



**Raytheon in the United Kingdom:**  
Innovation in all domains.

**Raytheon**



Raytheon is a technology and innovation leader operating in defence, national security and commercial markets around the world. We are especially proud of our history of innovation, which spans 100 years in the UK.



## From the Chief Executive



**BOB DELORGE**  
Chief Executive & Managing Director.

Today Raytheon in the UK employs more than 1,200 people at six sites. Our engineers and scientists are leading the way in designing, developing and manufacturing innovative solutions for our customers in different industries, businesses and governments. Raytheon brings to the UK and Europe proven U.S. technology, leveraging established products and skills. We have numerous relationships with industrial and research partners which enable us to play an important role as a major technology exporter to more than 40 countries.

Raytheon's UK operations are recognised for the broad contribution they make to the operational capability of the UK's armed forces. The company provides the Ministry of Defence (MOD) with mission-critical systems spanning ISTAR, weapons, command and control, air traffic management and training. Through major programmes such as Airborne Stand-Off Radar (ASTOR), Successor Identification Friend or Foe (SIFF) and Precision Guided Bomb (PGB), Raytheon UK has become a significant prime contractor and valued first tier supplier to the MOD.

Our innovative power solutions are a technology success story proven through indigenous manufacturing of Power and Control products for Raytheon's U.S. programmes, including Advanced Medium-Range Air-to-Air Missile (AMRAAM), Tactical Tomahawk, Tube-launched, Optically-tracked, Wire command data link, guided missile (TOW), Javelin and Global Hawk. Our investment in the development of high-temperature silicone carbide technology for future high-density power applications is providing the UK with a genuinely world leading competitive advantage.

In air traffic management, Raytheon in the UK has an unbroken heritage stretching back to the first British radar trials in the 1930s. Our Monopulse Secondary Surveillance Radar is the most successful radar of its type in the world, with more than 500 systems in service in 43 countries, and we have a large number of new systems on order from the U.S. and other countries.

Continuous development of our people and improvement to our processes ensures that as a business we add operational capability to our customers and ultimately a competitive advantage to British industry. Raytheon Six Sigma™ is a key element of our learning process. With each project and employee experience, we learn more about process improvement and providing value to the customer. Raytheon Six Sigma is part of the fabric of our organisation and continues to meet the changing needs of the business and our customers.

As part of Raytheon's global commitment to maths and science education, in the UK we support a number of initiatives including the UKAYRoc Rocketry Challenge, Farnborough Air Show youth day, the Schools Aerospace Challenge and the STEM Ambassadors Programme. We also partner with Strathclyde University and Adam Smith College in Scotland, working directly with students on engineering projects. The company also supports a variety of initiatives aimed at supporting, recognising and honouring our troops who protect and serve our country.

Raytheon's commitment to the UK is strong and we are proud of our position in the UK and the operational capability that we deliver to our customers, through our talented and committed people.



## VISION

To be recognised as a leading European provider of integrated capabilities in the Defence, Civil and National Security domains.



## Raytheon in the United Kingdom

### KEY UK SITES

#### 1 Uxbridge

Raytheon's UK head office. National Security and Mission Support business.

#### 2 Glenrothes

Advanced electronic assemblies and systems.

#### 3 Harlow

Head office for Defence. Design, manufacture and support for C4ISTAR, Precision Effects and ATMS.

#### 4 Broughton

Design, modification and support for special mission aircraft.

#### 5 Waddington

ASTOR support team, managing all in-service support issues including modification, post-design support, and training.

### Raytheon Company

With 2010 sales of \$25 billion, Raytheon is a technology and innovation leader specialising in defence, homeland security and other government markets throughout the world. Raytheon provides state-of-the-art electronics, mission systems integration and other capabilities in the areas of sensing, effects, and command, control, communications and intelligence systems, as well as a broad range of mission support services. With headquarters in Waltham, Massachusetts, Raytheon employs 72,000 people worldwide.

### UK Presence

Raytheon UK is a wholly-owned subsidiary of Raytheon Company. As a major supplier to the UK Ministry of Defence, the company has developed strong capabilities in mission systems integration within defence, national security and commercial markets. Raytheon designs, develops and manufactures a range of high-technology electronic systems and software at its facilities in Harlow, Glenrothes, Uxbridge, Waddington, Broughton and Portsmouth. In 2010 Raytheon's UK sales were £300 million, split 50/50 domestic and export.



