



Capturing the Past, Inspiring the Future

Nicholas (Nic) Birtles

Interviewed by

Richard Sharpe

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By Zoom

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Welcome to the Archives of Information Technology, where we capture the past and inspire the future. It's Monday the 22nd of February 2021, and we're in Zoom-land, because we're in the third lockdown because of the virus. My name's Richard Sharpe, and I have been researching and writing about and covering the IT sector since the early 1970s.

[00:27]

Making his contribution to the Archives today is Nicholas Birtles, and he has been in the IT industry longer than I have, right out, straight out from university, in fact he didn't bother to finish his university career; he decided to go into programming. Now Nic, you were born in Gainsborough, Lincolnshire?

That's correct. My... I was born towards the end of the Second World War, in December 1944. And, I was, my mother was living in Hull. My father was off fighting in the war, in fact he was a prisoner of war at that, at the end. And, so, my mother was evacuated to Gainsborough, which is why I was born in a hospital there rather than in Hull, because it was being bombed very heavily at the time.

[01:28]

Your father was an army officer, therefore.

Yes.

And later on a civil servant. What education had your parents had?

Both of them just, neither of them had been to university, so... And, both of them, you know, just, learnt as they went along I suppose. My mother qualified as a secretary, and was very proud of having very fast shorthand and speeding qualifications when they came along, and was a member of the British Institute, or the, the professional secretaries' association, and took all their exams. So she was very keen on that. My father, as I say, he, he joined up just before the war, and became an officer, and then, he stayed on after the war, and in 1946/47, I can't remember exactly when, not long after I was born, we moved out to Germany, and my father was in charge of a camp in Germany, a place called Badenhausen.

And what was his branch of the military?

He was in logistics, and, he was head of logistics for the regiment that he worked for. So he was, I suppose, mathematics, if I have to say that. He used to teach me how to use, he had a very very sophisticated slide rule which was a round slide rule, and, he would, he tried to teach me how to use that when I was quite young, and surprisingly, it's one of those things that always sticks in my mind, and, probably I get some of my mathematical bent from him.

[03:20]

You went back to Hull for primary and secondary education?

That's right. I went back about halfway through my, I think I went back when I was about, eight or nine – seven or eight, seven or eight, around that time. And, so, done some of my primary education in Germany, where I gather the schooling wasn't very good, according to my mother, and, so they moved me into a small private – public, a small public school, day school, called Hymers College in Hull. And, I went there. Didn't do particularly well in my, in my Eleven Plus, but I stayed on in the school. And, maths and chemistry were the two subjects I did very well at at school. And, and then I got a place at Manchester, at what is now UMIST, to read chemistry.

Would you say... How would you characterise your childhood? Happy?

I would say, you know, come from a, a very average, you know, sort of, lower middle, a middle-class family. You know, we weren't wealthy, but we were, you know, sort of, comfortable. Nothing exceptional. I had a very pleasant, you know, sort of, childhood. I... My mother was passionate about education, and sent me to a public school. I was a bit of a late developer I think, always have been. And, and you know, I look back very fondly on my, on my days at school, and the time I had there.

[telephone ringing]

Although you don't think that you did particularly well?

No, I don't think I did particularly well. I got, I got, I think, seven O Levels, and two A Levels.

I counted eight.

Sorry, it was eight was it? I can't remember now. I've forgotten the number. OK, eight O Levels, and, and a couple of A Levels. But I got... And I failed physics, which really annoyed me, and I think, I made a mess of A Level physics. But I got very high marks in maths and chemistry.

[05:37]

Then you moved to UMIST.

Yes.

Manchester University, for a degree in maths and chemistry.

Yes.

Which bored you apparently out of your mind.

The best answer is, it did. And, the... I had a very good chemistry master. My first experience I suppose of finding a mentor. I had a very good mentor at school at chemistry who realised that I had a, you know, I, I sort of enjoyed it. And so he mentored me, and which is why I did well. When I got to university, the chemistry was completely different, I didn't identify with the teachers at all, and found it quite boring. And, I had been very good at maths, and was always one of the top of the class in maths, and again, I didn't find it quite so stimulating when I got to university. And then I found these things called computers and started to teach myself to program. So, I got bored and decided that, I wanted to switch. And they didn't have, and this was 1961 I went to university, and they didn't do a computer science course in, only postgraduate courses in those days. So, I didn't fancy staying on, and I saw an ad for a job as a computer, as a trainee computer programmer, so I decided to go and do that.

[06:55]

What's this computer that you found?

Sorry?

What was the computer that you found?

The... Well, I worked on a number very early on. I worked at CEGB.

I meant, sorry, at Manchester.

Oh, sorry. I did a bit of work on Atlas, and, I learnt to program in FORTRAN, original FORTRAN II, and then FORTRAN IV.

[07:25]

So that gave you a chance to get on. What were you programming? What were you, what were your applications?

You know, I was just doing very... I mean when I started... Are you talking about when I was working, when I was just, you know, doing it for fun?

Yes.

I was just doing logical problems, and, you know, things like that, just... And, a lot of it, you know... And I even tried to learn some, actually I learnt some machine code as well. We had an Elliott 801 I think it was, and I did some machine code in that. And it was just exercises for fun more than anything else. Nothing serious. Then later on where you could, you know, build sort of, real little programs on your BBC Micro and things like that.

But you were allowed running time then, on these...?

I, I managed to get it by, you know, going into the computer room and offering to help. And, they allowed me to... And they turned a blind eye if I, you know, punched up a bit of tape and ran it myself.

Excellent idea.

I found that far more interesting. So, when I, I started seeing jobs for around, working in the computer industry, and decided that, you know, that's what I would do.

[08:43]

So in 1963 you moved to the Central Electricity Generating Board.

Correct.

A nationalised operation.

Yup.

With all of the distribution as well nationalised, right into the home, and into factories and so on, and offices.

Yes.

And moved to London.

Yes.

Was that a big change for you?

[hesitates] Yes, yes and n- Yes, I suppose it was in a way. But I had moved quite a lot as a child. We, you know, we had lived in Germany, I was back in Hull; we had been a couple of other places as well. And my father was always on the go. And, by this time, to be honest, my parents had separated and my father had moved to London, so he was in London anyway. And so I saw him, you know, sometimes when I was in

London. So... You know, but I was just a, you know, going on, and, to me that was the bright lights, an exciting place to go, so, so that's where I went.

[09:42]

Where was this based in London?

