

David Probert Access Summary

00:00:00 Introduction

David Probert. Born in 1951 in Hemel Hempstead Hertfordshire. Father worked for government ministry of transport in London, then moved to Hemel Hempstead and then Swansea to run personnel division of vehicle licencing.

00:00:59 Education

David was the first in his family to go to university. Studied mathematics at Bristol University. Won scholarship from British Telecom (BT) and would work in the labs during summer holidays in Dollis Hill, London, and worked on tele-traffic engineering. Got a good understanding of statistics. Got good results in maths degree. Went to Cambridge University to study under Professor Peter Whittle to do a PhD in self-organising systems. Known as statistical machine learning today. David recalls it was the first PhD in that topic at any university in the United Kingdom. Started his PhD in 1973.

00:02:03 Working with British Telecom: part one

After his PhD, David went back to working with BT. Developed their first strategic computer model in Fortran 70. Wrote all the code himself and created a colour graphics interface and control system. Took trips to the states and visited AT&T and Bell Labs in Murray Hill. Spent a few weeks in Mexico working with Telefónica Mexico to help them develop similar computer models. Started PhD at age 22 and was 25 when he began working with BT again. Had a two-year contract with them and finished the model at age 27.

00:03:01 Impact of the model

The model was well received, and David was asked to use it for strategic planning in the BT privatisation which took place in the early 80s. worked directly as a member of the main board and gave several presentations to the board of directors. Was asked to manage a partnership with Digital Equipment Corporation (DEC) in Reading.

00:03:37 Projects in Dollis Hill

A large enterprise with around 20 divisions all focusing on one area such as optical fibre research. David was assigned to the maths division. He recalls that it was called research division 9.31. worked as mathematicians at desks with notepads and did equations. Had basic computers. Used ALGOL 68 with a teletype 50 bode per second Gulfport computer. Was very slow and after programming the computer it would work in background mode with nothing happening in real time. David worked on the implications of adding noise to digital communication systems called pulse code modulation. Published first research paper in June 1970 at 19 years old.

00:05:07 Working culture at Dollis Hill

Post-World War II culture. Strong government orientation, secretive, with each division doing its own work. David likens it to the movies. Did similar work with BT in 1971. Very conservative working culture. Had special typing pool for doing mathematics equations. Formalised and bureaucratic, never met director of Dollis Hill. Very remote location. Anecdote about taking the train into London to visit bookshops during his breaks. Had an important role in WWII with bunkers underneath and was meant to be an evacuation centre for the British government.

00:06:45 Working with British Telecom: part two

Had been doing mathematics by hand. Had programming experience with the ALGOL 68. Wrote strategic plans for BT in 1976. Working remotely on IBM 360 and 370 computers with teletype terminals. Very large computer model. Around 5000 lines of Fortran code. Would have to compile information and then set up parameters for the business scenario that was being modelled, finance manpower limits and equipment modernisation. Had alpha numeric plots for the graphs. David was not satisfied with this and moved to Marton where he saw how they did VSLI designs. These were high-tech coloured monitors. Design chips for telecommunications applications. Had colour coded lines for particular layers of the chips and layers between transistors, resistors and capacitors.

00:08:33 Early programming at BT

Realised this could be used for computer planning such as using the same system to plan plots and graphs from business scenarios. Convinced his manager to spend £12,000 on computer monitors, a touch pad, control systems. Worked twelve hours a day. Personally wrote all the code in Fortran for a colour graphics monitor to drive the system. Would run the system remotely on the IBM and the results would come back in a big database which would then go into the colour graphics monitor. First application to have business graphics in quasi real time. Could make comparisons between scenarios and could see it in multiple colours on the screen. David designed a window-based system. Did a lot of early work in programming software for BT before they started working with DEC.

00:10:14 First experience working with DEC

Approached in 1983 as he was part of what was known as long range and strategic studies. Did work with optical fibres and video conferencing. They wanted a site to test run new range of laptop computers and PCs. Used the systems before they were available on the market. Used Professional as an interface for BT models.

