THE SPACE ADVANTAGE

Enabling Business Transformation in Financial Services and Transport & Logistics

March 2025

Insights from the UK Space Agency's Unlocking Space for Business programme, supporting companies to deliver benefits through satellite solutions

UK SPACE AGENCY

UNLOCKING SPACE FOR BUSINESS

In association with delivery partners

pwc

CATAPULT Satellite Applications

Contents

Foreword

In today's rapidly evolving technology landscape, staying ahead of emerging opportunities and understanding the forces that drive change are essential for businesses to grow. The UK Space Agency is committed to catalysing investment to advance space-based technology and maximise growth in the UK space sector, while championing the power of space to inspire people, offer greener, smarter solutions and support a sustainable future.

This report 'The Space Advantage: Enabling Business Transformation in Financial Services and Transport & Logistics' aims to provide a comprehensive analysis of how satellite solutions can support a wide range of UK businesses through showcasing accessible insights from our Unlocking Space for Business programme. It highlights how satellite solutions enable growth and enhance competitive advantage and sets out how support can be accessed for businesses interested in exploring these opportunities.

The global space sector is worth £377 billion[1] and projected to grow a further 11% per annum to 2030[2]. With satellite services supporting at least £364 billion of UK GDP[1], the Unlocking Space for Business programme has engaged more than 350 organisations in the financial services and transport & logistics sectors, aiding their understanding and exploiting of business benefits through the use of satellite solutions.

Leveraging 300 tangible global case studies and value proposition materials, the programme has showcased the power of satellite solutions in solving companies' greatest challenges, and the potential of emerging technology, such as AI and Machine Learning, to drive revenue growth, enhance operational and financial efficiency, improve customer retention and address environmental obligations.

Following the delivery of 42 tailored workshops to 27 end-user organisations, the programme has awarded over £5 million of funding to support 23 new satellite solution projects and pilots covering a range of business opportunities including nature investment monitoring, renewable energy resilience, risk scoring for maritime insurance and connected transport services and crowd monitoring.

The UK Government is committed to increasing investment in space innovation and technology; a total of £1.7 billion has been allocated to the UK Space Agency from 2022-25.[3] Unlocking Space for Business forms part of a wider Unlocking Space programme, which is focused on growing the UK space sector through championing the benefits of space to government, business, defence and investor groups, catalysing investment into the UK's high potential space sector.

As you navigate the insights presented here, we hope that this report serves as both a source of knowledge and a catalyst of strategic thinking. We believe the insights we have shared will inform you and your business' understanding of the current landscape as well as help to guide future business decisions.

Dr Paul Bate
CEO, UK Space Agency

Executive summary

Unlocking Space for Business: A transformative opportunity for sectors

The Unlocking Space for Business (USB) programme has demonstrated how satellite solutions have transitioned from being perceived as futuristic innovations to increasingly becoming essential components of modern business operations. Over 350 UK businesses engaged with the USB programme to exploit how satellite-enabled innovations can address key sector challenges in financial services and transport & logistics.

This insights report aims to further support businesses in these sectors that are exploring opportunities to benefit from space solutions. It has been developed through engagement and discussion with businesses and the space sector as part of the USB programme. It reflects the views and interpretation of UKSA, PwC and Satellite Applications Catapult. Separately, UKSA has commissioned an independent evaluation, which will be available on GOV.UK.

From niche to necessity: A shift businesses can't ignore

Historically focused on military, scientific and weather applications, satellite products have evolved into a key enabler of commercial innovation, with a global market size of £320bn.[4] As further illustration, Government satellites made up 95% of launches between 1957–90 but just 11% between 2016–23.[5] This has been increasingly recognised, for example by the Harvard Business Review article 'Your Company Needs a Space Strategy Now', which commented that *"space is becoming a potential source of value for businesses across a range of sectors"*.[6]

Earth observation, satellite connectivity and communications, and satellite navigation and timing, are now underpinning technologies for many business applications – from improving supply chains and market intelligence, to understanding and mitigating the impacts of climate optimising supply chains.

Closing awareness gaps: Turning satellite solutions into business value

While many businesses in the UK are mature users of satellite solutions, some have only recently discovered their potential – including a quarter of workshop participants of the USB programme, who were unaware of these capabilities before taking part.[7] By showcasing over 300 global case studies from leading companies, the programme provided evidence of the immediate benefits these solutions can deliver, sparking new interest and encouraging businesses to act on opportunities that some had previously never considered.

Catalysing new use cases: How UK businesses are leading the way

With over £5 million provided in Government funding, the USB programme enabled 23 UK business-led projects to adopt satellite solutions that sought to address real-world challenges.[8] These initiatives have sought to improve operational efficiencies, enhance customer outcomes and strengthen financial metrics, and serve as proof points for other organisations looking to create competitive advantage.

Rapid innovation: Expanding the value and opportunities of satellite solutions

The convergence of satellite technology with emerging advancements such as artificial intelligence (AI), blockchain and quantum computing is opening further possibilities. These integrations make satellite solutions more accessible, actionable and affordable for businesses. The UK Government's commitment to technology adoption, particularly the AI Opportunities Action Plan, will continue to equip businesses with the tools and resources to innovate and enable transformative impact across industries.[9]

Government support: The call to action for UK businesses to lead globally

With the UK Government investing in space innovation and technology, businesses are presented with a unique opportunity to lead on a global stage. As the pace of technological advancement accelerates, organisations that delay adopting satellite-enabled solutions risk being left behind in a competitive, data-driven market. The time to explore and capitalise on these transformative opportunities is now.

> "Services that incorporate data from satellites are becoming ever more important and affordable…[and are] vital to the UK's growth objectives.
>
> UK Space Agency Annual Report 2023–24[10]

Key facts and figures

The extraordinary impact of space solutions on Earth

Unmatched insights from space to Earth

10,000+

active satellites power business intelligence, risk management and operational efficiency worldwide[11]

77%

reduction in satellite communications data costs since 2019, making services more accessible and cost-effective for businesses of all sizes[12]

800 petabytes

of Earth observation (EO) data collected, growing by 100 petabytes annually — equivalent to 700 years of HD video[13, 14]

Empowering business activity

£320bn

of UK GDP (15.3%) is supported by satellite navigation capabilities, benefitting businesses through reduced transport time and cost savings[15]

£3.1tn

in global economic benefits from Earth observation applications expected between 2023-2030, across sectors such as financial services, supply chain and agriculture[16]

425m

users projected to be connected via direct-to-device satellites by 2033, transforming global connectivity and closing the 4% mobile internet coverage gap[17, 18]

Advancing climate and sustainability

17

UN Sustainable Development Goals are supported by space products, particularly in addressing Climate Action (Goal 13)[1]

2bn tonnes

of CO_2e has the potential to be reduced through Earth observation data applications, equating to 3.8% of global annual greenhouse gas (GHG) emissions today — more than the 3.6% GHG produced by the aviation and shipping sectors [16, 19]

£18bn

of economic opportunity from extreme weather and disaster risk mitigation using Earth observation is expected by 2030[16]

"Satellite imagery is playing a key role in how S&P Global supports clients with assessing exposure to growing climate physical risks such as extreme weather events. This information is critical for analysing the evolving business risks and building resilience."

