people who made that negotiation handshake are not there five years later when the deal has to be negotiated….

TOM FLANAGAN: To go back to the measures of success for knowledge transfer and the economic impact that universities have, in the US, what's the focus there?

DAVID WINWOOD: So again, I'm going to tell you that it varies university by university, even within a state. Your point about leadership being engaged in understanding what is important is so absolutely on target to what I've experienced. If you have a chancellor who understands what this is about and its impact and it's how many times you shake the hand and do a deal with the company, not how many dollars come in.

If it's a startup company formation, they like to see new companies form, they like to see money coming in from other states to help offset shortages in your own state. So all of those things add up. It really is difficult in states where we've had economic downturns,

large unemployment issues in some of the industrial states and this notion that startup companies are going to replace entire industries, that's really not true.

So we have to be very careful about what we promise to chancellors and elected officials. We can build the churn and begin to sort of stoke up those fires of entrepreneurial interest, bring other people in and liven up the industry. But if you just lost a 2,000 person manufacturing plant you are going to need an awful lot of startups in most cases to make that deficit disappear.

So all those things are important. But the the trick from my point of view for a tech transfer officer is to manage the expectations of all of those stakeholders because there is unfortunately this trend towards looking at a simple return on investment in terms of dollars. And you mentioned you don't like having to report patents.

The things that are really easy to measure - I think I sent you a quote from one of our colleagues, Ken Nisbet at Michigan and he said, it turns out in tech transfer, the things that are easiest to measure aren't really the ones that tell you whether you're doing a good job. It's easy to measure patents filed. I was once offered a bonus scheme by the a VP for research who said you get a bonus for how many patents you file.

No - I'm not going to. It would have been a real treat for a bonus scheme. There would be a provisional patent application filed every day of a week. I said, "That doesn't mean anything. You've

either got a very big patent budget or you're just gaming the system so what is the impact?" And again I think what we've begun to see is a realisation from university leadership and local government officials that it's really important to include the university in your regional economic development activities.

So my office, even in an all research, life sciences area and particularly of the innovation campus, works hand in hand with the Louisiana economic development office, with the local Chamber of Commerce. When they're trying to recruit companies to the area, they come and see us. They want to know what we can do to work with them which fits into, at the very local level, what James is doing on a global level to his university.

So we are increasingly being viewed as one of the parts of the toolkit that the economic development professionals have in the States to attract or retain companies, to persuade them we can work with you. We are much more user friendly than we used to be 10-15 years ago and that's been a real problem in the States. I think a lot of universities have realised that it's more important to count how many contacts you have with a company in total rather than that one transactional interaction that you had as a licence because if you also realise they're going to sponsor research, they're going to hire your graduates, they maybe will give philanthropic donations to named chairs and so on.

Then you have to look at the whole thing as a holistic engagement rather than a linear transaction that just happens once. You want to

keep coming back and touching all these different places around the university enterprise.

TOM FLANAGAN: And that brings us nicely to corporate partnering, to James. James, you're a band of one and your team is focused on corporate partnering. Corporate partnering could be all sorts of things right? So what is it in your definition? What do you do?

JAMES ZANEWICZ: Basically the easy way to think of my job is part travelling salesman and part concierge. So my job is to be on the road a lot. I go to places where companies and venture capitalists are. It's a lot of online dating where I send requests and tell them about the things that I think make our science look pretty in the hope that they accept a meeting with me and a lot of the times they don't and I feel bad about myself.

And then they accept one and I feel really, really good and I actually dance around my office! And so you take those meetings and corporate partnerships is really sitting in between tech transfer, knowledge transfer and development or advancement of those folks who are out trying to get those tax writable donations from people or charitable donations.

And in that role with those folks what I've learned from them is they ask people what they want to accomplish with their money. Well our role in corporate partnering is to ask folks basically what are you missing that we might be able to do for you from an

academic institution. And as opposed to figuring out what you think you should sell them, listening to what they need and then putting the pieces in front of them that might make sense, making the connections for them so they don't have to figure out how to navigate our complicated university systems because we are diverse, we have different departments to do everything.

Once you've seen one university or institute you've seen one. Every single one is set up different with a different structure. And if you have one person whose job it is then to become the concierge and guide them to everyone they need, and that's what my job is, and pull those people in a room and get out of the way and then tell them, if you have a problem, call me and I'll make it less bad.

It'll never be perfect but it'll be less painful if you call me. We'll work our way through it. I'm fortunate that I report to the dean of the school of medicine. When I make a call I can try and persuade people. When he makes a call, they jump. So it works out really well. And James, how do you select the companies that you would target, because you can't target everybody.

JAMES ZANEWICZ: I look at our areas of strength and try and find companies that I think complement those areas of strength for Tulane. That can be on the nature of companies who are oncology or infectious disease or areas that are really strong. It can be looking at venture capitalists for areas where we're spitting out companies because more and more, we're finding venture capital, and this is different than even two and a half years ago when I

started this job to a year ago.

Venture capitalists are realising they can't look in the same places they've always looked which are, in the US, Boston and the Bay Area for biotech investment and it's also the way of looking at what are your strengths. Well, I'm in New Orleans Louisiana, people like to visit. And so venture capitalists are looking, if they have to go somewhere else, they'd rather go somewhere they'd like to visit.

And I'm fortunate to live in one of those places and so that's kind of the thing. Look at your strengths, figure out both geographically and from a scientific perspective where you are and how you might make yourself look the most attractive to your date.

DELEGATE: Thanks to everybody for the illuminating insights. Paul, I have a question for you. Congratulations first of all on being the most innovative university I think two years running. It's a phenomenal achievement. 5,000 researchers - I think you mentioned 68 licences annually and five to six spinouts with equity. And those are good numbers by any international comparisons.

And yet, if we as a system in this country produced, and I say this tongue in cheek, only numbers like that we would be vilified by the policy makers and the funders. They would say, "not good enough, what the hell are these guys in the universities doing? The research is useless. It's going nowhere." So I think you've triggered for me a thought about, shouldn't we be looking at different ways of measuring the effectiveness of tech transfer and the measures that

are being used in this country, not solely but mostly, are I think not an indication of real impact or depth.

And for Dave, I have a question. In your days in AUTM, I think the AUTM data suggests that you do around 850 spinouts from universities a year, 800-900. If you simply normalise that back to the Irish context we might, as an entire system, do eight spinouts a year. Probably of the 30 spinouts that come from universities there are 15 that might be considered high potential startups.

So are we over-performing or are we just gaming it?

TOM FLANAGAN: That is a question that you probably can't answer.

DAVID WINWOOD: I really struggle with what is the right number of spinout companies to come from a certain dollar amount of research expenditures. There's a very famous or infamous story of a certain university in the west of the US that was producing more startup companies than MIT and you know, ridiculous numbers. And then it turned out that most of these startup companies had one employee.

It was the director of tech transfer and all the companies, big corporation papers were in his desk. And they were fakes basically. They were getting SBIR money, the small business money. So that for a long time became the metric. Your VP for research certainly read, it was Utah, everybody knows that. And they actually have a great office but for about a five year period they were just starting

a company around every invention disclosures almost.

So the rest of us, to your point, were then branded with, "you guys are really awful! Why aren't you creating startup companies like that?" Well they're not really companies. So it's easy in some ways to paper up a company and say this is now a startup. Jeff made a point about whether you license or startup. No, you wait until it's something that's there and certainly until a PI is passionate enough about it to say, I want to build this into something that you can work together with me.

The other challenge we have in the US is, I want to keep it inside. The moment it becomes a company, the faculty member is on the other side of the table from me. He or she can't negotiate with me, conflict of interest rules. So it becomes much more difficult to ease or guide or help support with whatever discretionary funds you may have.

A technology - let's call it a project, not the company. But once they incorporate and become a company, the sides are opposed. And now your investigator can't negotiate with you and it just becomes very difficult. So I like to keep it. Don't make it a company until one of Jeff's magic points there. Until we say, yep, this is ready, somebody is going to put money into it.

So the right number is really difficult to assign because you never know what decisions are being made along the way. I see universities that file more patent applications per year than they

have invention disclosures.

PAUL VAN DUN: What I keep on struggling with, and it's a little bit of frustration because this is this my 17th year that I'm in the office and still nothing has changed in that respect, that there still is, in my view an overemphasis, in a lot of cases from governments on spinning out companies. Their economic impact is highly overrated.

One thinks about the Googles, etc. I understand they are the darlings because it's very visible and employment you can cut the ribbon when a new building opens. But it's first spinoffs, then second place probably patenting and licensing. Everybody knows a couple of big success stories. And then barely nobody talks about collaborating with industry.

And there's a reason why I said earlier on that still after 45 years, collaborating with industry is still our bread and butter. I am absolutely convinced that the economic value that we can deliver as research institutions for the regions for our countries, etc. is way higher in the number of collaborative research and contract research and consulting that we do than in that handful of spinoff companies.

And yet, every single discussion, every single metric tends to overemphasise the spinoff. It's a tool and a very useful tool. And in some cases the only tool to get the technology out. But lets put things into perspective.

TOM FLANAGAN: So is a good measure for the tech transfer office the research dollars that a company is willing to invest in the research? Is that the right metric?

DAVID WINWOOD: It's one of several. But I think its a very powerful one because if you persuade someone else that what you have is worth them writing them a cheque for, you're having a good discussion. That's really validated because companies don't part with their money easily. Investors don't part with the money either nor should they.

So you have to present to them something that, as James says, looks pretty and is going to add value to their company. You have to be easy to work with. So yeah, I think that's one of the most important metrics to value, if I would do an evaluation of an office; are you able to reach out, engage with somebody, do a collaboration? If it's sponsored research, is there an option built into that somewhere? All of those things.

Again, it's a trend that is really happening in the US now and you've done this already clearly. But to move away from the linear, transactional notion of you sponsored research, you make an invention, you file a patent, throw it up in the air, see who shoots it. And do a licence with them and walk away. That still happens a little bit.

But mainly I think what we're seeing is the emergence of a different profession within tech transfer that James is sort of the

personification of at the moment, the two or three others that are doing this. And it really is that whole idea of, I hate to use the buzzword, a holistic engagement with the company. And then with the university as well.

JAMES ZANEWICZ: And that's where folks in roles like … really beneficial to folks in the more traditional tech transfer roles because, as part of your conversation with industry, and if you have people even in your advancement or development or classic donation offices who deal with those folks, ask them to ask as part of their conversations, what kind of data do you need in spaces you're strong in to move forward? And so I get that a lot and we've had companies and one of the most recent is a pain therapeutic for animal health and they say we need a canine study with nine dogs with these three things.

And I went to my faculty member said go price this. He priced it. We got a price of between $15,000 and $32,000. I went to my dean and said we can have this data, we have four companies who would be interested if we had data in this space and he funded the study out of his discretionary income. And so that's where Paul and his folks, they would had the choice to do that themselves out of theirs.

But if you're at a university that doesn't have that, you might go to your leadership and say, here's solid information from industry or venture capitalists and they are willing to look at this and move if we can present this data and it may not go forward but it's never

going to be unless we have it.

DELEGATE: My background for many, many years was in the South African tech transfer system. I've got a question and possibly Tom might also need answer it. That's about skills, just changing the tack. Have you seen, in your territories, the types of skills needed to do what we do changing in the last period? Secondly, are you struggling to find those skills? Because I know in South Africa and in southern Africa this is a huge, huge issue, finding the right sort of skills.

But even in my current work it's not that easy to find the skills that you need even in a place like Bristol. And the last question is, do you think it's at all linked to the salary structures of universities? Because that's one thing I'm starting to hear as well, is trying to attract the right sort of skills.

TOM FLANAGAN: So James you obviously have all the right sorts of skills. You're at a private university so you're outside of the range.

JAMES ZANEWICZ: The thing that I see: as tech transfer has moved to a profession and less of, whatever we used to call it where, you know, I fell into it, nobody grew up playing with tech transfer GI Joe or tech transfer Barbie as a kid. Now they do. And you have people who want to go into it. Those folks have what I would consider generally more of the harder skills, the sciences, things like that and what I see that is often missing in folks coming in (which I think is a harder thing to train) is that customer service

relationship management aspect.

I spent eight years behind a customer service desk at K-Mart where I had to learn that the customer was always right, you took it with a smile. And you might go home and then rant about people afterwards. Now we shut our office doors and do that. But I see less and less people who are able to sit and take it or say, you're right, I'm wrong even when you're not, just to end the argument and move forward.

And that's something that I see is lacking.

DAVID WINWOOD: My quote on that topic in terms of skills is when I interview people for licensing positions is, to the hard skills, hard sciences, hard skills, it's important that you can manage technologies. Way more important to me in your role here is going to be that you can manage technologists. If you can't deal with technologists on the inside and outside the university, it doesn't matter if you can manage the technology.

They'll never come back to you again. So you have to be able to build relationships and, as James said, basically take some crap sometimes from people who you know are wrong and you're right. But you have to play that game and that is a difficult one. People are really not comfortable doing that in many cases. A very special skill is to be able to speak to someone who is a leading scientist or engineer and know that they're actually wrong about something but not tell them quite exactly but persuade them there's a better

way of doing it.

But that's an awfully difficult skill to acquire.

TOM FLANAGAN: There's a huge set of skills I think in tech transfer. Obviously if you think about your licensing executives, they actually license, they do the patenting as well. So you have somebody that can understand the technology, you're somebody that can figure out the market and where it goes to. You can actually negotiate the deal, work the legals.

PAUL VAN DUN: The legal is done by the legal department.

TOM FLANAGAN: Yes but the commercial aspects, oversight of the legal. So basically kind of a CEO in a box.

PAUL VAN DUN: ..which is also the reason why a big part of the people that we have in that office are homebred so to speak. So quite some of them started relatively young and then grew within the organisation, coming from industry or labs. And depending on the segment, for example, we had a vacancy for about I think two and a half years, three years almost to get an additional person for the physics department.