00:11:18 Using the Rainbow and Professional systems

First use of DEC was the Rainbow and Professional systems. Robust. Lacked certain flexibility when it came to networking, connecting printers and email. Had an all-in-one system. David saw it as a closed world and compares it to American Online (AOL). Worked well but was not good at networking to the rest of the world. Solid systems, never crashed, no technical problems. Old floppy disc systems. Big military monitor that weighed around 10-15 kilos. Everyone in the office had DEC systems, either VT-100 or VT-200. Also experimented with Phillips word processing kit.

00:13:45 Difference in generational attitudes between colleagues in DEC

David recalls how the boss was resistant to email and was the only person in the office without a DEC system as he would use his secretary to print out his emails. David typed out all his documents from the early 1980s. Him and his colleagues adapted to email very quickly.

00:14:16 How the Rainbow and Professional systems changed how the team worked

Documents could be turned around quickly. Could write a draft and have a meeting to discuss it in the same day. Previously, it would take a few days to a week to get the typed version of a draft.

00:14:57 Comparing the DEC with other computer makers

Did programming on an original Apple Macintosh VisiCalc. Loved it as it came from Xerox PARC Smalltalk. Was more intuitive and easier to programme than DEC. Apple's weakness was that it was not computationally strong or robust enough for the modelling David did. It was good for simple modelling like spreadsheets but not corporate business with thousands of parameters. DEC was easier to use and link into backend systems. Frontend could also be connected, and the parameters could be sent back and forth.

00:16:26 Working with British Telecom: part three

Had a programme called IT overlay during the privatisation. This was a proposal for BT to make joint ventures and acquisitions in the computing industry. David presented this to the board in 1983 or 1984, but he cannot remember the exact year. The presentation included a financed set of business plans. Board decided it was too complicated as shareholders had already been written to regarding other investments. As a result of this, David got to meet the board members. This included John Alvey.

00:17:38 The Alvey Program

John Alvey spearheaded the United Kingdom government Alvey program. This included several components like VLSI and intelligent knowledge-based systems (artificial intelligence). Was not called AI at the time and there was a negative attitude towards it. Instead, people used intelligent knowledge-based systems and expert systems.

00:18:20 Explaining expert systems

Expert systems were based on a set of rules and was like a database. David uses the example of antibiotics and there would be a database of when to take and not take them, as well as side effects. Doctors could input a patient's symptoms, and the system would look for the right dosage for them to take. Example of a system was MYCIN in America.

00:19:21 Explaining intelligent knowledge-based systems

An extension of expert systems and used vision analysis as well as semantic and natural language processing. BT would approve projects from universities and fund them. They were

usually a collaboration between the industry and the universities. David represented BT on this government committee.

00:20:20 Being in charge of BT's DEC account

In September 1985 David was assigned to run the marketing and strategy side for DEC. A colleague ran the technical side. Aim was to engineer a commercial solution that linked DEC's VAX computers and BT's private automatic branch systems. No one had linked computer and telephone systems together before. ISDN was becoming mainstream. Had a protocol called Q-931 which was like a virtual switch that would very slowly send information between the telephone and computer. This is now called computer telephony integration but in 1985 David and his team established this. After two years BT came up with a commercial version called STANZA. Made strategic ventures during the privatisation with major businesses in the IT sector. Had meetings with DEC strategists to help work with BT. Would go to their offices in Massachusetts to see the team pioneering ethernet. BT was interested in metropolitan networks and LAN networks.

00:23:42 The importance of the project within the company

DEC was a good fit for BT as ethernet would help them develop telephone communications into homes. This was a key development for BT in the computing sector and David met with the BT chairman, Sir Ian Vallance to brief him on the project for the Davos Economic Forum in spring 1986. This was a project that went to the top of the business. Also worked on tariff rebalancing for BT to increase the price of local calls but lower international calls. Most of BT's profits were from international telephone calls. Briefed Sir Ian Vallance on how important DEC was in complimenting the work that BT had been doing. BT were strong with optical fibres and physical communications and could use DEC to extend the fibres. Briefed him on the DEC owner, Ken Olson and the fact he was a quaker so there could be a potential cultural mismatch in the hierarchy and management style between the two companies.

