



#### FAST FACTS

Customer: Roke Manor Research

Web site: [www.roke.co.uk](http://www.roke.co.uk)

Number of employees: 470

Country: Germany

Industry: Innovative solutions provider and contract research and development

UK Trade & Investment is the Government organisation that supports companies both in the UK trading internationally, and overseas enterprises seeking to locate in the UK. Its role is to help companies realise their international business potential through knowledge transfer and partner search support. UK Trade & Investment will help companies make sound investment decisions, based on their commercial expertise and unrivalled local access and knowledge.

## COMBINING DESIGN FLAIR, TECHNICAL INNOVATION AND PRODUCTIVITY FOR R&D SUCCESS

“The dependence of products and services on information technology has increased dramatically over the past decade,” says Sir John Taylor, Chairman of Roke Manor Research. “From financial services to transportation, healthcare, entertainment and all kinds of manufactured goods, markets and supply chains have globalised at a bewildering rate. The companies involved in these businesses have had to rapidly develop their capacity to deal with computing, communications and microelectronics. So over the past ten years they have been steadily increasing the amount of research, development and design that they outsource to specialist, focussed UK Research and Development (R&D) companies. Reasons for this is that they provide design flair, flexibility, world class technologies and risk sharing, with a trusted partner. One of the best such companies that has benefited from this trend is Roke Manor Research.”

Roke’s 17th century manor house, at the heart of today’s modern campus in Hampshire, began its life as a research laboratory in 1956, when it was bought by the Plessey Company and named Plessey Research Roke Manor Limited. The radio research group initially conducted research into electronic warfare and soon became a leader in this field. Throughout the 60s, 70s and 80s the company made significant developments in sonar, radar and radio technology, and also began to work in the civil telecommunications field – evaluating candidate systems for what eventually became the GSM mobile telecommunication standard used globally today.

Roke is unique in that although it has been owned since 1991 by German multinational Siemens – Europe’s largest employer – it is able to operate as an independent subsidiary company. It specialises in three main areas – networks, communications and sensors and provides innovative solutions and contract R&D to commercial organisations, defence R&D for the UK Government, as well as work for other Siemens business groups. But just because Roke is part of Siemens doesn’t mean it gets any preferential treatment. The company has to offer benefits on a case-by-case basis. This comes not only from technical innovation, but also commercial awareness, business



acumen and project management skills to ensure the end product is delivered fast and cost-effectively. According to Sir John what distinguishes Roke's UK skill base, from the rest of the world, is "the combination of flexibility, creativity and design excellence which enables difficult projects to be solved in shorter timeframes."

#### **Technical innovation and commercial productivity**

Roke's success is based on two characteristics that are representative of UK science and engineering as a whole.

The first is design flair and technological innovation – a historical trait that goes back to the industrial revolution and engineers such as Brunel.

The second is excellent business processes leading to increased productivity, which are crucial to the UK's current and future success. These include process management,

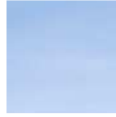
**"WHAT DISTINGUISHES ROKE'S UK SKILLS BASE, FROM THE REST OF THE WORLD, IS THE COMBINATION OF FLEXIBILITY, CREATIVITY AND DESIGN EXCELLENCE WHICH ENABLES DIFFICULT PROJECTS TO BE SOLVED IN SHORTER TIMEFRAMES."**

Sir John Taylor, Chairman, Roke Manor Research

product management, entrepreneurship and ways of squeezing more efficiency out of overheads.

This combination has made the UK, Europe's most successful location for attracting software and telecommunication companies that are looking to conduct R&D. Several regions have developed into centres of excellence for R&D, and business clusters have developed around these, employing over a million people. UK universities have established 64 science parks, home to over 1,400 companies, fostering closer relationships with industry.

Many innovative companies have located R&D operations in the UK, to take advantage of established academic and industry collaboration. For example, in 1984 Hewlett Packard set up its first-ever centre for long range research, to be located outside Palo Alto, in Bristol, UK. Microsoft chose to locate its first non-US research centre in Cambridge, while IBM's development facility at Hursley Park, near Winchester, is probably the largest of its kind in Europe.