They were in a place called Friars House, which was on Blackfriars Road, and they had a, a big computer centre in, oh, it's just at the back of, in Victoria. So I used to go over and spend time there. I used to, you know, like being hands-on on the computer in those days, which if you showed interest in, even though they were in closed-off rooms. I started out, my first job was as a computer assistant, actually, you know, loading up punch card decks and running systems. And then I got into the programming side with them, and just wanted to prove that I could actually do it. So I got into that after a year or two.

And what machines were these?

IBM... The main one as an IBM 1790, and that was all FORTRAN IV. But we also did a bit of work on 1401s as well. That was a very interesting set of applications that were developed to monitor power station construction. So we would get information coming in from contractors on, on power, on the building work going on, and in the early 1960s there were a lot of power stations being built across the UK. And, so we would get data in, and then it would be coded up, and run into programs where they were doing very early sort of, critical path analysis, to be able to see where they were in the project, and what was likely to go wrong and delay the project. And, it was a fascinating application, you know, and I, I found it really quite interesting.

[11:34]

You moved after two years to ICL, ICT.

Oh actually, before ICL I went to English Electric Leo Marconi.

OK.

Which eventually became ICL. And, to, again in London, to a place called Hartree House, which was over the top of Whiteleys store in Queensway. And, we used to... And this was, this was, I was writing their programs in a language called CLEO, which was the language for the LEO III, and it was sort of, similar to COBOL, but, it stood for Clear Language for Expression of Orders, or something like that, I seem to remember, CLEO. So, yeah, so I wrote... And I was actually doing a fairly big system for, my first job was writing a fairly big system for the Lyons bakery company, and, they were also very very advanced in those days. They had developed a machine called a Lector, and then a successor would be called Autolector, that could effectively read machine – marked cards. So, the order people were going out, and they would tick against, that, they would have a code that was on the top of, it was a punch card effectively, that... And then... Or, sort of like a punch card. And they would tick on these the number of the orders that people wanted, and how many that they would want. So, there would be, if it was in tens, they would put a, you know, the number of tens in the line there, and then the number of ones, and, this sort of thing. And, the machine read this, and it translated that into orders going into the machine. I wrote some of the actual machine language codes for the Lector and the Autolector, which was fascinating stuff for some of the order processing systems in CLEO.

And so this was automatic recognition, optical recognition.

Yes. Exactly. Very early on. I'm now in the sort of, early, mid-Sixties, something like that. Probably, I think this is about '64, '65, maybe '66. '65, '66 probably. You're making me [laughs] stretch back into, into my memory here.

No, it's very, it's very important, because, you are now working, you were then working on what came after the great breakthrough of LEO.

Yes.

In Cadby Hall.

Exactly. And it was a, it was a very very advanced system. And I think I always got an urge to, to work right at the sort of forefront of technology and with the latest things coming along. So, after... So... And then after about a year there, working on these systems, they asked me if I would like to go up to Edinburgh for a year, and, IBM came out with a new – sorry, by this stage the... No, still, it was still English Electric Leo Marconi. They had, they were remarketing another computer system, which was called System 4, it was an American system that was brought over, System 4. And Edinburgh Corporation had bought one of the systems, and I was sent up there to help train the IT team up there and be the main liaison on site. And I spent about a year in Edinburgh.

[15:31]

System 4 was compatible to IBM's 360 systems.

Correct. That's right.

Which had been launched in the year that you joined the industry, in '63.

Mhm.

Which eventually put IBM ahead of the bunch, as they were called.

Yes.

And it was made by RCA.

That's right. I was going to say, it's, RCA was System 4, yes.

Yes. And English Electric LEO Computers Limited picked it up and marketed it, and was able to sell it quite well in some places.

Yes.

So... And then '64 as well, ICT as it then was came out with its own range, its own new range, the 1900 range.

1900, yes.

So you went up to Edinburgh and helped them install that. It is a completely different type of computer to you.

It was. And, you know, and I would say that, I survived up there, I mean, I literally had, I think, you know, I was given a manual on the, on the System 4 before they sent me up there, and I, you know, I would be reading the manual and trying to keep a page ahead of, [laughs] or a couple of pages ahead of the people I was supposed to be getting up to speed on it. So, it was, it was a fun time, you know, it was up there, and, and really enjoyed it.

So you're not only a programmer, but you're also now a trainer.

Well, I sort of... Yes. And, I, I suppose, well I was a trainer sort of, liaison person. And, you know, that's, that's what I, that's how I sort of, got on, yeah.

[17:08]

What did you bring to being a trainer? I can see what you brought to programming.

I think... Well actually, I was going to say that, you know, a little bit, in the next phase in my life, I had a very very good mentor, and it was the first, I, I sort of look back on my life and I, I think about three or four key mentors that I had, made quite a, a difference to, to my career, and it opened up new opportunities, and opened up new things to me. And one of these mentors said to me, he said, he said, 'Nic,' he said, 'you're not bad as a techie, but,' he said, 'you're much better explaining complex technical things to people who don't really understand it, who are not conversant with it.' And, that slowly moved me out of being sort of, pure technical and trying to sort of look just at the, the technical issues, but looking at all the things around it. And, then I went into sort of, pre-sales technical work, and then eventually into sales, and that's, that's where my career sort of moved.

Who was this mentor?

Well, the guy that I think mostly of was... Just after, after I left, after I left English Electric, I actually, I had a desire to travel. I've always loved travelling, and I, you know, I was lucky when I was young, my parents were living in Germany for a number of years and we travelled a lot around Europe when I was a child. And I've always just had a desire to travel. And, in 1967 there was a world exposition going on in Montreal, and I decided to go, [laughs] go over there, and, and have a look. So I went over to Montreal, and, I ended up getting a job with Burroughs, another of the bunch. I never actually, I did apply for a job at IBM but I didn't get one, but I got a job at Burroughs. And there, that was where this mentor that I had, you know, I joined there in a technical world initially, but he said to me, you know, he said, 'You're much better...' And he was a, he was a sales manager and I was doing pre-sales technical support. And he mentored me and coached me, and I was actually moved into sales, after a few years there.

[19:39]

So this was Burroughs.

Yes.

Headquartered in Detroit.

Yes.

Originally a big manufacturing company of card sorters and accounting machines.

That's right.

Got into computers. Became one of the bunch. It is the B of the bunch, up against IBM and, and others internationally.

Mhm.

And was quite innovative in its computers. What type of computers were you trying to sell and to whom?

