



Space 2040 The global space economy is set to reach €1 trillion by 2040 - the commercial space race has begun

Realising the space opportunity for Irish business



November 2023

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Space 2040

Space heralds an unprecedented degree of private participation in a sector that has historically been dominated by governments and state-owned organisations.

As more and more enterprises and institutions gain awareness of the wealth of opportunities on offer, the commercial space sector is set to balloon in reach and scale, ultimately impacting every sector in Ireland. In this context, all businesses should urgently understand how space commercialisation will affect them, and where they can enter the value chain and pursue commercial return.

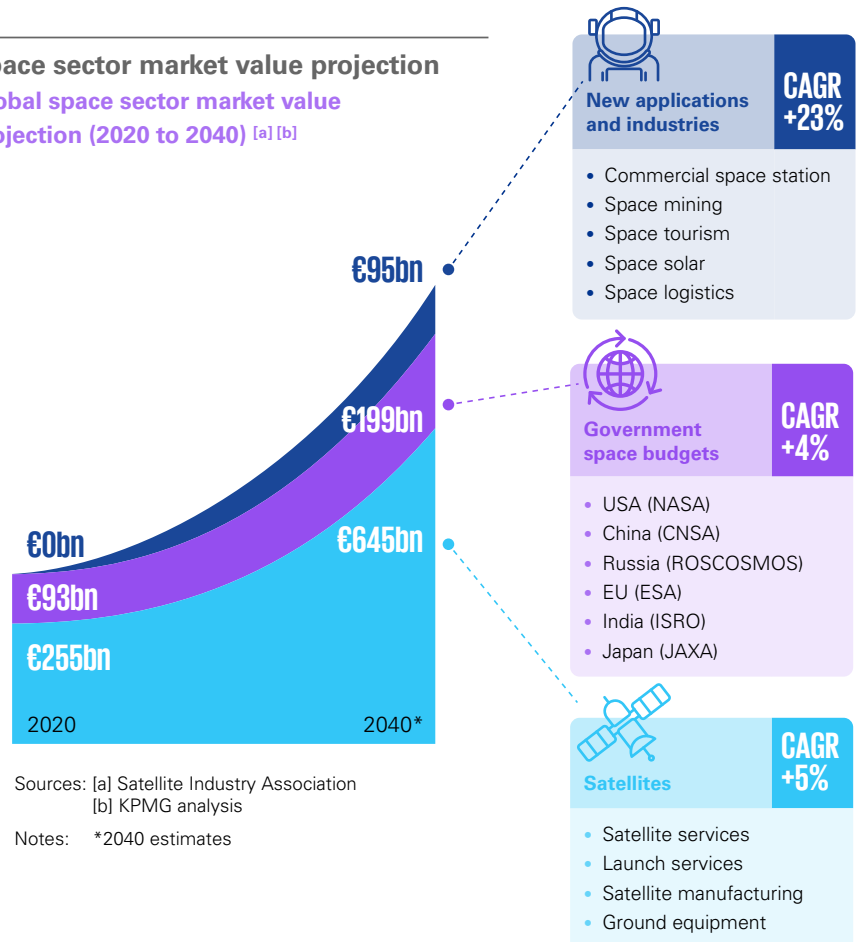


Defining the space commercialisation opportunity

Globally, the space industry promises to grow from €348 billion in 2020 to nearly €1 trillion in 2040. The latest Seraphim Space Index report highlights extraordinary growth with €5.22 billion privately invested in the industry within the last 12 months demonstrating a paradigm shift where space is no longer out of industry's reach. The fast-falling cost of spaceflight is creating a new value chain encompassing not only the launching of objects into space (upstream) but the ground-based support of those objects (midstream)

and the exploitation and application of the data they collect (downstream). Just as the first government-driven wave of space exploration eventually revolutionised fields from medical imaging to water purification, we believe today's private enterprise driven space commercialisation will yield technologies whose applications far exceed their first use cases. Space is set to yield whole new suites of services, products, and value, potentially representing a huge opportunity for businesses in every sector.