S&P Global
Credit rating and financial data agency

Satellite technologies

The space industry has long been considered a 'hidden utility' — critical for military operations and weather forecasting, yet largely invisible to the public. Today, satellites have evolved far beyond these traditional roles, becoming indispensable tools that underpin our daily lives and enable business transformation.

While businesses and Chief Technology Officers are now familiar with the power of cloud computing, digital transformation, and the growing importance of data, this report helps explore the sources and unique advantages of space technologies. Three key satellite capabilities — particularly when combined and are integrated with other tools like AI, customer data and socioeconomic data — unlock tangible advantages and new opportunities for innovation.

Earth observation

Offering unique and actionable intelligence from above on physical, chemical and environmental changes on Earth, using diverse sensor technologies.

Value drivers for business:

Change detection

Track short or long-term shifts, like deforestation or urban expansion, with historical 30+ year data available

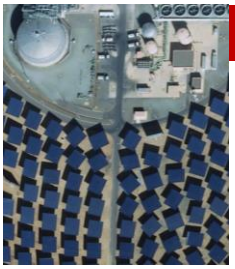
Remote monitoring

Gather intelligence on remote or large areas without stepping out the office - saving time and reducing operational costs

Consistent insights

Capture data with a reliable, standardised approach, enabling comparisons over time and across geographies

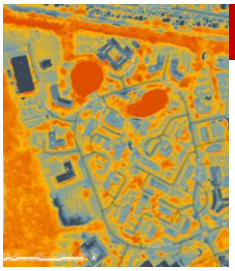
Example technology options:



Optical intelligence

Capture high-resolution, visible-light images for detailed and precise analysis of Earth's surface, much like a traditional camera

Monitoring the Noor Solar Power Plant in Ouarzazate, Morocco (Image credit: Airbus)



Thermal intelligence

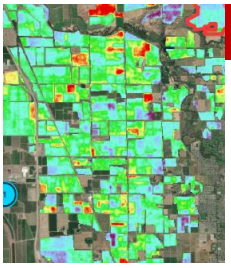
Detect emitted heat radiation to assess temperature variations and thermal anomalies such as energy inefficiencies or fires

Tracking heat loss across buildings at Surrey Research Park in the UK (Image credit: SatVu)

Radar intelligence

Gather all-weather, day-and-night insights of surface structures and floods, using pulses that penetrate clouds and darkness

Monitoring vessel movement at Port of Rotterdam in the Netherlands (Image credit: ICEYE)



Hyperspectral intelligence

Detect subtle chemical and environmental changes by analysing a wide spectrum of light, revealing patterns invisible to the eye

Monitoring crop health at California Central Valley in the US (Image credit: Pixxel)

Atmospheric intelligence

Measure changes in atmospheric composition, providing insight on pollutants, greenhouse gases, and weather patterns

Identifying a methane leak at Wales & West Utilities in the UK (Image credit: GHGSAT)

"We recognise the growing applications of satellite data in insurance, especially as data capture and resolution improves. Beyond exposure management, we're now exploring innovative ways to apply satellite imagery to help our customers manage risks and solve business challenges."

RSA
an [intact] company
Multinational general insurer

Satellite connectivity and communications

Providing seamless connectivity for people, assets and operations across the world — especially where traditional infrastructure falls short.

Value drivers for business:

Global reach anywhere, anytime

Monitor and communicate with key assets across the UK and overseas, including for autonomous and remote operations

Enhanced experience

Offer travel customers and staff uninterrupted access to the internet for business, safety and entertainment purposes

Operational resilience

Enable business continuity and communications during extreme weather or infrastructure outages

Example technology options:

Fixed systems

High-bandwidth connectivity for permanent operations, offices or remote infrastructure

Image credit: Viasat

Portable devices

Flexible solutions for remote areas or temporary activity like disaster response or construction

Image credit: Eutelsat OneWeb

On-the-move devices

Uninterrupted connectivity for vehicles, ships, or aircraft

Image credit: Kymeta / Eutelsat OneWeb

Handheld devices

Voice and data communication for individuals in remote or challenging environments

Image credit: Viasat

IoT dongles

Small, distributed systems for real-time data transmission in supply chains, energy, and agriculture

Image credit: Lacuna

"With our transport network ever more reliant on digital technology, there are huge opportunities from increasing satellite connectivity. Intelligent Transport Systems UK members, and the wider industry, are enthusiastic about the potential that satellite technology can play – supporting everything from more efficient operations, to asset monitoring and route optimisation, to name just a few."

Intelligent Transport Systems UK
Empowering Transport Technology

Trade body representing the UK's transport technology industry

“While GPS has long been the cornerstone of modern transportation, we are now exploring the exciting potential to elevate our navigation and location services. This includes more accurate real-time optimisation and the collection of valuable data to identify patterns, enhancing our logistics operations.”

Wincanton
Supply chain solutions partner

Positioning, navigation and timing (PNT)

Space-derived navigation and timing signals (e.g. GPS), that have been delivering critical location, movement and time synchronisation data for over 50 years.

Value drivers for business:

Pinpoint accuracy
Track vehicles and devices for location-sensitive applications like logistics and fleet management

Global resilience
Enable uninterrupted navigation and tracking even in challenging environments where older satellite or ground-based systems may not always work

Trusted timing signals
Underpin essential operations that require constant and accurate timing synchronisation for business operations, such as energy grids or trading platforms

Example technology options:

Traditional satellite navigation signals

Relies on global navigation satellite systems (GNSS), such as GPS, for cost-effective tracking, general navigation and mapping. Accuracy can sometimes be interrupted in certain scenarios, caused by dense urban areas with tall buildings, natural features like mountains or heavy foliage, or interference caused by severe weather or intentional signal disruption.

Image credit: Garmin

Enhanced satellite navigation services

Combines advanced satellites, ground transmitters and software applications to deliver highly accurate, reliable and resilient navigation. These services support high-precision applications like autonomous vehicles and real-time asset tracking.

Image credit: Focal Point Positioning

Complementary non-satellite data and technologies

Satellite solutions unlock further end-to-end use cases and impact when combined together, as well as with other data and technology sources, enabling a more complete picture on digital operations to solve business challenges.