I was working on the Burroughs 3500, which was a very innovative computer, and had a, the first what they called the MCP, Master Control Program, which was an operating system that allowed you to have multiple programs running at the same time, which was quite innovative and new at that stage. And, when I arrived, when I arrived at Burroughs, they had sold a machine to, a Burroughs 3500, to a company called ICL – sorry, a company called CIL, which was the Canadian subsidiary of ICI. So it was a huge chemicals company based in Montreal. And, I became the project manager doing the implementation of that system. And... And then Vince McCaffrey was the salesman who I worked with there. We first of all, I got there just as they were finalising the deal for the sale, and, and you know, we, we closed that deal, and then I got put into being in charge of the implementation, and it became a very successful implementation and went very well. And, so that, that was sort of, my introduction there. I had a great time in Montreal. I love skiing, and so I was, off every weekend skiing, and, living a, living a fun life as a, as a young bachelor.

And what was the application in this chemicals company?

They were all sorts of applications, all, mostly commercial that I was always dealing with. They were, you know, they were all around sort of, accounting stuff, in the days when people mostly wrote their own accounting systems. So they were putting on accounts payable, accounts receivable, and those type of systems.

[22:16]

You are now a manager as well.

Sorry?

You are now a manager as well.

I was a manager. Well, what happened, the next... Yeah, well I think I was called a manager but I didn't actually have any people to manage. And then, after that, they made a big sale to the Canadian unemployment insurance scheme. So... And, they bought five B3500s to go across Canada, so there was one in each of five centres across Canada. And we had a project team, I had five people working for me, implementing part of that, a major part of that system, the real technical details. And, we weren't involved in the sort of basic stuff, but all the management and the organisation, our team was developing that. So I did that for a number of years, and had a, a really, you know, interesting time doing that. So that was my first sort of man management experience, if you want to call it that way. I was probably pretty crass at it. I look back on myself now, I would, you know, give people orders, tell them what to do, get on with it, [laughs] sort of thing. We learn a lot as we develop.

[23:40]

What was the corporate culture of Burroughs?

It was very much about innovation. They loved, they love the fact that they were innovative and different, and they used to be very, very critical technically of IBM, and of course, that was the day when, you know, IBM used to spread FUD, you know, fear, uncertainty and doubt, and, you know, the IT manager could never, could never be fired for buying IBM. So you were always having to show why, you know, your product was significantly technically better, and would be more effective and more efficient for their needs. So, it was quite a, a tough sell against IBM in those days. But, you know, Burroughs were very... And I had a great boss, who really helped me and developed me and, you know, showed me all sorts of things, and, and he also, you know, took me round various places in Montreal where I was living at the time and showed me all sorts of things that had never, I wouldn't have found in a long time if I was trying to do it on my own.

[24:53]

You moved to ComShare after five years with Burroughs.

Yes.

A new software company, but based in Toronto.

That's right.

What were they doing?

They were doing computer timesharing. So... They actually, they had a, it was actually an RCA computer, a Sigma 9 I think it was called in those days, and, they were selling time. By this time I had actually moved into sales, so, I moved into sales with Burroughs, but it's, you know, selling big large mainframes is a very long time cycle. And, selling against IBM was pretty tough. And, somebody I knew went to a company there, to ComShare, and said, 'You know, this is really interesting. We're selling time on the computer, and, you know, you're selling to business people, and it's people who want to make things happen now, and, you know, make a, get their systems working.' So we were going into parts of organisations to put in systems, or to develop, that they could run in their office, and, and see the results instantly. And, it was, so, again it's innovative, fast-changing, and exciting. And one of my, you know, big success story, or, big success stories, but a success story there was the *Toronto Star* newspaper, and, I went in and got friendly with the operations manager, and they were having problems on scheduling all of their operations, you know, knowing exactly how many issues they were going to have to, they were going to print. And then they had different print presses working, and sometimes the print presses weren't working. And I built a sort of, what you think about, is like is a very early type of Excel model to be able to model all the things... And I built this in FORTRAN of course, because there wasn't any Excel in these days. I'm talking now about the early 1970s. And... So anyway, we all... So I built this, or, yeah, about '72, '73 probably at this stage, I think, from the way I'm going. So anyway, I built this system, and it was very, and it worked, and they were really happy. And anyway, I helped them expand it and develop it. And, they actually wrote a story, I've still got it somewhere in my archives, in the *Toronto Star*, about how they were, you know, very innovative in the use of computers. And I got my picture in the press [laughs] and all that sort of thing. Oh it was a bit of fun, you know. And, so, that was the sort of thing I was doing. And I was, you know, and I just enjoyed that, because you saw very quick results, whereas from the, you know, the old-fashioned, you know stuff

where you, you know, wrote programs, and you sent them off, and you got results back. Working on it, it was just before the days of, of the PC coming out, and, and being able to provide people with that sort of instant response.

[28:07]

And this was, therefore, centralised, big computers?

Yes.

In Toronto?

Yup.

Which then people dialled into...

Yup.

...from their own terminal?

Yup.

Provided by ComShare. And they paid by the hour, did they, by time?

Yes. They paid by the hour for how much time they used. There were various things. Because it, it was actually, the time they were actually connected to the computer, the actual amount of CPU time they used, and the amount of storage that they used. It was... So those were the, the ways that pricing was done.

[28:41]

And you spent two years there in Toronto.

Yes.

Then you move back to London.

Yup.

With ComShare.

That's right.

And you had a decade with ComShare in London.

That's right. Well I, what happened is, I, I got, I really enjoyed... They had a, a British managing director of the, of ComShare in Canada, a guy called Derek Price, and I got on very very well with Derek, and... And, anyway, and then, they had also set up in the UK, and, a chap called Ian McNaught-Davis, Mac as he was known, was the MD of the UK side. And I was getting to the stage, I was now in my late twenties, I think 28, 29, 27, 28, something around there. And I had sort of, I felt I had, you know, done my bit in Canada, and, was thinking about going back to Europe. You know, Europe had recently become part of the EU, and, I could see, you know, opportunities there. And, ComShare was planning to expand across Europe. So, they asked me... So I... So... And I met this chap Mac, and we got on well. He became another of my mentors later in my career, next phase in my career. And, so I moved back to the UK in about 1973, '74 I think, and started with ComShare there as a salesman again. And, and then I ended up... And they grew very quickly. They had a very big successful computer centre in Chelsea, and, the company grew, and it had a tremendous culture. It was, you know, it was, fast-pace, you know, make things happen, you know, you had to deliver, no place to hide. But a lot of fun. And we had some great parties, and some great times, and, you know. And then I became... Anyway, I worked my way up to becoming Sales Director. And in those days... Then, it was, I say, it was a very successful company. I had about 200 salespeople working for me, or sales and pre-sales technical people, installing stuff. And... And we had offices, we had about a dozen offices around the UK. And then we started opening up internationally and had offices in France, Germany, in the Netherlands. And then we started setting up distributors in Australia and, Canada – sorry, not, sorry not Canada, Australia, and, I've forgotten the other countries. Japan and various places like that. And I was involved in setting up all that, which was quite interesting.