Space sector market value projection Global space sector market value projection (2020 to 2040) [a] [b]



Sources: [a] Satellite Industry Association
[b] KPMG analysis

Notes: *2040 estimates

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Space in Ireland

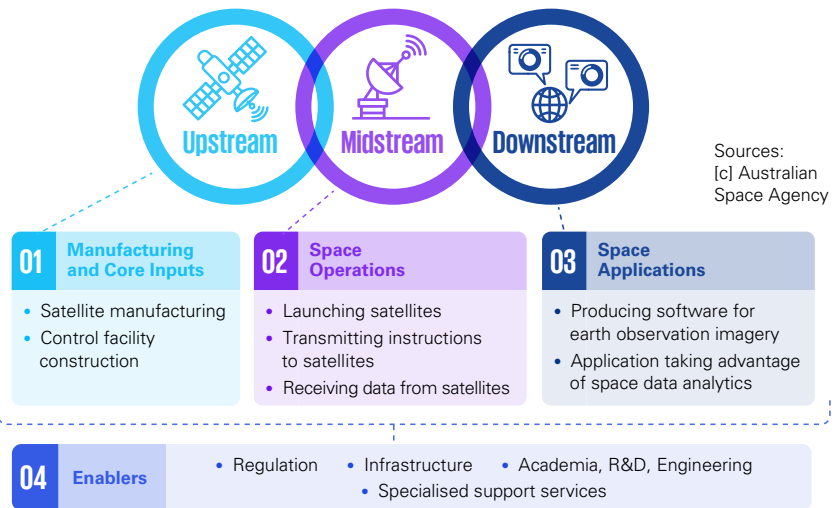
In Ireland, the space sector had a turnover of ~€300m in 2019, and employed ~1,140 people, much of which was accounted for by contributions in software, electronics and propulsion.

Northern Ireland's space sector had a turnover of ~£45m in 2019, and employed ~430 which was primarily driven by space manufacturing and applications.

However, given both have relatively strong capabilities in materials, microelectronics, photonics, telecommunications, RF and life sciences, Irish industry has plenty of scope to grow its involvement in commercial space, across all parts of the value chain.

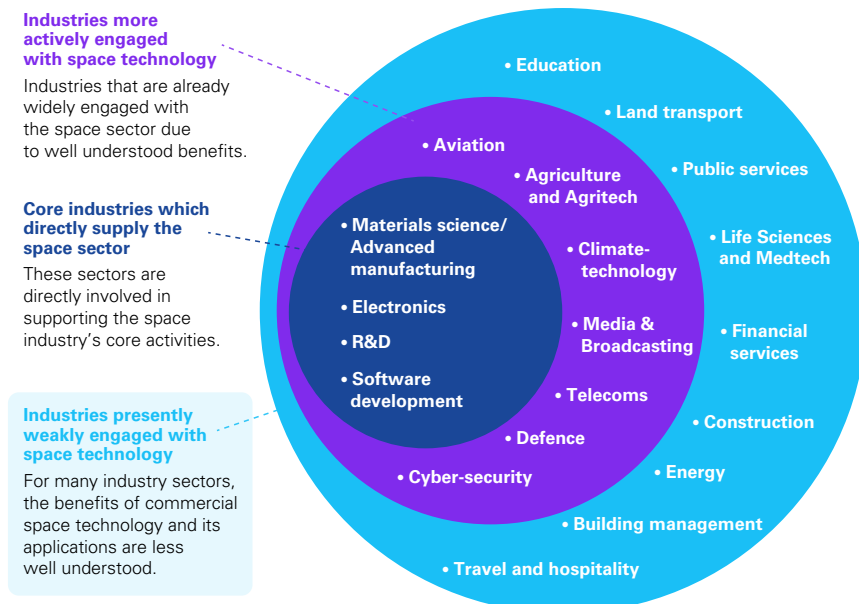
The space sector value chain

Illustrative space sector value chain [c]



Potential benefits of space value chain participation by industry

Classification of industries with potential benefits from participation in the space value chain [d]



Sources: [d] KPMG perspective from project research in 2023

However, current awareness of these opportunities is low; KPMG survey data from 2023 revealed that a majority of Irish organisations are not very, or not at all, aware of the commercial space sector, despite the fact that 81% of them believe that space will be important to their sector's development.

The Irish government is actively seeking to accelerate space involvement through advancements such as policy codification and the creation of industry institutions, as set out in the National Space Strategy for Enterprise in 2019. The same is true for Northern Ireland which published its Space Strategy in 2016. However, awareness of these strategies remain low, and events in the sector are already outpacing their ambitions and roll-out.

How private enterprise can capture opportunities in the all-island Irish space sector

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The commercial space sector is relevant to most Irish enterprises, both north and south of the border. Whilst the upstream value chain is accessible only to a subset, downstream is ultimately accessible to all.

