

Growth opportunities across the space supply chain

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100 SPACE PROJECTS OVER 10 YEARS

MARKET SIZING • FORECASTING • RETURN ON INVESTMENT

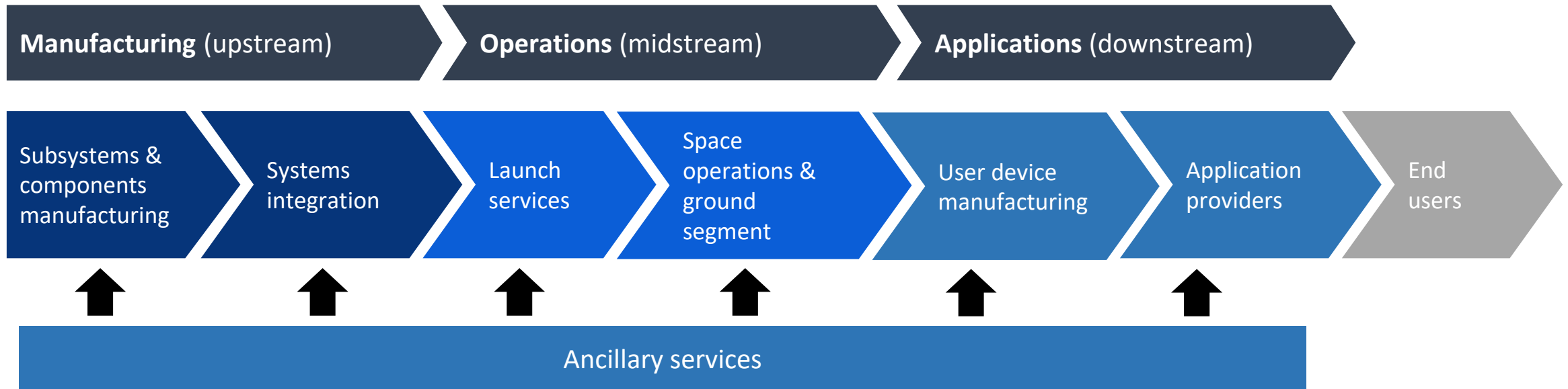
STRATEGIC INSIGHT • DUE-DILIGENCE • BUSINESS CASES

Growth opportunities across the space supply-chain

- What is the space sector?
- How big is the space sector?
- What are the opportunities for high performance technology companies?
- Future opportunities in space
- Q&A

What is the space sector?

Space value-chain



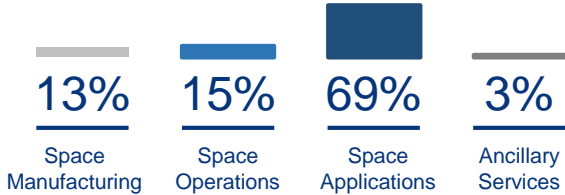
Source: London Economics

... significant differences between space technologies
(GNSS, EO, satcom)