[31:32]

This would involve the PTT allowing people to pass data over their lines, would it not?

Yes. Yes.

And sometimes it was very difficult.

Yes, it was.

Very political judgement.

And the, the... Well things changed very dramatically in the early Eighties, because then the PC came out. And, ComShare had developed software for doing some very sophisticated financial modelling, sort of, what I, what I call, what we used to call multidimensional XL. So, it's your multidimensional spreadsheet, so you look at things not just in two dimensions, but in as many dimensions as you want. So you can analyse your sales by product type, by customer type, by sales office, and you could put all these different things in and be able to get the analysis very much easier. And so we were actually moved, and the company moved out of time sharing, into selling in-house software for doing that financial modelling. And, that's... So that's... And I took the... And then, we went round the world selling this to other companies around the world, reasonably successfully, a product called Wizard.

[32:50]

And now you enter software sales.

Now I moved in, out of timesharing into software sales, absolutely.

Which is... Well you were running already, but this is really where your career really does take off, doesn't it?

That's right. And... So, yes, and again it's just one of those sort of, chance encounters. So I was at... I had got as far as I could go at ComShare. You know, I was the, I was the sales director of all their international business, but Mac, who had been my great mentor, and, you know, had given me lots of advice about running sales organisations and growing things, and, you know, but he was never going to retire. He had got a fantastic package there. And, he was also a very well-known, he was a very famous mountain climber, and did commentaries for the BBC on mountain climbs and things like that. And he also was the presenter of the TV series that the BBC did on, on the, you know, the BBC Micro, when that came out. So... But Mac was a great character, and we got on very well, but I, you know, I was always going to be in his shadow. And he was leaving me to do more and more of the day-to-day stuff as he was off doing his TV stuff. And, and then somebody came along, a chap I, one of my neighbours actually who I knew quite, who was an American who I knew quite well, and he said, 'I've got this Californian company called Ingres, who are looking to set up a...' And they sell this relational database. It's a whole new set of technologies, going to revolutionise database technology. And I had been doing a lot of this sort of thing, storing data, analysing it, all this type, using computers for that. And he said they're looking for somebody to run their international operations. So, I said, 'Oh, sounds interesting.' Anyway. And the, the CEO of that was a chap called Gary Morgenthaler. And, Gary was in London, and I met him, and we had a fantastic dinner, got on very very well. And, they offered me the job of setting up their European and international operations.

[35:13]

Let's step back a moment. When I first heard of this company, as you called it, Ingres, I wondered, why are they calling themselves by a French painter called Ingres. But no, it's Ingres [pronounced ingress]

It's not Ingres, no, it's Ingres. You're absolutely right.

A man called Ted Codd, actually an Englishman, a mathematician, working in IBM, came out with this new idea of building what had become, was to become a relational database.

That's right.

And he tried to get IBM to commercialise it; they wouldn't, because it would have hurt their income from their big database, IMS.

Exactly.

But, then people at the University of California Berkeley I believe...

Berkeley [US pronunciation], yeah.

Berkeley.

Mike Stonebraker at Berkeley, he was one of the, he was one of the main people from there, there were a couple of people from Berkeley who were on the board, Larry – sorry, Larry? Larry Rowe, and Mike, and Mike Stonebraker, were the two key guys at Berkeley who I met and got on well with, and took them on lecture tours round Europe about it, and things like that.

[36:29]

Eventually IBM did let the penny drop, and they, they launched... Well, System R was the...

Yes.

...was their experimental one. But Db2 was the relational database. And it was also integrated into the mid-range System/38 and later the AS/400.

Mm.

And raised a whole number of issues. But coming down the track as well is another company, which you went head-to-head with in Ingres, which is the mighty Oracle.

Mighty Oracle. While I was, before Oracle were, you know... I mean Oracle had been operating in the UK for about three or four years before I set up the Ingres operations in, in Europe, and they were great competitors. And Geoff Squire, who was running Oracle, and I became, you know, sort of, we would have stand-up fights through the press, you know, and, we always used to try and position ourselves as the good guys. We were the, we had come from the academic side and we had, we were the white hats and they were the black hats. But we had a lot of fun, a lot of fun, it was a great time, great time.

They certainly did. You did manage to get a reputation labelled on to them as really savage [NB laughs], of firing a third of their sales force, whatever they have done, they just, drew a list of their sales force and

That's right.

Fired, what is it, a third of it, or a quarter of it?

About, about, at least, at least a quarter, between a quarter and a third, somewhere like that.

Every year, just, out they went. In, in others came. And they also had some rather dodgy accounting practices, did they not?

Yes they did.

Which nearly made them bankrupt.

No. But... They did, but in fact at the end of the day they outsold us, and, you know, we were, the company was too technical I think in its, in its thing, and not sales and marketing driven enough. And, Larry Ellison, who was the founder and CEO of Oracle, was a great, you know, I mean... And, what happened is, we would come out with a new development, and Larry would say the next day, 'Oh he's got that,' you know. And, he would sort of, you know, cobble up something, and let the guys in the lab cobble up something that they could demo, that was demoware, and to say,

whatever big announcement we've got. And then, you know, and then just, if anybody wanted to buy it, they'd have to wait a few years, but they didn't tell them that; they just said, 'Buy this,' and keep working on it, and then we'll deliver you this in a, in another, in a few months. And of course the few months became several years. But they became very successful, so, you know, and, and overtook, I mean they're a much bigger, well had a huge, a lot of big successes, we won a lot of big government contracts against Oracle. And, most importantly, we won a, a big deal with ICL, where ICL standardised on Ingres as a database to sell, in those days it was the 2900s. And, that deal, I, I remember, you know, we had a lot of fun negotiating it, and when it was finally signed they paid us about \$10 million upfront, and I was in touch with somebody who stayed with Ingres all the, right up until, well, probably about ten years ago, through a couple of acquisitions that happened to it. And, the royalties that they had got out of that software ended up being over, over a billion over 20 years.

But, it didn't work, fighting directly with Oracle.

It was hard work. It was very hard work.

[40:19]

What platforms was Oracle... Sorry. What platforms were you running Ingres on at the time?