Value drivers for business:

Holistic insights

Merge different types of intelligence together to create a more comprehensive dataset for decision-making

Big picture meets local detail

Combine broad macro and historic trends with specific site or customer information

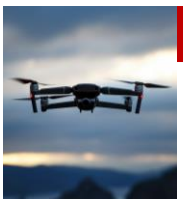
Advanced analytics

Powerful tools like AI, computer modelling and simulations use these combined datasets to identify patterns and predict outcomes

Example technology options:

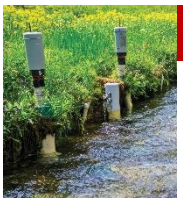
Geospatial mapping data

Location-based data representing physical landscapes, built environments and economic activity



Drone and aerial imagery data

High-resolution visual and sensor data collected from airborne platforms, providing detailed surface and environmental insights



Ground-based sensors

Internet of Things (IoT) devices and physical measurement tools capturing environmental, industrial and operational data for ground truth validation

AI-driven analytics

Advanced data processing powered by artificial intelligence, enabling automated analysis, pattern recognition and predictive insights

Customer, financial and economic data

Quantitative and qualitative insights on consumer behaviour, demographics, market trends and financial conditions

"The unique perspective provided by space data, combined with expanded connectivity and complementary datasets — such as ground-based measurements, IoT sensor networks, and historical records — is driving the development of advanced modelling solutions. These models deliver significant commercial advantages, for example by providing predictive insights for infrastructure resilience that enable proactive maintenance and cost optimisation."

CATAPULT Satellite Applications

Technology and innovation company helping businesses realise the potential from space

"Satellite data is highly applicable for asset managers covering a broad range of investment use cases and these will only grow in number as barriers to accessing and customising that data are reduced."

Man
Global alternative investment management firm

Applications for business

Challenges that businesses are seeking to address using satellite solutions, identified through the USB programme

From financial services to transport & logistics, satellites are enabling businesses to tackle some of their toughest challenges and unlock new growth opportunities. Satellite-enabled solutions are no longer futuristic — they are enabling transformation today, including delivering real-time insights, improving operational precision and supporting sustainability goals.

Business benefits	Challenges being addressed, identified through the USB programme
Driving revenue growth	• Limited customer-specific insights leading to missed opportunities and untailored pricing strategies • Technology gaps needing to be closed to bring new commercial solutions to market
Enhancing operational and financial efficiency	• Unreliable forecasting and manual inspection processes leading to inefficiencies and delayed action • Frequent travel and on-site visits to remote locations driving up costs and operational complexity
Improving customer retention	• Generic customer strategies and experiences posing challenges to engagement and loyalty • Disruptions and delays in resolving customer issues damaging customer trust and satisfaction
Addressing environmental obligations	• Complex and often unreactive mitigation strategies being taken for climate-related risks • Resource-intensive and fragmented processes for environmental monitoring and compliance

Examples of use cases identified from the USB programme

This section showcases case studies of projects funded by the Unlocking Space for Business programme, using four business benefits to illustrate how UK businesses are leveraging satellite solutions to solve or create opportunities from key industry challenges — from enhancing autonomous vehicle navigation, to streamlining carbon credit verification and mitigating infrastructure risks.

Case Studies

Driving revenue growth

Enabling more precise autonomous vehicle solutions

gmv

Underpinning verified quality carbon credits transactions

octopusinvestments Treeconomy

Enhancing operational and financial efficiency

Assessing subsidence-related insurance claims

Admiral satsense optera

Monitoring events which impact light-rail infrastructure

OneBigCircle

Improving customer retention

Enhancing visitor travel for sporting events

Sports City Management Co. Transport for Greater Manchester You. Smart. Thing.

Empowering clients with actionable wildfire risk insights

ASSIMILA AON

Addressing environmental obligations

Monitoring environmental changes to better quantify climate and nature-related risks

WIM EARTH BLOX

Enhancing nature and climate-related risk management

Foresight Frontierra

Deep dives on following pages →

"It's been inspiring to see the momentum building around the 'Space Advantage' — with more businesses using data-driven insights from satellite solutions to drive growth, efficiency, and sustainability."

pwc

Multinational professional services firm

Driving revenue growth

Example applications that businesses in the UK are pursuing, supported by the USB programme

Enabling the deployment of reliable autonomous vehicle navigation solutions

As transportation shifts toward greater intelligence and autonomous features, highly accurate and resilient navigation is critical for the safe and efficient movement of people and goods.[20]

However, traditional navigation signals are vulnerable to interference from tall buildings, dense urban environments and bad weather, which can lead to positioning errors and safety concerns.[21]

With 40% of new cars in the UK expected to have some self-driving capabilities by 2035[20], and the market size for connected and autonomous vehicles projected to be £42bn that year[22], businesses are exploring technology options that can enhance the accuracy and assurance of positioning data, to unlock this commercial market.

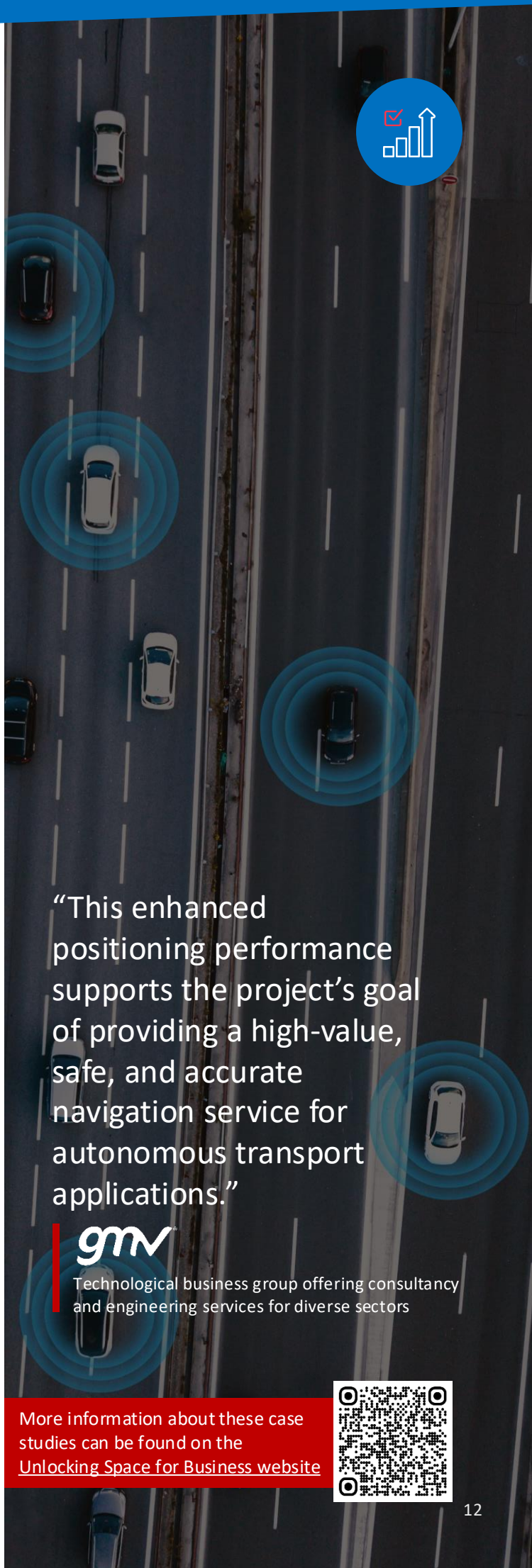
The satellite advantage

Case study

Space company GMV, collaborated with the UK's national mapping agency Ordnance Survey (OS) to improve the accuracy and reliability of satellite navigation and positioning data. This helps to unlock new markets and customers, through supporting safety-critical applications such as autonomous driving and drone-delivery services.

