The Past and Future of Australian Innovations in Information and Communication Technology (ICT)

Oral History Interview

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John Puttick

Interviewed by:

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Project Summary

This interview is part of a series of oral history interviews undertaken by the Pearcey Foundation and the University of Sydney as part of the project 'The Past and Future of Australian Innovations in Information and Communication Technology (ICT)'. The series interviewed recipients admitted into the Pearcey Hall of Fame from 2003 to 2020. The hall of fame recognizes outstanding life-time contribution to ICT in Australia in business, research and government. Each oral history captures a short biography of individuals who made an outstanding contribution to ICT in Australia. They also collect insights on aspects that had a lasting effect on ICT innovations in Australia, positive as well as negative from approximately the 1960s to the 2010s. Interviews lasted about 60-90 minutes and were conducted by Sebastian Boell, Graeme Philipson, Peter Thorne, Kai Riemer, Sandra Peter and Belinda Wang. The complete set of interviews in this series is archived by the Pearcey Foundation.

Key Points Covered in this Oral History

1. Innovative market opportunity sense on large scale industry solution, which is peculiar to Australian context, e.g. the stock trading system in GBST.

2. Human capital management tactics for young generations in start-ups are key to bringing innovative minds into the industry.

3. The linkage between university and industry is insufficient, government can play a role in developing policies to strengthen the local university-industry tie as a content in the tendering procedures.

4. Attitudes towards government shifted from negative to positive, the QLD governments well support the GBST to expand internationally, the pity is John did not make good use of the government support and resources back then.

Biography

John Puttick

Founder of GBST
Pearcey Hall of Fame in 2007

Entrepreneur, Banking software pioneer,
Queensland industry leader,

John Puttick was born in Auckland, New Zealand in 1947. His father Clifford was a grocer and his mother Eris a milliner. He attended Auckland Grammar School (1961-1965) and Auckland University (1966-67), where he studied commerce.

He joined brewing company L.D. Nathan (now Lion Nathan) in 1968 where he learnt computer programming, becoming chief programmer. The limited talent pool of those days required many late nights to get systems to work.

His family and colleagues had advised him against entering the strange world of computer programming and wanted him to become an accountant. He did eventually complete a chartered accounting course, at Auckland Technical Institute (now Auckland University of Technology) in 1975.

He married Judith Gillanders in Auckland in 1967. They were to have five children. In 1974 he and his family decided to emigrate to Australia for the greater business opportunities offered. They moved to Brisbane, where Puttick managed the Queensland, Northern Territory and Papua New Guinea operations of software and systems integration house Datec until 1983.

And then established his own company, Star Systems, which grew into Global Banking and Securities Transactions (GBST), a publicly listed company which develop banking software and financial transaction software. Its software manages more than half the daily transactions on the ASX. He retired from the company in 2015. It remains a major force in banking software, with over 500 employees

In 2014 he became Chair of workplace software company Tanda, now Workforce.com. In 2015 he became Chair of Over the Wire, a Queensland-based telecommunications and integration provider ranked in 2019 is one of the fastest growing companies in Australia. He is a member of the companies Audit and Risk Committee and Chair of the Nominations and Remuneration Committee. The company listed on the ASX in 2015.

In 1979 he became involved with the Faculty of Computer Science at the University of Queensland and the Faculty of Applied Science at Queensland University of Technology. He has advised both universities on course development, product development and linkages to industry until 2019.

He was a leading figure in the Queensland branch of the Australian Computer Society and was a foundation member of Software Queensland, which became a strong voice for the growing Queensland IT industry. He chaired the organisation in 2006. During this period, he

also served on several technology related Ministerial Committees of the Queensland Government and as a member of the Board of CITEC.

He was Chair of South Bank Institute of Technology from 1998 to 2010. QUT awarded him an honorary Doctorate in 2007 in recognition of his contributions to industry and higher education. He was also on the Council of QUT from 2007 to 2019.

John Puttick was inducted into the Pearcey Hall of Fame in 2007.

Interview Transcript

Date of interview: Wednesday 16 December 2020

First of all, John what's your, can you give us a brief rundown on your career, the highlights, key dates, key happenings, starting out with your academic or educational background and how you got into IT?

Okay, so my career started in the late-60s, I was working for what is now Lion Nathan, LT Nathan. They got one of the only computers in New Zealand and they did what was normal in those days: an aptitude test across all the people that worked for them to see who had a bent for programming the machine. And I came out of that process. In the meantime, I was doing accounting, or professional accounting, via night school and continued to do that. Worked for Lion Nathan and then found my way to the Auckland University working as a programmer. So, I'm in a sense self-taught. Although there were a few one-to-two-week courses in Assembler or SNOBOL or COBOL or Fortran or something, I might have gone to. But by and large self-taught. I took the leap to Australia in 1974 and joined Harry Douglas which was a consulting firm called Datec, and Datec did systems for money. So ever since the 70s I've been doing systems for money. I've been living as a professional systems builder or supplier and have survived in that capacity. So, we did bespoke systems development for some years. Then did, in those days, when the minicomputer became fashionable or big for business systems, we did a lot of construction of systems around the minicomputer. That's where I met Wayne at the Pearcey Foundation, because Wayne was a director of Data General and that was a popular product that we would use. Datec sent me to Queensland and I was in Queensland for many years. I think when I first came here, there might have been 20 computers on the ground in Queensland. 20 computers total to run the State, it's sort of a strange thing to talk about, early 80s before the…

What year did you go to Brisbane John?

I went to Brisbane in '78, 1978. I beg your pardon, no hang on, '76, 1976.

You came to Australia in '74 and…

'74, so two years in Sydney and then up to Queensland in '76.

And you've been in Queensland ever since.

Yeah, and I started our company in 1983, which was then called Star Systems, now called GBST. And I retired from there in the early 10s, like 2014 I think it was, might have been '15.

Your bio that I did it as '15.

Yeah, it's got all that, yeah, so '15. Look, rather than sort of drag you through all of that history in terms of systems engineering, systems building. I think probably the main thing that we did that sort of I'm proud of, and has certainly empowered Australia, is we automated the what we call the trading cycle for stocks and shares and listed stocks from woe to go. In other words, we can streamline the order processing, capturing, processing, taking to market, back from market, settlement, client accounting, tax accounting, regulatory accounting, as a complete end-to-end platform…

From the Stock Exchange, the ASX?

From the Stock Exchange and across the market, yeah, so in and out of the players of the Stock Exchange and in and out of the market. We did an early version of that in the 80s and we did a re-version, a repurposed version, rebuilt it in the 90s…

Now I just edited Ann Moffatt's memoires and she wrote quite a bit about the early days of software at the ASX.