00:26:32 Outcome of the project

Very positive results came very quickly. Submitted plans to main board of directors in March 1986 and received £10 million for research funding. Repeated this the next year. Worked closely with Angus Walker, the BT head of strategy. Was like a mentor. Showed David how to commercialise BT's research. BT acquired a 51% stake in Mitel which they eventually bought back. Had a joint venture with DuPont that had limited success. BT were putting lots of funding into working with DEC and were the only computer company that BT were working with. They bought equipment from other companies like IBM, but DEC was the only company they shared intellectual property with.

00:28:43 Moving to working in DEC

Came to a point in the negotiations between BT and DEC on what was known as Project Thomas where BT were unhappy with DEC hosting and running all the computing services and BT just providing the telephone lines. Partnership fell apart and David saw there was more of a future in networking and communications in DEC, so he moved there. Had been working with their teams already and loved their culture of peer-to-peer networking and the

quaker meeting room. BT was a very political organisation which David did not like. He wanted to be the one doing projects rather than participating in office politics. Was in the United States in 1986 and met several vice presidents including Bill Strecker, head of engineering strategy. Bill Johnson head of ethernet. They put in a bid for David to work for DEC. They liked that he was working on a visual calculus for intelligent systems. Called Bob Taylor who was head of marketing in Reading. Came to a decision in August 1987. BT were unhappy and tried to make him leave straight away but his team supported him, and he was allowed to stay and transition the work to them.

00:32:27 Working at DEC

Initial job was special projects manager. Ran all the expert systems marketing and added network service marketing. Based in Queen's House in Reading. Was a hexagonal building. All floors were round shaped. Carpark in the basement. Gym facilities. Dave Clark was his manager, and they worked on the marketing floor. BT was a big office, and David had a secretary and personal assistant. Peer-to-peer communications in DEC meant projects happened a lot faster.

00:34:54 DEC Worldwide Exhibition 1988

In Cannes. David was in charge of making the AI component happen. Was due to him having a PhD in the subject so he was the most experienced. Also had experience pitching technology to businesspeople. Describes AI as being able to focus information for the decision maker. Pitched this at the exhibition linked together with 12 other applications that DEC ran on VAX and PDP computers. David made lots of connections with DEC employees all over the world.

00:36:23 Working in DEC Park

Queen's House became DEC Park. Was like a technology factory and very different to any environment David had worked in before. Every desk had a pole next to it with a number on it which was their office number. Building split into two. Part one included all the United Kingdom team such as marketing service and field service control. Everyone was accessible. No one in a locked office. Part two was engineering operations. Nearby street where customers and partners would always be. Very cultural and inspirational. Street had many European flags. Created a motivating environment.

00:39:56 Responsibility for managing projects

People were allowed to fail but not too often. Given responsibility of projects. Quaker meeting room where people could volunteer to run projects. David did this several times for projects in Russia and projects with the internet. In November 1991 David was in charge of negotiating for DEC and providing first international routers in Eastern Europe. Visited all the countries and met with university research departments. At this time DEC was managing the whole European internet. Backbone networks ran at 2mb per second. Operations centre in Sloterdijk in the Netherlands where all internet traffic went through. Was upgraded to 34mb per second. Systems were a high-end VAX cluster. Almost every university in Europe and the United States were running their research applications on DEC PDP systems.

00:43:01 DEC clones and replicas

David went to Russia in the 1990s and saw they were running their applications on PDP replicas. In Hungary they reverse engineered the systems and developed clones in a factory called Starkey. This was illegal but were hired to join DEC as they knew so much about the systems and became DEC Hungary. Some systems were legally installed such as the CERN network in Protvino, Russia for their high energy physics centre. In Moscow a director spoke to David and told him how they bought parts for the system from Dresden in East Germany rather than from DEC officially.