The project integrated satellite positioning data from the GMV's network with ground-based data from the Ordnance Survey Net network, which consists of 115 continuously operating satellite navigation reference stations across the UK. This integration has enabled:

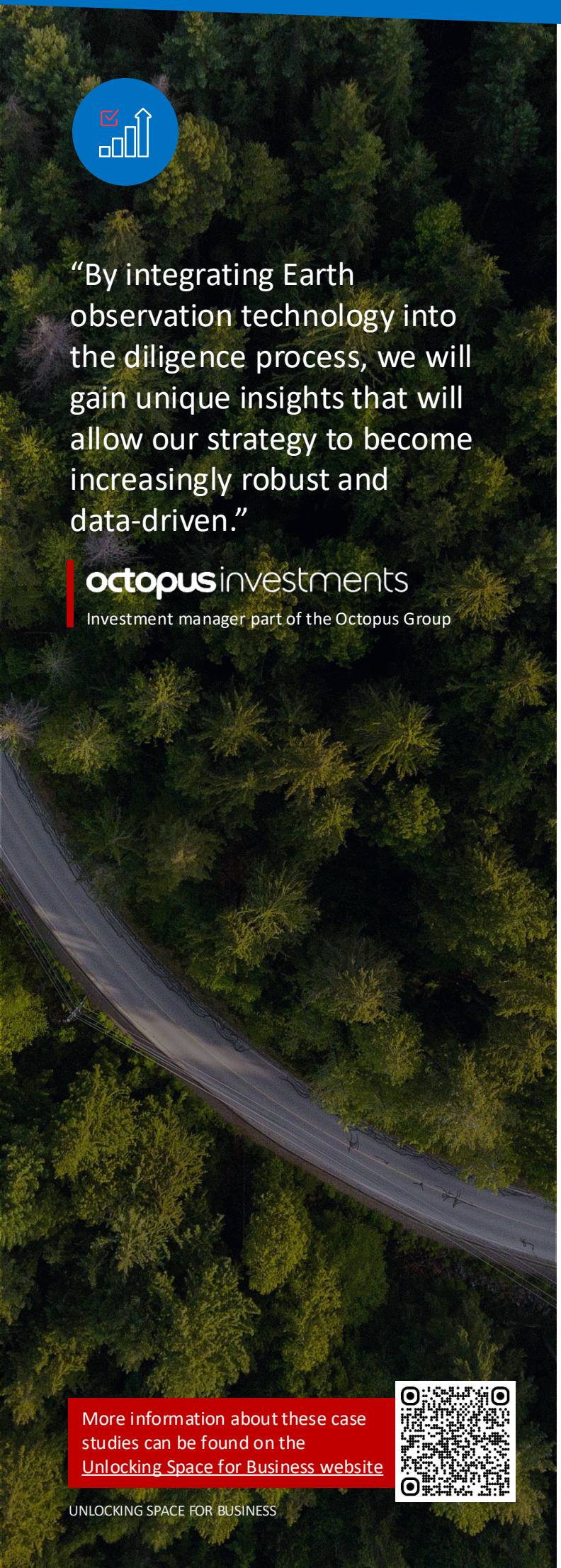
- ✓ Safer and more accurate navigation solutions for autonomous vehicles, helping to unlock new customers and drive revenue growth
- ✓ Greater trust in autonomous transport, helping other businesses to adopt new technologies
- ✓ Ability to also benefit other industries such as agriculture, construction mapping and mining



"This enhanced positioning performance supports the project's goal of providing a high-value, safe, and accurate navigation service for autonomous transport applications."

Technological business group offering consultancy and engineering services for diverse sectors

More information about these case studies can be found on the Unlocking Space for Business website



Underpinning the sale and purchase of verified high-quality carbon credits

The carbon credit market is growing rapidly, with two-thirds of UK businesses expected to meet sustainability targets through carbon offsetting.[23]

However, a challenge remains in ensuring the credibility and accuracy of carbon credits. Validating these credits is especially important given that 99% of carbon offsetting purchases by UK organisations are currently made overseas, amounting to up to £200m annually. [24]

With new Government principles for voluntary carbon markets and nature integrity introduced in 2024, businesses require transparent, verifiable data to assess and invest in high-quality carbon credits confidently.[25]

The satellite advantage

Case study

octopus investments Treeconomy

UK investment manager Octopus Investments partnered with green tech company Treeconomy to embed satellite-derived insights into investment decisions related to nature-based carbon projects.

Octopus' Nature Capital Strategy is focused on generating high-integrity carbon removal credits[26], which aligns with Treeconomy's experience in using satellite capabilities to measure, report and verify (MRV) services for carbon and nature projects. By utilising investment underwriting principles and satellite imagery, this project helps investors:

- ✓ Monitor, measure and verify land-use changes transparently and cost-effectively
- ✓ Conduct due-diligence processes more accurately with alternative data sources
- ✓ Confidently invest in sustainability projects, accelerating funding for critical climate projects

More information about these case studies can be found on the Unlocking Space for Business website

Enhancing operational and financial efficiency

Assessing subsidence-related insurance claims risk

The intensity and frequency of extreme weather is increasingly resulting in more climate-related disasters and related insurance claims.[27]

One major consequence to extreme weather including drought is subsidence, where shifting ground causes buildings to sink. This has been forecasted to drive insurance payouts to £1.9 billion annually by 2030.[28]

Understanding and managing subsidence risk is complex, involving multiple factors like local geology, weather patterns, and human activity. Traditional risk assessment methods to date have been costly and difficult to scale.