### Spotting commercial opportunities

Roke has the ability to meet challenging time scales, due to attention to detail, flexible working, and focus on cost. If Roke can guarantee getting its customer to market even a month quicker on an 18-month program, it will win the contract.

A key ingredient in Roke's success is its willingness to go beyond reacting to R&D opportunities and invest in its own intellectual property. This means Roke can get clients into specific market areas more rapidly than anyone else because they have pre-invested in a portfolio of products. Rather than being reactive, it means they have got what their clients need before they even know they want it.

A good example of this is video motion anomaly detection (VMAD), an intelligent closed-circuit TV (CCTV) system developed by Roke.

The company spotted a market as CCTV installations began to mushroom in the UK and abroad. The manpower required to monitor banks of CCTV cameras started to become prohibitive. So, building on its imaging expertise, Roke researched technology that could automatically detect anomalous behaviour.

The company spotted that there were some techniques that allowed a computer to spot if something out of the ordinary was happening, but these all required programming, which cost money. VMAD was completely different, it learnt normal behaviour automatically and could therefore detect if anything abnormal was happening – with no programming. Roke saw a market and invested in producing the core software and now offers VMAD into other companies' products around the world on a white-label basis.

### Delivering the end solution

Another of Roke's strengths is systems engineering, which entails solving the whole life cycle problem, rather than just developing a piece of technology.

Roke is able to pull together all parts of a complex system, using in-house processes and expertise to come up with the most cost-effective solution. This is particularly useful for entrepreneurs or smaller companies that have a particular product in mind, but not the technical or project management skills to bring it to market. Roke also prime contracts big projects, which involves collating the best team of experts from within Roke, and managing partner subcontractors as necessary.

In the defence market, systems engineering means conducting the analysis of the problem and taking it right through to the end solution. A good example of Roke's successful defence work is HALO® (Hostile Artillery Locator) – an acoustic locator of guns and mortars, designed initially to detect cease-fire violations in the former Yugoslavia. HALO® is now acknowledged as the world's leading acoustic system for this purpose and is used by the British and many other overseas armies. Roke generated the intellectual property for SELEX and now supports them in worldwide sales of the system.



### Leading the way in communications and RFID

Roke's projects, for other parts of the Siemens group, tend to focus on its specialist knowledge of mobile communications, and more recently radio frequency identification (RFID). Recently Roke's researchers developed high speed downlink packet access (HSDPA) technology for Siemens. HSDPA is an enhancement to 3G, known as 3.5G that makes the downlink to mobile devices a whole lot faster – from 384kbps up to 14Mbps and beyond.

RFID is another big trend that Roke believes is developing quicker than people realise or thought possible. Applications currently range from passive tracking of logistics and packaging through to active asset tracking in the pharmaceutical industry. The big breakthrough

for RFID will be when it hits the food industry. When everything in supermarkets has an RFID tag in the packaging there will be no need for individual scanning at the check-out. Roke is convinced that it will see RFID eventually mandated as a world wide standard. RFID tags currently cost about ten cents each, but as mass production techniques are applied, this will eventually fall to about three cents.

From a business perspective, the complexity comes from the technology used to read the tags, and the value to be gained from integrating that into larger commercial systems. This is where Siemens is focussing its activities and the development and engineering of RFID reader technology at Roke plays a key role in their strategy.

### R&D in the future

Roke still believes that the UK hosts some of the most innovative and creative R&D resource in the world, whose design excellence, technical innovation and flexibility ensures success. However, it is important to remember that it is not design flair alone that keeps customers ahead of the market, it is necessary to adapt to a changing environment and offer whole solutions, as well as R&D, to remain an industry leader. Roke understands the constraints of R&D projects, and the need to deliver value for money. Its clients are provided with solutions that meet not only technical requirements but also their commercial requirements. Roke is keen to continue the trend of solving the most complex engineering problems and designing innovative world-first solutions faster than anyone else to ensure that its customers remain that step ahead of the competition.