## STRATEGY

To provide our customers with affordable, integrated solutions, exploiting our indigenous capability and wealth of Raytheon technology.



A broad portfolio with extensive, indigenous capability born out of 100 years of UK heritage.



Raytheon in the UK offers customers an end-to-end capability for design manufacture and through life support across three key domains, C4ISTAR, Precision Effects and Air Traffic Management.

## Defence

### C4ISTAR

The need for sharing accurate intelligence data is critical to security. Military forces deployed throughout the world, operating in joint environments, require real-time access to actionable intelligence. Raytheon in the UK has a broad capability which allows us to offer enterprise-wide solutions covering the whole intelligence, surveillance, target acquisition and reconnaissance (ISTAR) cycle of collect, direct, process and disseminate. Raytheon maintains a broad indigenous capability in the UK to support this domain, including design, modification and release to service of special mission aircraft such as Sentinel and Shadow R Mk 1 as well as established capability in IT GEOINT Systems.

Raytheon is providing an advanced command and control (C2) system to increase operational tempo by providing an efficient effect-management tool through a contract with the UK aimed initially at land operations and eventually benefitting joint operations. The Defence Targeting Toolset (DTT) will provide a tool set of software applications for the MOD to carry out both time-sensitive targeting as well as strategic effects planning.

### Precision Effects

Our Precision Effects portfolio brings together a range of Raytheon capabilities to provide accurate and resilient systems to support the demands of current and future operations. Technologies include: GPS Anti-Jam systems, Identification Friend or Foe, Counter-IED solutions,

soldier systems and communication systems. Raytheon is a global leader in the development and deployment of a wide range of advanced technology precision weapons systems. Raytheon has indigenous design and development capability and is the prime contractor and design authority for the Paveway™ IV Precision Guided Bomb (PGB).

### Air Traffic Management Systems

Raytheon is a major supplier of monopulse secondary surveillance radar (MSSR) systems, technology pioneered by the company in application of monopulse reception techniques. More than 500 Raytheon solid-state MSSR systems have been sold worldwide, the majority of which are Mode S capable.

During the past three years, Raytheon has been working in cooperation with the UK government-led aviation plan, NATS and a consortium of wind farm energy providers to adapt ASR-10SS S-Band and ASR-23SS L-Band Primary Surveillance Radar systems to overcome the radar interference issues associated with wind turbine blades. Raytheon has now developed new processing architecture and software algorithms to mitigate the impact of wind turbines. This capability has been developed on the basis of retrofit for existing ASR-10SS/ASR-23SS radar systems, and is offered as a standard on all new systems. With the field trials now complete, Raytheon is working to finalise plans with key customers to commence implementation of system upgrades.



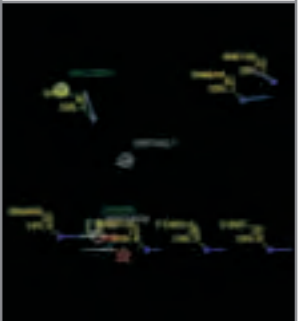
Raytheon's UK Defence business has a world-class reputation in a number of high-technology areas. These include C4ISTAR, Precision Effects and Air Traffic Management Solutions. The design and development, manufacturing and support for this area of Raytheon's UK business are carried out at our Harlow, Broughton and Waddington facilities.



ADS-B

### Automatic Dependent Surveillance-Broadcast

Raytheon is pioneering future air traffic surveillance sensors. Our revolutionary solution for Automatic Dependent Surveillance-Broadcast (ADS-B) will provide air traffic controllers with improved surveillance service data for today's increasingly busy airspace.





Raytheon's Power & Control business in the UK provides solutions to customers in military and industrial markets for applications including weapons, radars and other civil products used in extreme environments where reliability is critical.



Military ECAS



Vehicle mounted charger



## Power & Control

With headquarters in Glenrothes, the Power & Control business designs, develops and manufactures advanced power conversion products and electronic control systems. These consist of power management and distribution; missile guidance and control; AC-DC, DC-DC power supplies; motor control; power modules; hybrid microcircuits and semiconductors.