Yeah. Well, we were kind of, in a sense for people to understand, we were the mirror, in a sense we're the mirror to the ASX. The ASX is the auditorium where the deals get done. We're the industry envelope that delivers the outcomes, in and out of the market and back to their customers, and if anything, we deliver all the money. The money does actually cross at the ASX, but the money flows in and out of client accounts, broker accounts, various advisor accounts, various custody accounts…

And that's what you developed, the GBST?

Yeah. So, we've traded, and we've got clients that still are clients after 35 years, we've traded every day with our clients with cash in the billions of dollars, continuously, virtually non-stop, since the mid-80s. And it's something I'm pretty proud of. So that's my major achievement, there's a lot of other sideline achievements. During that time I became connected, because of my history at Auckland Uni, the Computer Society asked me to go and lobby for computer courses at UQ and QUT. Which I've done, and gradually, over that, time built quite profound computing capacity in those universities, I've been rewarded or recognised for that by being an Adjunct Professor at UQ and an honorary Doc at QUT, and again, I'm not saying that to skite, I'm just putting the credentials there for you to…

My mother always used to say if you don't skite about yourself nobody else is going to.

Yeah, well I'm not trying to blow my trumpet, I'm trying to just sort of encapsulate the…

We want you to blow your trumpet John.

Yeah, okay.

That's the purpose of the interview.

So, I've had a hand in building the capacity of particularly the Queensland IT industry, but broadly the IT industry. And I've set a standard, particularly the standard, going back to the GBST. The managing cash in and out of the market across multiple players, it was unique and still is, to some extent, unique in the world. Other people do it but they do it at scale, like ADP for example, do it as a computer bureau. I think the British Stock Exchange does it as a service to its clients. But to do it as a private enterprise for profit, a bit like how Link do the share register or how Computershare does the share register: we do all the movements, and

we balance the cash. Like we keep a real-time cash account for the house intraday, all the time, as a balancing. Like: where's all the money? The problem is "where's all the money", not so much "Where is all the stock". "Where is all the stock?" is fairly easy. But where is all the money and, that's what makes them successful businesses, managing their cash. And so, we do that as a continuous spectrum of activity and have done successfully for a long, long time.

Can you explain a bit of the rationale about, or the process, the drivers, what drove you to form that company and when did you get the idea, how did you set it up, how did the transition from Datec occur?

Yeah, okay, well that's a good idea. Well, okay, the short answer to that question is did you ever meet Harry Douglas, Graeme?

Oh yeah, I remember him well. I met him in the late-80s actually, when I was editor of Computer World.

Well, I used to get a lot of inspiration from Harry, he's a very remarkable man. And a lot of inspiration came, when he started running for the seat of Wentworth. Which is, as we all know, a famous sort of seat in terms of testing the polls. It's a precursor seat, right, it's a Liberal Party seat, but the mood in the Wentworth electorate can actually give you some indication of what's going on, Harry spent more and more of his time trying to win back, at that time, the Liberal seat of Wentworth. And so we were working hard, Harry was distracted, and I decided I'd been there about eight or nine years, so I decided I was going to start my company. I could see the opportunity for large scale industry-wide solutions that have now come to pass, like TechOne and some of these other guys. But there was an opportunity emerging to be able to do software at scale for larger enterprises, and build a common solution that brought efficiency to an industry. Fed the software, fed the supplier, but was peculiar to the Australian condition.

Did you start out with the idea of doing the system for the Stock Exchange or did that grow later?

No, that came not long after. We started off with the objective of doing business solutions for manufacturing through to accounting and client accounting, like debtors and debtors collection. So we were doing people like Palmer Tube Mills, Bundaberg Sugar, Spaghetti Factory, and Defiance Milling Company, where we'd have a complete solution into their plant run through to bookkeeping, as a turnkey capability. One common set of software which would modernise industry, and modernise…

Which would today be called an ERP system.

That sort of thing right, which we did, and we did quite successfully. During that process what came up was an old colleague from the uni came to me with a service called Ian Sharp, I.P. Sharp, does that ring any bells for you guys?

It does.

Toronto-based time-series service, now part of Reuters. We ended up with a Queensland agency for it. And it had all these time-series events, like mineral prices, oil prices, stock prices, whatever. And we sold them into, particularly in those days, the mining industry. And I saw it as an entree into the mining industry. What I hadn't realised is we had all these live end-of-day prices for the stock market, and the asset boom of the 80s, the Ariadne, Quintex,

Bond Corp, all wanted, they had big ledgers. We used to do Ariadne's ledger, they had like 100 different stocks, they had open positions on about 100 stocks and they were using it to run down to the bank to get more money to buy more stock, right. So we did a valuation ledger that could measure their progress each month on the valuation of their portfolio. We did it for Ariadne, Quintex, and Morgans: "Porky" Morgan. And that led us on to this whole idea of the stock market needing revitalisation, and ultimately dematerialisation, like people were carrying these big stacks of money around, big stacks of certificates around, and it became clearer and clearer that that was unsustainable. And we decided to invest in it, and it was the crash. We'd already built a system when the crash of '87 brought it on in spades. Because the outcome of the crash in '87 was a shopping list of about 100 recommendations that the world's stock markets automate, that was kind of the net result.

Yeah, well Ann wrote a bit about that in her book, that was about the time that the ASX introduced seats.

That's right, exactly right.

Which she was at the time in charge of.

Oh, was she in charge of seats? Right, okay, well we interface, so we drop orders, our system drops live orders into seats. I mean it's changed now, but we would deliver orders that our customers had taken over the telephone, and deliver them via, probably a pretty slow protocol now, looking back on it. We would deliver them into what was called an Orderpad, or it was the bottom line of a screen actually, the seat sort of screen. We could deliver, because the coding system of the ASX is the stock code, the word "buy" or "sell", and a price range, that was kind of like, and the broker number, so broker number, it might have had an order number, the three digit or three letter stock code, and a buying and selling range. And you could deliver those to the seats order screen and then what they called the operator of the seat's screen could deliver that into the market, could push it into the market when he saw it was suitable to put it on the market, That's how it all worked back then. It's more automated now but that's how it worked back then. And we would collect all those things, issue contact notes, collect all the money, and pay all the various people that came off the back of it. So, we've been doing that day on day, every trading day since then.

And you expanded internationally…

I've got a whole lot of other things but that's the cornerstone of my career basically.