And finally we had to get her from the UK because we could not find it. Even with all the branding and even with a little bit more flexibility as to HR policy given our autonomy. I can't give people a yellow convertible, just for clarity, but we can stretch it a little bit more. But even against that background, it still is extremely

difficult for some segments.

And if the economy goes well, that's the time that we face most difficult things because then people go to industry, people get attractive offers. And in the period from 2008 through 2009 and 2010, full economic crisis, then the applicants were flowing in because everybody was looking for a safe haven at that point in time.

TOM FLANAGAN: These guys obviously have seen it and done it and have interesting, interesting perspectives and different approaches. It's a conversation that we could keep going all day. But I want to thank you individually. Paul, thank you very much for coming in. And for David and for James as well.

# New Initiatives: Managed Consultancy

In 2017, a number of Managed Consultancy Services pilot awards were made under the Enterprise Ireland Technology Transfer Strengthening Initiative (TTSI) programme of funding. UCD was one of the first off the blocks and Elizabeth explains the purpose of creating such a service offering from an HEI.

Elizabeth Nolan, ConsultUCD


We talked earlier about the importance of cultural change and cultural development. This is something new that KTI and the universities are trying. It is a very positive story.

Managed consultancy. What is managed consultancy in universities and why is it a good idea? I was delighted to be invited by Alison to speak today and to share with you my view on why this is a really important initiative for Ireland. It's an established practice in many countries, particularly in the UK but it is something we have not yet tackled in Ireland and there is huge opportunity here for universities and higher education institutes to add value to society generally by taking on consultancy projects.

By way of personal background, I didn't know Jeff Skinner when I was leaving university and I wasn't saved from going to work for a consultancy firm. And I've been almost 20 years working in

consultancy as a result. I was most recently a director with KPMG in their management consulting arm until February of this year when I left to take up this really exciting challenge with ConsultUCD.

So the role I saw advertised on LinkedIn late last year came about as a result of a call for funding from KTI. Along with Maynooth University, Trinity College Dublin, Waterford Institute of Technology and University of Limerick, UCD won some funding to set up a managed consultancy service pilot.


Examples of consultancy. What I wanted to give you here was a flavour of what consultancy with a HEI or university might look like or feel like. If you work with a HEI or university, you can expect to get technical and innovative solutions to business projects. For example, recently I've seen a large American multinational manufacturer in the pharmaceutical space.

They came to UCD and said they had a reaction that had worked well for many years. But all of a sudden, the results were declining. They didn't know why and they wondered was there an engineer who could help them. One of our engineers spent one day with them, reviewing their reagents, reviewing their processes and their facilities and their technologies and came up with a list of recommendations and observations to help them improve their results.

Strategic initiatives and planning. A very interesting SME contacted UCD and they are experts in voice recognition technology. They wanted to undertake some user evaluation and take on some user feedback. So they're currently working with one of our academics who has expertise in voice recognition but is also an expert in the user experience.

So together, they're designing an evaluation study. The company will go off and gather its data and then our experts will help them analyse that data and look to see where the future may lie.

Reviews of existing strategy and contributions to policy. Lots of academics from many institutions are active in this space. In UCD, I've seen an expert in the business of biotechnology working with a small SME that has massive growth plans. And what he's doing is working with them to look at their organisational structure and make sure that it's fit for purpose and will suit their business as they grow.

We provide expert reports and experts who are willing to appear in court or provide expert reports for any type of legal process. We also have a lot of requests for bespoke training. One of the interesting examples I've seen so far in UCD is a group of six academics from the social sciences side of UCD. They came together to design a three day masterclass on cost benefit analysis and its application in the public sector.

And that was for a small public sector organisation. Lots of our

academics are regularly asked to speak at seminars and business conferences and you'll find our experts in big data and AI and robotics are in particular demand at the moment. Then finally, lots of our academics are invited to serve on advisory boards.

One other type of consultancy service that HIEs and universities will offer is access to specialist research facilities or equipment. For example, come and use our 3D scanners or 3D printers or CT scanners. That type of equipment is available. Also, people with new ideas who want to test a product often come to a university and say, I'm thinking about this recycled animal bedding as a source of fuel.

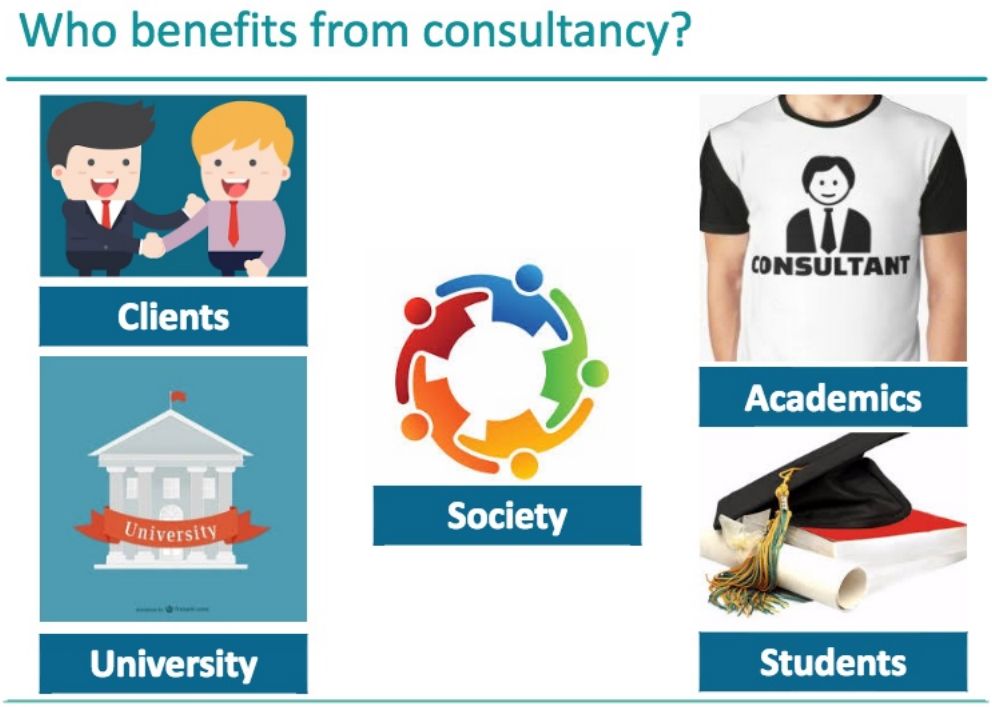
Can you help me create a pellet? Can you help me test the energy production of this pellet?

I hope you can see that the type of consultancy is really varied. It covers academics and experts from all types of disciplines and it serves the needs of all types of organisations, from small startups to public sector organisations and for every type of business in between. I hope you can see as well, potentially, that consultancy is different to research.

Consultancy is, in general terms, the application of existing knowledge to solve a client-driven problem where research, in its general terms, is the pursuit of new knowledge and often results in new IP being generated.

So why would a university then offer a consultancy? Well from

what we've seen in the UK so far, there are many stakeholders who benefit from this type of consultancy. The clients - very importantly, clients get innovative solutions, often quite quickly, to challenges they're facing. And as a result, society in general should benefit from, we would hope, increased productivity, growth of organisations, increased opportunities then for employment and ultimately, returns to the exchequer.




Clients also benefit from developing relationships with universities which will ultimately be where they go to look for their next generation of talent. The university obviously benefits then from these relationships. The more relationships universities generate with all types of different organisations, the more able it is to increase its impact and to add to society in a very general and broad way.

One example of how universities and clients work together for mutual benefit comes from an interesting example from the University of East Anglia in the UK. The University of East Anglia was contacted by Norwich Union, a local business, who wanted some help reviewing their customer data. So they'd spent a bit of time working with the statistics department.

And that was back in the mid 2000s. Now, over time, the relationship has deepened. There's been more engagements. And Norwich Union has become part of the Aviva Group. As a result, thetr is now an MSc in Actuarial Studies in UEA that the Aviva staff actually lecture on. Aviva also sponsor a chair in insurance statistics in the University.

Aviva benefits from having unparalleled access to and indeed, influence over, their next generation of talent and they're also at the forefront of statistical thinking and methodology.

Our academics and our consultants benefit from taking on consultancy. In the last couple of months as I've been starting ConsultUCD and working in this space, I've been really fortunate to work with the University of Cambridge and learn from their model. And one of their academics actually came over to spend a day with us in UCD.

He spoke from personal experience of taking on consultancy over the last 20 years, of how enjoyable he's found it. So he's found it really nice to go out and spend short amounts of time with loads of

different companies. He's also enjoyed being able to go back to the university and not have to stay working for some of those companies.

But he's also felt that his experience has brought a new dynamic to his lectures. So ultimately, the students benefit. He finds his lectures are more engaging, full of real life examples and anecdotes that the students can relate to and they can see how the knowledge actually transfers into real life application. And then ultimately for our students, our most important end user, the more relationships the university has with organisations who are positively disposed towards the university, the better their chance for employment and the range of employment opportunities open to them.

This all sounds good. How do we make it happen? Well, of vital importance is to put in a managed consultancy service to support this. If we want to realise these benefits, the engagement between the client and the university has to be professional. If there is a myth out there that universities are difficult or slow to deal with, it will be the role of me and my colleagues, the other four members of the pilot, to dispel that by creating managed consultancy services that are dynamic and flexible and that respond in a timely manner to the needs of businesses and organisations.


So what will this manage consultancy service do? It will be a central point of contact for clients. If an organisation has a concern, a challenge, a project that it wants to undertake and needs some expert advice, the consultancy service would be the place for them to go to say, hey, I need an expert in biotechnology, or I need an expert in an animal medicine, whatever it might be.

We'll also have a role in making sure we're looking outward, so looking out from the university and looking at the market. What does the market need and how can the university help to solve that need?

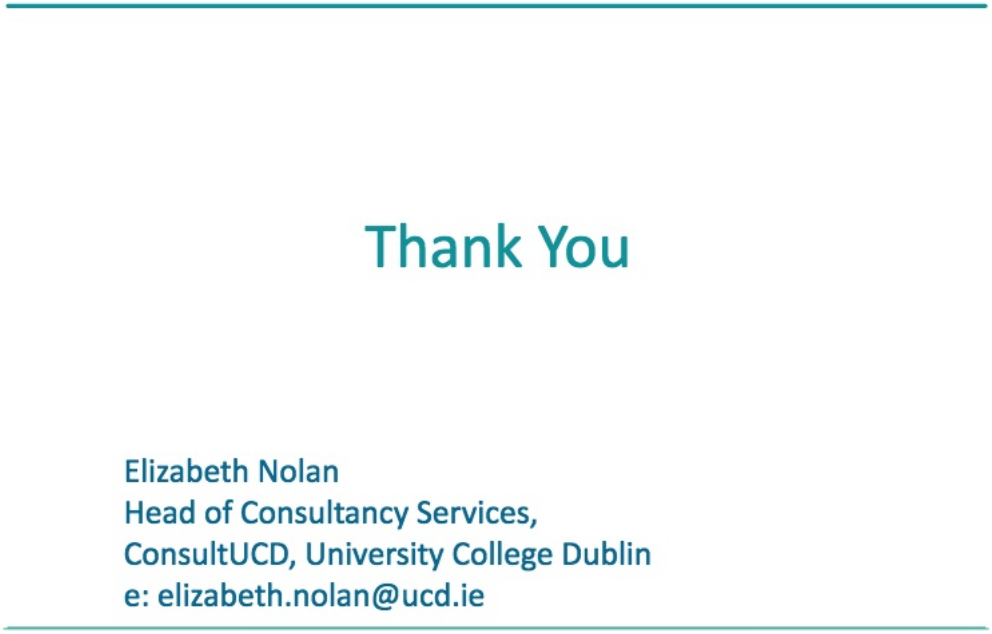
Very important - in the last discussion we touched there on skills and I see this as a really important role for the managed consultancy service. If we have academics who are interested in sharing their knowledge and expertise via consultancy

arrangements, we need to make sure we equip them with the skills to be good consultants.

Some of this work I've done so far in UCD has been quite a cultural change for some of the academics who have come along. So they're used to getting up and speaking to lecture halls and giving a monologue for 45-50 minutes. And one of the things I tell them, that the most important skill of a consultant is to listen. So, stop talking and listen to what your client has to say.

Understand their challenge, understand their context and then apply your knowledge to their specific challenge. So that's going to be something we need to develop in our academics and it's very much a challenge I'm looking forward to. The consultancy managed service will also provide commercial and contractual support to both sides - to both the client and the academic, helping them get the relationship up and running and then providing support along the way throughout the journey of the project, ensuring that we grow and develop and support relationships throughout their lifecycle.

I hope you can see that there is a very interesting space. It's one I'm delighted to be working in. I'm very excited about the opportunity that exists to develop and grow and manage consultancy services in a HEI. I'm more than happy to take some questions now.




DELEGATE: How are you funded?

ELIZABETH NOLAN: So, thanks to Alison Campbell, there is funding from KTI for a three year pilot to get up and running.

DELEGATE: Is there a cost for people to use your service.

ELIZABETH NOLAN: Oh yes of course. That's where the commercial element of this comes in. Yes there would be a cost, somewhat like research or some of the other arrangements that have been talked about before, some of the consulting fees that come from the clients, would go towards my service.

DELEGATE: And does your service do collaboration like in the licensing area?

ELIZABETH NOLAN: Well often, our consulting can lead to other types of collaboration. Again, that would be the experience in the UK, that consultancy can be a quick, low risk, short term interaction that can lead to bigger relationships or bigger collaborations, research studies or Ph.D. placements, etc. So that would be the goal at the end of the day.

DELEGATE: OK thank you. Good luck with it it sounds very interesting.

ELIZABETH NOLAN: I think it's likely to be a large number of small deals to be honest. Academics are busy people. Their heart lies in their teaching and their research. Consultancy will be an add-on for that. So as a result, I think there will be a large number of small projects. The idea is, certainly in UCD - I can't really speak for the other four - that my services are a voluntary service but that the benefits to using the service would outweigh the reasons for an academic to doing it privately.