The satellite advantage

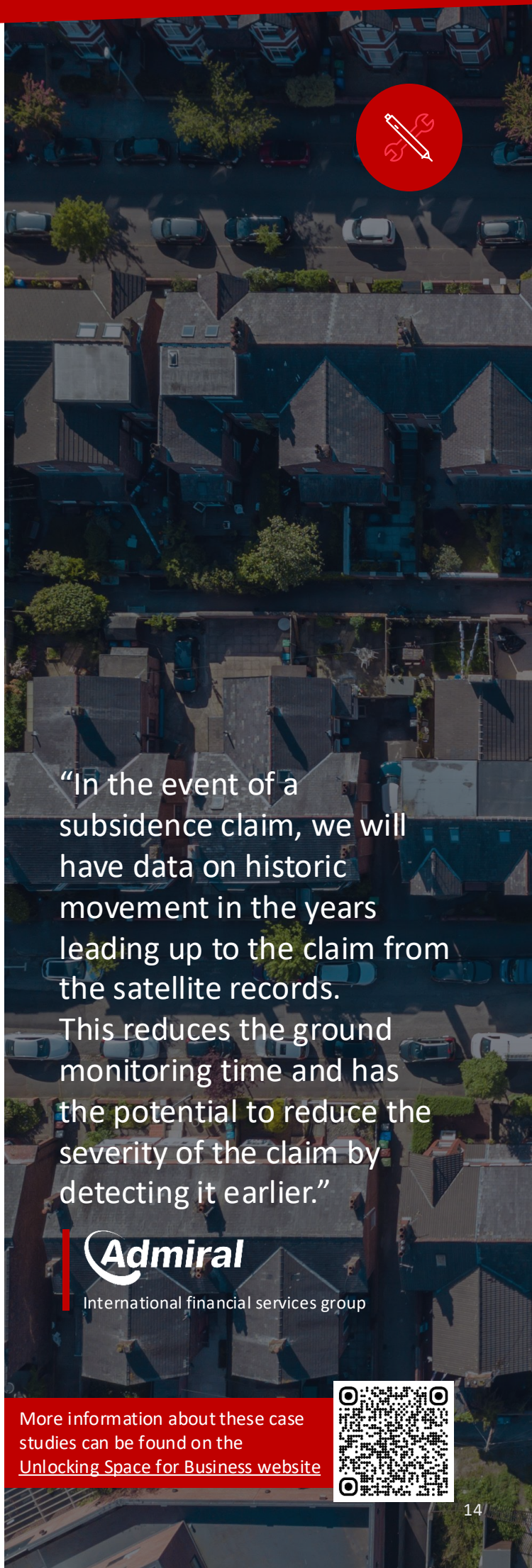
Case study

Admiral satsense

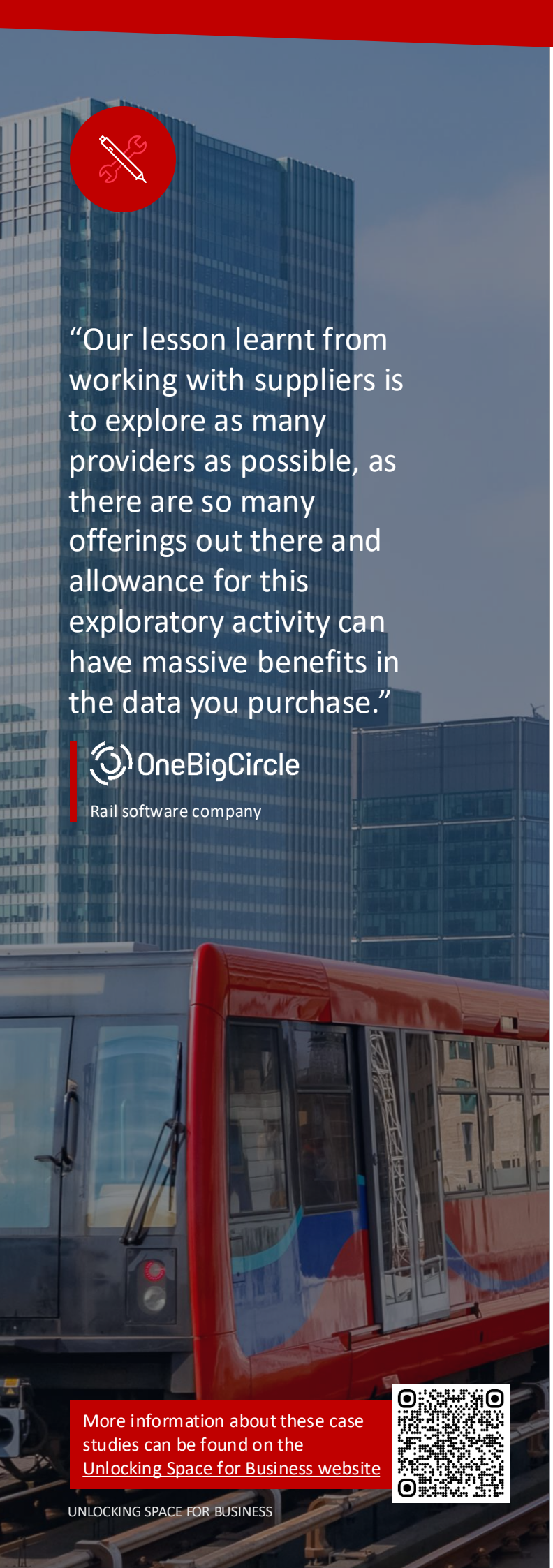
Home insurer Admiral, in collaboration with ground movement specialist SatSense and engineering consultant Optera is using satellite-derived imagery data to remotely monitor and assess subsidence risks across UK properties. The potential impacts are significant, given Admiral's portfolio of over 1 million home insurance customers and 10+ years experience in handling subsidence claims.[29]

The project uses synthetic aperture radar (SAR), an advanced satellite technology which sends radar signals to the Earth's surface and measures how they bounce back. This detects small shifts in the ground — down to millimetres. By comparing SAR data from different periods, Admiral has worked with SatSense and Optera to:

- ✓ Identify high-risk areas by tracking ground and building movements over time, spotting subsidence issues before they escalate
- ✓ Improve risk prediction using satellite data to detect cyclical ground shifts, validated against historical claims for accuracy
- ✓ Boost efficiency and cut costs by enabling faster, more precise claim resolutions and reducing the burden of subsidence management



More information about these case studies can be found on the Unlocking Space for Business website



"Our lesson learnt from working with suppliers is to explore as many providers as possible, as there are so many offerings out there and allowance for this exploratory activity can have massive benefits in the data you purchase."

OneBigCircle

Rail software company

More information about these case studies can be found on the Unlocking Space for Business website

Monitoring infrastructure-impacting events for light-rail

The UK's rail system delivers over £22 billion in benefits to the UK economy, environment and society each year, with £8 billion attributed to decreased congestion.[30]

Maintaining these networks, which often span large and remote areas, requires continuous monitoring, inspections and repairs to ensure the safe and efficient operation of the railway system. Flooding, erosion and vegetation overgrowth can threaten infrastructure, yet traditional site inspections are time-consuming, expensive and carry safety risks from trackside activity.[31]

The satellite advantage

Case study

OneBigCircle

Rail software company OneBigCircle is transforming rail safety and efficiency, through a satellite imagery-powered solution that detects vegetation overgrowth, land movement and flood risks across the UK's critical railway infrastructure.

Using hyperspectral Earth observation sensors which capture a wide range of details on the ground — beyond what the human eye can see — the system can detect subtle environmental changes that signal potential hazards. This satellite imagery is combined with AI, machine learning and ground-based videos to provide real-time monitoring, risk assessment and event triage for rail operators. This approach therefore seeks to:

- ✓ Enhance safety by reducing the need for frequent on-site inspections by maintenance teams and personnel
- ✓ Improve efficiency in monitoring and managing rail infrastructure
- ✓ Reduce maintenance costs while strengthening the long-term resilience of the UK's rail network

Improving customer retention

Enhancing visitor travel routing for sporting events

97% of UK cities saw average congestion levels increase in 2024, costing the UK economy £7.7 billion due to lost time and fuel.[32, 33]

A major contributor of non-recurrent traffic is event-related travel, including concerts and sports games, which account for more than half of all congestion.[34]

This is a regular occurrence in the city of Manchester, which places significant strain on public transport and road networks during football matchdays, making it difficult to predict and manage crowd movement efficiently.