00:44:46 DEC's influence on its users

People at universities had been using the systems since DEC launched in 1957. They would do their undergraduate, PhD and later research on these systems. Would take skills learnt from this into other projects. Finance and energy sectors still using PDP systems until recently such as industrial control systems in energy.

00:46:16 Move from Artificial Intelligence to the internet

DEC wanted to move from product into services. Promoting and marketing in the educational sector. In late 1994 it became possible to send commercial traffic over the internet. Worldwide internet conference in Prague 1994 was a pivotal moment. David on a platform with influential people such as Vint Cerf who co-created the internet. Sat next to Eric Schmidt. IBM also there and tried to hire David as internet vice president. He was DEC marketing director for Europe at this time.

00:48:04 Internet plan for DEC

David made a proposal for funding for 10 technology marketing employees. Put eagle projects throughout Europe which were high profile concept plans e.g. one plan was to invest as a sponsor in the world's first supersonic car. Met with Richard Noble. Proposal was to run the website for his project and make its first video. In February 1995. Wanted to show you could put multimedia on the internet as at the time there were not many websites and no browsers. Put one of the first internet shops online with encryption by using Trintech. When the supersonic car broke the world record in 1997, their website was the busiest in the world, so it brought people to the internet. Computers for this ran out of Newbury business park but had to be transferred to NASA systems in the United States due to the demand.

00:51:25 Kolanet project in Russia

Set up around six years after the Chernobyl disaster. Aimed to show DEC could be used to improve the environment. Use network sensors to detect if there was a radiation leak and arrange for people to evacuate. Worked with Dr. Alexander Baklanov. Brought together scientists from Norway, Sweden, and Finland, as well as Dornier in Germany and DEC in the United States and United Kingdom. All supported by respective governments. A key contact was Alexander Rimsky-Korsakov who was director general of the radiation institute in St. Petersburg. March 1992 signed an early protocol. Dornier installed the sensors and DEC ran

the computers. People installing the sensors did not seem to understand what the sensors meant and turned the machines off, so DEC decided they needed to train people before they installed the technology.

00:54:42 Running internet training courses

Led to a wider training programme. Internet clinic. Educated people on internet security, chat, browsing. Would be on discs and do interactive training. Very successful across Europe, Middle East and South Africa. People thought of the internet as a network protocol from universities and did not understand it would be the mainstream tool for business. Had to train people in a hands-on way to help them understand and change their perception.

00:57:02 Creating internet kiosks

Not everyone had internet in their homes. Most people could make a phone call and an email but could not do larger things like send videos. DEC experimented with creating places like internet cafes which would have a dedicated connection to the internet.

00:58:08 Online shopping

DEC Sweden had a deal with a banking company and made ATM machines that DEC took to conferences around Europe along with credit cards. The cards had 'cyber shopping with DEC' on the cards to show the internet was not just browsing but included online shopping as well. The card gave 15 minutes of surfing time and then it would time out. Ran on Alpha 64-bit system. Card had an artistic impression of the supersonic car.

01:00:09 Describing the ATM system

Very heavy. Needed a crane to lift them. Later models had a moulded plastic shell that was hand custom made. DEC desktop system in the base. A screen, keyboard and roller board. Cable connected the screen to the laptop. Plugged into the internet. The shell came in different colours. All DEC hardware and software.

01:01:23 Creation of the Alta Vista

Next stage of moving the technology base of the internet to the social media and browsing world. Alta Vista would have robots that picked up information from the internet and would bring them to the Alta Vista database. Able to take every bit of data and put it into one database index with a 64-bit address. Whole internet on clustered servers. First time that a search term could be put into an engine to find a website. Before this, magazines would have lists of websites to go to. No way to search for information. People thought it was impossible to do. Revolution in search. In 1997. Google took the same concept but monetised it which DEC did not. DEC re-engineered Alta Vista for enterprises. Could index whole company data.