So there are benefits for both the client and for the academic and in terms of using the university. So for example, when the contracting would happen, the contract would be between the university and the external organisation rather than between an individual and an organisation. And by doing that then as well, the academic would be covered by the university's insurance policies, negating them the need to take out private insurance or professional indemnity insurance for the individuals.

# Industry Insights on Research Collaboration

R&D industry leaders share experiences of engaging with third-level research, how it has impacted their business and that of their supply chain and the types of engagements and funding that can be accessed to support the needs of the business at different times.

Kilian Cawley, Managing Director, PE Labs

Clare Hughes, Managing Director, CF Pharma

John Neilan, Director of Research, Cook Medical

Moderator: Alison Campbell

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ALISON CAMPBELL: I'm really delighted to have our three guest panelists here from industry and I know from last year's session how very much delegates welcomed the participation of our industry colleagues and hearing from them about their experiences of research development and innovation, particularly with third

level. That's the topic of this session.

What I'm going to do is hand over to our three panellists. I'll be asking each of them to give you a little bit of background about where they're from and the kinds of interactions that they have with our institutes here. And then, after they've each spoken, we'll go into a conversational format with them. I'll tease out what I think are some interesting points and then there'll be opportunity for questions from the floor where you can ask about the points you really think are interesting.

So, if we could kick off with you, Killian.

KILLIAN CAWLEY: Thanks again Alison. There have been some great speakers here today. I'd just like to share my perspective and experiences, being a small business collaborating with Dublin Institute of Technology. And firstly, I have to honestly say I am continually stunned by the high level of talent and world-class expertise that's in our colleges and universities here in Ireland.

My company, PE Services genuinely is privileged to work with DIT Hothouse and DIT Agricultural Analytics Research Group. I would just like to recognise Knowledge Transfer Ireland and Enterprise Ireland for being the catalyst for making this collaboration happen. I wanted to say that at the outset. PE Services is a small company operating along the border in County Cavan.

I'm a Monaghan man, I just want to make that very clear. We employ just over 20 employees and we operate throughout Ireland

and into the UK. We're an equipment-based, solutions-providing company. And I suppose we have a number of different areas in our business, primarily agriculture, providing turnkey solutions in the pig, poultry and dairy sector and we also have a washing environmental division and we provide services, washing everything from trains and trucks to army tanks.

So there's quite a range there and we also have a safety division and we provide safe access systems for being able to access thr tops of road tankers, particularly for the food and pharma sector and of course my favourite sector, distilleries and breweries. So there's a diverse range of products and a diverse range of customers.

This spreads the risk and I suppose, using the poultry analogy, we don't get to keep all our eggs in one basket. In a previous life I was in the banking sector. I left the banking sector about 10 years ago and invested in the company and within a couple of months, along came the recession and I quickly realised there were more than two certainties in life; death and taxes.

There was a third, and that was uncertainty. But we wanted to put a positive slant on that and we called it change. So, over the last 10 years, we've become more and more accepting of change and particularly over the last while, none of us expected Brexit. None of us expected Mr. Trump. And it appears the world is continually looking for change.

We've learned the same, or I've learned the same, from my

customers needs, that they're constantly changing. Our strength as a business is our industry knowledge and our ability to adapt and change and provide customers with tailored solutions. So change is very much part of that. It became very clear very quickly, the huge importance of technology, particularly in the farming sector.

There's been a greater dependence on automation and information and particularly in the poultry sector within Ireland and worldwide. At PE Services, we supply computer systems as well as other equipment into the poultry sector. The systems we provide control everything from ventilation, feeding and temperature to water. There are various sensors throughout the poultry unit that provide a huge amount of data into these computers and the data that are on the computers are sitting there and that data is not been used.

We've seen a need. We needed to translate this data and turn it into usable information for the farmer so the farmer can make real-time decisions. As well as that, we also saw that there was huge competition in our day-to-day business and this was increasingly putting pressure on margins. So it is very important that the company would look towards having a competitive advantage in the future over our competitors and try and find a way that would provide better margins and develop overseas markets and develop a stronger business structure for the future.

I believe in combining things that we were good at with technology and that this would make us more resilient to economic cycles and

other challenges that might come our way.

Being a small company with limited resources in terms of money and skilled people, it’s impossible to embark on any product development on your own. So "think small - be small, think big - be big" was applied to our thinking. I knew that there was a huge demand for data-driven technology through various poultry experts that we would have interacted with such as the Carton Group and other international companies that we would deal with.

As a result, we developed a 'farm of the future' concept and basically, this involved controlling and measuring all the inputs and variables into a farm with the aim of improving animal welfare, better food production and more profitability. Essentially, it’s precision farming. Initial inquiries were made. I wanted to try and find out how I could move this on.

I became aware of the Innovation in Competitive Enterprises (ICE) programme as it was known. This programme helped companies scope out new technologies and innovations relating to their businesses. It was led by Malachy Mooney and Kieran Fegan who is in the Dundalk Institute of Technology. They were excellent in helping us to scope out the need and find a potential solution to the problem we were trying to resolve.

And this kept us commercially focussed in relation to what we were looking to do. From there, we embarked the VITAL programme, a lead-on from the ICE programme and it helped match companies to

new technology and new opportunities to enable growth. We completed a feasibility study which was grant funded through that particular programme in relation to the specific technology and we discovered that there was no other product available worldwide for what we were looking at doing.

So through the VITAL programme, we were very lucky that (VITAL being with Dundalk Institute of Technology) there was a network there and we were introduced to DIT Hothouse and to Kieran O'Connell. DIT house the School of Computing and are experts in Data Analytics and I was introduced to Dr. Robert Ross and he leads the Agricultural Analytic Research Group.

To be very honest, I was very sceptical at the start that a college in Dublin city could help chicken farmers in Cavan and Monaghan. I met with Kieran and Robert with a very open mind. After the first meeting, I was very confident that they were the right academic partners. Kieran is from a farming and a business background and Robert is an expert in data analytics and I knew these two combined were very important and a good match for us because that's where we were coming from as well.

Kieran also won me over in terms of something that struck a chord with me at the very outset. It was his definition of innovation - turning ideas into invoices. And this is ultimately what every business needs, turning good ideas into good products and eventually into sales. At the end of the day, that's what keeps us all going.

That’s why we exist. So we sat down, we agreed what we wanted to achieve and how we were going to go about it. And everyone had very much clarity on what was to be achieved. That was a key part of what we started to do initially. Communication and understanding of each party’s expectations and abilities and our roles and responsibilities were clearly outlined at the start.

Robert Ross completed the Innovation Partnership application for a grant funding with Enterprise Ireland, with a little bit of help for myself. I have to say, Robert took most of the burden. Enterprise Ireland grant funded what we call the Smart Chick project. This particular technology was a data analytics project. It won a Merit Award in the Enterprise Ireland Innovation Arena at The Ploughing in 2015.

We were delighted that it did that. But following this, I attended a conference in Birmingham - a poultry conference - and I discovered that a Belgian company which, from one of our previous speakers was a spinout from Leuven, had already begun to provide a technology very similar to our Smart Chick technology. So it was something that I was disappointed about obviously but I met with Kieran and Robert in DIT and we all agreed that the technology that we would look at needed to be a unique technology and we reconsidered our position, or as as Jeff said earlier on, and I don’t like using trendy words, but we we 'pivoted'.

Robert proposed a visualisation technology and it was a 24 hour, artificial intelligence monitoring system. It was ideal for our sector,

for the agricultural sector and it provided significant benefits to farmers, to their animals and the industry worldwide so we were looking well beyond the Irish side of things, well beyond Europe and further afield.

In fact again, going back to what I said at the start, DIT and Robert Ross are at the forefront of this deep learning technology worldwide. And again, it's an indication of the expertise that is present in our third level institutions. For somebody that's coming from a business perspective and looking in, it's really staggering to see what is going on behind behind our college doors.

Flock Guard was born, which is the technology we are working with at the moment. We submitted a Change of Project to Enterprise Ireland and after a few weeks, we got approval to proceed. Today, thankfully, the project is very well advanced and it's nearing commercialisation. We have a test farm in County Monaghan thanks to the Carton Group, the large poultry processor in Shercock, County Cavan.

And in fact, DIT are actually on farm today with some of the PE Services staff. The interaction between DIT and ourselves has been genuinely very, very strong. So I suppose the key to this is the link with DIT Hothouse and Kieran O'Connell. I see that as creating a bridge between the business and academic experts, that's very important.

There is open communication, clear goals and milestones are

essential along the whole way. Hothouse has helped my company in all the licensing, the grant applications and any technical issues that have arisen during this particular journey. Our technology was a finalist again in the Innovation Arena in The Ploughing last year and it is gaining interest internationally.

It's great to see that the interaction that we're having with the college and the work that we're doing in the business is gaining good traction, both in Ireland and further afield. We're even talking to our Smart Chick competitor in Belgium and I have a conference call with him in the morning. It's amazing how these things work.

This is all taking place again, I suppose why we're here today, with the help of Knowledge Transfer Ireland, with Enterprise Ireland, with DIT Hothouse and DIT Agricultural Analytics Research Group. So, in summary, and I think I've gone on too long here so I'm very sorry, I believe using technology and the expertise within our third level institutions will help overcome some of the challenges that we all face such as Brexit and help us even to look beyond the UK.

And I think that's very important, particularly being in a company and on the border. In PE Services' case, I've learned, you're never too small to innovate. Also, embrace change, don't fear it. And finally, very importantly, be clear on what you want to achieve commercially, keep focussed on this and keep watching the market and your competitors. It's very important.

Ensure good, open communication and keep a very close

relationship with your academic partner. And as I've already said, in my experience, the key to this is the commercial interface and that will lead to the success of it. So finally again, I'd just like to thank Knowledge Transfer Ireland, Enterprise Ireland, Robert and Kieran and DIT for all their help all along.

Thanks very much.

ALISON CAMPBELL: I think there's a couple of themes in there that we will be coming back to. You've pointed the way to some interesting things that we might talk about. Clare, you similarly had a need for some external expertise that you didn't have in your own company. Do you want to talk about your story?

CLARE HUGHES: Thanks for inviting us here today. I think my story reflects a lot of similarities to my previous speaker's stories. It's about how can a small business compete with international markets. And how can we create something of value with IP that can be scaled up to something that's actually worthwhile so that we can be bigger than the sum of the individuals.

I'm a pharmacist and I started my first business around 17 years ago. I sold it six years ago and I was sort of starting from scratch again. Three or four years ago, we set up a new company, an ISO medical device company and we did mainly OTC products for veterinary and for pharma. That's where my contacts and my knowledge were so that's sort of where we stayed.

Ideas normally come from people and not from corporations. And

that's my reason why I think small businesses can compete with international, large, Johnson and Johnson type of corporations. The only ceiling that you put on yourself is self-imposed. And there's nobody better than small businesses to see the market-driven need for a solution.

I am not a philanthropist, I'm in business to make money. So there always has to be a market for what I want to do. Our product that one of the girls in the company basically came up with was, well, why isn't there an easy way to look at targeted treatment to treat for gastrointestinal worms in animals. And how do you have to send it to a lab? And by the time you've sent it to a lab, you've infected the rest of your animals, they have cross-contaminated, the animal is getting sicker and it's going to cost more to treat them. So, my previous speaker was dealing with inputs from farms, I'm basically dealing with the outputs at the other side of the tale.

So we set up a company called Telenostics and that was to digitally analyse the faecal bioburden in a faecal matter in farm animals and then in humans. Why we started with veterinary is because there's actually not a legislative mechanism for medical devices in veterinary in Europe and we knew, once we had proof of concept, we could go to market and we could actually fund ourselves.

But what we thought would be easy actually is a complicated product. We needed mechanical engineers, image acquisitions, telecommunications, IT guys, some physics people to develop algorithms to recognise the image and then the parasitologist to do

the clinical papers. And I think, when we were speaking earlier on, to try to understand the university lingo was really difficult.

I mean, there are MVPs and TRLs and MHRAs and CADs and LEOs and VRNs and DOIs… I'm just interested in basically paying people and keeping my show on the road, how do you integrate your normal business solutions with your day to day process. I've had three companies and I have four kids, it's like seven kids and a load of people, I take my responsibilities as an employer seriously.

So I want to ensure that I don't lose track of my P&L when I'm trying to do fancy things that will buy me nice things in the future. So it's about how do you actually stay grounded and how do you keep your eye on the prizes. So how do we compete and how are we scalable and how do we get something that's protectable? In our situation, we have we created this idea called Telenostics which was a telecommunications diagnostic device to automate the faecal sampling.

But there was everything then from preparation of sample to an image acquisition to writing an algorithm either locally or in the cloud to recognise the image and then feed back to your iPhone so that you so you can treat the animal straight away. So it very much feeds in with Killian, with the whole herd health management thing and having a dashboard of information.

And that fits very well with the European Medicines Agency. And there's prophylactic treatment and targeted treatment to prevent

drug resistance in Europe. So we basically start with this idea and we approached Enterprise Ireland. I've been really lucky in all my experience in business, Enterprise Ireland has been a sort of a key partner.

And I remember my first meeting with them. I thought it was really scary. Now I think I have around ten of them on speed-dial. They they sort of become like an extended member of your business. We were lucky. Declan McGee from the Innovation Partnership, he put us in touch, we got our first feasibility study which was a simple form, takes around three hours and you get €5,000, so what you think might be an idea, at least you can get a little bit of research.

He put us in touch with UCD and again, we were really lucky, we met with Stacey Kelly who is here today. She tried to put us in touch with the investigators to help us on our complex project because I had no idea about engineering. My IT capacity is nil, really I'm a pharmacologist's pharmacist. So how did I get all these separate guys together and - UCD is a town - how do I get them all working together? So basically Stacey was a really important part of that.

And then luckily enough, again through Enterprise Ireland, we got a very good solicitor to help us with our IP negotiations with UCD and actually that was the first time I had really dealt with Knowledge Transfer Ireland because we use their model agreements to actually set that in place because I really didn't know exactly what I was doing, but the model agreements were super.

