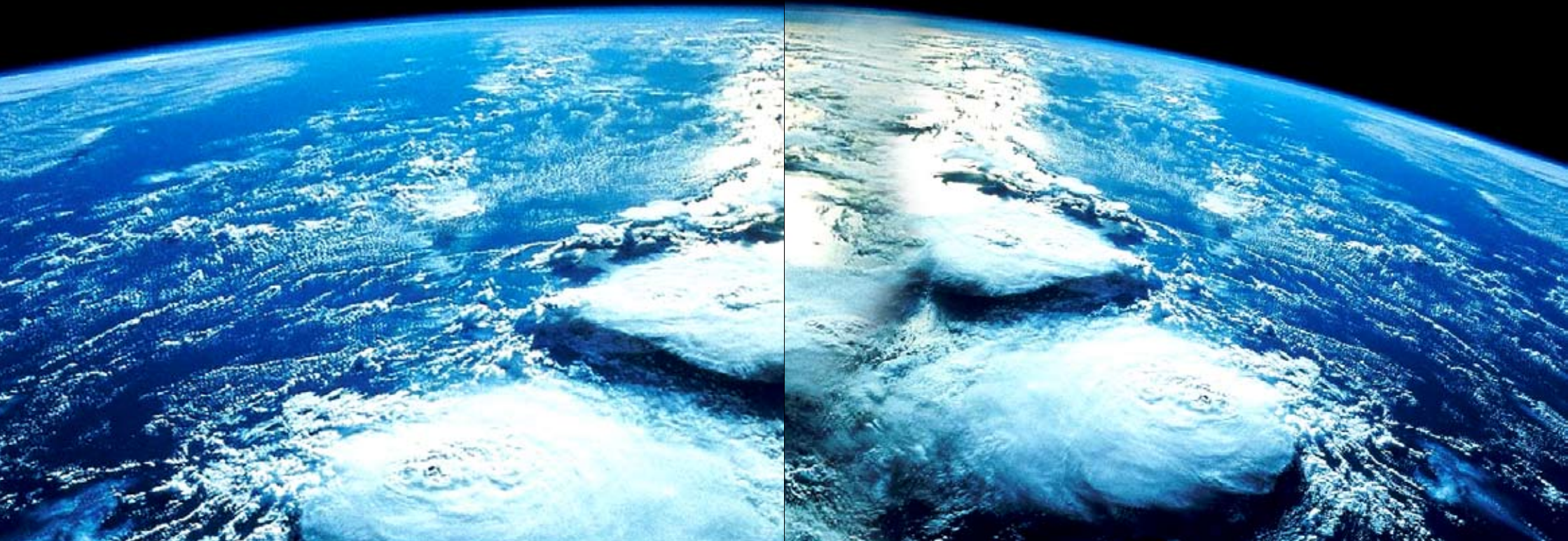




# VISION 2025

**A World of Opportunities for  
UK Space Technology**





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# Vision 2025 A World of

# Opportunities for UK Space Technology

In 2006, the “Case for Space” painted a picture of the huge benefits Britain enjoys from its world leadership in space. It is a story of one of Britain’s most hi-tech, value adding sectors, a sector that today supports 70,000 jobs, that contributes £7 billion a year to our economy, that employs the most highly skilled workforce in manufacturing, that is growing four times faster than the rest of the economy.

Space is still a young industry. Fifty years young. On 4th October 1957, the Soviet Union launched the world’s first satellite, Sputnik 1. Fifty years later, the satellite revolution is only now gathering pace.

So on the eve of satellite’s fiftieth birthday, and one year on from the Case for Space, UK Space offers a vision of a space enabled future. This is a glimpse of what a space enabled world may look like in 2025, what it will mean for our economy, for our Government, and for us as consumers, as families and as citizens of a country that remains at the heart of one of the most dynamic and strategic sectors in the world.

This vision is just that. It will not happen unless we work together as stakeholders in UK Space to make it happen. Today.

# The Challenging World of 2025



## Global risks and opportunities

We need innovative solutions

### First let's look at the world of 2025.

There is more than one possible scenario, but a few things are clear.