You expanded that internationally and to other similar online systems, did you not?

Yeah, so we went from here into New Zealand, somewhat, not a great deal of penetration into New Zealand. Hong Kong, Singapore, ultimately London. By then we had a wealth management offering, in fact we bought InfoComp from Wollongong, Rob De Dominicis. He had in a sense, he had the end investor version, he had the kind of mirror of our system for end investors. So they're referred to now as wealth management platforms. So it's for wealth managers to give advice to the client. So our system would deliver results into the wealth management platform for the client. So we purchased that, we've taken that into London quite successfully, that's been now, it was acquired by a client. That client has been prevented from actually amalgamating the companies, by the Monopoly Commission, and they're supposed to be vending it out again as we speak. Yeah, so we've built our own business that finally became international: a limited office in the US. It's actually in Florida, we tried Wall Street, decided we'd be better off off-Broadway, and offices in Hong Kong,

Singapore, and London, or two offices in London, and offices throughout Australia. So yeah, quite a sizeable company. When I left, when I retired, it had a market cap of 250 I think it was 250 to 300 million.

Yeah, it went, it's publicly listed, right?
Publicly listed, yeah, in '05 I think it was.

Yeah, and what's the market cap nowadays?
Well, it got acquired. The acquisition price was around 270 million, I think, I can't remember exactly Graeme…

When did the acquisition happen and who acquired?
It settled about two years ago.

And who's the acquirer?
The acquirer is a private entity. Had been a client of ours in New Zealand, the guy, and it's called, it's a funny name, it's called First New Zealand, but they're abbreviated to FNZ. I think it might be called FNZ Corporation, but it means First New Zealand, and that was a stockbroker. They were a client of ours.

But you've been out it now for a few years.
Hey?

You've been out of it now for a few years and you became chairman of Tanda or Workforce?
Yeah, I'm a chairman of Tanda, they're going like a steam train, and I'm chairman of Over the Wire.

Yeah, and of course Over the Wire, that seems to be going really well, that company.
So, I'm very happy with both of them, yeah. Over the Wire is an end-to-end, comprehensive supplier of telecommunications services to business, so it's B2B, so it's voice, data, hosting, cloud, and not the cables, we don't supply the cables. But everything that goes between that travels or traverses. We supply them in the sense that we wholesale them, we wholesale them from, increasingly from, well certainly from Telstra, but increasingly from NBN Co. But we provided value-added services for the business needs. And probably the most important, (there's a whole bunch of great services that we provide across that network), but one of the most, one of the good ones, is a sort of soft telephone network involving mobile and deskbound telephony, so that you get one virtual company. So we've been building virtual companies prior to COVID I suppose, is the best way to.., or facilitating people so that they can be connected to the office from home, out on the street, and obviously at the desk. They can be found and participate in office activities or company activities without impedance, can go anywhere, and all the company's records are online and available to them, and all the hosted services that we provide are available to them, and so yeah, that's got a good growth strategy and it's gone very well, and that listed about five years ago.

Yeah, I thought it had listed, yeah.
Yeah, they're doing great, and then the Over the Wire (referring to TANDA). I'm particularly proud of, that's a young bootstrapped company, it's only five years old, it's getting up

towards 20 million annualised turnover and recurring turnover. They were students at QUT, they started it at a coffee table at QUT where we delivered a business planning exercise, and they've built a very good business in the human resources rostering time-measurement. Not so much pay, we don't do the payroll, but we do, we capture the times, time clocking, and we capture the roster and we try and make the roster as efficient as possible, and real time as possible. And the other thing we do is link the roster of, in other words the cost side of the roster. to the revenue flow that might be coming out of the shift. So we try and give some idea of gross profit that might be coming out of this shift, whether it be a restaurant or a medical services company or a processing company. And they're growing very well. We acquired a company, we acquired the oldest HR company in the US, it's called HCM, Human Capital Management, but they had a brand called Workforce.com and we wanted the brand. So we acquired the brand name, the URL, and the company name, based in Chicago, and it was formed in 1922 I think it was, it's nearly 100 years old. It was formed as an industry association but became commercialised, and we acquired it a little over, just over two years ago.

Now do you have, are you very hands-on? You're chairman, do you have an executive role at all?

No, I'm sort of, I'm a quasi-exec, I Chair the Board of the company, I've just come today from the, chairing the management committee of Australia. We separated the finance committee, or finance, so that those two Boards don't get bogged down on finance, and I'm a member of the finance committee. I don't chair it, although I happen to be chairing it at the moment because the other guy is on leave. And all of those meetings or the Australian Board meeting is done face to face. But all the other meetings are done, this year particularly, they're done virtually, and it's a good company. It's running very well, people, it's a great example of a start-up that's succeeded, its owners have wanted to go to the States. We're in the process of getting it all nicely audited and so on so that it can be valued properly in the US context, because I think it will value up pretty highly. So it'll get audited this year as the first proper full audit and then next year. It'll mean that we're ready to do raisings if we want to, we don't have to, it's a bootstrap company. The guys kind of like the idea of building mostly rent roll rather than raising capital, because they don't have to give the farm away to raise money, and it gives them more flexibility on how to run the business. They're sharp boys, they're only young, they're all under 30. But they work together well, and they were in a share house together at university, they lived together while they were at university.

They must be happy to have an old bloke like you keeping them in line.

Look, I get on very well with them. I've got respect for them, they've got respect for me, they appreciate the grey hair, they don't think it's…., they find it useful. They approached me by the way, they came to me.

Oh good.

Yeah.

Yeah, okay, so that's great John, thank you.

How did that happen, how did they approach you?