Mostly a DEC PDP, PDP-10s, and, things like that running, and the, the VAX... Sorry, not PDP, it was the VAX operating, VAX systems. So DEC were very big in those days, so it was a lot on minis, on those sort of computers.

Did you have to change much to run it on the ICL 2900 Series?

We didn't do that work. ICL did that themselves, and, you know, modified it to run on that. And by that stage I, you know, I, I was very heavily involved in negotiating the deal, and winning it. But, you know, my technical days had long since gone, I was not involved in the translation to the, translation of that onto the ICL systems.

[41:18]

So so far in your career, Nic, we've had London, Edinburgh, out to Toronto, back, presumably to London, were you based in London?

Yes. Yes I was based in London. Yup.

And, now, the Nic feet are getting itchy again, are they not?

[laughs]

And, the Bay Area is calling, 'Nic, where are you? We need you.'

Absolutely. Absolutely. Well, I went... Ingres, I had a great time there. And unfortunately, you know, things changed. My mentor, Gary Morgenthaler, who I got on very very well with, the board decided he wasn't growing the company as well as he should, or as fast as he should, whatever, and moved him aside. And they brought in a chap, and I can see his face and I just can't remember his name now, who came from CA, Computer Associates, to, to run the company. And he and I did not see eye to eye at all, you know. And, he was one of these that looked, everywhere outside America... I'll never forget, the first time he, he arrived in Europe, you know, it was a... His plane arrived about noon on a day. I went to Heathrow and picked him up. And it was a lovely sunny day. And I said, 'Well, you know, let's go and,' just to try and get to know him, I said, 'Well let's go and find a nice pub and have a, have a lunch and pint of beer.' So we went to the pub. He insisted on trying to pay, went into the pub, and couldn't believe it when they wouldn't accept his dollars. He said, 'Well everywhere I go in the Caribbean, they take my dollars. You know, why don't they take my dollars here?' And that was the guy's attitude, you know, that, whatever happens in America, you just do a, a smaller version of it in the European countries. Didn't understand the different culture in the European countries and all that sort of thing. So, you know, I could see that it wasn't going to last very long. We, you know, we weren't going to get on. So...

That was another very aggressive software company, CA. They made a lot of acquisitions, didn't they. They bought... And then they plugged them into this unbelievably aggressive sales force.

Exactly. Yeah. And, you know, I mean, heavens, I've been in sales for a long time, but I've always been, like to think, you know, I've never conned people, or, you know, sort of, pressured them into some of the sales techniques that I've seen used. And I always believed that, you know, we were selling value and quality for what people wanted. So...

[44:06]

Did you look to Gupta, or did Gupta find you?

Gupta found me. And I was... And he was looking to... And he was doing on a PC what Ingres had been doing on mainframes – on minis in those days, and, set up a, a set of software to do SQL databases, and, and particularly around networked databases. There was a company called Novell that had done very well in networking PC software. And so, this software did that. And then, also... And this was just when Windows was just coming out, and graphical development tools on Windows, they were very ahead of the market in that. So I went there, and in three years I grew the business, the European business, to be bigger than the US business in three years from a standing start, and just had a lot of fun with that as well. I brought a couple of my old managers from Ingres across who also were looking to change, and, you know, we had a great three, three or four years, I think about three years, where, you know, the businesses just went out there, there was the market for it, and we knew where to go and we knew where to find the right sort of people. And, we were very very successful.

Nic, why was it so acceptable in Europe?

I think, the PC market had taken off, and, people were looking for tools to make PCs more usable. And, you know, we understood the, the relational database part of it. So we're selling a highly compatible SQL database that runs on PCs. And, we did some fascinating deals, and I was always looking for the big deals. I mean, I remember

negotiating a big one with Siemens, who were in the early days of MRI scanners, and, they were looking for a database to manage all the scans. And, so, we managed to convince them that they could do this on a, on a, effectively a, you know, a PC in their, based in their scanners, and then connect all those PCs – all those scanners together to get all the data. And we ended up with a multimillion pound order for those when, you know, I was working on deals for databases for graphical software for the early satnav systems and things like that. So a lot of very interesting projects I got involved in. It was, it was a fun time, another fun time.

[46:57]

And then one day Mr Gupta called me and said, you know, ‘You’ve done very well in Europe. We’d like to, you know, would you like to come over here to the US and run the US business for me, and, take over and run our worldwide sales?’

Which you did.

Which I did. And, you know, it happened at just about the right time. As I mentioned earlier, I got married some years earlier, and my, my two stepsons, who I inherited, were now just about to go to university, so, when they went off to university, we went off to the States for a couple of years. And then, both of them came out and did secondary degrees in the States. So, I had a, an interesting time in the, in the States. And in fact, quite interesting, one of the first things that happened when I got there was that, Oracle were realising they needed, they tried to develop a database version of their software to run on PCs, and, couldn’t. And they just, you know, they just hadn’t got the right culture and the right fit and everything else. So I did a deal with Oracle to sell the, to resell Ingres’s – sorry, Gupta’s software on PCs. And, and that was great. What I hadn’t realised at the time that I was negotiating with this that Mr Gupta, Mr Umang Gupta, had been fired by Larry Ellison and they didn’t get on very well. But anyway, he let the deal go through. But then Larry tried to buy Gupta, and put a, an aggressive bid in to buy it, and I told Mr Gupta that we should take the deal. And he was determined that he wasn’t going to take the deal, so that sort of ruined my relationship with him. And, this was in about 1995, something like that, about that time.

You left in ’96.

Yeah, '96, OK. Yeah. I wasn't far out. So... You know, and this was before the, you know, the dotcom boom and the tech stocks had really started to take off. So, you know, I had, I used to have a spreadsheet on my, on my system that linked into the Oracle share price and told me what my shares were worth, which was many hundreds of millions, looking at how the, you know, if I had converted my Gupta shares into Oracle shares. But, c'est la vie, you know, that's life in the fast lane.

[49:44]

You're not particularly driven by money, are you?