The latest addition to our Power & Control portfolio is the development of High Temperature Silicon Carbide (HiTSiC). This technology has potential applications in aerospace, energy and green-related industries as it enables integrated circuits and transistors to operate in temperatures of between 300°C- 400°C. This pioneering technology is also a first for the industry and demonstrates Raytheon's commitment to growing its business and capabilities in the UK.

Reliability and precision are essential to the performance of any system that relies on electrical actuation, from missile flight control to systems for radar, armoured vehicles and artillery. Raytheon's UK operations are able to provide a complete turnkey capability from design through to manufacture within a MIL-Q-9585A and ISO 9002 Quality Management System environment.

In aerospace and defence, the engineering team is engaged in the manufacture of the guidance unit for the Paveway™ family, control section for AMRAAM, power modules for Tomahawk, and the Javelin anti-armour weapon. Other programmes of note include ATFLIR, APG-79 radar, ASTOR, Global Hawk UAV and the International Space Station.

Commercial markets where Power & Control products can be found include transportation (railway ATP and automotive safety), communications and oil and gas exploration.

Established in 1960, Raytheon's Glenrothes facility's design and manufacturing capability includes semiconductor fabrication, substrate and microcircuit manufacture, printed circuit board assembly and unit build – a complete production resource for high-quality electronic subsystems, from wafer and chip to fully packaged units. The design and production facilities at Glenrothes are focused on the high-performance end of the electronic systems market, concentrating on complex, mission-critical components and subsystems for the aerospace and defence industries.

### World Leaders in High Temperature Silicone Carbide

Our HiTSiC team have achieved 10 times higher logic complexity and significantly faster processing than previously demonstrated. Application areas include aerospace where the drive to more efficient aircraft creates a market for high-temperature electronics for power switching, monitoring and actuation.



A complete production resource for high-quality electronic subsystems, from wafer and chip to fully-packaged units.



Raytheon's track record of experience spans a wide variety of military organisations, government agencies and commercial industries, as well as languages, cultures and skill sets.

## Training & Mission Support

### Training

Through the appropriate use of modern learning approaches and new technologies, Raytheon delivers smart, agile and flexible training solutions that are more efficient and effective, and result in high-quality, value for money curricula that reduce the overall time spent in training and asset use and release personnel for front-line duties, while delivering the requirement in full.

Raytheon in the UK is fully committed to supporting the UK MOD and delivering training solutions in any capacity required for our armed forces. We recently completed delivery of the Early Training Transformation programme to the MOD. This delivered interactive courseware to the Defence Technical Colleges and demonstrated training reductions of around 34 percent, with significant reduction in costs. Raytheon has combined its leading cybersecurity capability with its existing renowned training processes to forge cyber training solutions suitable for the MOD, government and commercial customers.

### Mission Support

Raytheon's UK operations have been providing support activities at customer sites for some 30 years, maintaining and running systems ranging from early warning radars to battlefield simulation trainers. Our engineers are based at MOD stations across the UK and Europe.

Since 2001, Raytheon has been involved with the Higher Formation Trainers,

which are part of the Command and Staff Trainers (CAST) used by the British Army and their allies, providing resident maintenance engineers to support activities. CAST engineers are based at three sites: Warminster and Catterick in the UK, and Sennelager in Germany. CAST provides collective training for British Army and NATO units from battle group through divisional level to corps. Raytheon personnel operate the facility, providing engineering support and system advice to the military.

In 2004 the MOD opened an integration and test laboratory at the Warminster Land Warfare Centre in Wiltshire, for the Joint Effects Tactical Targeting System programme (JETTS). The unit, known as the JETTS Battlelab, helps test new software and evaluates new tactics and doctrine in a synthetic environment across a wide range of operational teams, such as indirect fire and joint operations. The unit has a full-time staff, including officers from all three services and a team from Raytheon who support the integration, test, evaluation and acceptance process.

Raytheon has a support team co-located at RAF Waddington, which manages all in-service support issues, including modification and post-design support for the ASTOR programme. The company is also responsible for delivering a comprehensive training package at the ASTOR training school that includes classroom, simulation and equipment training.



Raytheon's global training experience dates back to the 1930s and spans government, defence, cyber and commercial customers. It has developed a holistic series of proven systematic tools and processes that have been used most successfully with a number of clients including the UK MOD, General Motors, NASA and the US Army, enabling development of fit for purpose, optimally-sized and budgeted training regimes that are focused on the trainee.