Look, I saw them, one of the students, one of the fellows when he was a student was on the University Council, as I was. So I was on the QUT Council for 12 years, and, so the name of the university is Queensland University of Technology. I was kind of like the babysitter of

the word "Technology" and their brand as a university because of my industry, being from that industry. And the guy that was on the Council had seen me at Council meetings and developed some respect I suppose for my views, so he came to me and said: "Could I be his mentor", or could I spend some time with him, not so much could I be his mentor, could I spend some time with him. And I obviously did, you don't go to a university to help the university and not engage with the students. And we got on very well, and more to the point, what was good about them, they were smart enough as young people to take the advice. So we talked about whether they should have a direct or indirect model to the market, should they get good at approaching the market themselves or should they sell through resellers? And I managed to convince them virtually at the early part of the meetings that we had, that not only did they have to build a good product, like a platform style product, which is what they built, they also had to build a good business, and part of building a good business is building a good sales mechanism. Like how do you make sales, the only thing that feeds a business is sales. So if you're good at systems, apply that systems brain to the front end, while you're building the platform think about the features and the interconnect between the sales system and the features of the platform and have one feed the other. And they took that, they onboarded that advice, and so we've got a really highly automated sales mechanism. It involves people but not a lot of time. Our sales guys, and there are about four or five of them in Brisbane, an hour, they do 40, they actually do 40 sales calls, 40 sales demonstrations a week. That's kind of how they've benchmarked, it's sort of like an internal goal let's say, they reckon an hour is long enough, if someone can't get the merits of what we're trying to give them in an hour, it's either time to hang up on them or ask them to hang up on us. So, we have a mechanism where we do cold calling. We get leads generated in a whole lot of ways, we deliver those leads to a sales guy, the guy spends an hour with you doing a demo, by which time you're either on board or you're not going to buy it and then we move onto the next one. So we've got a highly efficient sales process, and what is good about that is…

And what sorts of companies or organisations are the clients?
Hey?

What sort of clients do you have…?
Well, we've got, well I mean names that you might know is Domino's Pizza, we've got Betty Burgers, we've got SBS as a client, that's the broadcasting, the television station. We're just about to get involved with McDonalds. So these are people that need fluid, flexible rosters, they're not people with fixed cohorts of staff.

Yeah, that was what I was thinking.
Yeah, they might be medical services companies, they might be chemist companies. Our sweet spot is entities that have limited windows when they're available to the public or when the public come to their store. And need experts of different configurations or sorry, a team at work with one, two, or three different types of skills where you need them all to be there- otherwise the expertise isn't available, if you follow what I mean. Like a restaurant, it needs some chefs, it needs a wine steward, it needs some waiters, it needs a cashier, so you've got to have each of them together to make the thing work.

Yeah, I just got your website up, it's nice and clean, the homepage.
Yeah, it's good, yeah.

But your involvement came through the university rather than a deliberate effort to engage in venture capital support?

So, I guess there's a turning point in the lives of all these start-ups. I've mentored a lot of them, but what I try and encourage them to do: you're never going to get a future value of capital. Sorry, the other way around, you're never going to future value your equity, sufficiently, to price the capital to your advantage. In other words, the guy that's bringing capital will already have pre-priced his capital against you as the offeror of the equity, if you follow what I'm getting at. So the future value of the capital, he's already taken the value, so he's going to get too big a slice for the amount of money he's putting into the company. And actually more than that, it defers the decision that the company has to make about how it's going to go to market and sell, gets put on hold. If someone comes in with $10 million right, to this new start-up company, which you'd say is a big sum of money. The $10 million is only going to last you a year or two: you've still got to solve the problem of how you're going to sell to your market and create actual sales and cash flow out of the sales. So what I tend to encourage people to do when I'm mentoring them, try and solve that problem first, try and work out how on earth you're going to sell to your market, on what terms and on what basis. At least have an exemplar of that and preferably some cash flow. Because then you won't dilute as much equity, even if you do want to raise capital to perhaps build out the software, you won't have to dilute as much as if you had no revenue. That's the argument I put, and I also put, and the same process, I take them through a McKinsey technique called three horizons planning for growth, I don't know if you've heard of that, but this particular technique that McKinsey's got was used on a stockbroker called Charles Schwab on the west coast of the States, and it's out of that technique that they invented online stockbroking. So, I've tended to use that technique in my commercial life as a way of doing strategic…

What was the name of that technique again John?

It's called three horizons, 3H, Three Horizons Planning for Growth, it's kind of proprietary to McKinsey but they make a big noise about it. There's YouTube examples of it, the inventor, it's quite old now. But the telling moment for me was when it was used to discover the idea of online stockbroking, because these guys on the West Coast were sending orders to Wall Street using Telex and they were missing the window. The market was already open in Wall Street, these guys had to get up at 5 am to meet the market. So Schwab came up with, sorry, McKinsey came up with the idea of putting them online, putting the clients online but using the Schwab broker number, so that they could deliver orders to Wall Street from their bedroom, this was back in the 90s. What I'm getting at, long story, I use three horizons for growth to plan out the raising of capital, how you might grow this business from bootstrapping it with nothing through to a viable business, and I've done it quite a lot. I've done it at GBST, I've done it with all the things I'm involved in. And when you look at a business problem that way you tend to see what the future requires because it's mapped into what we should do now in order to have this future that we're putting in the third horizon. So, it's kind of a neat way of getting your thoughts ordered, your strategic thoughts into a sensible sequence. By doing that you tend to solve problems that people don't confront early enough in their business life. You bring the problems forward that need to be solved in order for them to exist as solutions in a year or two's time.

Now in all of this wonderful career, brilliant career, what do you think is the most innovative thing you've done, and what made it innovative?

Oh my goodness gracious. Look, I think probably a broad answer Graeme: was took the dive to, an early adopter of Unix and open systems for business solutions. So, we did all those things I was describing earlier for industry in Queensland. We were flogging Unix boxes which were… a Unix box was half the price or a quarter of the price of the bespoke system from IBM or NCR or…

This was when you were still at Datec.

No, it was when I started my company, we called it Star Systems and we chose to put it on a Unix system. It also gave me more buying power on behalf of my client of hardware. I could get the hardware from half a dozen different vendors, the software would port easily between boxes, you weren't locked into one vendor. It meant my investment was made into one platform and it could be spread across different client bases, different hardware bases or user groups. So for me the revolutionary thing was going Unix. Now, a lot of people followed in the software industry later, but I was an early adopter of Unix for commercial purposes…

Yeah, it was still pretty nerdy back in the mid-80s, wasn't it?

That's right, for example, we could get terminals, ASCII terminals connected to a Unix box, we could get 16 terminals hanging off the back of a 30 grand Unix box, there were things that were available on the Unix system that you couldn't do commercially.

What processor hardware were you using back then?

Back then we used, actually, funny enough we used the IBM RS/6000, it was a really good. I can't even remember, was that a 64 bit or a, I think it was a 64 bit machine on a chip. so using the IBM, we were using, I think Honeywell had systems, we ended up using Digital quite a bit once they'd, because Digital had non-Unix minicomputers, but eventually they came out with Unix-based…

Ken Alston famously said that Unix was snake oil.

That's right, exactly. So that was, and actually, what was good about it, it kind of went with the kind of clients we wanted. We wanted clients who had an appetite for technical risk, so that was like mining, manufacturing, some finance. Not banks for example, they're the kind of antithesis of that, but the ones that are out in the capital markets or stock trading and stuff, those sorts of people tended to have an appetite for technical risk. One of our best clients in that thing was Ross Palmer, I don't know if you remember that name Graeme…

Sounds familiar.