All the stuff that's in your pack and especially this forum here, it's super because the information is already there, you don't need to be a genius, you can actually just use information that's already put there and it's free and it's cheap and it makes things much easier to do.

So then basically we got the researchers. I remember the first day I met all these researchers. There were a couple of Russians, a couple of Germans. It was like a very international body. The words holistic, philanthropic and blue sky research were mentioned. I had to leave the room and get a cup of coffee because it was really scary.

I didn't understand how I could ever get this commercially to work. The university departments were in separate buildings, geographically diverse from each other and all their acronyms, the guys in the engineering department had different acronyms to the guys in parasitology and the IT guys are completely off the wall altogether. I couldn't understand what they were saying.

So we got an entrepreneur in residence to actually base themselves up in UCD for basically 12 months. And she was vital really to bringing everything together. The funding is easy to get at an early stage if you have a very good idea and a proof of concept. Enterprise Ireland is absolutely super. We were lucky enough that there was a smart agri award.

There was a Horizon 2020 project in 2015/16 and we won the whole

Europe, there was a pan-European thing and we won that outright. So that set us up and that was managed by SEBIC. And then we started to working with WIT and TSSG which are the telecommunications guys from SEBIC. It was a whole diverse group of skills, trying to basically navigate your way and your passage through the simple idea that turns out to be a complex product and then to try to bring it to commercialisation.

The thing I would say is that nobody cares more than you about your project, especially in a small business. You don't have a huge amount of resources, so you do have to stay personally involved. But if you can access the the likes of Knowledge Transfer Ireland, there's a huge amount of knowledge in UCD. It's amazing, the people we've met in UCD are absolutely super.

The likes of Stacey and her team, they couldn't be more helpful. We now have grouped our IP solicitor and it's very much a team. If we have a problem, we sort of work it out together. And they've been great. So you really don't need to be an expert in everything but you just need to know where to find the information.

ALISON CAMPBELL: Thank you very much. Turning to you, John. You have come at it from a slightly different angle; larger company, multiple institutional interactions. Share with us.

JOHN NEILAN: I'm director of research at Cook Medical. Cook Medical is a US multinational company. There are two sites in Europe; one in Limerick, over west if you know where that is! The

other one is in Denmark. It's a medical device business. We cater for a lot of different medical specialities. Cook is also a diverse company. It has different divisions - pharmaca, cell therapy, regentech, property, hotels, resorts.

The medical device business is the part of the business that we serve. I started in medical devices through a startup, Mednova. That startup got acquired by Abbott. And then after Abbott acquired part of Guidant that Boston Scientific couldn't keep, they had basically duplicated everything that they had in the site that was based in Galway.

So we shipped that all to the US, closed down the Galway site and then I moved to take up a role in R&D with Cook Medical. Back then there were 16 engineers working on lower level R&D and at the time we set out a kind of a vision for what we wanted to become. That wasn't management-led, it wasn't led from the top that this vision was created.

That was something that we felt that we could do and have a vision for ourselves. And to do that, we said there's a couple of things that we need to change. Because essentially, working within a multinational company, you're competing with other sites for the opportunities. To get more of that opportunity, we wanted to get up to a higher level of strategic importance and to influence the company at a higher level. So starting off from the R&D perspective, we set out two objectives.

We wanted to develop better quality product and we wanted to do it faster. Those are the two first objectives and then the longer term goal was to move from product development into a core research role. All of this, what we set about doing, was on top of our day job. That's the way I describe it, this was a longer term vision, we're going to work towards this because this creates a lot of opportunities for people and it adds more value to the company and we get seen from within the global corporate organisation.

We're trying to catch their attention to say that these guys are capable of doing more. To get better and faster, there's a few things we did, initiatives we took on. Within our R&D cycle, it was the same as all the other sites as you would expect. We said we need to get it faster. So there was an iterative prototyping, concept development phase that ran in six week cycles.

And Cook, at the time, were vertically integrated so all the components for the product they made were sourced in-house. They had all that capability. But that was one of the problems we identified. That was the cause of why the cycle was so long. And sometimes within a global corporate organisation, you are not seen as their customer within the vertical.

They just say you're another colleague so they don't have to change the practice of the way they work. What we did is we started looking at sourcing supply chain partners here, indigenous supply chain partners here on the island. And we went out there and I have known a lot of these people from past work experience and

what I presented to them was that there's an opportunity here.

If you change the way you deliver your service, (because their lead times were similar to what we had it terms of our own in house) we needed to totally change how that operated. If you work with us in changing your systems of work and how you provide the service to us, we'll guarantee you you'll get the business. That's the proposal that we went out with. And what we set out as the target, instead of that six week turnaround cycle, we said we're setting a target of one week and whatever we need to do in terms of buying equipment, adding people, to be able to turn that around, if you're prepared to commit to doing that, we'll guarantee you you've got the business.

So how it happened was that there was a big project up for grabs at corporate. We got the chance to pitch it. We went out there, pulled two project plans together, one if we were forced to use our internal supply chain and the second one if we were allowed to use the indigenous supply chain. One was 50% percent shorter than the other. So of course you're appealing to the corporate guys -'I can get the product faster'.

We had built the reputation around quality because we had built a very deep understanding of the science behind the product we developed. And that was through some of the interaction with the academic institutions, that's where they came in, we leveraged the expertise that was out there. We had done a lot of direct funded work. We had done co-funded work through Innovation

Partnerships.

Through engaging with those you develop your own skills. And we worked very directly within the programmes that we had with the academic research providers, with all the different institutions that we worked with. We took real ownership because, when we committed to doing a project, and it starts with small scale programmes, we had to deliver results.

That's because, when you go back to corporate saying "I want to do more", well, if you haven't delivered the result, you don't get that second opportunity to do more to scale it up.

Going back to the R&D then, in terms of engaging the supply chain, that worked out very well for us. We have partners, there are several of them. There were four or five at the time. One did particularly well, Vistamed up in Carrick-on-Shannon, through the whole process they added 200 jobs up there but we didn't go out to create 200 jobs there. What we went out to do was to get a much faster R&D development cycle.

So effectively, we doubled the size of our R&D team but they weren't on our books, they were in Vistamed and worked with our team in developing that new product. But we worked in very fast cycles and eventually we actually turned it around where that cycle there was six days - we got it back to a week. We turned it around in two and three days, we got so fast at doing it.

So, from a corporate perspective, we got a lot of attention because

they wanted to do all of the product development in Ireland because of all of the business units, they could see it - the products were getting launched but the quality then of the product, that's speaking to the academic engagement. The one thing in medical devices is that products are getting far more complex.

And the kind of breadth of skills that you need is widening all of the time. And we don't have all of those in-house. That's one thing. And then the other thing we don't have in house, we don't have all of the equipment that's available to the academics. If you go into to their labs and see what they can do in characterisation, we don't have the expertise or all of that equipment.

We have some of it, we don't have it all. But by leveraging that, when we go and do a programme and we have all of those points of context set up, the corporate guys see this and they see the quality of the product. One of the things that we did, we proposed that big programme of work, they got a 40% increase in the product sales on that new product in the first year.

That drew massive attention from the corporate perspective. Then we started doing more ambitious programmes of work. Those were programmes that were directed or are very much aligned with the current business or the current products within the company. But we started broadening the vision. Again, we weren't asked to do this. We did ask if we could go and do some of it but we got turned down, they said no, that's far too strategic, there's too much risk, how do we protect the IP, how do we protect the confidentiality.

So how we overcame that particular kickback was we said, okay, will you allow us to work on developing some of the manufacturing technology associated with it? "Yeah, no problem." We went off and did it but we ended up with new product technology. So then, that opened the doors for us again. We grew the group from 16 people to 70 people.

And then it is like a split in the stock. We set up a core research group and that core research group was to look at the more ambitious programmes of work where we were looking at technology that didn't fit in with our current product ranges that were looking for new opportunity beyond that. And that's kind of where we're at at the moment.

It's been an eventful journey, it's been an awful lot of hard work from both sides. And with the academic institutions, we've gone from smaller scale, direct funded research to smaller scale co-funded research to larger scale programs and more diverse programs and that brings its challenges. I suppose the system isn't perfect. The one thing I'd say to people is that there is absolutely no excuse for not engaging with academia.

We have a fantastic breadth of expertise available and capability available out there. Spend time finding the right partner starting off and then be wary when you scale up. There are problems with scale. If we look at the funding mechanisms. The Innovation Partnership is brilliant system but we need Innovation Partnerships that allow bigger scale programmes.

Innovation Partnership programme, there's a 25% overhead that facilitates some of the administration of a programme. Particularly, bigger programmes of work need more administration within the university system. Some of the other systems we are also involved in; SFI Research Centres through one of the Spoke Programmes, Curam, the issue is, if you are in through one of the co-partners, not through the core, there is no overhead allowed for managing the programme.

And that puts huge pressure on the academic institution because you can't run programmes without having some kind of administration and oversight and project management.

ALISON CAMPBELL: You raise a very interesting issue there John. We often hear, and it's been fantastic to hear your three sets of very diverse experiences, the positivity of working with research. Of course we often hear the pressure of, well, there must be more. Your example was more, better, higher quality. Within the academic research system, it's "let's do more, let's do more spinouts" (and we were hearing about the numbers and the issues about quality earlier), "let's do more collaboration".

Actually I think you touched to a very good point. At some stage there is a capacity issue within the state research side, possibly as much as a capacity issue that we were hearing about within your own organisations and perhaps that's something that longer term we need to look at. But I think what I'm hearing and gathering from all of you is that there has been that right kind of capacity and

capability, very different in each of the three situations, that you have been able to tap into.

And Clare, there's something that I'd be really interested to pick up with you. Everybody has described complexity. In particular, you were talking about really engaging and that ability to access diverse research areas and skills, not just the skills but the disciplines outside of those that you're familiar with. And in the end, you decided the best way to manage that diversity was to work with an entrepreneur in residence.

I'm just wondering what brought you to that point of understanding that you needed that kind of individual. And then, how did you find them and what was the nature of that relationship with the institution?

CLARE HUGHES: The idea wasn't really our idea. UCD had an entrepreneur in residence when we started and we found (David Kavanagh was his name) he was a really good guy, came from business, knew how to navigate UCD, not only geographically because you get lost in the place but how to find out how to get something machined or 3D printed or how to bypass the queues (it could take months to get something on a CNC machine), how to do all of these things. Because really it is quite complicated.

How do you actually request another researcher? Because it's just not clear to outside business how everything works. Shortly after we started, he left, which was a shame, back to (I think) private

business. So at that stage, Trish McOwan (basically this was her idea) was working very much with all the speciality functions. She started spending three or four days a week up in UCD.

And they eventually gave her a desk up there and she got all the individual guys to really speak to each other and that really needed to be done at an early stage. Otherwise they would all grow in their own area but would never talk to each other so I think that was really important and I think key to keeping the thing commercial and focussed and with milestones and timelines so we didn't run out of money and funds.

And we sort of kept an eye on the end goal.

ALISON CAMPBELL: That focus you were talking about, I think that's something that, in a different way, you also talking to, Killian, in terms of the relationship that you needed to have with the academics and the resource providers. How do you manage that relationship?

KILLIAN CAWLEY: I suppose in our situation again, to go back to what I said, we were very clear at the outset what we wanted to achieve. Going back to some of the other speakers, we listened to what the expertise was and we also were very lucky with DIT Hothouse and I keep mentioning that but that interaction with the college, having the commercial aspect, being able to bridge the two was very important.

And I think when we were going off track, Kieran helped pull us

back and when the researchers were going off track, he helped pull us back. So we managed to keep a good strong focus on what we were trying to achieve. And I think it was very important to have somebody there to keep everybody operating but still allow everybody to be able to express what they want to achieve.

I have been involved with other research where, if you don't have that commercial side of things, it can branch off into other areas and particularly other areas of research that become more interesting as the project moves on. And then you lose complete focus and the whole thing falls apart. From my perspective in business, going back to what Clare said, at the end of the day we have to be able to meet the wages at the end of the week.

We have a lot of commitments and there are a lot of challenges out there. So anything that we undertake, we undertake very seriously and it's very important then that we focus on making sure that it works and it's very important that the partner that we're working with is committed to making it work also. And that's why that whole commercial bridge is very, very important, particularly from the business perspective.

I think results will come out of that if everybody remains focussed.

ALISON CAMPBELL: John, you had a very interesting tale to tell in terms of the expansion of your business, the expansion of the R&D side of your business and also about the effects on the supply chain in the way in which you're externalising your research and

working with the third level. Any other intangible benefits that you see? Because often, we look at these interactions and can see that there might be immediate skills applications and possibly some new technology, intellectual property or know how.

But you're touching on something much bigger there. Can you give us a sense of what the other intangibles might be?

JOHN NEILAN: Well you know that whole growth from 17 to 70 people, there were particular points in there where we actually doubled the size of the R&D by winning some of the opportunistic product development or research and development projects within the global corporate perspective. But the real big win beyond that, because that's still doing kind of product development which is very much applied to current technology that you have in-house, it's moving outside of that then and getting to now, where we don't operate at all on a local basis.

We're operating from a global direction and perspective. That's based on the we've built broad skill set we have built. Our own skill set has developed a lot but we have access then to all the skill sets across the different research providers. And it's proving that model to them, to the corporate, because we see that as fundamental to the development of the business going forward. It's only in its infancy and that's one thing here.

There's a lot of discussion today about startups and spinouts, which is fantastic and they are great metrics. But don't forget sometimes

that some of the potential is within the existing businesses that are here. What we're trying to avoid in terms of keeping the business relevant, if you keep doing what you're doing today and using the technology that you have at your disposal today, you will expire in 20 years.

You know it's like the old, foreign direct investment type companies came in, stayed 20 years and moved out. So we have to keep adding value as a site. In adding value, you're creating more value. The whole access into the research centres within academia is very important. Another interesting one; recently what we've done is we've started to collaborate on research with our supply chain partners where they put money on the table, we put money on the table and it's matched with funding from, in this case, Enterprise Ireland.