There are clear opportunities for many Irish companies in developing and

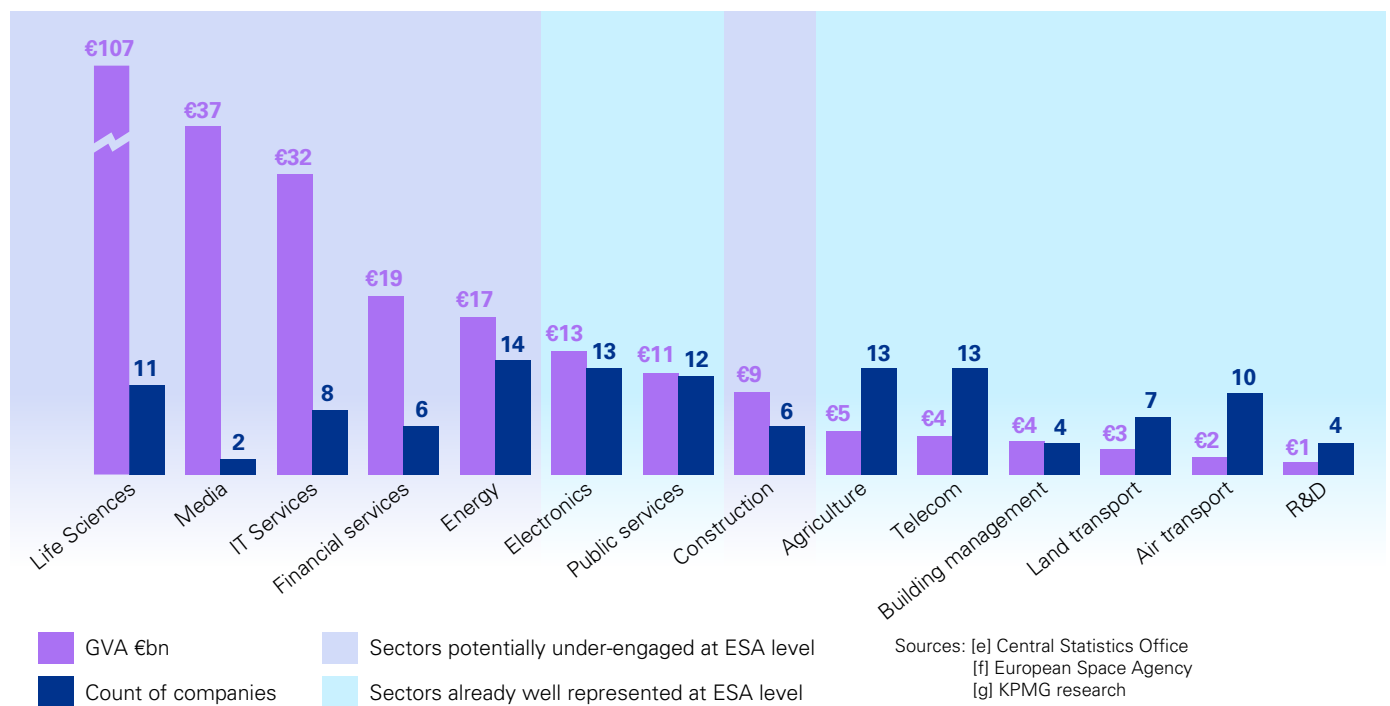
adapting existing technologies for the commercial space market, forming technology spin-outs from space to non-space applications, and in building applications and services on top of space-based systems. Given the growing prevalence of space data, it is likely that some businesses will already be participating downstream without realising it. The question now is to what extent businesses on the island of Ireland can imagine the use cases of the future and exploit them before their competitors.

Businesses looking for inspiration will find no shortage of examples, whether in Apple's use of satellite connectivity for emergency location in its latest iPhone, to Satellite Vu's adaptation of satellite thermal imagery to industrial monitoring.

According to KPMG analysis of company involvement with the European Space Agency, a number of Irish sectors are relatively under-engaged in space compared to their size, including life sciences, media, IT services, financial services, and energy.

Relatively under-engaged enterprise sectors

Number of Irish companies involved with European Space Agency (ESA) in sectors with a GVA exceeding €1 billion ^[e] ^[f] ^[g]



Businesses in these sectors have a particular opportunity to take advantage of existing space use cases, and to develop others.