He's the guy that took on BHP and won. Palmer Tube Mills, made plumbing pipes and stuff.

Ah yes.

And Palmer Tube Mills beat BHP? at the ACCC, they had to let him into the market, and he was using their own steel to make a better version of distributing pipes. I guess what we were saying to our clients then, we can drop the cost of computing for you if you're prepared to take a technical risk like you are with your factory anyway, you're in a risk mindset. We'll couple this stuff, this stuff isn't actually technically risky, it's actually very profound, what's good about it is it comes from vendors that aren't hooked to a brand name, they're vendors

that are there for the technical, they're vendors that are proud of the technology not the brand name. So we got on like a house on fire with that stuff, and it was so portable, you could take it anywhere.

And why would you describe, you said like mining was one of the industries, what were the other industries?

So manufacturing, the main one for us was so cane to sugar to soft drink, cane to sugar to rum, milling, flour milling, steel, rolling steel into fabricating products from steel, spaghetti manufacturing. So anyone that, small scale, how would you call it? Small to mid-scale manufacturers that weren't, they're not the giants of this world, like for example, you wouldn't necessarily sell one to BHP. Although we sold quite a lot to BHP, we sold quite a lot to Telstra, for number crunching and other internal services. Australia Post, we did a lot of automation for Australia Post on this platform.

So, was it all custom software or did you productise some of it?

No, it was productised in the sense that debtor general ledger fulfillment are productised. The customised part of it was plugging it into their plant and collecting data. For example, if someone's now made a tonne of sugar that's going onto a railhead, say, we'd take the evidence of that off the weigh bridge and log in another tonne of sugar to the plant. So we would customise elements of it to fit the thing into their business but it was anchored off a set of software that was standardised, general ledger, bookkeeping, pretty simple stuff now. Like a mini SAP but a very, very mini SAP. And back then, I mean it's different now, but back then, I mean things have, even the industrial settings have changed now. Everyone's gone for scale, they've all been acquired, they're bigger, these places are bigger, they've got IT budgets up the wazoo. Back then people were trying to limit. I mean I think this is one of the issues for your study, one of the issues for computing, whether it be from the private sector or from government, is people don't want to spend enough on it, they tend to want to keep the lid on it. Like if you think about how many enterprises do you know that have a decent technology strategy, they might now, now that it's too late, but back over the time that I'm talking no-one would see IT as being anything strategic, certainly not strategic. Very few people made an investment in the technology because it had strategic value to it, and would therefore pay a premium, unless you're a customer of IBM. I think this is where, if you're going to government settings this is where the issue is. The IT industry has been poor with its voice into policy makers, and as a result of that, it has no profile and to some extent that's probably because it's an invisible sort of product. You don't see the product go down the street or anything, but as a result we've tended to not get fair value out of many of the transactions. We do now, so the lens you see now, isn't the lens that I was looking through in the 80s, 90s, and 2000s, because people wanted to limit their spend on IT, not expand their spend on IT. And then the other aspect to it then which I tried to address a little bit with that standardises solution is IT experts were expensive, as Graeme, probably remembers. So if you wanted a programmer or a systems designer or particularly a data-based programmer back then, back in the day, they were as scarce as hen's teeth and people would outbid each other to try and get the best talent, particularly in Sydney. So, the cost of staffing them was high but the actual solutions were treated like the last, the least cost.

Was there a difference in Queensland in terms of getting access to programmers and skilled people compared to Sydney?

Yeah, so I was explaining that briefly before the meeting. I spent a lot of time at both universities building capacity in terms of generating, especially programmers, and up until recently I still had active roles at both universities. So, back in the day that I'm talking, the universities were allocated quotas. They had so many quotas for engineers, so each faculty had a quota that it was allowed to staff for and allowed to enrol. Nowadays it's the opposite, the student, it's led by demand. And in the 70s there were no quotas allocated, zero quotas allocated to computer courses, in fact there weren't any computer courses. So I had to lobby to get the university to decide it wanted to allocate some quotas out of say Arts, so a lot of the popular degrees back then, but it sounds crazy now, is a Bachelor of Arts which might have been language (actually incidentally, language is a good precursor to computing) but people dismissed all that as being not relevant. What I'm trying to get at is I had to lobby the universities to allocate quota. And therefore once you've got a bit of quota you can get a Professor and you can get some staff, but you had to get 200 students in order to justify having a professor of information technology. So, I had the role, because of my work at the University of Auckland, the Computer Society gave me the challenge of lobbying UQ and QUT to get computer courses going. Which we've done and now we've got quite sizeable and good capacity computer courses. Yeah, back in the early times that I'm talking there were very few people producing actual computer programmers.

And how did you feel with big international computer companies in Queensland?

They tended to dominate, there weren't a lot of them, there was, the main ones were IBM, Burrows, Unisys or UNIVAC…

ICL was big in Queensland too, wasn't it?

What's that mate?

ICL was big in Queensland.

ICL was strong, so ICL was very strong, Fujitsu was in there but not strong, IBM were not strong in terms of mainframe computing, they were a little bit in business systems. Digital Equipment was quite strong in Queensland, because it found its way into the coal industry, the mining industry, they're the main ones that I can think of. Then the later ones were people like Data General, Lionel Singer came along, Prime was quite strong here at one stage, Sun Microsystems were strong, so it sort of gradually built up, but it didn't have the dominance that say Canberra has or Sydney has with the major vendors driving the industry. In fact, the policy settings for computing were largely driven by those international vendors in those days, weren't they Graeme?

Yes, yes, very much so.

And so, you had your business located in Queensland of course, so how was it to find qualified staff, and you also mentioned people from the arts, and what was the background of the people that you tried to hire?

Yeah, okay, so I was one of the first who used to hire women, so that's one point I want to make sure that you knew, we used to do very well with women. But more to the point we would go overseas and hire, so we hired in South Africa, London, a little bit in New Zealand, and whenever we could, we would hire talent, so we've got…

Sorry John, just broke up a bit, just broke up a bit the last ten seconds John.