2025 is a world of global risks and opportunities, driven by:

- climate change
- pressures on natural resources
- demographic stress from an ageing and growing world population

- global interdependency
- and violent conflict

It will demand mankind's full abilities to adapt our way of life, and to live in harmony with our natural environment. The pace of innovation will be as relentless as it is today.

Innovation is driven by the fusion of information, communication and new, smart materials. And it is in cutting-edge fields such as space where breakthroughs happen.

The information age makes individuals ever-more powerful. Successful states and businesses adapt to the big

challenges, exploiting their technological strength to stay ahead.

China and India have become economic powerhouses and centres of engineering excellence. Britain needs to stay on its toes to compete. Success in 2025 depends on decisions taken now.

# Satellite Technology Makes The Difference



## **Without satellites, we cannot cope with the big challenges**

Satellite technology will enrich  
and empower the UK

Satellite technology is one of the major shaping forces of our times. It is embedded in the tools that facilitate daily life. We are part of a global network of information, communication and navigation.

Our quality of life and problem-solving capacity depend on it. Without satellites, we cannot cope with the big challenges.

- Satellites move more data around more reliably.
- They link networks together.
- They observe and measure everywhere in real time.
- They provide precision in space and time.
- They expand the limits of our understanding.

Space-age tools are essential for sustainability, good governance, security and defence. They are a world-wide engine of development and empowerment.

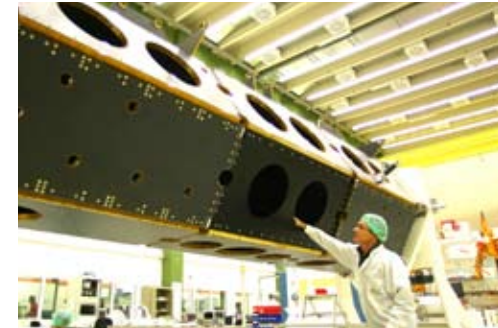
Satellites multiply the wealth-creating force of information and mobile communications technology. They provide global reach, resilience and supreme energy efficiency.

Britain's ability to share the benefits of space with others is a source of 'soft power'.

In 2025, our leadership in space technology is a source of enrichment and political strength for the UK.



# A Global, Competitive Growth Market



## £1,000,000,000,000

Double UK's share of world space market  
– value from £7bn to £150bn

By 2025, the global space sector has radically changed. The cost of launching satellites is a fraction of what it is today. New materials and new commercial launch operators slash the risk of investing in satellites. Previously unseen levels of investment have stimulated huge growth in the market for satellite based applications.

In 2025, the space market is no longer reliant on governments.

The traditional US dominance, backed by military space, is fading in a sector that looks more to the City than the Pentagon. Even space science and exploration is beginning to attract private funding.

Space is a global competitive market that continues to grow quickly. By 2025, it is

worth more than one trillion pounds.

Britain holds the purse strings to space. London remains the place to go to finance your satellite business. Britain's long-held lead in communications satellites has helped it make more money from space than anywhere else in the world. City money and UK technology is a winning combination no other nation can match. The British take space from the laboratory

to the marketplace quicker than anyone else in the world – just as we do today.

In 2025, Britain has doubled its share of the world space market to 15 percent. Space adds £150bn a year to the UK economy.

In 2025 UK space sells in two weeks what it now sells in a year.



## A sustainable way of life – fuelled by sunshine

Unleash the green satellite revolution

By 2025, our way of life and our way of working must be sustainable. Satellite technology can help us do that.

The harsh environment of space teaches the art of engineering for sustainability. Space technology drives low-carbon solutions in other sectors.

We develop technologies to capture space's most abundant resource – energy.

Much street lighting and traffic signs have been rendered obsolete by intelligent road traffic – enabled by satellites.

Aircraft routing and landing by satellite navigation cuts fuel and noise, is safer and expands capacity.

The world's 8 billion people expect always-on broadband wherever they go. Without satellites, we would run out of electromagnetic spectrum.