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Potential use cases in under-engaged sectors



Energy

- IoT asset tracking
- Oil and gas prospecting
- Oil seepage monitoring
- Wind farm wind prediction
- Solar “sunshine maps”



Construction

- Connectivity to remote construction sites
- Site surveying
- Site asset tracking
- Site condition monitoring (e.g., soil quality, air quality)
- Flood and subsidence risk analysis



Agriculture and Agritech

- Crop yield/livestock monitoring
- Fertilisation and irrigation monitoring
- Soil condition/snow cover monitoring
- Rainfall assessments and farm water management



Life Sciences and Medtech

- Remote patient monitoring
- Remote consultations
- Remote surgeries
- Air quality monitoring
- Pandemic and disease surveillance
- Microgravity drug development



We are all adopters and users of space technology. Space underpins communications, travel, financial services and monitoring of our planet weather and ecosystem. Businesses may be using comms infrastructure of geo spatial services within their products and services without even realising they are utilising space infrastructure. In the next 10 - 20 years we will see upwards of 100,000 satellites launched into various orbits around Earth to provide services and increased possibilities to join the space sector. Adjacent sectors that can harness this space capability as users or developers include Insurance, FinTech and Energy. The public sector could be one of the largest users of space technology to provide more efficient and effective public services and informed and intelligent resource management.



Robert Hill
Director,
Northern Ireland Space Office



IT Services

- Cyber-security (e.g., satellite data transfer, space communications)
- Data analysis of space technology (e.g., artificial intelligence, machine learning)
- Space data software development (for other industries which can benefit from space)



Financial services

- Insurance risk assessment (e.g., crop failure, climate change and natural disaster risk)
- Investment portfolio climate change risk assessment
- Sustainable investments emissions verification



Space presents significant opportunities; the global space economy is projected to grow from an estimated £270 billion in 2019 to £490 billion by 2030 and the UK Government is committed to investing in the growth of the UK as a space nation. This provides a significant window of opportunity now for Northern Ireland companies, particularly those which are active in the Advanced Manufacturing & Engineering and Technology sectors to explore how they can target their products and services to this exciting growth opportunity.



Kelly Murphy
Space Sector lead,
Invest Northern Ireland

Developing a space strategy

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Commercial space is evolving fast and offers huge benefits to those willing and able to engage with it^[h]. Tomorrow's winners are acting today to understand and capture the opportunities space technology and exploration offer them.

Businesses looking to enter the commercial space value chain need to urgently acquire the relevant skills, knowledge, and relationships. This process should support the preparation of a comprehensive space strategy, mapping out commercial space-related threats and opportunities, capability gaps, goals and prerequisite investments. Whether performed in-house or by third parties, such an exercise offers firms a solid foundation on which to build, in what is necessarily a complex and dynamic landscape. Such efforts at the enterprise level will of course need support by relevant players throughout the space ecosystem, e.g.:

[h] A 2016 report by the Department of Jobs, Enterprise and Innovation estimates that Ireland's ESA budget (2010) generated a return on investment of around 7:1: <https://enterprise.gov.ie/en/publications/publication-files/economic-enterprise-impacts-public-investment-rd-ireland.pdf>

National Policy Makers

- Update both the National Space Strategy for Republic of Ireland and Northern Ireland to include stronger upstream ambitions.
- Establish a state body to promote space industry development and the fulfillment of the National Space Strategy.
- Seek membership of COPUOS (Committee on the Peaceful Uses of Outer Space).
- Encourage private industry to engage with commercial space potential.
- Develop a robust and responsive space regulatory framework.

Academic Institutions

- Fast-track the development and delivery of practical space courses at undergraduate, diploma and postgraduate level.
- Deepen ties with industry across all sections of the space value chain.

Investors

- Review existing portfolios to identify companies that could benefit from a space sector play, based on practicality and viability of adapting their technologies for space applications or adopting space data for downstream applications.

- Incorporate commercial space suitability into standard assessment processes for new investment opportunities, especially in hardware, materials science, and optics.
- Consider funding commercial space-focused incubators to encourage relevant startup activity.

Private Enterprise

- Develop organisational understanding of commercial space technologies, applications and capabilities. Engage with Space Industry Skillnet.
- For applicable enterprises, engage with relevant EU programmes such as Horizon Europe, The EU Space Programme, and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT).
- Deepen collaboration with HEIs to facilitate relevant knowledge and skills acquisition.
- Explore opportunities to adapt terrestrial technologies for upstream application.
- Explore potential use cases for space data to enhance existing products and services, especially in under-engaged sectors, e.g. pharma.

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Produced by: KPMG's Creative Services. **Publication Date:** October 2023. (9750)