JETTS Battlelab



### Number one for a reason

Raytheon is rated number one in the world for training outsourcing by HRO Today magazine, a leading human resources publication. Customers around the world consistently look to Raytheon to solve their most complex training challenges. We are proud to deliver solutions that meet these challenges in ways that only an industry leader can.



## National Security

Multiple classified programmes support the British Government's secure information technology and cyberdefence needs. Raytheon provides 50,000 licences to UK government users, including the MOD, to protect the Defence Information Infrastructure.

### Integrated Security

Raytheon is an industry leader in designing and developing world-class integrated security solutions for government and national security customers across the globe. The company delivers a comprehensive suite of demonstrated security capabilities in all domains – air, land, sea, space and cyberspace - that protect all types of infrastructure, are adaptable to different security threats and are scalable to any size of problem. Our solutions provide complete situational awareness, protect vital assets and information at all times, improve the sharing of information and intelligence and enable more effective decision-making.

Raytheon offers a comprehensive set of end-to-end integrated services and solutions for border security, protection of national infrastructure, perimeter protection and intruder detection.

Our legacy in building highly complex systems-of-systems and our scalable, open architecture solutions provide our customers with optimal, cost effective Commercial Off-The-Shelf (COTS)-based solutions to their security problems.

### Cyberdefence

Raytheon has more than 30 years of experience in securing some of the worlds' most critical IT systems. Every minute of every day, defence companies come under cyberattack by multiple threats seeking to seize our intellectual property rights. IPR, if lost, could lead to consequences in-theatre. Raytheon has for many years understood these consequences and developed and acquired cutting-edge cybersecurity mitigations.

Raytheon is redefining how organisations protect resources by extending IT security beyond layered defence, focusing on disrupting command and control of an adversary within the IT perimeter. No matter how complex the system or threat, Raytheon is trusted by global governments and the largest companies to deliver a proven, powerful line of cyberdefence. Our security management system at the four New York City area airports is the first fully integrated airport perimeter security and intrusion detection system in the world.

As a global leader in training services, Raytheon is also helping defence organisations, governments and commercial organisations change their mission and business processes to respond to cyberattacks by re-designing how they train their cyber experts, employees, customers and partners.

### Clear View™ Security Solutions

Clear View security solutions is a highly efficient and configurable approach to monitoring and managing complex security challenges and it delivers a flexible, scalable security solution with a low cost of ownership. Clear View security solutions interconnects various sensors and support systems to enable complete situational awareness and command and control of security operations, including multisensor resource management and correlation, intelligence collection and analysis, video management, knowledge management, incident tracking and management and asset management.



Raytheon delivers a comprehensive suite of demonstrated security capabilities in all domains – air, land, sea, space and cyberspace - that protect all types of infrastructure, are adaptable to different security threats and are scalable to any size of problem.



Airborne Stand-Off Radar and Shadow R Mk 1 systems are providing the British armed forces with a world-class intelligence, surveillance, target acquisition and reconnaissance capability.

## Major Programmes

### ASTOR

Integrated by Raytheon for the MOD, ASTOR is an advanced air-to-ground surveillance system jointly operated by the Royal Air Force and the British Army. As prime contractor, Raytheon has been responsible for delivering full capability: hardware, software, infrastructure, ground stations, training and a comprehensive contractor logistics support package.

Known in service as the Sentinel aircraft, the system provides a highly effective 24-hour surveillance, reconnaissance and target acquisition capability. It delivers wide-area surveillance and reconnaissance providing imagery intelligence in near real-time for national, theatre and tactical headquarters.

At the heart of the ASTOR system is a dual-mode synthetic aperture radar (SAR)/ground movement target indicator sensor (GMTI). The SAR provides high resolution images while the GMTI tracks the movement of hostile forces: their numbers, direction and speed. The imagery, which can be exploited both on board the aircraft and on the ground, is transmitted by secure data links to ground stations at all levels of the command and control chain. Sentinel continues to provide valuable situational awareness to troops and commanders in the field.