By 2025, the red tape of frequency allocation is no more. Instead of today's tortuous process of interGovernmental frequency allocation, there is a dynamic global market for bandwidth. Frequencies are traded like any other good, free from the dead hand of Government. The consumer sees a single 'internet in the sky', enabled by satellites, that provides a global, mobile platform for the world's communication needs.

In 2025, satellites are running on sunshine – just as they are today. But by 2025, smarter use of satellites is a central plank in Britain's Low Carbon Action Plan.

Satellites have replaced much of today's energy-intensive terrestrial broadcasting and cellular phone networks. This cuts Britain's CO<sub>2</sub> emissions by 6 million tons per year.

Dishes are museum pieces. So too are most masts – a single satellite carries the traffic of an entire mobile phone network.

By 2025, Britain's leadership in green satellite technology has helped us create the most dynamic low-carbon economy in the world.



# A Global Health Check to Tackle Climate Change

## 24/7 Earth monitoring network

UK science, technology and political will can make it happen

Satellites are the only way to monitor gradual change at a global level. Today, satellites are monitoring our changing climate. In 2025, they are policing our promises.

In 2025, the world has a satellite-enabled monitoring network that underpins our understanding of the health of planet Earth, alerts us to dangers and speeds our response. Never again will the world be as unprepared as it was for the Asian Tsunami.

Millions of sensors on the ground are connected by satellites into a continuous Earth monitoring network that collects information on the world's changing climate, such as ocean heights and temperatures, and transmits them for instant evaluation – all in real time.

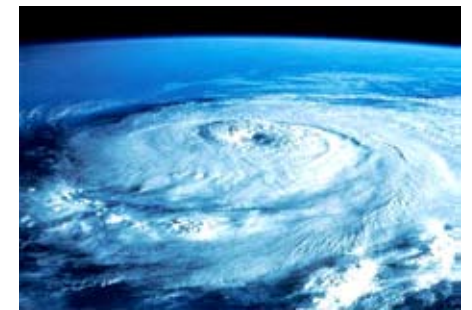
Every hour, high-resolution satellites take hyperspectral images of all points on Earth and detect changes.

Satellites remain our only way of accurately assessing changes in sea surface height and temperature, our melting ice caps and solar wind intensity.

By 2025, satellites have become the global green policeman, monitoring and enforcing international agreements to cut emissions and to defend our natural resources, such as the Congo rainforest. Efforts to find international accord are

galvanised by irrefutable evidence – evidence of our impact on every corner of the world, for every hour of every day of the last 25 years.

The UK continues to lead international efforts to tackle climate change. And it is UK Space that gives us the science and the technology to keep us centre stage.







# A Satellite-Enabled World



**Satellites guide, locate and connect everything – securely, efficiently, stress-free**

UK leadership of new service markets

In 2025, satellites guide, locate and connect everything. Every piece of kit knows where it is and can keep in constant touch with the outside world.

Movement – of people and things – is quicker, it is safer and it is kinder to the environment. Satellites drive our cars safely, they prevent congestion and they save energy, allowing us to work, play or even sleep.

In 2025, safety is built into our daily lives. If our cars crash – which happens less often – they will alert the emergency services for us. The black boxes of aircraft are a thing of the past.

People at risk, such as children and the elderly, can safely be located and helped at all times.

Health monitoring and alert devices work everywhere, allowing us all to lead fuller lives in the comfort of our own living space. For many of us, satellites will let us take the 'old age home' out of our old age.

Space can help Britain to create an intelligent transport infrastructure – and we can sell it to the world.



# A Digital Generation on the Move

## Satellites deliver to a 'glocalised' audience

UK satellites teach and entertain a digital world

In 2025, entertainment is truly mobile, global and interactive – a global tool in tune with local needs. The TV, the internet, and games consoles have all combined beneath an 'internet in the sky'. Today we run our own websites. In 2025 we run our own channels. For the same cost.

And we are all plugged in, wherever we are. Be it on our wrist, in our pocket

or even behind our ear, we are able to interact with the world, any time anywhere. Satellites help to keep us plugged into the world at all times.