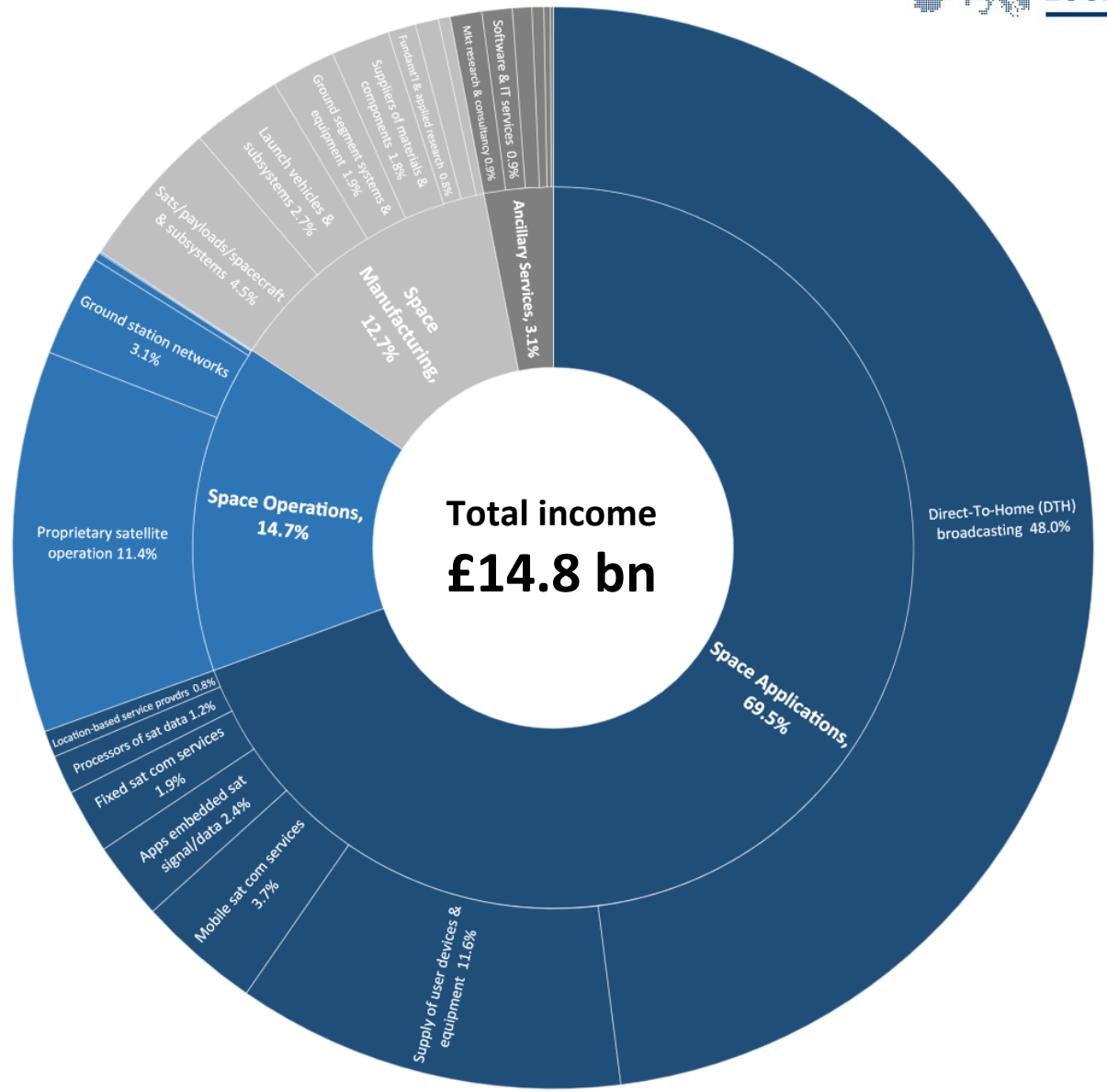
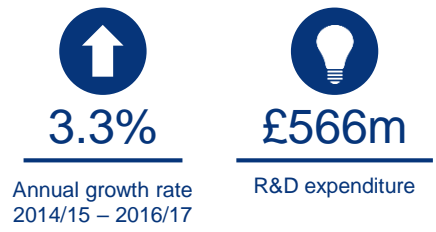
How big is the (UK) space sector?

UK Space Industry, 2016/17

£14.8bn
Total Income



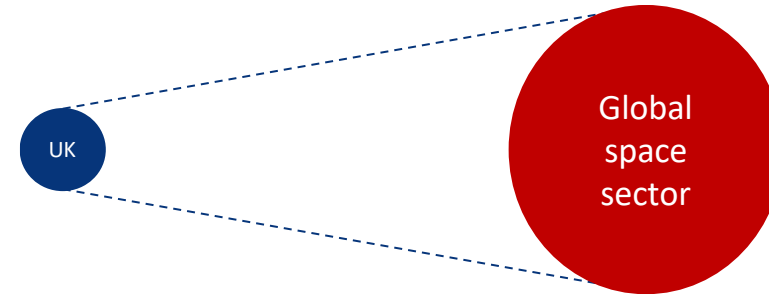
41,900
Employees



Source: London Economics: Size & Health of the UK Space Industry 2018

How big is the (global) space sector?