01:04:47 Company structure

David was always based in Reading. Team of ten were virtually hosted out of Reading. Included people from Paris, Stockholm, Copenhagen, and Vienna. Every country had an

internet marketing manager. At least 20 internet managers. Translated websites into other languages.

01:05:55 Cultural division in DEC

The internet division that David worked on was different to other parts of DEC. created friction at times. Some people believed they spent too much money on marketing, and it was a waste. David's team firmly believed that they were moving in the right direction and DEC needed an entrepreneurial flair. Previously DEC had focused on technology-based companies, but David's team believed they should move to advertising and manufacturing companies as well.

01:06:56 How DEC had changed over the years

1990s were difficult. Almost every quarter there would be downsizing. Profits not what they should have been. Trying to bridge the old and new world together. Created the first Dual Military Zone (DMZ) that was dual firewalls. Created the first VPN that they called the DEC Tunnel. Not widespread recognition that this was pioneering. Culture more interested on big systems.

01:08:32 Meeting his wife

Met his wife, Valentina through work in the Kola peninsula in 1993 in the beginning of the Kolanet project. She was managing international relations in the Russian Academy of Sciences. It had institutes all over Russia such as the Kola Science Centre where Valentina was at the time. Married in April 1997 in Abbey Baptist Church in Reading. Initially lived in Reading but have lived in Newbury for 27 years. Live in walking distance to where DEC had its networking offices.

01:09:58 Working with the Russian postal system

Early meetings were with Boris Petrenko, minister of the postal services in March 1992. Came from a connection in Canada where DEC had a lot of business. He introduced David to the manager of Technopost who did all the technology for the Russian post office. Worked together for a number of years. First started working on tracking and tracing post. First contract in northern Komi. David sponsored and presented at the first Russian postal conference in November 1992. Vladimir Putin there as he was the secretary for economic affairs at the time. David did not meet him as he arrived late, and Putin left early for a conference in Moscow the next day.

01:11:39 Meeting Russian officials

David sponsored the European youth orchestra in December 1991 in Moscow and invited senior figures. Gorbachev attended with his wife. Saw him again in 1993 in an airport lounge with security and his wife. Also met the minister of the environment, Daniel Lev relating to the Kolanet project. DEC were working at a high level in the government ministry.

01:12:43 Work in Ukraine

Worked at a high level in government ministry. Was involved in making the first website and fibre network for the Ukrainian Parliament. David gave training courses and seminars on internet security for Ukrainian government workers. Provided systems for Donetsk Technical University. Telecommunications research institute in Odesa that DEC provided an early system to. Installed systems in the Central Bank of Ukraine. Gave systems as they knew people would want to buy more.

01:13:51 Work in Georgia

David was responsible for the first website for the Georgian Parliament in December 1994. Since leaving DEC, David has done lots of work in Georgia under the auspices of the United Nations. This included an audit for the Georgian Parliament, security, and other ministries.

01:14:40 DEC's legacy

DEC provided internet standards and developments made under Bill Johnson and Jack Simonson in Littleton, Massachusetts. Palo Alto research labs in the west coast. DEC also developed other software like Millicent (small low-cost e-transactions). Huge amount of intellectual property that has gone unrecognised. Many network protocols were engineered and tested by DEC. They were unsuccessful in commercialising and profiting from them. David believes people are understanding its importance now as they are looking back on the creation of the internet and seeing what influence DEC had in it. Telecoms industry had no idea about lightweight protocols. Quaker philosophy that DEC used was needed to change how technology was being made. DEC should be remembered for lightweight networking protocols and making them happen at a low cost and often free of charge.

01:17:25 Personal legacy

Contributed to the development of technology in a practical sense. Sped up implementation of internet in many countries, particularly in the Middle East and Eastern Europe. People's fulfilment has been boosted through social media and networking.