Poor planning can lead to negative fan experiences, lost revenue, and reduced future attendance.

The satellite advantage

Case study

Sports City Management Co.

Transport for Greater Manchester

You. Smart. Thing.

Venue manager Sports City Management Company has partnered with local government-body Transport for Greater Manchester to address the matchday congestion challenge and deliver on innovative and inclusive transport solutions.

By combining satellite imagery, satellite navigation data and customer data, machine learning is unlocking a better understanding and prediction of travel patterns that were previously not available.

Through the innovation of merging data types, this solution can enable event planners, transport operators and city officials to:

- ✓ Enable smoother visitor experiences - by reducing congestion, minimising delays and improving overall journey efficiency
- ✓ Sustainable and inclusive travel, by encouraging smarter mobility solutions that promote public transport and reduce environmental impact
- ✓ Better event planning, helping organisers make data-driven decisions that enhance safety and reduce disruption

"The anticipated return on investment is expected to be demonstrated by increased use of the public transport network for Transport for Greater Manchester (TfGM). This is being achieved through the deployment of innovative journey-planning technologies that encourage sustainable travel behaviours."

You. Smart. Thing.
Travel management and visitor travel planning platform

More information about these case studies can be found on the Unlocking Space for Business website

Empowering clients with actionable wildfire risk insights

Wildfires and other climate-related disasters are becoming more frequent and severe, driving up insurance claims and financial lossesa.[27] For insurers, accurate risk assessments are not just about mitigating losses — they are important for earning and retaining customer trust.

Europe's wildfires in 2023 were among the worst this century, costing an estimated £1.8 billion in economic losses.[35, 36] Yet, insurers have historically lacked a widely accepted wildfire risk model, making it difficult to consistently and effectively forecast and mitigate potential losses.[37]

As climate risks grow, businesses and individuals will demand deeper insights and proactive mitigation. Insurers who meet these needs will strengthen customer loyalty, reduce churn, and become trusted partners in risk management.

The satellite advantage

Case study ASSIMILA AON

Earth observation provider Assimila, partnered with insurance broker Aon, to develop a satellite-powered solution that enhances their customer's wildfire risk assessments and pricing offerings.

By combining historical and real-time Synthetic Aperture Radar (SAR) satellite imagery with climate data and predictive analytics, this solution reveals wildfire risk insights that were previously undetectable for clients. Unlike traditional imaging, SAR can penetrate cloud cover and smoke, capturing critical ground changes before, during, and after wildfires.

In the absence of a widely accepted wildfire risk model, insights from this Wildfire Severity Index enable insurers, brokers and risk managers to:

- ✓ Enhance tailored pricing and risk management strategies, to enable more customer-centric underwriting decisions
- ✓ Improve the unique customer service offering, creating an edge against competitors with better-informed clients
- ✓ Help customers action more effective risk mitigation plans

Addressing environmental obligations

Monitoring environmental changes to better quantify climate and nature-related risks

Regulators are tightening environmental disclosure requirements, with institutions like the European Central Bank expecting companies to report on climate and environmental risks.[38]

While the TNFD[39] is not yet mandatory, +500 companies and financial institutions accounting for £14 trillion AUM are already reporting on nature-related impacts.[40]

Traditional risk assessments remain costly and fragmented, especially across multi-region and multi-sector portfolios. Without scalable, data-driven insights, financial institutions risk falling short of ESG commitments and regulatory obligations.

The satellite advantage

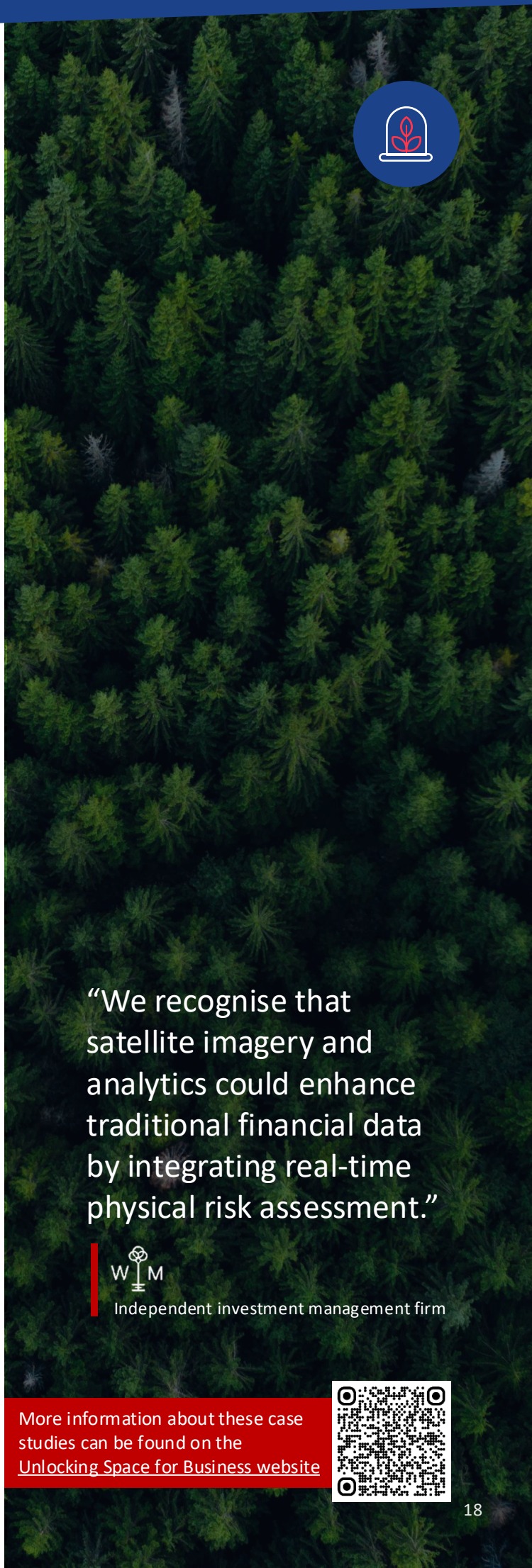
Case study

W M EARTH BLOX

UK-based investment manager WieldMore partnered with climate analytics company Earth Blox to develop an environmental risk evaluation system, that provides a comprehensive view of risk modelling for businesses in the energy, agriculture, and logistics sectors.