No. I never have. I've always... You know, think, the things that really motivate me are, working with people, and, trying to make things successful. I like successful projects, I like helping people's careers, I'm very proud of the fact I've got a lot of people who I think I've mentored. Having had a couple of key mentors myself, I've looked, and, I've tried to help mentor a number of other people, and I have a lot of people every now and again call me and say, you know, 'You gave me great help with this.' And that gives me much more satisfaction than money. As long as I've got enough to pay the bills, and to... And I sometimes think I've probably been a bit stupid, I haven't made... I've always worked, for some reason I've always picked the companies that were number two in their marketplace. I've never worked for one of the, the big guerrillas. I've always worked for one of the smaller ones. So you're always having to compete hard. I don't know, just the way it happened. I mean Gupta was first in the marketplace, then a company came along called Powersoft, and, Powersoft, you know, actually had a better sounding name to be quite frank than Gupta, and they did very well. And, they sold out to, to Sybase, who are another start-up database company. And, you know, anyway, Gupta didn't, and... And so that sort of, I suppose, that soured my relationship with the founder when I said, 'We should sell.' And so I left about six months later.

[51:27]

Are you more comfortable in the position of number two?

[pause] I... It all depends on who the number one is. You know, if it's somebody I get along well with, then it's no problem at all. I went from there to a company that became called Constellar, and that was doing enterprise application integration, and it was a British company set up by a chap, and, I went in there as COO, and very quickly built it up, again with a lot of big orders, and knew where to go to get that sort of stuff. And this was about bringing data from lots of different sources, what people used to call the islands of information, and being able to integrate that, to be able to give a much, without having to change all your systems, but to be able to integrate the data over the systems, to be able to produce new sets of information, and things like that. And... Unfortunately the, the chap who had founded the company, had good visionary ideas, but he, he started to get a bit too carried away with what he thought he could do, and all the rest of it, what was realistic. And anyway, in the end, he left and I took over the company as CEO. So... And that, I had a couple of interesting years doing that, and, you know, I...

[52:50]

While you were there, we had the Y2K experience.

We did. Absolutely.

Now, what... We've done a lot of work in the Archives, asking people about Y2K. We've got a paper on it as well. There's a big range of opinion. One opinion is, it was a very, very clever piece of marketing by software companies and consultants, who basically stitched up users, and forced them to upgrade, or, it was a magnificent piece of work, because nothing really did fail. There were some failures in some places, but the proof of the pudding was in the fact that, planes did not fall out of the sky. Where are you on this?

I would be somewhere between the two. I think there was, I think it was a great marketing con job. I think they did... Yeah. I, I think there probably could have been some problems. I don't, I think it was a bit over-hyped, how bad the problems were, but the fact there were no problems at all was great, it was fantastic, a good advert for the IT industry.

And you were able to...

It was a good... It, it was a... It was well-used as a marketing tool to get people to upgrade their systems.

Yes. To pressurise them.

Yup.

But it was a bit of a con, did you say?

I think it was a little bit over, over-egged.

[54:13]

OK. In the public sector, we get a string of very public failures, because it's a public sector, databases, records, National Health Service records for instance and so on and so forth. We don't hear as many from the private sector. But you have been selling software to both sides. Would you say there are as many failures in the private as in the public sector?

[hesitates] I would say that, what happens in the public sector is, they always try and go for huge Big Bang type solution, you know, like with, you know, the national, the national, NHS records that were going to be available everywhere on a project called Spine I think it was called at one stage. And... And then they bring in, you know, these great big companies like Accenture to run them. It used to be Andersen Consulting in the day, but then it became Accenture. And, you know, they, they're great, but, they always underestimate the complexity of dealing with the myriad of exceptions. What kills these things is, there's, you know, there's one standard thing which sort of, which, which everybody thinks is the right thing, but there are millions of exceptions. And it's trying to deal with all the exceptions that have built up over the years. And, the Government isn't tough enough to go back and say, 'I'm sorry but that's the way you're going to have to do it now. We're not going to allow all these exceptions any more.' Whereas in, in companies, if they're going through that thing, they say, 'Sorry, we're going to change it, and, you know, we're going to get rid of

some of those exceptions.’ So I think the reason you have these big failures is, they try and accommodate too much, and without looking at how much change they’re going to have to make, and then find that the, the changes that are going to need to be made to, you know, processes and practices that people have, is too difficult. So they, they say, ‘We’ll have to change the software to handle all these different, you know, myriad of complexities.’ And that causes the problems. That’s why you get these big failures.

And it’s not as if a government can say, ‘Well, no, we’re not going to have that type of customer.’

Exactly. Exactly. Yup.

Private company, well, public, plc, they can say, ‘No, we just don’t want those customers. They’re too granular, they’re too small for us.’ Whereas a government can’t say that.

I mean, don’t... You’ll get me going very quickly soon, but you know, I mean quite frankly, the, the latest example of that is the track and trace system, which, you know, they wanted to have a big centralised system. Everybody I know in the IT business told them to have, you know, smaller modular systems on a local basis, get the local system working, and then leverage it up from there. They wanted this Big Bang approach, which has been a complete, you know, we’re going to build these apps, and, you know, we’ll do everything ourselves. We don’t need any input from, Google or Apple. We’re going to do everything ourselves. And it’s monumental flop, and we spent 20-odd billion in, in building stuff that doesn’t work and has been... That’s one of the reasons why we have one of the highest death rates in the world, or *the* highest death rate in the world. It’s not the only reason but it’s one of them.

[57:43]

We’re still in the Bay Area.

Yup.

And from 21 to... Sorry. 2001 to 2002, Support.com, Inc. What was that about?

Probably... You know... [laughs] Not one of my better moves. Not one of my better moves. The honest answer is... People don't realise, you know, when you had the dotcom crash in early 2000, it really hit the Bay Area. A third, one third, of all the people employed in the IT industry lost their jobs, in the Bay Area. You know, it was huge cutback there. And, there were whole office parks that were empty. You know, suddenly there was just nobody there any more. It was quite a devastating time. I think, people in the UK, it didn't, the impact was not as great as it was in Silicon Valley. So, you know, suddenly... We sold Constellar, that I was working for, and, and you know, frankly, we didn't get as good a price for it as we wanted. We were hoping to get a public offering, an IPO as they call them, an initial public offering, just about, in the early 2000s, just as the market was crashing. And that didn't happen. And, so, we sold the company, to a company called DataMirror that then in turn was acquired by TIBCO. And, so... And I left as part of that. So then I'm looking around. And a job came up at, and it was just down the road, and it was going back to running international sales. I had always done well at that job. And so I went in there. And, and then after about six months they, they brought in another, they brought in a, a sales guy to run worldwide sales, who was another one like the one I mentioned before, who hadn't got a clue about, anything outside the US, had no international experience. And he and I didn't, didn't work well. So, that only lasted for, you know, about a year or eighteen months, something like that I was there. Not one of my better choices.

And you were out?

And I was out, yes.

[01:00:09]

What was your next move?