Oh okay. So, we would have innovative reward systems for people to stay longer and we realised that people have a two-year itch cycle, a five-year itch cycle, maybe a seven-year itch cycle. So we'd make provisions for people to make sure that they felt happy staying, continuing with us, as well as joining us. So, for example, after five years there was an extra years' leave, I think it was. After seven years there was long-service leave, not waiting till ten, there were things that stretched you out, so that you got over these hurdles and we tried very hard to keep people. We had undergraduate schemes, we were the first to have, working over the summer with us, particularly between second year and third year. Chance to see us, us having a chance to see you. More recently, we've had scholarships at UQ, Deans scholars to get people in from high school, so we've got three-year scholarships, the type that you win from high school, and again that was targeted. I've got a particular history and done very well out of it I must say, it's the selfish aspect. I think women make good computer engineers, good designers, obviously but also good, very good workers and good programmers. So I've done a lot to try and encourage women to join, to come into the industry. So we've had scholarships at the high schools for women to choose not engineering, but software. So we've done a lot to try and get gender, some gender diversity, and all of that finds its way into our brand, sorry, it makes our brand look good in that context so we can hopefully hire the best cohort that we can each year. We used to hire batches of six leaving university, we would hire more than we needed and then sift through them and gradually try and make the good ones stay, that's kind of what we used to do to get people. Actually, more to the point, we used to conduct Unix courses and some programming courses in Queensland ourselves, mainly through the TAFE network, not so much through the university network. So they had different criteria of excellence, measuring the student on entry but also awarding the result to the student, so we built a series of TAFE courses which we ran here and in Sydney. What's the city TAFE in Sydney, the nearest TAFE in Sydney?

Sydney Institute is the big one in, north Sydney was very big on…

That's right, we put it in North Sydney, so we used to teach on their behalf, their brand but our content and our teacher…

Really?

We used to teach Unix, we used to teach something on 4GLs, we taught a couple of things, components of probably a Diploma let's say, but we would teach the Unix component. So we did everything to try and increase the numbers and the flow of numbers into our industry. It was selfishly motivated but we wanted to be able to, we wanted to be in a position where we could hire the best ones that we could see, so we wanted to get up the pipe stream earlier, so we could make our own assessment of the talent.

So, one way of getting engaged in the teaching was a good way to suss out good future employees?

That's right, exactly right. And actually, we also did it at Wollongong come to think of it. So we got sort of, we did it in Darling Downs which is up in Toowoomba. You'd know, you guys would know yourselves, IT talent is kind of like a peculiar kind of talent, it's a talent that's not easily observed. You've got to see the work to observe it, you've got to see the results to observe it, and so it's good to get in the front end of it and see people solve problems and assess their solution in order to identify that they have the talent. I think, you know what I'm driving at? I'll flip it another way, the rule of thumb for me is that some

people can be tenfold, ten X better than other people at code cutting, for example, so you're trying to look for the ten X type person. That's probably a better way of saying what I'm trying to say. Some people are just so inspirational with digital design and digital execution that they are at least tenfold more productive than others. So, we're looking for those guys.

Thanks John, changing the subject a bit, when you were building GBST or Star Systems, as it was initially, did you seek, or did you receive, or did you want any government support?

Well, that's a good question Graeme. The answer is you want anything you can get your hands on. When you're building, I mean cash drives, there's another acronym for you, cash flow is more important than your mother in business, right, cash, the availability of cash to the business allows you to do anything. When you get short of cash you get an unhappy company, and you get unhappy customers and things go in the wrong direction. So you've got to be…, cash is king in any business setting, and particularly in the game that we're in because they're kind of long-term- to get a platform to work. If I go and make a, let's say I make food, food supply, like that sugar industry I was talking about, if I get a bad batch I can just throw the bad batch away and just make some more. But with software, until you put the last bug out of the system it's of no use to anyone, so they're long build cycles. So they're long gestation cycles that you've got to finance or feed to get a suitable result. And then once you've got the result it's great, you can scale it and you can use it, reuse it and all sorts of things, right. So it's the upfront early cash that defines or helps define some of the success. So, getting a model that feeds the cash into it in the early days is the issue. So, anything that helps with that is a big thing. Now, did we receive anything? Not a lot. The ones that I can think of would be the investment grant, the R&D investment grant. Now for an early company that's not that relevant, because there's not a lot of tax to pay. So all you're really getting is some, it's a tax incentive. I get that, but it doesn't give you a lot of cash to play with. The same, likewise we've got the export development grant, whatever that is, that's a five-year window I think, and then all that's doing is returning back some cash that you already had. We got very little government projects, we were below the radar for the government. The natural government buyer would tend not to buy off us, didn't have the brand or the scale. So yeah, there wasn't a lot of easy cash around, and so, the way we did it, we kind of ran two businesses. We ran a services business that was bringing in fees, and we used the fees to pay for the software and gradually bootstrapped ourselves into the market on the software. Once the software scaled up it started to return really good cash, and we could do other, more risky, software ventures with it. So, we used what I'd call a meantime services business, the gross profit out of that to subsidise the entry into software production, that's how we did it. Government incentives, I got to the stage, particularly in the Paul Keating recession, that I didn't want government as a counterparty. We ended up getting foreclosed on by certain government departments, jobs that you had for two years got canned, they hired some of our people, I was very anti-government back in the 90s because I think government protected itself without necessarily wondering about the consequences in the marketplace, they don't do that now but they did it back then. So I used to have a great mistrust for government as a counterparty, and in a sense I still do. Not because, it's not personal, they don't run to the same timeframe that I run to is probably the right way of putting it, they're not conscious of time equalling money or the relationship between time and money.

And what other factors were there in your success or what outside factors were a problem?

I think problem solving, having a propensity, I think what computer people and me, my company and me particularly, is having a practical approach to it. Nutting out and proposing solutions to problems that advance the business system of the client. In other words, if you

can feed the client with valuable gains, the system produces valuable gains to the enterprise, so that's their business model, in terms of trade, the production cycles, the efficiency that they operate by, their access to information. If you can do that, you'll have a good business. In other words, you as a supplier will have a good business as a result. So hitching my promise, I suppose the most innovative thing I did, particularly for the stock market, was saying I was prepared to continue to invest in business efficiency for the market as a whole and for the players within the market, if you were prepared to pay me, increasingly, on the volume that might flow through that process. So I had a fixed price, all through that time we had a fixed price based on volume. So it was a fixed price per ticket, it was $3 per ticket, let's say. My promise to the market was we will continue to be the best R&D we can afford, we'll produce the best R&D we can afford as long as you continue to accept my price point which is $3 a contract note. So in a sense we were in partnership, I'll be your R&D arm and you will grow your business because I'll invest in your efficiencies sufficiently for you to be able to grow without increasing costs. So yeah, making technical products that are informed by business circumstances. Like it's a business-related proposition that is reflected by the software, and you were talking about Giro earlier I think, weren't you, or was that a different meeting?