So where we see that they need different technologies from a supply chain perspective, they're putting their money on the table to co-invest with that, they see that aligning. The big advantage of it is, it cuts our cost in half. So it makes it even more attractive from a corporate perspective. But that's another starting point. We were doing that within, let's say, the medical device business.

But there is an opportunity that you could broaden that out across sectors so that if you get somebody in different sectors, if you get four or five partners investing and you get funding with Enterprise Ireland or SFI to match that, developing a technology that's useful to both, particularly around manufacturing technologies, there's an

opportunity from a very cost effective method to go and do really ambitious things around manufacturing technology.

ALISON CAMPBELL: You've all described a very bright, vibrant research and development community here, not just in academia but within the businesses and the models that you've described to us. Obviously, it gets increasingly topical and as Killian mentioned the 'B' word, I'm just going to ask each of you what your views are on the effect of Brexit on your businesses and particularly, on R&D in Ireland.

John, would like to go first?

JOHN NEILAN: Yeah, it's interesting. I call it the evolution of research initiatives. We started off working locally with our local university and we started then looking at the other possibilities with other partners on the island. We then moved off the island and we have done some work in the UK. It's absolutely amazing, the stuff I didn't think of.

We are a small nation and relatively, our budget is pretty small in terms of what's put into research here. Now we want more funding into research into the academic institutions. Absolutely, it's necessary. But the UK have a bigger budget. So in some cases they have the advantage of the scale and they have the history where they are 100 or 200 years working in a particular field. And we've had the fortunate experience where we've been working on a technology and we went to the UK to get a second opinion. We had

a theory on how this was working and we weren't sure.

We went to the UK, they threw a totally different theory and they proved that their theory was right in a very short space of time. But from a Brexit perspective, I see a lot of opportunity. We need to be able to collaborate from a European perspective. We've worked with universities in Germany around some particular applications.

And as you get more involved I think we'll start doing more of that because we don't have all of the technology and all of the state of the art equipment that's needed when you're really at the cutting edge, where you're down to a molecule, an atom level of detail. You do need to reach out because there is expertise out there that can help you.

Brexit is going to cause a huge issue - it could potentially cause a huge issue - if there's not something negotiated where we can keep that door open there. Our UK partners, we find them very good to work with. We're really blown away by the capability and the expertise that's there too, and their willingness to work with - we haven't done this yet - with Irish institutions.

We have proposed that to them and they're very willing to do that.

ALISON CAMPBELL: So, greater collaboration. From your perspective, Clare?

CLARE HUGHES: I possibly think for Irish institutions there is a really good opportunity. I know from some of the American people

and business people we've been speaking about, they're slow about they're investing in the UK, there's a new medical device directive in Europe and there is going to be a while before that's harmonised, it's really unclear how the UK are going to deal with all their regulatory affairs and how the European Medicines Agency is going to integrate.

I don't think anybody knows any of these answers. When there are levels of uncertainty, people don't invest. And then we are the only English speaking country in Europe. So we really have to offer our capacities to take advantage of that and then work with our European partners when we're found lacking. There are two universities in Belgium and Netherlands we've done a good bit of work with, and they're absolutely wonderful.

Their English in most instances is much better than mine. I think there's this huge opportunity there because of the level of uncertainty and the amount of variables there are huge.

ALISON CAMPBELL: Opportunity for change then, Killian, because we don't like the uncertainty word, do we?

KILLIAN CAWLEY: No, we don't like uncertainty but one thing we are certain of is of change. With Brexit, there are a lot of negatives there. Being in business and growing up on the border down through the years, we've been going over and back the border depending on currency fluctuation so it's nothing new . The effect of Brexit was the day after the decision was made for a lot of

companies, my own company included because we were working with Enterprise Ireland quite a lot to increase jobs and increase exports.

Of course it was going into Northern Ireland and into the UK. So there have been negatives in relation to that. I think the opportunity here really, particularly in collaboration, why we're here today and talking about knowledge transfer, I think the technology piece, as I said earlier, creates something new within the company and something new possibly within the industry as well.

And forget about exchange rates and various different things like that. I think if you have something new you're offering customers that's going to save them money, that's going to allow their businesses to be better and is going to give an overall improvement to the industry, I don't think Brexit is going to have an impact on that. People will want to have it.

But the other thing that Brexit is doing for us as a company, obviously we have to rethink, we have to plan a strategy in terms of looking beyond the UK. Now, we're not just looking over the fence, we're looking over the other fence as well and further afield. And I mentioned the Belgian company as well, spun out of Leuven. There are great opportunity there as well.

The journey I have been on has opened our minds as a company in terms of the opportunity and, going back, if you do think small, you

will be small - if you do think big, well hopefully, you will be big. You have to take that perspective and that's why we're engaging on this journey and I think it's important that we see it through because there is an opportunity in it.

We'll have to deal with whatever Brexit throws at us. None of us have a crystal ball. None of us know what's going to happen. And I think at the end of the day, if we always keep change in our minds, we'll just try and work with it.

ALISON CAMPBELL. I'd like to throw it open to the floor. Do we have any questions?

DELEGATE: The proof of concept for your product, what is involved with that and what's the name of the programme that's involved after the proof of concept with Enterprise Ireland?

CLARE HUGHES: Well we started with a feasibility study and went to an Innovation Partnership. The Innovation Partnership really, the output of that was the proof of concept. And then, from the Innovation Partnership to where we are now is really the commercialisation part which we did in association with Enterprise Ireland. So I suppose it depends, every project is different.

Your milestones are different. It sort of depends on the project but Enterprise Ireland have very good DAs and they can sort of work with you and reflect and give you funding mechanisms. It could be equity funding, it can be what used to be called RTI funding, I'm not

sure of the acronym now, so that you can keep the venture capital funds at bay for a little bit longer until you really need them.

We've never really looked to VC funds because we've been approached at early stage by pharmaceutical companies. The panacea for a pharmaceutical company is to be able to diagnose and treat. So after we have proof of concept, which was the Innovation Partnership, Enterprise Ireland helped us on the commercialisation skill and now we're getting strategic investment from a pharma company to help us have the end product.

DELEGATE: Just one more question. On the proof of concept stage, is that a certain length of time required for that or just whenever that\s completed?

CLARE HUGHES: It depends on what you're trying to prove. So from us, it was that our actual proof of concept was that we actually had a valid patent and that we had enough raw data to show that actually the product worked. It didn't mean that everything was sorted and everything was clear sailing from there. But it at least showed that we had a novel product there, we had capacity and that we had some sort of white paper on some dataset that we had proven.

DELEGATE: Thank you and good luck, it sounds like a great product.

ALISON CAMPBELL: And if you are interested in funding, if you are able to stay to the end of the meeting, we should be able to reveal

something for you that might actually be quite helpful around that. Are there any other questions in the audience?

DELEGATE: I'd like to compliment the three speakers, Clare, Killian and John for a very informative talk. My name is Mary White, I'm from NSAI, your National Standards Authority. Clare, I have one question just looking at your biography there. Has ISO 13485 helped your business in becoming accredited? And I know you're working now towards the Medical Device Directive and with the directive, there's going to be changes in standards.

But has this enhanced your business?

CLARE HUGHES: ISO is a prerequisite really to do business in my opinion. We got reaccreditation to new 2016 standard in January this year. I remember when I started business first and I was working for a small American food company and implemented ISO - it was 15 years ago - I remember thinking I'll never have to do that again. But 15 years later…

It's a prerequisite to business. It's not an advantage. It controls everything. I think it's vital. And if you're going to try to deal with international companies and, nearly all the companies we deal with, we're micro towards them. And to be able to deal with them confidently, you have to be independently accredited, And to have the checks and balances in place in a small company where resources and capacities are always an issue, you have to have a policeman over your head thinking, God, we'll never survive that

audit unless we do it properly.

So ISO sort of gives you that, it puts manners on you.

DELEGATE: Kieran Fegan, the company is VARA. I was wondering, a lot of companies would say that navigating the system in terms of determining where the most appropriate expertise resides within the third level sector remains a challenge. I know KTI do a fantastic job in terms of showcasing some of the technology and the research capability that's available and a lot of the technology gateway centres and the other research centres are doing a much improved job in terms of branding themselves and showcasing what they do.

But is that still a challenge on the industry side? Do you still find that it's very difficult to determine who can help me within the research world in Ireland?

JOHN NEILAN: I'd have to agree, that's always a challenge. You have to spend a lot of time out there yourself and you have to be comfortable with the partner that you're selecting. Even if you get a partner that's recommended, I'd still go and (I've learned that from hindsight and we've made all the mistakes and if I had the time back, I'd do things differently) but yes, it's a challenge in terms of, it takes time to do that.

That's a process you have to go through and put effort into. We have, in the past, jumped with the first opportunity we've got and it's worked out for us. You eventually get exposed to more and more of the experts through working and engaging and then you

find a better partner for the next programme or a partner to collaborate with or you're already collaborating with.

If you're starting off, it's a critical part in terms of finding that right partner to start with first. And it does take time. I think you've just got to go out there and meet as many as you can through that whole process.

ALISON CAMPBELL: So there's a bit there about being able to navigate that system but actually I think the message coming through is, it's like any relationship, you might be able to do a bit of dating but if you want a serious relationship, you have to put some serious effort into it yourself and it's both sides. I think the time for serious effort on behalf of ourselves, the panel here, has probably come to an end.

I'd really like to thank everybody for their questions.

# Creating a Business Innovation Culture


David Erixon, Head of Digital & Customer Innovation, Ulster Bank & Founder, Hyper Island


Thank you very much. Thank you to Knowledge Transfer Ireland for a great day and also for the opportunity for me to share some of the interesting things that we're doing around culture within Ulster Bank. And I think we've heard many perspectives here today, very

many interesting perspectives but I think a lot of it boils down to whether we want to be able to share knowledge and work with each other.

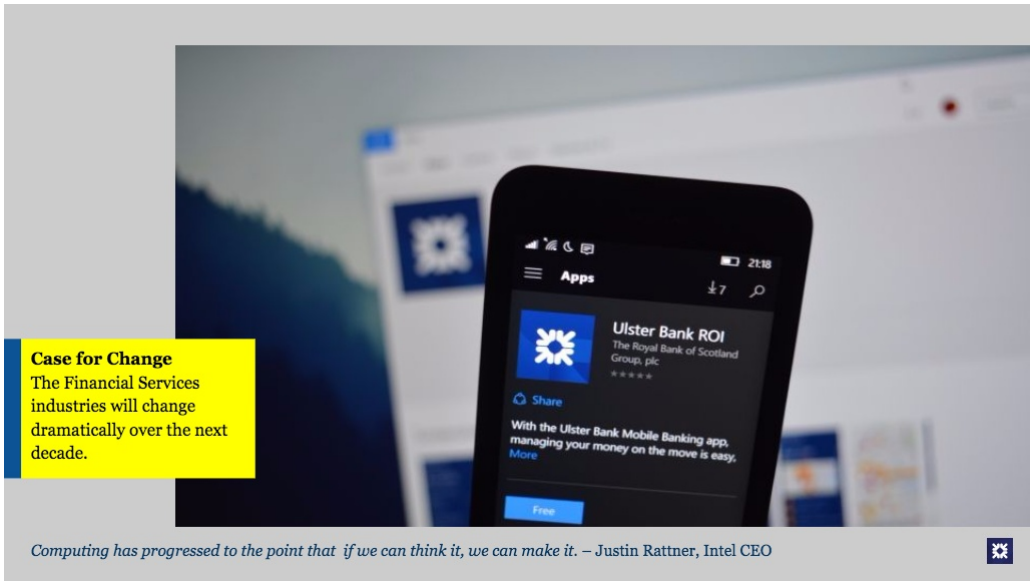
We need to be incredibly good at collaboration and that in itself is a social technology. So a lot of what I would be talking about today are the challenges and the opportunities. So I don't think it comes to anyone's surprise that the banking industry has changed enormously over the last five years but will change even more so over the next 10 years.

And there are many drivers for that - technology being one, new types of technologies. We all hear things like Blockchain, machine learning algorithms being the new IP. It doesn't matter what industry you're in these days, you need to be a technology firm to a certain degree. And now the driver is internationalisation or globalisation.

For us in the financial services and banking sector, it's particularly driven by the European Union. And there's a number of big regulations coming into the market around data privacy but also around new payment services directives which force banks to open their systems through APIs to third parties so that other people can build on top of the data that customers have that sits in banks.

And last but not least, we have enormous change in how we, as people, use technology. There's a lot of talk about disruption and technology being disruptive. My personal view is that technology

really doesn't disrupt. What changes things is when we change our behaviour. And increasingly, people do things with their mobile phones or with technology, with new interfaces that completely restructures industries as a consequence of it.



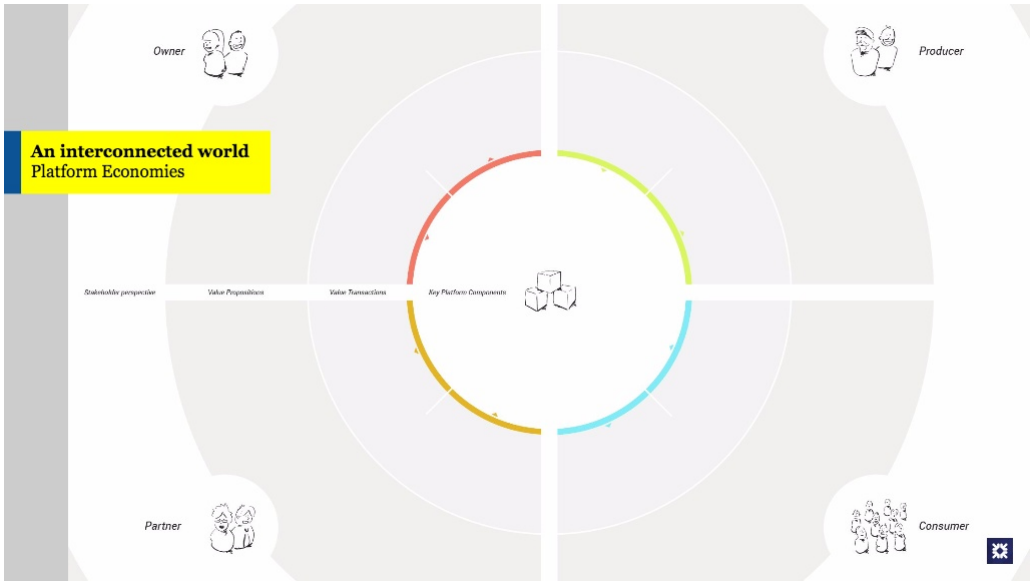

And we've seen lots of industries that have already been through this. There was a time when companies referred to themselves as record companies; making, selling, distributing records. In this world with Spotify etc, no one is a record label anymore. So that's just one of many examples of industries that are being disrupted as a consequence of the change in human behaviour.