Well, at that stage, we had been considering moving back to Europe. Both of our sons, as I mentioned, had come over to the US and both done their postgraduate degrees in the US, and both had moved back to Europe. And, you know, one of them

was looking like he was going to get married, and my wife was thinking about grandchildren, and all sorts of things. So... And then, September the 11th happened. You've no idea the... You know, by that stage we were pretty settled in California, and, we had bought a, a house on a sort of, you know, executive housing estate, you know, a very, very nice house. And we got on very well with our neighbours. And I'll never forget, you know, after September the 11th, a couple of our neighbours came to the door, and, banged on the door, and said, 'Why aren't you flying the US flag?' And we said, 'Well, why should we be flying the US flag?' 'You've got to show support,' you know. And they all had put flag posts up, literally, with a, you know, Stars and Stripes. And it was just a different culture, you know. And if you asked somebody, well, has anybody thought why they've, you know, why has September the 11th happened, you weren't allowed to ask questions like that, you know. If you're not for us, you're against us, is the attitude. So... And it was that and a lot of things, like, kids had moved back, as I say. So we decided... And frankly, I had got a bit tired of the sort of corporate, the corporate life at that stage. So, we decided in 2002 to move back to, to Europe. So... To, back to the UK. And that's what we did. So we came back here in I think May 2002. And, at that stage I, you know, how old was I then? I was probably about 58, late fifties. And... So, I think I sort of, started to feel a bit burnt out in the corporate world. You know, I had had a, you know, I had been there, done all that. And the thought of doing another, you know, travelling all the time type job again didn't appeal to me. And, you know, and we had made a little bit of money, but not hugely wealthy, but you know, I didn't have to worry about, you know, a salary coming in every month, because I, I don't need, you know, I don't need my own private jet, or I don't need three houses around or anything like that, you know. My tastes are relatively modest. I like to eat in nice restaurants, and I like, you know, have a decent car, but I don't need five of them, or anything like that. So, I decided to, to move on to the next phase of my life which was looking to put something back. And, so, I joined actually the IT livery company way back in its very early days. I knew Barney Gibbens, who was the founder of the IT... You are familiar with, obviously, with the IT livery company, WCIT?

Yes.

So, I... And on a chance meeting, when I came back, I bumped into a chap called Mike Warburg, who was the, in those days was the treasurer of the, of it, and he said, 'You know, you should come back and get involved.' And I, I joined it in 1988, before I went to the States. And so, I was, I was about the 200th member to join I think. So... Anyway, so I got involved with that, and started doing quite a few things there, helped fundraising for them, got involved in a few projects. And eventually I got asked to become, you know, to go on the path to become Master. And I've had a fantastic time, you know, being involved in a lot of interesting projects. I'm still very active now with the livery company, and, you know, trying to look at putting something back, having had a, you know, a relatively interesting career. So... And then I became non-exec director of a number of early-stage companies, and I've done a bit of angel investing, some successfully, some not so successfully, but it's been an interesting experience. That's what I've been doing for about the last, fifteen, eighteen, seventeen years since I came back from California.

[01:04:33]

So you put together a portfolio career...

Correct.

...for yourself. And, your big project now is behind you, so to speak.

Yes, exactly. [laughs]

Aeralis. Now this is, a UK attempt, I don't know if it's Great Britain or England, but it is UK, isn't it?

Yes, UK attempt, yah.

To build what I... I'll explain it to you, [laughs] and you tell me if I'm wrong. Because then, that will check on how your marketing is going.

OK.

And how well the Times did. You take prefabricated, or pre-designed, pieces of an aircraft, a jet, and it's meant to be a trainer, and you can put them together in different configurations, and therefore build a different type of trainer. Is that it?

That's correct. It's much... That's the basic. It's much more than that. The... It starts with what we call the common core fuselage, which is the, the basic fuselage of the aircraft. And, then you can put different wings on it to achieve that. So, if you want a dose... And you have to know a little bit about the current pilot training. To train a pilot for the, to fly a fast jet in the Air Force today, used to take about three years. It now takes about five or, or even longer sometimes, because of delays and... And they're using primarily the Hawk, which is a great workhorse, but they're all pretty old, and, you know, the maintenance of them is, is pretty high. And also, they start out in a basic trainer, and then they go into the Hawk, and then they have to go into an F-35 or a Typhoon, Eurofighter, or, sort of aircraft. And, my stepson, Tristan Crawford, has been passionate about aircraft as long as I've known him, which, as I say, is now well over thirty years, and, he has had this idea. He started out, he did a, he did engineering at Cambridge, and then, he came to the States and did a master's in ergonomics in Chicago, and then went back to the UK and got another master's in aeronautical design at Cranfield, and he worked for about ten years, or, nine years I think, eight, nine years, at Airbus. And, he was on the crossover between engineering and marketing. He did a lot of work on, this was when Airbus with its family of aircraft was doing very very well, and he was looking at how they could use the financial, financial models, build financial models to communicate the success of this, of the Airbus family of aircraft. So... And then he ended up working at Boscombe Down, and saw the Hawk and other aircraft and thought, every one of the military aircraft are designed, and they're also designed around an engine, so you can't change the engine. So, he also designed this so that you've got a central, a cell pod underneath the fuselage where you put the engine, and, we have a patent on this and on the modular design. And, you know, it's quite normal in civil aircraft that, you know, you can buy an engine from Pratt and Whitney, GE, or Rolls Royce of course, and they all fit in a pod underneath the wing. Well nobody has ever done this with a military aircraft until we came along.

[01:08:23]

So Tristan had this idea five years ago, and this is by the way not his first idea [laughs], he's had several others, and he had always worked for big companies. And he came to me and said, you know, 'I've got this idea, and, you know, it's fantastic, and it's going to revolutionise it.' I know nothing about the military aviation market, it's not my sector at all, but you know, I listened, I gave him some advice, what do we need to do, how do we need to get it to go. And, I must say, you know, if I have to look at any of my protégés who I've helped mentor, he is one of the ones who has done fantastically well, and hopefully he'll continue to do well in the near future as well. And it sort of, it expand- And it's just, a lot of it's come down through network of contact. Early on, one of my very good friends in the IT livery was the Master the year before me, a chap called Michael Webster, and, Michael is an IT lawyer, and worked, he worked with 3i's for many years, looking at all of, all the legal work about putting in, investing money into early-stage companies. And, I told Michael about Aeralis, and he was quite interested. And, anyway, I was still not sure, and I was chatting to, and Michael's a keen golfer, and I play golf badly sometimes, and I was chatting to Michael, and he said, 'Well it's funny you said, I happen to, one of my best friends that I play golf with used to be in the aviation defence sector, and knows it very well, and, he started out as, a chap called Brian Hibbert CBE.' And Brian started out as an apprentice at Rolls Royce, and then went to a company called Hunting Engineering, and he became Technical Director and then Managing Director of Hunting Engineering. Hunting wanted to split, and they do a lot in North Sea oil, and they wanted to sell off the, the defence business to fund more expansion of the North Sea oil business, this was the late Nineties. And Brian led a management buyout and raised money to, to buy the company out. And then he ran it for about seven or eight years, doubled it in size, and then sold it to Lockheed Martin, and then stayed on for a couple of years as CEO of Lockheed Martin's European operations.