Different meeting, I think…

Yeah, different meeting, but what I'm getting at is they're priced for scale, they're not priced for the first sale. They're priced for scale, and you get rewarded as you build that scale. That's what I think…

Yeah.

And earlier you mentioned that there was a factor that was outside of your control that really helped you to grow your business on the stock market?

A factor that was outside my control… what did I say, can you remember what I said, say it again?

Were there any factors outside of your control?

Oh, okay, that allowed us to grow, I think, well actually you did mention ICL and Fujitsu earlier on, we were able to out-innovate these multinationals. because we were faster at their own game, I suppose. Like we were localised and quicker and quicker turnaround, so we were able to knock them out of our patch. They were the dominant supplier when we go there and we were able to knock them out by being better at execution, quicker at execution. But I don't know if, I don't think we got a lucky break, we had to earn that right. It was look, sticking to the knitting, keeping your eye on the client's needs, being able to translate the client's needs into value, communicating that value, and then pricing against that value, that's the sort of guts of it. I mean there have been dark days, trying to find out where the next slab of money is going to come from, but we've had clients all the way down from Bankers Trust, Merrill Lynch, Credit Suisse, UBS, UBS are a longstanding client of ours. Credit Suisse are a longstanding client of ours, by longstanding I'm saying 30 years...

Yeah.

Deutsche Bank, and Macquarie, it goes on. People trust people that are consistently performing, you're selling trust in a sense.

Yeah, now innovation, you are a Kiwi originally, you came to Australia when you were comparatively young. But, do you see anything specifically about the Australian psyche or the Australian personality for want of a better word that is either helpful or not so to being innovative?

Yeah, well I can answer that one, I'll give an answer that answers sort of both points there a bit Graeme, I think Australia and Kiwis are very innovative. I think that's obvious, you would know that as much as I do. We're prepared to have a go at trying to make our own solutions to things, and those solutions tend to be particularly in Australia's case (and there's plenty of examples) they tend to be quite advanced, they're well-informed and quite advanced. So that's a good positive and that's a good national characteristic, it's certainly a good Queensland characteristic, to colonise Queensland, which is a vast state, you've got to be able to be self-reliant and rely on your own skills and wit, right.

Well, we've so far interviewed Adrian Di Marco, John Grant, David…

You would have heard all that. Well actually what I did, just a week ago I went up to Cooktown.

Oh yes.

Cooktown is so known because James Cook came in there to repair his boat. Now it's probably the remotest city, it's not a city, it's a town. There are a couple of smaller ones really further up but Cooktown is the most remotest thing here in Queensland, there'd be a couple in WA that are equivalent. James Cook was able to put his boat back together in Cooktown by using local materials, his own staff, cooperation from the natives, fresh water, good timber, and then on top of that he had to find his way back out again. It's quite a remarkable, that alone, it's inspirational but quite remarkable. And I think the early pioneers, the early discoverers, have left us that legacy. That's kind of why I made that point, because all of these towns around Australia have been discovered by explorers who have taken massive risk, they're probably amateur surveyors at the most, and have survived. Well some haven't, but many have survived to tell the tale and document the tale and we're better for it. And they've discovered things, ore bodies that are the envy of the world and stuff, right. So we're great at all that and we're great at the associated engineering and all that. But it's also got the flipside or it's got the obvious side, which is we tend not to be that cooperative amongst ourselves, and I think we should be better at that. We should be able to club together and collaborate together and share ideas a bit better than we do, we tend to be mavericks.

Yeah, well as we started about when Sebastian joined us, Kai and you and me, Kai apologised for leaving by the way, we were talking about the cooperation between industry and academia and how that maybe has a bit…

Oh yeah, well that's right, like if you…

We could do a bit better in Australia.

Beg your pardon, say again?

We could do a bit better in Australia.

We could do a lot better. I think the Kai mentioned, Sebastian, that in Germany there's a better link between universities and industry. And I'm, obviously because of my history that I

described earlier, I'm very interested in that bridge, that linkage, and I don't think it's all the universities' fault, that's the point I was making earlier. I think our industry users, let's say, or end users, almost see the university sector as irrelevant, both from the point of view of undergraduates and from the point of view of research. And I think there's a value proposition that they're missing out on completely. Just to be general about it, rather than particular, there's plenty of particular examples. I think the what you might call the rigor that goes into research in universities, that method, call it the scientific method or the academic method, and particularly the peer group testing and all that that universities do around good ideas. I think industry could benefit just from using that method, let alone the product that comes out of that method, and that's never been accepted. Even though these guys that are running these industrial complexes have been to university, somehow, they don't see that value and they don't try and bridge that. Or they don't even do things like here's a trial problem, why don't you have three or four goes at cracking it? So you've got universities that are out there innovating up the wazoo, like some fantastic ideas being generated out of the universities that I know. And not just ideas, prototypes and early products, and particularly in IT, like if you think of machine learning, AI, robotics, vision, let alone these systemic fields that Michael Rosemann's on about, like business innovation and some of the softer things. All of that stuff should be being field trialled in industry, they shouldn't have to do arbitrary tests in computer labs, they should have industry partners where they can be field tested on industry-informed problems rather than arbitrary problems that are set in a lab. Even if the industry doesn't buy it, the industry should at least get the flow, some degree of knowledge flow, and I'm thinking flow in both directions. So, I don't know whether that's elitism or being under the equator. I think if anything our industry tends to focus on the Northern Hemisphere as being where all the action is and how can I get there quick enough and stuff. Rather than: in our own backyard we've got a lot of amazing labs, talent, brain power, young people. That's the other thing we underrate is the beautiful flow of young minds that come through each year, a whole stack of them. Those minds will be developed, or they should, in my view they should be, the developments of those minds should be informed by industry style problems. Even if the solution doesn't find its way back to the industry partner. The problem should be shaped by industry, and the problems that they're working on should be shaped by industry, that's what I think. And we can, and even if we just took one sector, let's say it's logistics or let's say it's air travel or let's say it's solar power or let's say it's medical services, we could take one sector and apply our whole nation to it. We don't have to necessarily excel on all of them, we could be the world's leader in any of those sectors, and I think there are examples where we might have been, or could have been. So, I think we need to do a lot better on the intersection and we should have policy settings on both sides of the fence that allow that to happen. Make it easier to get more seamless interaction of staffing and particularly problem state, scoping of problem. The scoping and stating of problems that are worth solving, and the prototyping of them and the early testing of them. And I tell you another thing that industry can do for universities, I was talking earlier about the front end, like selling, you've got to sell things. Well the universities aren't so good at selling, so why doesn't industry show universities how to sell their ideas or sell, how to sell things? Like let's just make it simple, or at least give us a pipeline where can go off to the northern hemisphere with our solutions. So yeah, I think there's a lot of dialogue that can go on, much better, in fact, I would be keener in participating in that kind of stuff than specifically helping to get a better government policy or policy settings. If we can shake industry's tree better and get the value propositions of both sides of that equation clearer, more clearly defined, I think that'd be a good outcome of your study actually.