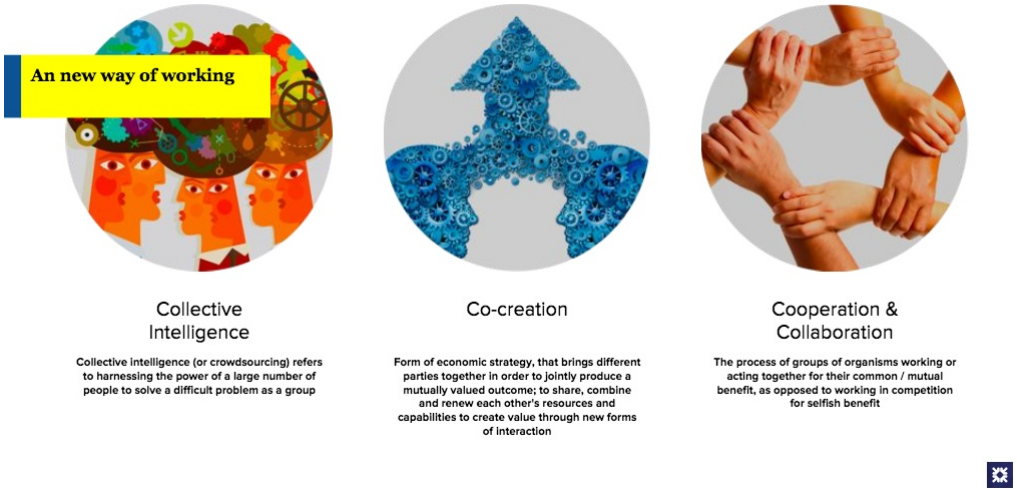
And the same sort of enablers are affecting banking. I'm just going to give a very simple illustration about mobile banking. Mobile banking today is exploding. In Ulster Bank, about 35% of our active customer base is active on mobile banking. And that has more than doubled in the last three years. And in fact, as a channel, it's the only channel that is growing. Even banking online is slowly diminishing, so everyone is moving to the mobile.

Now the cost for us to serve customers, actually the cost for running the bank, a mobile bank, is 1% of the overall traditional branch-based banking systems. So you can obviously say that technology would be a big driver of getting costs down. But the interesting bit here is that when we look at customer satisfaction, customer satisfaction using mobile banking is 50 times higher - 50 times higher - than using the traditional branch-based approach.

And what's interesting about it is that it kind of defies some of the ideas that we have around how competition works, that you either compete with price or you compete with added value service. And here you have something that does both at the same time. It removes a lot of waste out of the system and simultaneously adds a lot of value.

And we're only at the beginning of this. This change of technology regulation and customer behaviour is driving us into a completely new world, an interconnected world where platform economies are taking over. We no longer compete as actors in isolated systems but we compete by collaborating - who has got the best ecosystem? And this forces companies to rethink how we work.

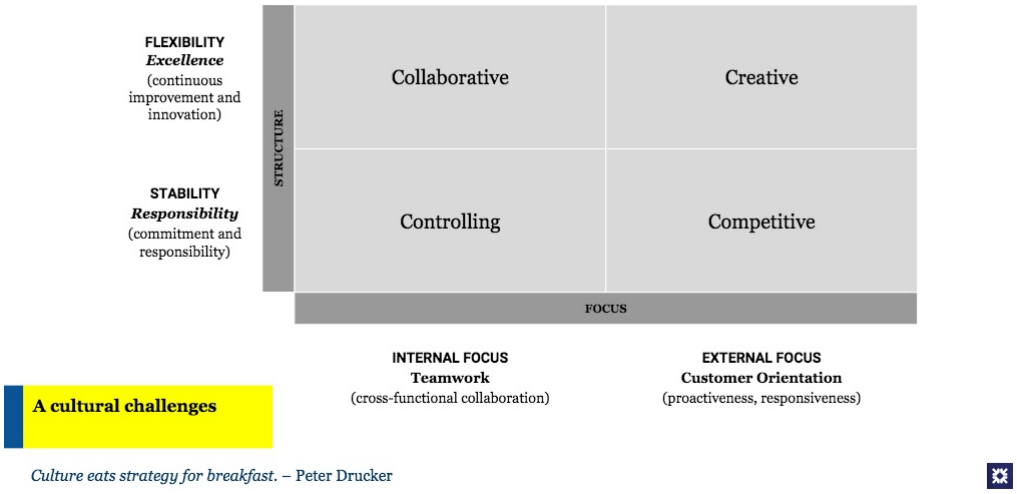



Banking, I would argue, is almost like the last vertically integrated local industry on earth. Banks do everything themselves and their regulator locally is suddenly being opened up to to a very different world. And that world starts with how you think, what you believe in. And banks have been doing basically the same things in the same way for the last 200 years.

So the things that we are confronted with, as a business culture, are things like, how are we going to work with collective intelligence,

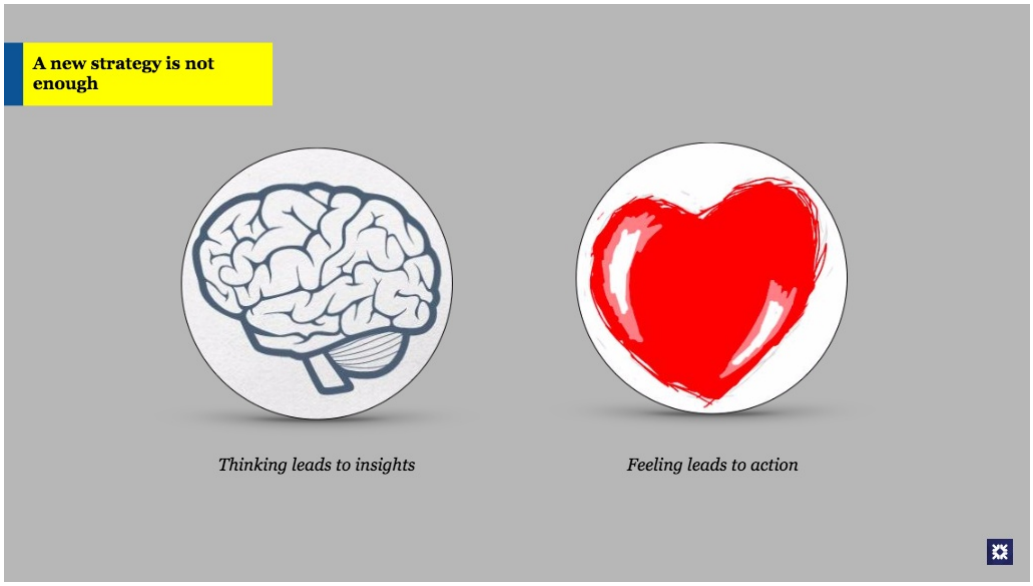
co-creation, collaboration and completely new partnership when we are so siloed internally? `ee can't even collaborate internally. How are we going to collaborate with partners externally? And this I think is an interesting kind of overview of types of cultures and the challenges in banks.




This is not just Ulster Bank, this is any bank. I'm Swedish and I come from a banking industry probably 10-15 years ahead of the one that is here in Ireland due to a lot of factors but it's still a challenge there. And you can see the banks - any of you that is familiar with with Mintzberg and machine bureaucracies, which banks are to a large extent, together with the professional side of it - are very much about building controlling systems, very internal, and a lot about stability.

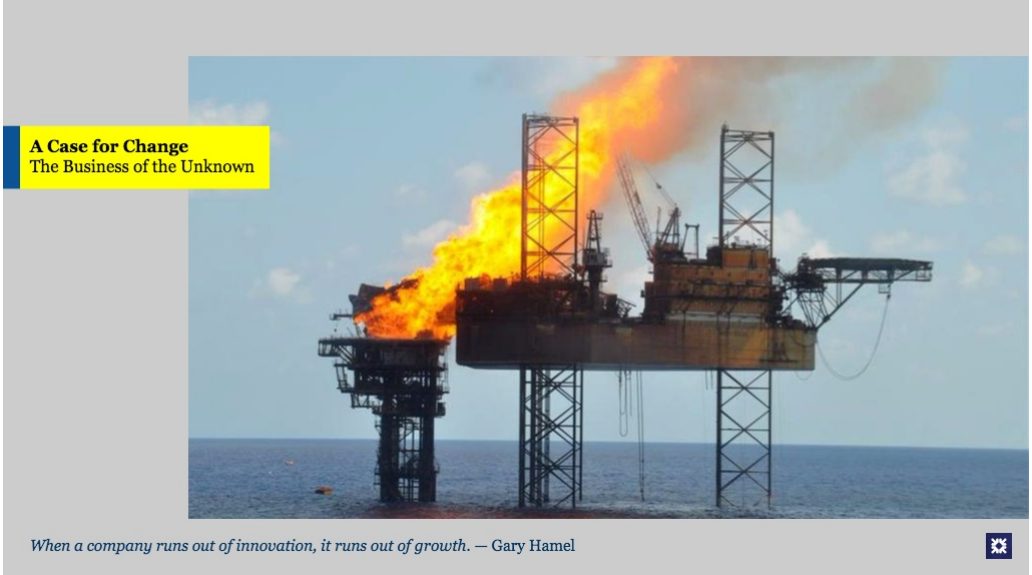
I would argue, even after the financial crisis, it's been even more focused on this. It's been a very, very almost survival strategy, recovering strategy, looking at your internal processes, systems, culture and all of that. While we know if we're going to be

successful and grow and be able to compete on an EU-wide scale, we need to quickly move into a much more flexible and externally-focused way of working - enormous challenges for our culture.



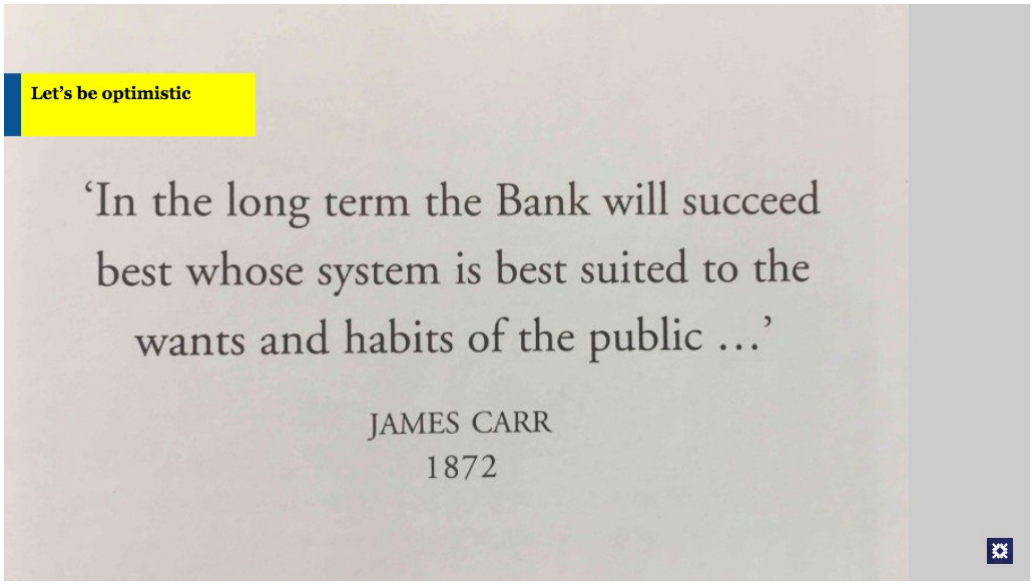

And also we, realise that just implementing new business strategy is not going to do it because if there's something we know as a bank, it's that thinking leads to a lot of insights but not necessarily to real change. What makes people do things differently is when we feel stuff. It doesn't matter what change you want to go through.

You can read all the material there is in the world about the lethal consequences of smoking but knowing that won't necessarily change your mind. It's something else that is required. And you can, just looking at this picture, with banking culture, which side? Do we play over there or do we play over here? So you could literally refer to what I quickly tried to lay out as a huge, burning platform.



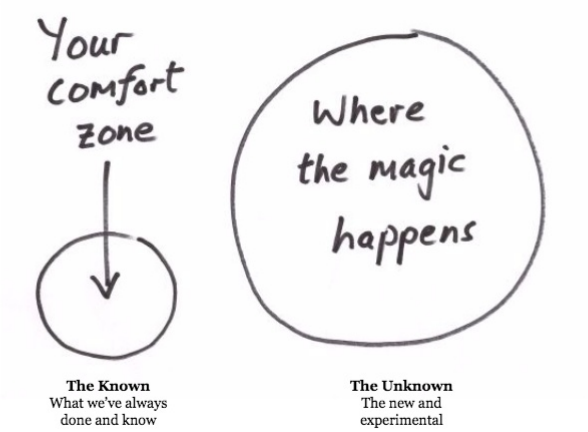

And I guess if there ever was a case for change for an industry, here's one for banking and financial services. There's something interesting for me about the case for change and the notion around burning platforms because they tend to be based on fear and they tend to be based on crisis of threat. And if I go back - if you end up in fear and crisis of threat, you easily see what type of energy comes out of that. It's not necessarily positive energy.