Tourism into orbit is affordable to the many and not just the few. We are even looking forward to holidays in space.

Families and friendships are transformed by virtual 3D presence at the push of a button.

Real-time interactive e-learning via satellite is a major export business that allows students worldwide access to first-class education.

In Britain, space has become the most popular GCSE, boosting the nation's skillset across the whole landscape of science and technology.





# A Better-Prepared World

## Satellites for crisis reaction and resilience

Prepare for when only satellites keep working

With rising sea levels and radical changes in the world's weather, we must be prepared for natural disasters on a scale beyond human memory.

A space-based early warning system will save thousands of lives, from floods to the next tsunami. For example, terrestrial sensors, connected by satellite, allow us to predict volcanic eruptions more accurately and earlier.

This is an intelligent system, constantly alert, constantly connected.

Satellites are the eyes and ears of the world. The same technology that guides our cars and alerts the emergency services is embedded in our roads and railways, and even our buildings.

When disaster strikes, satellites guide emergency relief straight to the heart of the problem, even in the remotest areas.

And when ground infrastructure fails, satellites keep working. Life goes on – satellites keep people in touch and economies ticking over.

"If you are not in Space you are not in Defence". The same virtual technology

that takes us all to Mars has also revolutionised the digital battlefield – satellites are the eyes and ears of our Armed Forces, minimising risk and loss of life on the ground.