[01:10:58]

So... And, I wasn't sure whether this idea was really going to take off at all. So, Michael Webster arranged for Brian to meet my stepson, and, Brian came back and said, 'Yeah, I think this is a fantastic idea, it'll be very successful.' So I said to Brian, I said, 'Well Brian, you know, Tristan wants to get this going. He needs some money. You know, if you put in x, I'll match it and put in x.' And, you know, I knew about SEIS and all these sort of schemes. I said, 'We'll get it under SEIS,' we'll do all this. And...

What is SEIS?

Oh, sorry. SEIS is small investment enterprise fund, scheme. And it's a scheme... So, if you, if you invest, it's limited to £200,000, you get 50 per cent back, and, the company's got to be less than two years old, and, it's got to be less than £200,000, and there's various other limits. You get 50 per cent of the money back as a, in tax. And then the second one is EIS, which is the Enterprise Investment Scheme, and that's for bigger companies, and there you get 30 per cent of your money back. It's to encourage companies to invest in early stage. And, I think it's a fantastic scheme that the Government's come up with here. And so, we raised about £150,000 in the first round of funding, and that allowed us to go and file the patents. It costs a lot of money to file patents. And then to, do a whole set of feasibility studies on, is the, how big is the market? And we found out there was a market of about, six and a half thousand aircraft out there that need to be replaced during the next 20 years. I mean, the Hawk is, went into service in 1974, and they've sold over 1,000 of them, but BAE are no longer in that business, and don't have any plans for a replacement. And there's, the French produced a plane called the Alpha Jet, and that's even older, and again there's no, there's no replacement planned. So you can see...

You're in charge of investments are you?

So I'm in charge of investments, yes.

And you've raised two million?

Yes, we've raised a couple of million already, and we're in the process now of trying to raise another, 50, 60 million to build a couple of prototype, flying prototypes. And we just announced last week a contract with the RAF, which unfortunately was very badly worded, but it goes on about, £200,000. The £200,000 is for one piece of work which has to be done by the end of this financial year, which of course is the end of March in the government cycle. So it's a, so it's, [laughs] it sounds like the whole contract's worth £200,000. That's just the first, that's just the first phase for this work this year.

[01:14:02]

This is probably an impossible question to answer, but, what proportion of value is going to be IT?

It's a question of whether you look at it in terms of the cost, or the benefit to the project. We're looking at IT across every area. We've already got some people, some PhD, got some PhD IT students doing work on a self-learning AI and machine learning flight control system, so that you can teach it to learn to fly itself and to be able to adjust to when you get high winds and different pressures and things like that coming up. So, that's one part of it. But the big part of it is collecting data, and, the big data analytics opportunity with this is, is tremendous. At the moment, all the systems that are used in training are all designed by different people, and have got different components. So, the simulators are made by one company, the learning systems by another. The aircraft don't have any sort of, live data link. Aircraft has a live data link. So we'll be collecting data, you know, while we're flying. And the pilot suits these days are all equipped with biometric sensors, so that the instructor can immediately see when a pilot is being stressed by things, and learn to, you know, adjust how he's going. So there's a huge IT component in this. In terms of actually, the cost of development, it's about five per cent, it's about, between five and ten per cent, about seven or eight per cent I think, in terms of the cost of the whole project. But it's important, and that's why, it's the IS at the end of the name of Aeralis. But in terms of the benefit, we think it's about, you know, the modularity is the key benefit, but we think that the IS gives us the ability to scale the, the, all the IS systems – sorry, the modularity gives us the, if you scale the IT over so many different aircraft systems, that, you know, that we get huge benefit out of it. So the benefits become very significant. And it talks in that article about three variants. We've actually got plans at the moment for about 20 different variants.

[01:16:36]

So... And again, there are some great pals I talk about to Tristan in the IT industry. You probably remember, in the late Nineties, early 2000s, Gartner and people like that were telling large companies that, you know, you've probably got 40 or 50 different major systems out there that you are using, such as, you know, Oracle, Ingres, you've got Linux, and you've got, you know, IBM's operating system.

You've got all these systems. And unless you... And you've got PeopleSoft, and you've got SAP. Unless you cut down to having about ten systems, you won't be, you won't be able to maintain everything that you've got in the future. And, that's exactly what's happening today. One of the air marshals, a chap called Air Marshal Andy Turner, who is in charge of capability for the Air Force, has said that the Air Force has 48 different types of air frames in use. And he said, it's just, the maintenance... And some of them... And most of those, they've got less than ten of the aircraft, and the maintenance costs of those are huge. So we see that our modular aircraft can handle about 40 per cent of a total air force's requirements in the future, you know. So...

[01:18:02]

OK, last two questions from me.

Yes.

A very silly question but one which is really on the, on the front pages now. Do you have any bitcoins, and would you have any?

I'm probably a fool because I didn't buy any bitcoins. To me, it's the ultimate scam of all time. It's pure, it's pure bullshit marketing. There is no value to them at all, other than hype, and they will crash badly at some stage. And it's a question of, if you buy it, how, you know, you have to have a plan for how long you're going to keep it before you sell it, hoping the price has gone up.

[01:18:40]

So good advice to everybody. The next and final question. What are you most proud of having done in your career, Nic?

I think having helped a lot of people, and a lot of other people, and, you know, and some charities and other things I've been involved in, do better. And to see greater opportunity and bigger horizons. You know, mentoring people is about opening the doors, to them seeing things in a different way than they were seeing them before. It's about helping them, you know, see a path and a vision of how they can achieve

the dreams that they've got to make them happen. And, if I've helped do that for a few people, I really, I feel very honoured.

I think that, from what you have said and from what other people have told me about you, that you have indeed done that. And we feel very honoured to have your contribution to the Archives of Information Technology. Thank you very much for your time Nic Birtles.

[End of Interview]