So what we try to do in the bank is to change the way we think about our case for change. Instead of looking at it as a crisis of threat, we're trying to look at this as a crisis of opportunity. And instead of going into this change with fear and trying to protect what is, we've said, hey, there are opportunities here and let's see what we can develop that's new.

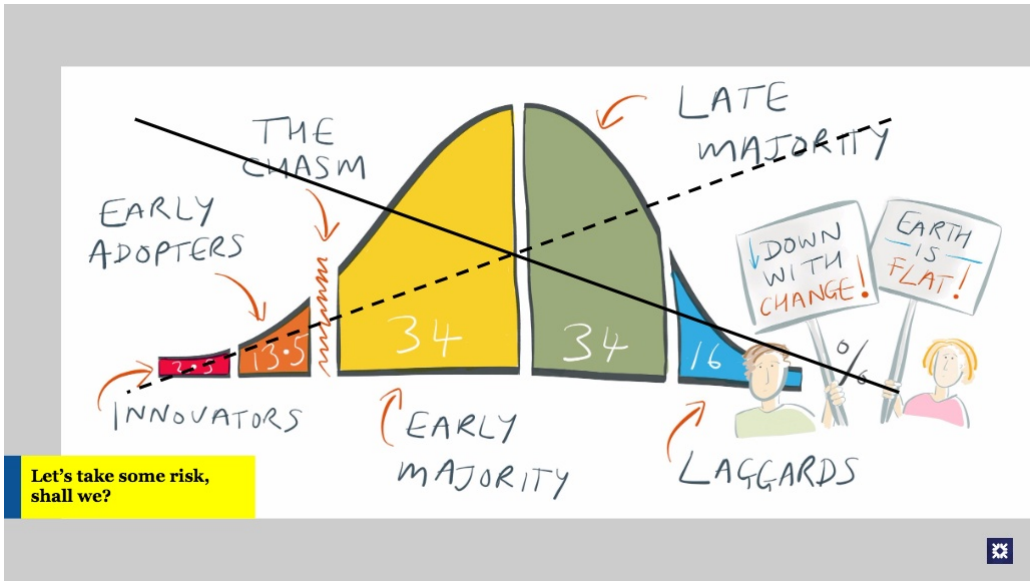



Now that's easier said than done. Because literally, what we're talking about now is a business that is venturing into the unknown. And what I mean by that is that banks have been so used to doing the same thing for hundreds of years and refining those processes. And what we love is the known - we're managing risk. That's fundamentally what a bank does.

And when it does it well, society really benefits. And when we fail, we know what happens. So we love that comfort zone where what we do are things that we've always done and known. And suddenly, we are saying that in order for us to grow into the future, we need to venture into the unknown. It's about the new and the experimental.




And the minute you say that in a banking culture, everyone gets incredibly nervous, as you probably understand. So come in and you talk you say that we actually need to take some risk here. And this is the law of diffusion of innovation it's been around for a long time - common knowledge. It talks about how new ideas and behaviours and technologies enter into society and then spread into society with innovators, early adopters, etc.




And that's common knowledge but what's less common knowledge,

what’s very, very important is the diagonal line here, which is the black thick line high on the left. That’s the risk profile of an individual and a lot of what we heard today is industry and academia partnering around startups. And we had a previous speaker that talked about the correlation between risk and value. But what’s amazing about entrepreneurs and innovators is that they take risk.

And they are able to. They’re able to see something that doesn’t yet exist. If you’re a laggard, you can only believe in what has already been done and proven and that’s how you minimise risk. "I won’t do this unless it’s already been proven." So you have your personal risk profile on one hand but in an industry that is so quickly changing direction.

And the institutional risk profile is the dashed line, the other diagonal - the less you do the higher the risk. If you don’t do anything as a bank, if you just continue doing what you’re doing, what’s death like as a change? It’s the ultimate change. And I recently saw this report from Standard and Poor’s Top 500. They’ve been looking at how the lifespan of businesses in the Top 500 in the last 70 years.

And when they started that, I think that the average lifespan lifespan of the company was around 80-85 years. And last year that was down to 12 years. So even though we, as human beings seems, to increase average life, companies and organisations tend to go in the reverse direction. So it looks like we are quite bad at managing

change.

So what we decided to do in the bank was to recognise the risk, that we need to start to take calculated risk. And how do you do that? Well you can't just rely on luck. You have to rely on skill. And I think that this is where it really becomes part of the discourse that we have today because the bank now needs to start to seek new knowledge.


That doesn't necessarily exist inside the bank but outside the bank. And how do we start building those partnerships and flows of knowledge and information, not only with people that would not necessarily compete with us, but actually people that might directly compete with us? Because the only way we will be able to compete is if we actually collaborate in some of these areas.

So we quickly identified tgat if we want to start building a culture of innovation we needed to build skills. One of the things that we did, which I can highly recommend and there's lots of research

around, is build innovation culture. I particularly found the work of Rao/Weintraub useful. It was published in the Sloan Management Review in 2013 and they looked at the businesses that have been particularly good at innovation and as a result, have grown their business.

**Self assessment:**
Where are we?

| BUILDING BLOCKS | FACTORS | ELEMENTS | BUILDING BLOCKS | FACTORS | ELEMENTS |
|---|---|---|---|---|---|
| VALUES | Entrepreneurial | Hungry | RESOURCES | People | Champions |
| | | Ambiguity | | | Experts |
| | | Action-oriented | | | Talent |
| | Creativity | Imagination | | Systems | Selection |
| | | Autonomy | | | Communication |
| | | Playful | | | Ecosystem |
| | Learning | Curiosity | | Projects | Time |
| | | Experiment | | | Money |
| | | Failure OK | | | Space |
| BEHAVIOURS | Energize | Inspire | PROCESSES | Ideate | Generate |
| | | Challenge | | | Filter |
| | | Model | | | Prioritize |
| | Engage | Coach | | Shape | Prototype |
| | | Initiative | | | Iterate |
| | | Support | | | Fail smart |
| | Enable | Influence | | Capture | Flexibility |
| | | Adapt | | | Launch |
| | | Grit | | | Scale |
| CLIMATE | Collaboration | Community | SUCCESS | External | Customers |
| | | Diversity | | | Competitors |
| | | Teamwork | | | Financial |
| | Safety | Trust | | Enterprise | Purpose |
| | | Integrity | | | Discipline |
| | | Openness | | | Capabilities |
| | Simplicity | No bureaucracy | | Individual | Satisfaction |
| | | Accountability | | | Growth |
| | | Decision-making | | | Reward |

Reference: Jay Rao and Joseph Weintraub, Sloan Mgmt Review (2013)

They then went in and looked at what were the things that allowed them to be so innovative and identified a number of areas; values, behaviours, climate, resources, processes, success, etc. And then, they also developed a self-assessment tool, which is what we used among the leaders in the bank. We tried to understand where we should start and where our opportunity is.

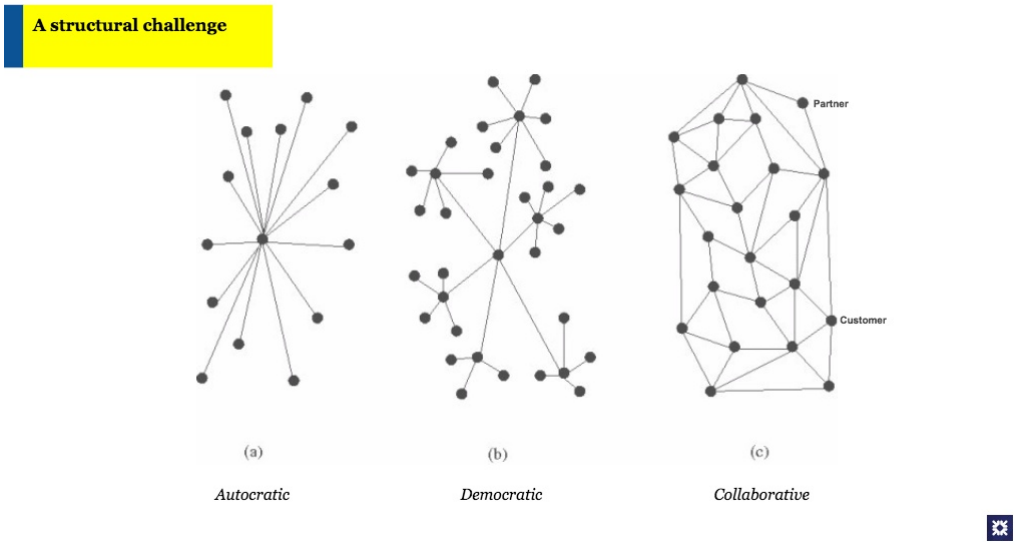
One part of this is understanding your starting point and then setting yourself some objectives into the future. And we quickly realised that there were two areas here that have particular challenges; resources and processes. When it came to that we realised that we were heavily relying on a leadership philosophy that stems from an industrial era where managers in the business,

particularly for managing risk, rely on tasks and resources, making people agree on things, making people like it.

We project things linearly into the future. We look at incremental ways of doing things a little bit better. So we take what's already there and we try to improve it by constrained control, doing what we've always done and know. And we took the view that what we need to add to that is a completely new set of leadership skills. Suddenly we need to be able to facilitate shared purpose with partners.

We need to, instead of trying to agree on every little detail, we need to start focusing on whether this is the right direction, imagining the possibilities, getting people to collaborate and not put people into boxes but actually say, if we're going to deliver an integrated customer experience, we need to get people from across the business to work together.

So we identified this as a leadership challenge and also a structural challenge because banks are by definition ( Mintzberg) incredibly hierarchical and bureaucratic. And we haven't cracked this by the way, we're still struggling with this. But one thing that we realised very early on in our journey (which started about a year ago) was that we needed to find a way of building networks within the business that can start collaborating and innovating across functions.




And that wouldn’t just include people internally in the bank but also partners and customers - a huge structural challenge. So the view that we took (the management team) was that we needed to do two things simultaneously. First of all, we needed to make sure that we equip our leaders with some new skills so they can help us to be more innovative and seize the opportunities in this future.

But that’s not enough. We also need to "lift the ceiling". We actually need to get everyone in the bank to understand what we’re doing and why are we doing it but also to contribute to it.

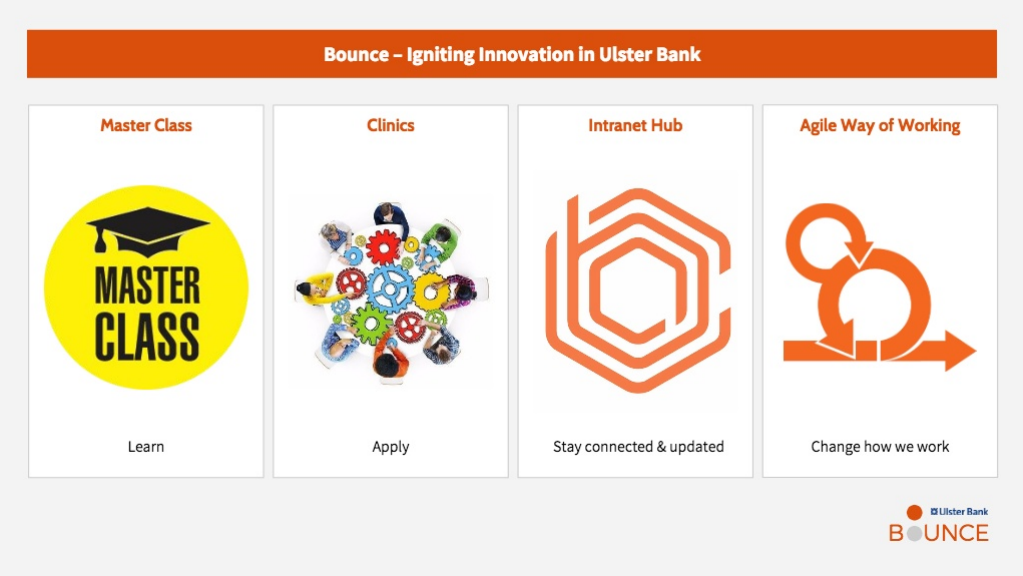


So, as a consequence of this, we put together a bank-wide program that we call 'BOUNCE'. The nature of this program was through collaboration. In the past, the bank would typically have gone, oh, we need some innovation, let’s go to HR, they go to training and somewhere down the line, there are some courses offered and people can sign up to them - the traditional way of doing things.

And we decided this time to do it quite differently. First of all, we decided to do it as a collaboration across the business. We used the

resources that we had, that were good at orchestrating things, from the Academy, to mobilise people from across the business. That was the first thing we did.

The second thing that we decided to do was actually put this programme together in an agile way. From the moment we decided to do this to the time it took to actually launch it with an MVP and pilot, it took three weeks. And the programme itself started off with basic skills training, and I will talk about that a little bit more. We called that the BOUNCE masterclass.