The tool integrates satellite data — including natural event risk maps and regional heat maps — with terrestrial datasets such as emissions records. By combining these data sources with AI-driven predictive models, the tool enables businesses and other investors to:

- ✓ Strengthen nature-related risk assessments and make more informed decisions with faster response to evolving risks
- ✓ Enhance ESG compliance, addressing growing regulatory demands and sustainability goals, lowering the risk of penalties or non-compliance
- ✓ Improve financial risk analysis, by incorporating environmental dependencies into traditional risk models



"We recognise that satellite imagery and analytics could enhance traditional financial data by integrating real-time physical risk assessment."

W M

Independent investment management firm

More information about these case studies can be found on the Unlocking Space for Business website

Enhancing nature and climate-related risk management and reporting

In 2023, there was a 44% increase in companies declaring climate transition plans, demonstrating how businesses worldwide are under increasing pressure from regulators, investors and customers to effectively measure and manage nature-related risks.[41]

In the UK, the Government has mandated climate-related financial disclosures aligned with the TCFD[42] recommendations. These regulations require many companies to report on their governance, strategy, risk management, and metrics related to climate change.[43]

To comply with these evolving requirements, businesses need efficient methods to identify, mitigate, and report on nature-related risks within their investment processes.

The satellite advantage

Case study Foresight Frontierra

Foresight Group, an investment manager focused on building a sustainable future, partnered with environmental geospatial consultancy Frontierra to develop an advanced platform that integrates nature and climate risks into due diligence and asset management processes.

This platform leverages satellite data, geospatial analysis, and proprietary algorithms to assess climate and nature-related risks at both site and portfolio levels. By integrating 35 climate risk indicators and 15 nature-related metrics — including biodiversity data, asset-level insights, and advanced geospatial models — it delivers deeper, more reliable assessments where standardised datasets fall short.

This solution is able to help Foresight Group and other investors:

- ✓ Conduct more accurate risk assessments, leveraging diverse datasets for improved nature and climate risk evaluation
- ✓ Strengthen proactive ESG compliance and decision-making on risks
- ✓ Improve financial disclosures, aligning with evolving regulatory standards

More information about these case studies can be found on the Unlocking Space for Business website

Supplier ecosystem

With over 1,700 organisations in the UK space sector[1], a diverse supplier ecosystem is enabling solutions for sectors like transport, financial services, and beyond. Businesses can access their services directly, via brokers or through data and technology aggregators, all working to maximise value and flexibility for users.

UPSTREAM SOLUTIONS

431 **Satellite manufacturing:** Design and construct satellites that deliver critical analytics and business services

Launch and in-space logistics: Manage satellite deployment and operational longevity

Satellite operations: Provide ground-based technologies to maintain satellite performance and interpret data

DOWNSTREAM SOLUTIONS

Earth observation

19 **Satellite hardware and data providers:**

Collect, process and package Earth observation data for actionable insights

AAC Clyde Space, Surrey, planet., BAE Systems, GHGSAT, ICEYE, Telespazio a Leonardo and Thales company, Horizon Technologies

137 **Specialist insight providers:**

Analyse satellite data to create targeted, sector-specific solutions for decision-making

spottitt, earth, Map Impact, Réseau, tradeinspace, EARTH BLOX, Fathom, ASTERRA, NV5, optimal cities., SimAnalytica, ASSIMILA, satsense, WATERMARQ, LiveEO, Escrow-Tech, Geospatial Intelligence, AIRNODE, deepplanet, Environment Systems, GEOCENTO, sparkgeo, VE3, Treeconomy, BolgiaTen, EOLAS, Frontierra, Ordnance Survey, Omanos Analytics, Space Intelligence

Satellite connectivity and communications

19 **Satellite network operators:**

Enable satellite-based communications, including IoT, broadband and 5G infrastructure

eutelsat ONEWEB, Lacuna, Stellarsat, Orbconnect, AVANTI

138 **Value-added services and resellers:**

Enhance and/or repurpose satellite derived data and products to provide tailored business solutions

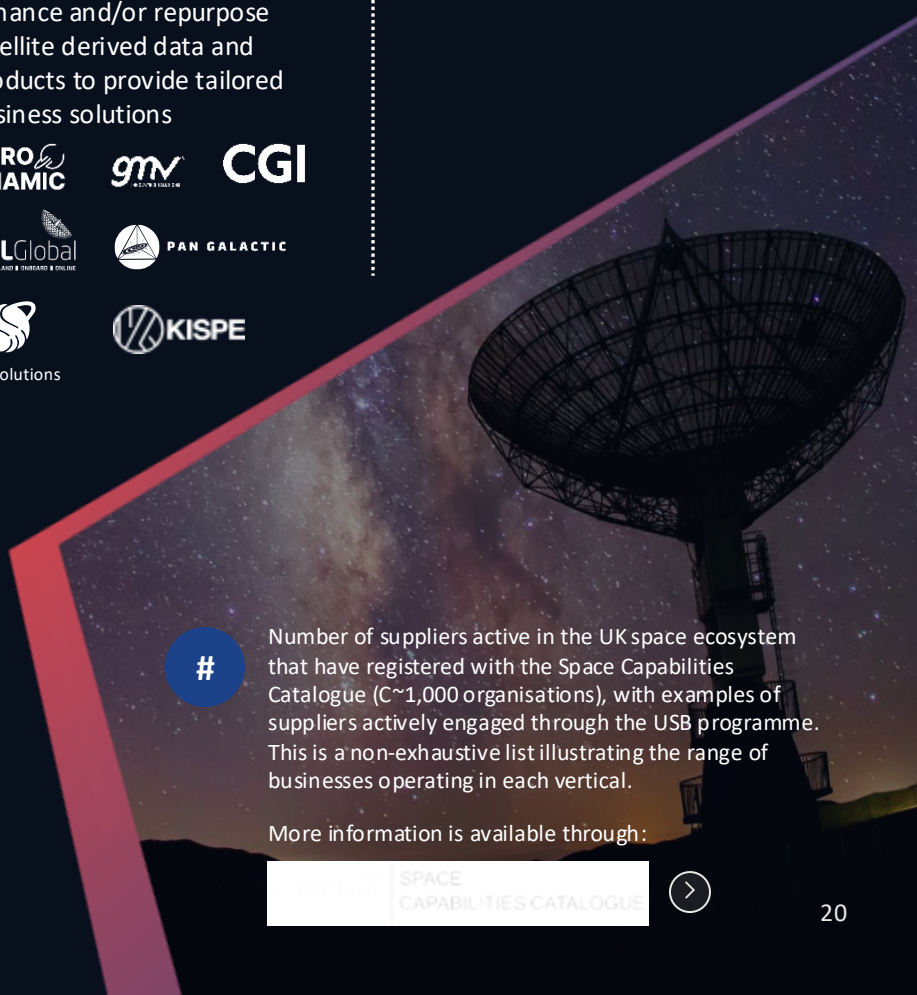
ASTRO DYNAMIC, gmv, CGI, NSSLGlobal, PAN GALACTIC, MLS Solutions, KISPE

Positioning, navigation and timing

103 **Location-based service and equipment providers:**

Offer technologies and devices that deliver flexible navigation, mapping and timing services

ALBORA, Teleplan Forsberg, gmv, RethinkPNT, xona space systems



Number of suppliers active in the UK space ecosystem that have registered with the Space Capabilities Catalogue (C~1,000 organisations), with examples of suppliers actively engaged through the USB programme. This is a non-exhaustive list illustrating the range of businesses operating in each vertical.