Reports on performance have included exceptional intelligence and operational availability. By operating at high altitude and at considerable standoff distances, the radar platform is able to remain over safe territory while providing an excellent “look-down” angle of the target area. An asset to ground commanders, Sentinel tracks insurgents and makes a difference in the lives of coalition forces.

### Shadow R Mk 1

The Shadow R Mk 1 offers enhanced tactical intelligence, surveillance and reconnaissance (ISR) capabilities to support urgent operational requirements. Leveraging its ASTOR experience for the Shadow R Mk 1 programme, Raytheon’s UK operations integrated 21 mission systems on four Hawker Beechcraft King Air 350CER aircraft. Configured with three operator workstations, the Shadow R Mk 1 accommodates two pilots and five mission personnel.

The four aircraft are now in service with the UK Royal Air Force as fully operational tactical ISR assets. Raytheon UK also provides ground support equipment, post-design services, further modifications and in-service support for the Shadow R Mk 1.



During 2011, four out of five ASTOR aircraft, known as Sentinel in service, have been deployed in support of Operation Ellamy in Libya and Operation Herrick in Afghanistan.

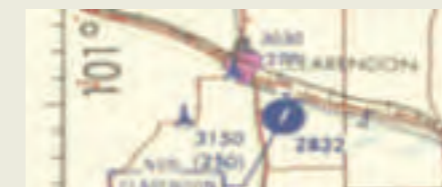


Sentinel



Shadow R Mk 1

The ASTOR dual-mode radar provides SAR swath, SAR spot and moving target indicator imagery.





## Major Programmes

As the prime contractor for the UK MOD for the Paveway IV programme, Raytheon has demonstrated global leadership in missile defence.

### Paveway™ IV

In an environment where time-sensitive targeting remains fundamental to success, Paveway IV provides the ultimate in operational flexibility. Since 2008, Paveway IV has been operational with the Harrier GR9 and is now integrated on Tornado GR4 and Typhoon and it is being used by the Royal Air Force (RAF) in support of current operations. A UK RAF weapon of choice, Paveway IV will be integrated onto the RAF's F-35C Joint Strike Fighter.

Paveway IV features dual-mode guidance and is the latest generation of the Paveway family. For extreme accuracy in all operational scenarios, it utilises second-generation, state-of-the-art GPS-aided inertial navigation that incorporates anti-spoofing and anti-jamming technology. It also incorporates a laser-guidance system and the pilot is able to switch between modes as necessary, even after release. This gives maximum flexibility to attack re-locatable and moving targets as well as fixed targets.

Paveway IV provides a state-of-the-art, all-weather precision munition that is easy to integrate on current and future aircraft. It is a joint programme between Raytheon in the UK and Raytheon Missile Systems in Tucson, Arizona. Raytheon is the weapon design authority (DA), providing systems engineering, programme management and aircraft integration.

Our Glenrothes plant manufactures the GAINS (GPS aided inertial navigation

system) and RMS in Tucson is the DA for the warhead and ECCG (enhanced computer control group) and undertakes final assembly and test of the ECCG.

Raytheon's UK Paveway team also includes Portsmouth Aviation Limited (Air Foil Group and Navalised containers) and EDO MBM Technology for the Aircraft Umbilical Interconnect System and Quad Containers. Thales Missile Electronics Ltd in Basingstoke designs and manufactures the PGB Fuze, a state-of-the-art 'intelligent' fuze with full cockpit interface.

Spiral development options for Paveway IV, primarily for satisfying the UK MOD requirements for selective precision effects at range, include the provision of a wing kit that will more than double the range of the weapon, alternative warhead variants for low collateral and high penetration, fast moving-target engagement capability, a datalink for post-release weapon communications, enhanced GPS anti-jam and improved target selectivity/autonomy.