Yeah.

Then let me put you into the shoes of an advisor to the Queensland government who wants, who says like that's a great idea, we want to achieve better connection between industry and academia, what would you advise them to do?

Yeah, that's a good question. I know they've tried, that's why it's a good question, they've got a thing called Advance Queensland. Which is a sort of, it's got grants and it's got industry reps and it's got academic reps and it meets regularly and it had a big pot of money. I think it might have exhausted some of that money, but just carry it forward. They've worked hard and I think they've done quite well. They've certainly done well on the challenge of getting…, so a lot of this stuff has been southeast Queensland centric, and they've done quite well to get ideas that might have been generated in the southeast back into the regions. So that's been a good thing, they've done a lot of good things. What should they specifically do? I think, if I was the Queensland government, I would insist on all of their tenderers, every single one of them, stating as clearly as they can the relative proportion of local content that's being delivered through their tender. There's a one-line statement that will shake the tree a little bit. Like where are they getting the stuff from that they're selling to me? Like it's only a one-line question in a tender, but it would be worth posing the question to see what happens. I'd also, I figure it would be interesting to know, I don't know how you'd do it specifically, the device for doing it but it would be interesting to know the degree of engagement by business with any university in Queensland. I don't mean that they just hire their graduates, but do they sponsor anything, do they go to any events at the university, do they sponsor any seats, do they encourage any content, are they the case study for any content, like how many university projects have they had their name on? It's a simple question, I'd start asking some simple questions, why not? Actually, come to think of it, an annual survey, a phone around. I'm a great believer in phone, so going back to the point about the selling process, a great way of starting an entry into a new market is by phoning people and doing a survey, not a big piece of paper survey, but a phone survey. A bit like how you're doing this. Try and get a survey done in ten minutes answering three questions, and maybe do it quite regularly, when I say regularly, on a particular heartbeat, let's say it's a year or half the year. But at each half year we ask the same three questions and we try and get some longitudinal assessment going of the degree of engagement and if not, why not. So, it could be: "Are you engaged in university, what are they, if not, why not?" That could be the kind of questions. Not because you necessarily want to know that data, I think that data would be useful, but it would stimulate other data if you know what I mean. It's the derived data that might come from it that matters, and I think you'll find that there's a lot of misunderstandings.

In that context what has changed over the last decades is the approach to intellectual property by the universities, any ideas around that, because that seems to be more and more a restrictive factor for industry collaboration?

I think that's right, that's a very good point, and I think that's particularly applied under the health-related sectors. I agree with that, but we both know there's a whole lot of free form sort of stuff going on. So okay, let's say there's the patented IP, or there again, let's say the university has patented some IP. Even more reason why it should be exposed to industry, you've got patent protection. But either way, one of my worries and I used to do a fair bit of this at a place called BIHECC. You guys heard of BIHECC, the Business Higher Education Research Collaboration?

Vaguely.

There's a whole lot of IP that the universities generate but they don't want to exploit further. So, let's say we've done 100 projects at a university, probably only ten of them are going to be funded further for further discovery. The other 90, for the sake of the point I'm making, I mightn't be right about the proportions, kind of falls by the wayside, it falls off. Now what happens to that? It'd be almost like you want a bargain basement fair, let's say, where people can go and forage through the stuff that isn't going to be exploited any further. Like there's probably, I think there's all sorts of value transfer ideas that need to be looked into much greater, that's my take on it.

Yeah. We're getting close to time here John, thank you. Have you got any other questions Sebastian?

Maybe the one that, looking back in hindsight at your achievements with your company, is there anything that you think would have helped you go further now that you have all the wisdom of the many years of experience?

Yes, good question. The one that helped me quite a bit at the time (I should have done more with and I should have used the Australian government ones), the Queensland government has got trade offices in Hong Kong, London, Los Angeles, they're the ones we used, I used all three of those, but I think there's three of four more somewhere. I think there was one in Japan and there might be one in India Anyway, I've used, the three that I mentioned, I used quite effectively as ways into larger markets. As landing posts, let's say, to go and present and to get some early credibility in larger markets. I found that really, really beneficial, and I probably should have used that more than just jumping randomly into airplanes and chasing one client in Vancouver or something. What I'm getting at is they were able to do advanced research, if I'm coming to open up a new market they were able to select me target firms, do some preliminary analysis, out of that preliminary analysis. maybe line up half a dozen visits or maybe a week's worth of visits. I could have used that better and done it earlier, that capability. Is that what your question was?

Yeah, yeah, so you think it's very beneficial, the overseas growth support that you could get from the government, you could have relied on more?

Yeah, I think at the end of the day you've got to get into the bigger markets, obviously, well in my case I think you do, there might be some that you don't. And too often, we go off as mavericks and have to learn the hard way of how to penetrate these markets and people have already been there, or people are already there, and the Queensland trade offices specifically were very good at networking you into those markets.

Thank you.

Yeah, thanks John, and finally John, we always end on a high note, what's your biggest disappointments in your career or for the Australian industry?

Oh, I think we've left, having just said what I said, I think we've let too much of our actual ownership go overseas right, I really do.

Yeah, that's a common theme actually.

Yeah, I really do, I think it's a damn shame. We are a clever country, we deserve to keep the capital fruit, let's call it, more contained here. Unfortunately, and I don't blame them either,

and certainly it applied to me, the multipliers you get in other markets exceed what the local market is prepared to pay. So you tend to go where the best outcome is, right, but it would be great to be able to see these companies stay here. Whether that's practical I don't know, but we've lost some, well not lost, they've all done well, but it would be great to see more of them stick to the ground here.

Yeah, any final comments, observations, thoughts?

Oh look, I'm pleased you're doing the study. I think, as I said in the course of this discussion, I think the technology industry in Australia is too low key for its own good, so it's no-one's fault but our own and we should do more of this sort of stuff and try and capture the stories.

Yeah, that's good.

So good on you.

Thank you, John. Thanks so much for your time today.

End