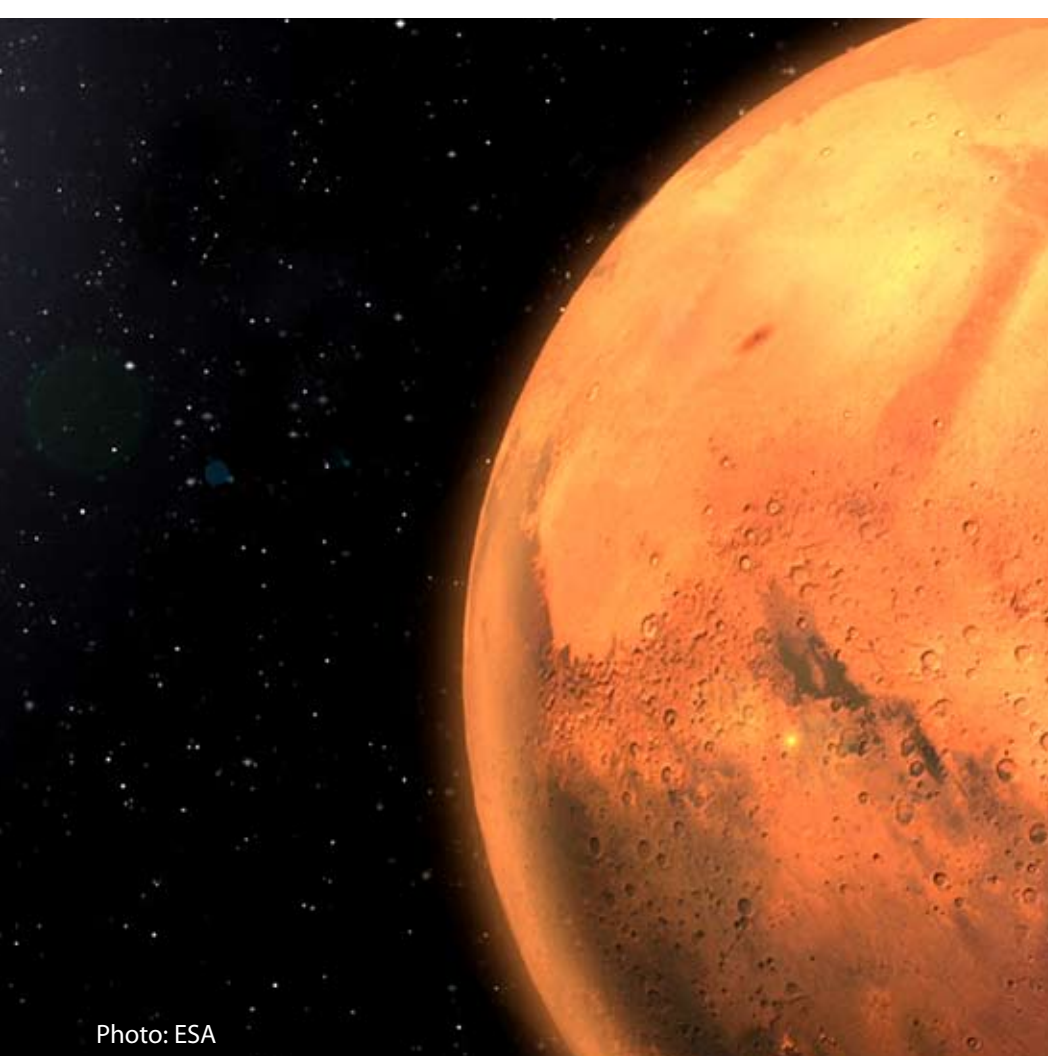


Photo: ESA

## Push forward the frontiers of science

Provide the tools for explorers - and inspiration for us all

The exploration of our solar system has transformed our understanding of life on Earth.

Only by understanding other planets can we understand how Earth and its climate function.

Minerals and energy in near space become part of mankind's sphere.

The public's imagination is captured by an international research laboratory on the Moon and missions to Mars.

Man's exploration of the Solar System – and beyond – is inspiring a new generation



# Mapping the Universe

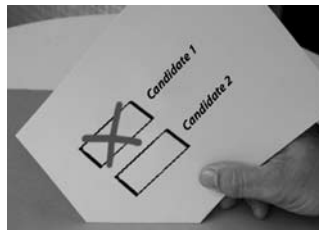
in a new way. Satellites stretching out to the Red Planet relay 3D imagery back to Earth, allowing us all to walk on Mars, in the comfort of our own homes.

Some nations have embarked on manned missions deep into the Solar System.

But even where the UK does not join this particular race into space, UK businesses and universities capture opportunities for science and business and provide the technology and services that enable others to pursue their objectives.



# A Sustainable, Inclusive Global Economy



## Instant infrastructure – a Civil Service in the Sky

Help Africa to use space technology  
for growth and empowerment

Developing countries, above all in Africa, need sustainable solutions to help them grow.

Communications satellites offer an instant communications infrastructure that would otherwise be beyond the reach of many developing countries.

Satellites offer a sustainable, cost effective alternative to laying down copper wires. A solution that is free from local corruption and bureaucracy, that will stand where ground based systems fall, that stands the test of time. Satellites connect Africa's rural populations with the global economy. They monitor crops. They can

predict droughts. They direct help when help is needed.

Satellites underpin democracy. Directly. As Inmarsat proved last year in the Congo, satellites offer a tamper-proof way of collating election results. They also spread ideas – the 'internet of the Sky' stretches across Africa. It teaches, empowers and inspires Africa's future generations.

To Governments, satellites offer a Civil Service in the Sky. Reliable tools in orbit help governments to prevent and manage conflicts, to improve their national security and to extend governance to the furthest reaches of national territory.

Where Nigeria's Space Agency is treading today, the rest of Africa will soon follow.

Satellites are Africa's infrastructure of the future. They can help spread the old pan-African dream of connecting all African nations together.

Satellites spread good Government, prosperity, education and hope into every village in Africa.

# The UK Space Vision 2025

This vision offers a future where Britain's leadership in space technology has transformed our place in the world and in the global economy, and our way of life.

***Our strong, confident message is: Be In It To Win It!***

- Playing to our strengths, the UK is the best place to do space business in 2025.
- Our engineers and entrepreneurs bring new technology to orbit quickly.
- They create profitable applications that improve people's lives.

- London's financial markets provide leverage for commercial ideas and smart procurement.
- They make it Europe's space capital.
- Government uses space-driven services for efficient governance and delivery.
- It provides leadership on space opportunities that support Britain's priority goals.
- Enabled by satellites, we push ourselves forward in a clean-tech revolution that makes high-mobility information societies sustainable.