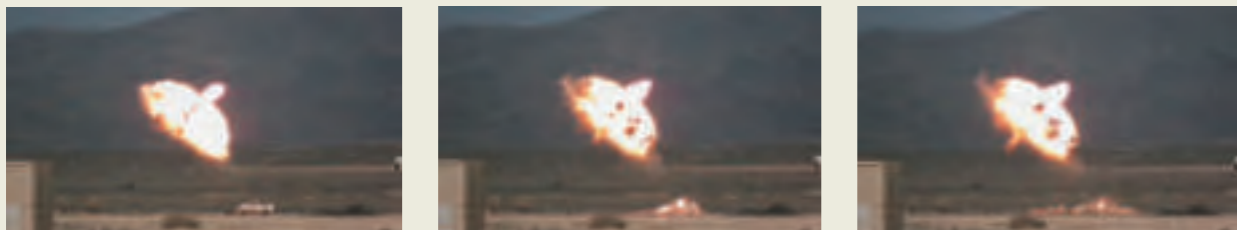
Raytheon has been awarded a four year contract to provide continued in-service support for both current and legacy UK Paveway weapon systems for the UK MOD. Raytheon's UK operations will support activities such as configuration management, design support, obsolescence management, safety management, spares provision and quality assurance.



Paveway IV



### Demonstrated accuracy every time



Paveway IV is the precision guided weapon of choice for the UK RAF and achieved 98 percent mission success during the UK's participation in the 2011 military intervention in Libya.



Raytheon is delivering sustainable solutions for enhanced air traffic surveillance to service providers worldwide.

## Major Programmes



### Air Traffic Management Systems

With an indigenous design and manufacturing capability, Raytheon is a major supplier of Monopulse Secondary Surveillance Radar (MSSR), technology pioneered by the company in the UK through the application of monopulse reception techniques and development of Mode S.

More than 500 Raytheon solid-state MSSR systems have been sold worldwide. Customers include major national air navigation service providers such as the FAA, NATS, NAV CANADA and DFS as well as airport operators around the world. Among military customers are the U.S. Department of Defense, UK Ministry of Defence, the Royal Netherlands Air Force, Royal Australian Air Force and Royal Danish Air Force.

### Radar Site Services

Awarded in 2003, this contract to supply and install primary and secondary radars formed part of the major upgrade and enhancement programme for NATS to improve and sustain its surveillance radar infrastructure. A supporting contractor logistics support contract provides dedicated support for repairs for radar systems to enable NATS to meet the

99.99 percent availability to their customers. Technical support is also provided on a help desk for immediate support issues.

In 2011, under an extension to the RSS programme, Raytheon was selected to supply a radar system to replace legacy equipment at Manchester. The delivery and installation of the system will increase commonality across NATS surveillance infrastructure providing the same equipment as at other major airports where NATS provides engineering support.

### Saudi ACRC

Awarded in 2009, this programme provides for the supply of 21 radar systems, together with their supporting infrastructure, for en route services as well as for radar approach control at Saudi Airlines major international airports. This will enable the extension of radar surveillance for air traffic control throughout Saudi airspace. It will deliver both a substantial enhancement of flight safety for the rapidly growing domestic airline sector and also improve the efficiency of Saudi Arabia's air traffic management system.

Raytheon is the sole UK manufacturer of civil ATC radars and provides the latest air traffic control solutions globally.

### Advanced surveillance technology

Raytheon can tailor its surveillance solutions to suit customers' specific requirements. Motion compensation and adaptive reflection suppression were key to successful deployment of an MSSR system on the floating Heidrun Tension Leg Platform, 140 km off the Norwegian coast, enabling provision of stable data irrespective of weather or sea state.





## Major Programmes

### Advanced Digital Antenna Production (ADAP)

Raytheon won the competitive development contract from the U.S. Air Force GPS wing in June 2004 to provide a next generation GPS anti-jam system known as ADAP. Platforms being equipped with ADAP equipment include both aircraft and ships.

ADAP, which follows on from Raytheon's successful Digital Antenna Electronics development contract, represents a significant performance enhancement on the company's highly successful GAS-1 system, which has sold more than 6,200 units worldwide. ADAP entered into production in 2009 to equip fixed and rotary wing aircraft and ships.

### Successor Identification Friend or Foe (SIFF)

Recognising friend from enemy is a critical factor in the fog of war. Raytheon in the UK, and its earlier Cossor division, have more than 60 years of experience in the design, manufacture and supply of IFF equipment.

UK Successor IFF, known as SIFF, is today used by all three armed forces and fitted to more than 1,000 platforms across greater than 50 different types, including warships, submarines, helicopters, missile systems, fighter and transport aircraft.

As prime contractor for the SIFF programme, Raytheon is responsible for all supply, installation, and design aspects for designated platforms. This upgrade included interrogators, transponders, associated cryptographic computers and control units. The equipment is supported by a contractor logistics support package until 2028.