More information is available through:

SPACE CAPABILITIES CATALOGUE

Emerging innovations

Innovation is transforming sectors, and satellite technology is at the forefront of this change. Emerging technological advancements like AI, blockchain and quantum computing are merging with satellite solutions to deliver ever-increasing business value. These innovations make satellite offerings more accessible, efficient and impactful to real-world business needs.

What's happening?	The business impact?
Reusable rockets have already dropped the cost of launching satellites by over 90% in the past decade, accelerating new planned satellite deployments.[44]	**Affordability** Increased competition is driving down costs, making satellite solutions more affordable for customers of all sizes; satellite communications data costs have already decreased 77% since 2019.[12]
A once concentrated sector is continuing to expand, with over 1,700 UK suppliers and new satellite capabilities being offered, such as AAC Clyde Space's EO services.[45, 46]	**Choice** The number of UK space sector suppliers is expected to grow further, following an 11% increase since 2022, offering a wider range of tailored satellite solutions.[1]
Satellite systems are increasingly integrated with major technology platforms and cloud services such as AWS and Microsoft Azure.[47]	**Compatibility** Greater integration with mainstream cloud platforms will enable easier access to satellite-derived intelligence, such as Planet's agriculture collaboration with AWS.[51]
AI is automating the analysis of vast satellite data volumes, for example NVIDIA and Spire's advances on time-critical weather predictions.[48]	**Efficiency** AI-driven modelling of complex scenarios will continue improving, enabling increasingly real-time use cases, for example ICEYE's rapid assessments of flood damage for insurance clients.[52]
Blockchain and quantum encryption are improving security of satellite data and communication flows across the world for financial industries.[49]	**Security** More secure, tamper-proof data exchanges are expected, through efforts like J.P. Morgan's development of a blockchain-enabled Kinexys for transactions via space.[53]
Companies are expanding global satellite coverage, like Planet Labs and OneWeb, with increasingly large service volumes becoming available.[50]	**Scalability** Large scale solutions will provide increasingly global portfolio insights, supporting sectors such as mining, oil and gas which already have a 60% EO adoption rate including for remote operations.[16]

Summary of USB-supported projects

The Unlocking Space for Business programme has provided funding to a range of feasibility study and pilot projects, which trial new satellite-enabled solutions to address real-world challenges. A summary of all projects has been outlined below.

Financial services

Climate risk, resilience and response

- Supporting insurers better understand scale of wildfire risk using EO data
- Using location to unlock EO for informed financial decision making
- Advancing EO insights for nature and climate risk management and reporting
- Utilising EO to assess the impact of environmental events on an investment
- Integrating satellite imagery into residential property roof assessments
- Building models with EO data to understand financial impact of changing wind resources
- Assessing subsidence-related insurance claims risk using satellite radar data
- Integrating EO data with financial models to assess impact of climate and nature risks

Sustainable business opportunities and compliance

- Conducting automated analysis on vegetated natural capital assets with EO
- Mapping the natural world and predicting environmental risks with EO
- Measuring and monitoring biodiversity using EO data for the housing market
- Developing nature insights for due diligence processes and risk reporting with EO
- Measuring nature-related impacts and dependencies of corporate facilities with EO
- Using EO to support data-driven investment decisions for nature-based carbon projects
- Unlocking investment into nature credits through EO-enabled financial products

Transport & logistics

Smart asset monitoring

- Tracking marine trade vessels with EO to identify unusual shipping behaviour
- Developing AI-powered maritime software to detect ships using EO data
- Producing tidal elevation maps to enhance shipping channel management using EO
- Producing condition maps of UK rail to identify hazards with EO data
- Assessing short-term risk factors of maritime incidents using EO insights

Connected transport services

- Enhancing on-board connectivity for light-rail using satellite connectivity and PNT
- Enabling more accurate satellite navigation signals for novel mobility applications

Human activity monitoring

- Reducing congestion for fan travel to Manchester City's Etihad Campus using EO

USB delivery partners

UK SPACE AGENCY

At the UK Space Agency we boost UK prosperity, understand the Universe, and protect our planet and outer space. We play a major role in delivering the Government's National Space Strategy. We nurture a thriving space ecosystem — a network of investors, scientists, engineers, integrators, academia and research labs — and a sector that generates an annual income of £18.9 billion employing 52,000 people across the country. Our staff include scientists, engineers, commercial experts, project managers and policy officials who:

- **Catalyse investment** to advance space-based technology and maximise UK space sector growth
- **Deliver missions and capabilities** that responsibly meet national needs and advance our understanding of the Universe
- **Champion the power of space** to inspire people, offer greener, smarter solutions and support a sustainable future

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Satellite capabilities 101

Watch bite-sized learning and development videos designed for new or potential users of satellite solutions within the financial services and transport & logistics sectors. These videos explore topics relating to the procurement and integration of types of satellite data and services, and discuss specific uses cases for business:

Satellite solutions 101 for financial services ›

Satellite solutions 101 for transport & logistics ›

USB insights for suppliers and integrators

Discover the five key learnings for suppliers and integrators on how to support end-users to fully realise business benefits from satellite solutions. These learnings and insights emerged following extensive USB programme engagement with end-user businesses.

[Pending public link] ›

Other UKSA programmes

The **Business Applications and Space Solutions Programme (BASS),** in partnership between the UK Space Agency and European Space Agency (ESA), is a commercially focussed space applications programme that delivers innovative uses of space assets and data.

Find further details on open funding opportunities from the UK Space Agency, the space sector, academic, education and community partners.

pwc

PwC is one of the leading professional services networks in the world, operating across 157 countries with more than 295,000 people, and providing services to 84% of Global Fortune 500 companies. Our purpose is to build trust in society and solve important problems through delivering the highest quality support to our clients across Advisory, Deals, Risk, Tax and Audit services. Our **Global Space Practice** has dedicated teams across the world supporting public, private and investor organisations across the space sector on a diverse range of strategic and operational agendas.

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CATAPULT Satellite Applications

Satellite Applications Catapult is part of a network of 9 UK Catapults, dedicated to boosting growth in strategically important areas of innovation across three missions; **Sustainable Earth, Autonomous and Connected Earth** and **Beyond Earth**. We focus on **Increasing Market Adoption** by stimulating market demand for satellite services within end-user sectors. We provide **Business Support** to high-potential space sector companies through access to our facilities, technical experts and helping them commercialise their ideas. We play key roles in **Collaborative and Commercial R&D projects**, taking risks others may not.

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