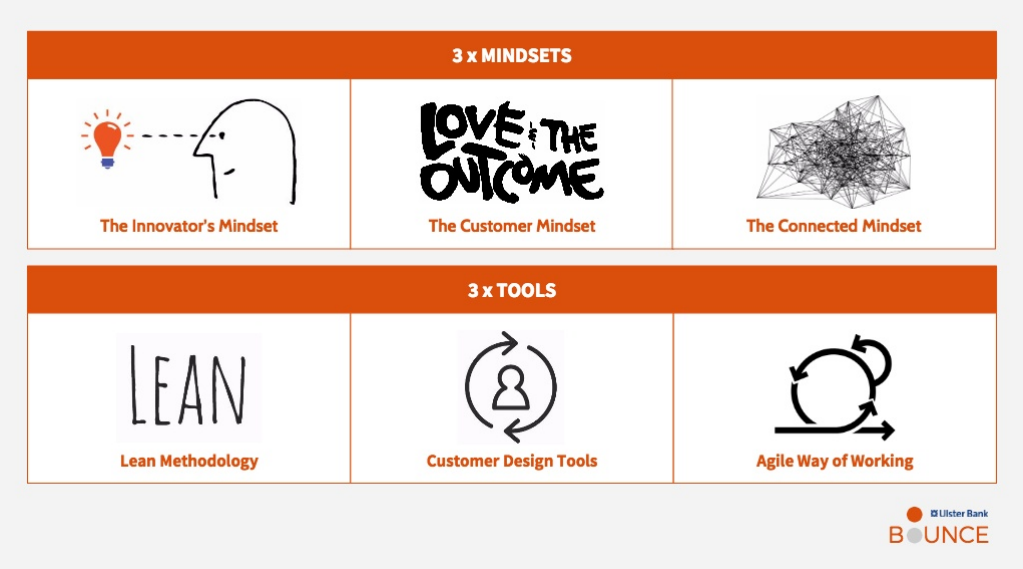



It really is a very simple, one day experience, highly interactive I would say and experiential. It's not just someone who talks to people for a whole day, it's very collaborative. And the other thing that we decided to do was to start to take information from the outside world and seed it into the information and communication channels inside the bank. Because there's lots of stuff happening out there and there's technology that allows us to curate and share different types of innovative information with different types of

departments.

We created an intranet hub for that. And then we added two things very quickly. The first one was to make sure that people that went through masterclasses quickly got to apply what they learned. So we start to instil it in everyday work. We did a training programme around how you can become a facilitator of BOUNCE clinics and how you can start applying this in your particular area or getting people from across the business together to solve problems.

And the final thing which we added was to use this programme to then implement a much more agile way of working, to start changing how we work. And there are six particular things that we've been trying to address in becoming more innovative from a skills perspective. One thing is very much around mindsets and how we think. We have a strong belief that actually how we look at the world and how we think about it, if you change that, it's easier to change behaviours.



So we focused on three particular mindsets - innovation, customer-centricity and connectivity and collaboration. And then we give three very practical tools - Lean methodology, which is the notion that you can take out waste and put in value simultaneously and you start to optimise process instead of just traditional resources. Lots of it was around design thinking and putting the customer at the centre of that.

And the final one was training in an agile way of working.

We kicked this off in October last year. Since then, we have had almost 600 people going through this program and I've stopped counting now how many clinics we've done. We literally just kicked off our agile scale-up programme and we now have dedicated resources inside the bank that are literally taken out of the existing structure and working cross-functionally.

A number of things have happened with this. We sat down recently, the people that were kind of behind it and still kind of orchestrating this, and tried to get some learnings from it. There is one thing that we did, which I really recommend people to do. By the way, I love this quote from one of my favorite writers Ursula Le Guin, she's a Canadian anthropologist: "You always have to defend the imagination against idiots", because one of the things that we decided to do was really to resist the resistors.

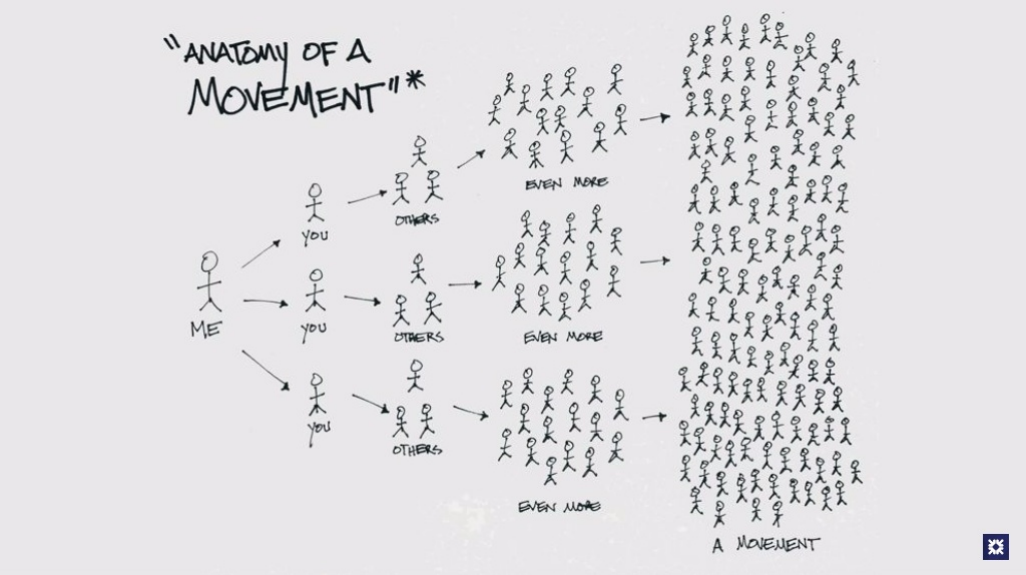
*You always have to defend the imagination against idiots.* — Ursula K. Le Guin

We knew that we would hit up old truths about how we should work as a bank that wouldn't necessarily be constructive for us. And from the beginning, there was an urge in the bank to say, let's go to the people that we know will be resisting this and let's see if we can get engaged with them early. In my experience from having done similar things in other big organisations before, that's the most effective way to kill great energy and great initiative.

It's a little bit like - I use the analogy of a gardener - if you're planting a new plant, where do you choose to put it? In the worst place possible? Or do you give it fertile ground and sun so it can grow. Or think of a mother with a newborn baby deciding, maybe I should put it in the forest for a night because if the baby survives that, maybe the baby will survive anything.

So, we decided that instead of trying to mobilise and argue and try to convince people that wouldn't necessarily take to this, we would do the opposite. We didn't make this a mandatory programme in

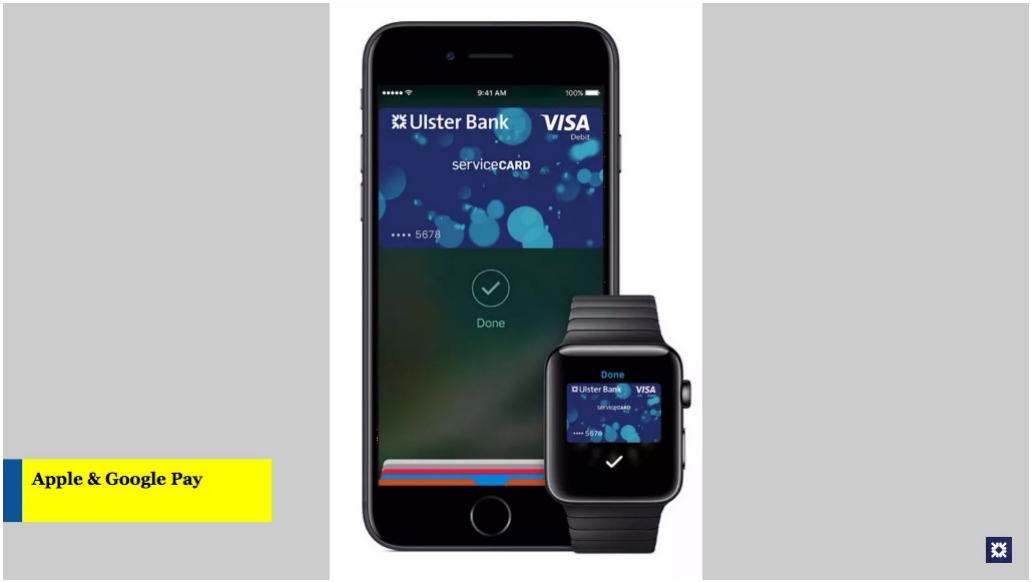
the bank. We started off as a pilot. We spread it amongst some people. At the time we didn't have a name for it. They loved it. They talked to their colleagues and the people that were drawn to the idea of the bank doing new things in a new ways and got in contact with us and said, hey, can I get involved? And literally, we now have 600 people in the bank (of only 3000) who gone through this completely voluntarily.




And no one needs to get a tick box. It's simply because people now want to be part of it. And I guess that really taps into the power of building a movement to change culture. And I guess that is how we look upon the way that we need to do this. Mobilise people's passions and optimism and energy to do things in entirely new ways.

So that is the 'how'. What has come out of that so far? Well, we have been doing this for almost a year now. And I think that we're starting to see something. I was very proud that we were the first bank in Ireland to launch Apple and Google Pay. It is a direct

consequence of us allowing ourselves to think a little bit differently and more importantly, work a little bit differently.

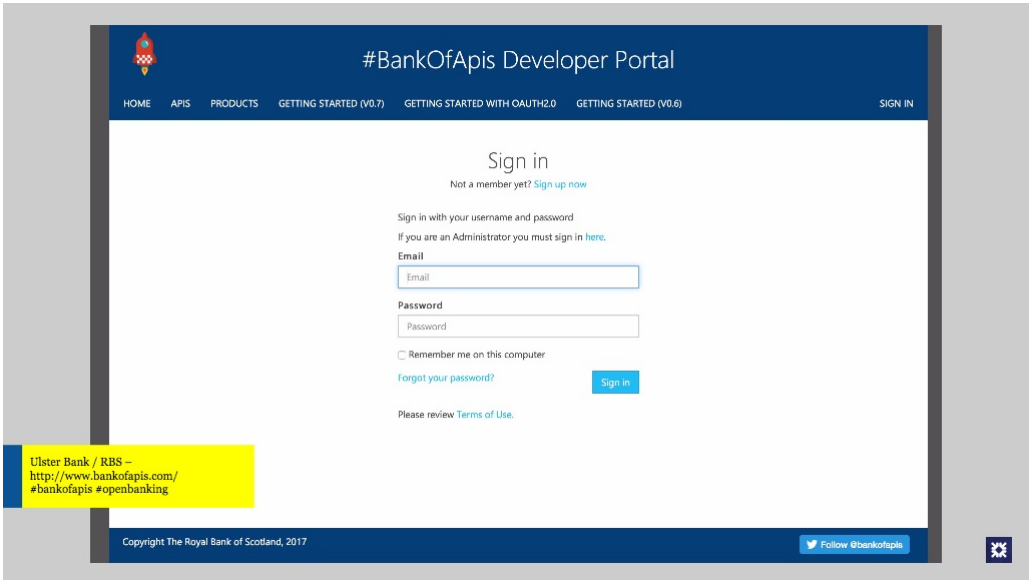




Another thing which I think also demonstrates this new mindset of the bank are the partnerships that we have done with Dogpatch Labs which is a startup accelerator co-working space trying to lead FinTech in Ireland. Literally, what we did was we went in as a partner with Dogpatch and we've now also put our innovation solutions team within Dogpatch so people from the bank are now

out of the bank, working with all the startups in the Fintech area as part of Dogpatch and others.

And we've orchestrated a number of hackathons. I'm again very proud that the one we ran in February was the biggest one run so far within the whole world of RBS. And as a consequence of that, a number of pilots and programmes have been initiated. And the final one that I also just want to point out is that we have launched what we call the "Bank of APIs".




We developed a portal where we are ahead of the PSD2 regulation and ahead of the UK Open Banking Regulation. We launched a way for partners to partner with us and start building services on top of the bank's information data and infrastructure. Again, if we had a culture of fear, this could not have happened. It came out of a culture of "let's see what the possibilities are".


I'm going to stop there.

This is all work in progress. And I don't like to talk about what we're going to do. I prefer to talk about what we've actually done. But as you probably understood, there are loads of challenges left and we're still at the beginning of this journey. Thank you.

DELEGATE: Steve Donoghue from Nova UCD: First of all, David, that was very interesting and I'd also like to commend you to stand up in front of an Irish audience and talk about banks and innovation. I wanted to ask, obviously since the crash, banks are very heavily regulated across the western world. So to what degree did those types of externalities affect your work to date and going forward?

DAVID ERIXON: For me it's very interesting because I have worked in the financial sector in Scandinavia. I've also worked in the financial sector in Africa. And in my last job before coming to the bank, I worked for Old Mutual in South Africa. For me, what's interesting in this, it's a cultural thing here, but if you start with

Scandinavia, Sweden in particular had a huge financial crisis 15 years ahead of the Irish one and the global one.

It was very similar in terms of dynamics but it was a local event. And as a consequence of that, the banks were forced to start thinking differently and so was the regulator. Now maybe it's a cultural thing or maybe it's just that we're in different life cycles but one of the things that really triggered within the Swedish industry was a much deeper collaboration between the banks and the regulator.

I'll give you some examples of that. They understood that the way they had been working, particularly around being siloed with information, wouldn't work anymore. If they were to prevent the kind of the problems that occurred, we actually had to share information much more collaboratively in a way that would still protect the integrity of competition.

And there were a number, on top of that, of services that started to be jointly explored and developed. One of them was eID, for example, a common way to do AML and Know Your Customer. Again, championed as well by partnership with the central bank. Lots of stuff happened within how we deal with physical currencies. Interestingly, today in Sweden only 2% of all transactions today are with cash.

And the central bank have come out and said that they will launch an e-currency in 2020 and they predict by 2025 that there won't be

a physical currency. Again, that happened because the bank started to collaborate intra-industry. But not only intra-industry but also in the private sector, in retail particularly which was heavily reliant on cash.

I'll give another good example - cash machines. The bank decided that it's stupid to compete on placement of cash machines, they're very expensive to actually manage. So they decided to collaborate around it. We have the best coverage of ATM systems I think in the world despite the fact that it's a huge country with not that many citizens.

Here in Ireland, they still compete with it. You can go down the main street of a village and you will have four or five cash machines from each bank next to each other and then there's not a cash machine in the rest of the county. This is instead of people saying, let's not compete - that's stupid because at the end of the day, the Irish consumers are paying for it.

You're paying for it. So I think that there is a mindset shift there and I think it's happening right now. I now see collaboration with the BPFI happening within the eID space, within peer-to-peer payments. There's an openness for banks to work differently. I'm starting to see openness from regulators as well. The social technology skill is to be able to see where we actually have a shared purpose.

So if it's about making banking more convenient, cheaper for the

public, for the consumers, of real value to society, then we can align on how we work to make that happen. I think that's the skill that is slowly being introduced and this view that we just need to collaborate in silos and not think about the wider industry issues, we're letting go of that. And I think that's a very positive thing.