Mode 5 is the next generation IFF providing improved security and interoperability across NATO. Raytheon provides Mode 5 ready transponders, interrogators and cryptos across multiple platforms.

### Defence Targeting Toolset (DTT)

Raytheon in the UK is working to advance the speed of military operations through a contract with the UK MOD to deliver a DTT capability. Aimed initially at land operations and eventually benefitting joint operations, DTT will provide a tool-set of software applications for the MOD. DTT delivers coordinated effects with limited resources, by enabling coherent planning for targeting and operations. It will also improve the ability to prosecute time-sensitive targets. By building on existing applications and developing new ones as required, DTT will substantially improve both operational tempo and freedom of operation while reducing error.



ADAP



IFF 4810 Transponder



SAS

### Small Antenna System (SAS)

Developed under a U.S. Department of Defense (DoD) GPS Directorate contract started in 2008, SAS utilises Raytheon's advanced Digital technology in a smaller, lighter package for platforms such as small and medium helicopters, unmanned aerial vehicles and other size, weight and power (SWAP) sensitive platforms. This is a fundamental step change in antenna system capability for digital performance in a small form factor. Units have been supplied to the U.S. DoD for trials and evaluation purposes. This technology is also available for use in the weapons market on platforms such as cruise missiles.



Raytheon supplies anti-jam antenna systems for the UK Type 45 destroyer, Eurofighter/Typhoon, CH-47 and ASTOR programmes and has delivered systems to military customers in over 20 other nations.

# 100 YEARS IN THE UK

1900

1920

1940

1950

1960–present



**1908**  
A.C. Cossor electronics company is first listed as a private company

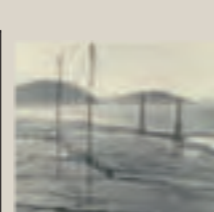
**1932**  
A.C. Cossor introduces its first cathode ray oscilloscope



**1927**  
A.C. Cossor launches the famous "Melody Maker" radio set that would soon become a centerpiece of countless British homes

**Circa 1935**  
Experiments that included A.C. Cossor personnel prove that radio waves can be "bounced" off aircraft, and the "echo" picked up and interpreted by a receiving station to determine bearing and distance of the aircraft. This secret technology was the Radio Detection And Ranging system – radar

**1936**  
A.C. Cossor achieves a historic milestone, becoming the first company in the U.K. to sell a television set



**Circa 1937**  
A.C. Cossor is selected to build the critical receiving units and operator displays for the Chain Home air defence radar network, the first operational radar system in the world

**1940**  
Chain Home comprises 19 transmitting and receiving stations from the Shetlands to Lands End. For the Battle of Britain, Chain Home provides the RAF with a precious 20-minute warning about the oncoming Luftwaffe



**Circa 1940**  
Raytheon partners with the UK to supply thousands of magnetron tubes, critical elements required to enable radar functionality



**Circa 1950**  
A.C. Cossor introduces the first commercial aircraft radar system to guide aircraft to and from British airports

**Circa 1950s**  
Facilities in Glenrothes that would soon become part of Raytheon Systems Limited (RSL) design some of the first hand-held calculators, TV remotes and circuitry for dozens of defence and civil applications

**Raytheon Systems Limited**

**1997**  
Raytheon acquires Hughes Defence and Texas Instruments, which later form Raytheon Systems Limited



**2000-present**  
Raytheon is prime contractor for leading programmes such as ASTOR, providing the UK with worldclass intelligence, surveillance and reconnaissance capabilities

**2009**  
Raytheon acquires cyber business Compucat



**1961**  
Raytheon acquires the A.C. Cossor electronics company

**2000s**  
Raytheon commercial activities in the UK include systems for air traffic control, hybrid electronics and semiconductors for various industries and a major software engineering facility

Sources:  
"Cossor: The First 50 Years" by Alfred Price  
A.C. Cossor & Son (Surgical), company website [www.accoson.com](http://www.accoson.com)  
"CH: The First Operational Radar" by BT Neale, [www.radarpages.co.uk](http://www.radarpages.co.uk)  
The National Valve Museum (UK) [www.valve-museum.org](http://www.valve-museum.org)

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**Raytheon**

*Customer Success Is Our Mission*