- The global reach of tools in space allows us to monitor and confront climate change and threats of insecurity.
- It multiplies the UK's political and military ability to act.
- Our understanding of how Earth operates is empowered by continuous measurements of terrestrial and solar data from space.
- The ambition to explore our planetary neighbourhood opens new economic perspectives and inspires a new generation.

- We understand that our way of life depends on orbiting technology as the backbone of a networked global community in pursuit of a prosperous future.



This vision looks ahead to the world of 2025. That's less than two decades away.

That world of 2025 will be challenging, exciting and promising.

One thing is clear – satellites will play an even greater role in our lives and in our world than it does already. The question is, will Britain still be in it?

Britain's world leading bank of space technologies has every potential to become a key driver of our future prosperity and security, and a key driver in the future of the global space sector.

To realise this vision, we must:

- Recognise space technology as a Key Technology
- Commit Whitehall to a space policy with vision and ambition
- Remove the regulatory barriers that stand in the way of satellite enabled growth
- Make better use of the space solutions across our policy landscape

# *Let's be in it to win it!*



## Acknowledgements

This leaflet was produced for UKspace, the trade association for the UK Space Industry. It was formally presented to Parliament on 20th June 2007, by Tom Gunner, on behalf of UKspace, at the Summer Reception of the Parliamentary Space Committee, before the Minister for Science. UK Space Vision 2025 was inspired by the recommendation of many stakeholders, including Lord Sainsbury and Malcolm Wicks, for UKspace to produce a forward vision of a space enabled world and the benefits to the UK of maintaining its lead role in Space. It complements and builds on the 2006 Case for Space initiative, also by UKspace, which quantified the present benefits of Britain's leadership in space technologies and applications.

This book is the product of a consultation process involving experts from across the UK space landscape, including academia, policy makers and businessmen. UKspace is grateful to Ged Davis for chairing the initial workshop, and for QinetiQ for hosting it. UKspace would also like to thank Richard Knight and Kirsten Robinson of Mission-21 for designing the final presentation and booklet in record time. Above all, UKspace would like to thank Klaus Becher for managing the entire process with such efficiency, including hosting a web portal and blog to stimulate debate, and for producing the final report through all its revisions.

UKspace would also like to thank the following members of the UK Space Vision 2025 Consultation Group and the UKspace Communications Group for their contributions to the text: John Auburn, Andrew Brookes, Gerrit Beyer, Richard Brook, Jenny Carlton, Jeremy Close, Ged Davis, Richard Farrimond, Paul Flanagan, Bob Graham, Max Grimard, Tom Gunner, Prof Keith Hayward, Helen Kennett, Chris Lee, David Matthews, Marie Le Mauff, Pat Norris, Mark Oakes, David Parker, Colin Paynter, Ian Reid, Dave Robson, Karen Rogers, David Southwood, Sir Martin Sweeting, Will Tew, Peter Truss, Nick Veck, Will Whitehorn, David Williams (Avanti).

UKspace is very grateful to Bill Olnier MP and Ian Taylor MP, chairs of the Parliamentary Space Committee, for offering the platform of the PSC's 2007 Summer Reception to launch the vision.

### About UKspace

UKspace is the trade association for the UK space and satellite industry. UK Space supports 70,000 jobs and contributes £7 billion to the UK economy, and employs Britain's most highly skilled manufacturing workforce. Founded in 1975, UKspace is sponsored by both SBAC and Intellect, reflecting both the manufacturing and service companies within the industry. UKspace members are: ASTOS, Avanti Communications, BT, Com Dev, EADS Astrium, ERA Technology Ltd, ESYS, Helios Technology, IGG Component Technology, Infoterra, Inmarsat, LogicaCMG, Nottingham Scientific, QinetiQ, Qioptiq Space Technology, National Physical Laboratory, SEA Ltd, SciSys, SERCO, Surrey Satellite Technology Ltd, Thales, VEGA Group PLC.

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