- Global space sector offers significant potential for exports
 - **x20** as big as UK market in 2016/17
- UK space sector exports: **£5.5 billion** in 2016/17



Coverage	UK, 2016/17 (Size & Health)	World, 2018 (Bryce Space)	World, 2018 (Space Foundation)
Total	£14,792m	£217,620m	£325,370m
Space manufacturing	£1,882m	£15,298m	
Space operations	£2,179m	£4,864m	
Space applications	£10,278m	£197,459m	
Ancillary services	£453m		

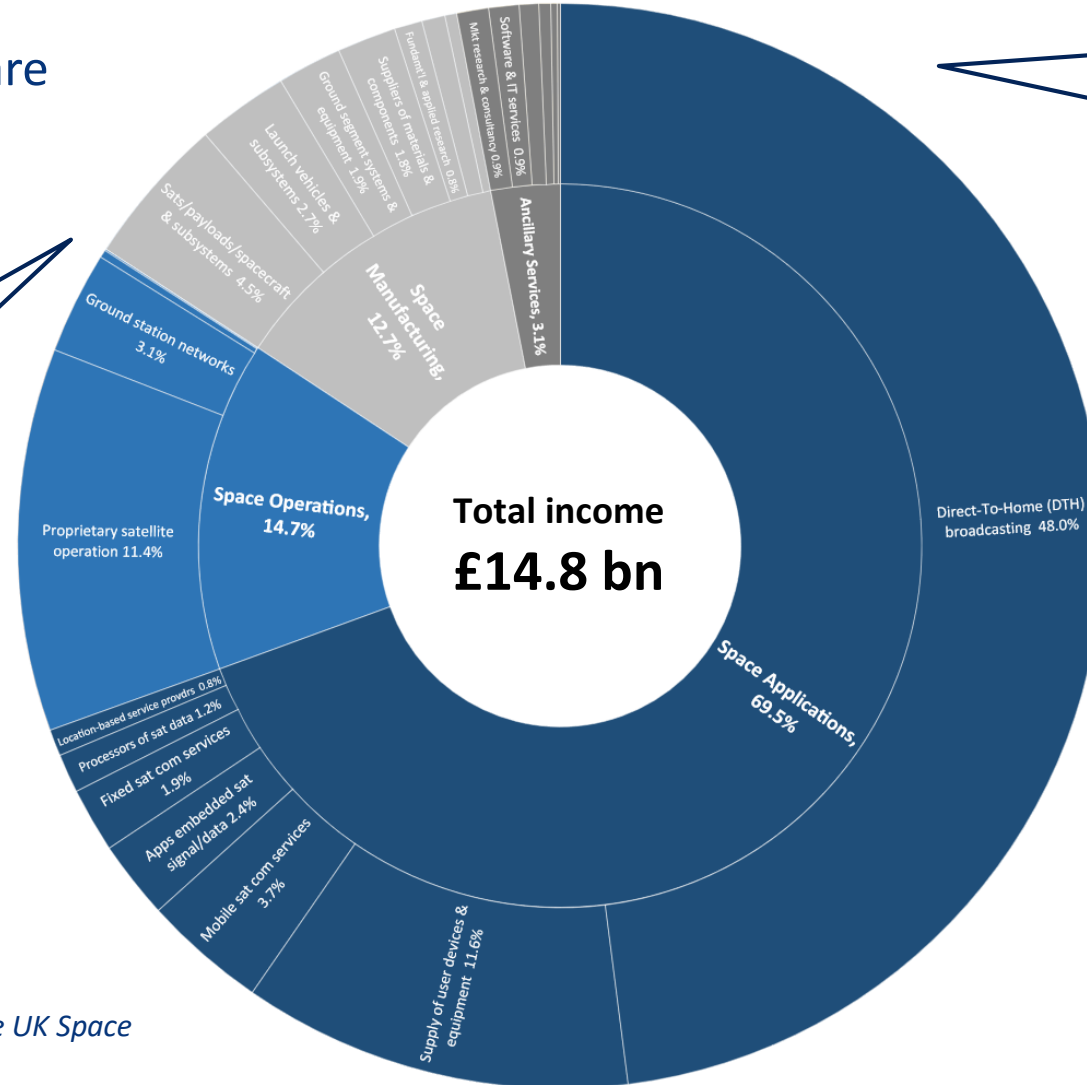
Source: London Economics 2018, Bryce Space 2018, Space Foundation 2018. \$:£ exchange rate on 31/12/18 used for Bryce and Space Foundation figures

What are the opportunities for high performance technology companies?

Space and HPT markets share similar design challenges:

Space manufacturing:

- Components for launch vehicles and spaceports
- Satellite manufacturing
- Engineering support and testing
- Composite materials



Ancillary services:

- Research and consultancy
- Supply-chain management

Space applications:

- Automotive connectivity
- High speed GNSS reporting
- Leveraging modelling software for space applications

Source: London Economics: Size & Health of the UK Space Industry 2018

Traditional space vs NewSpace

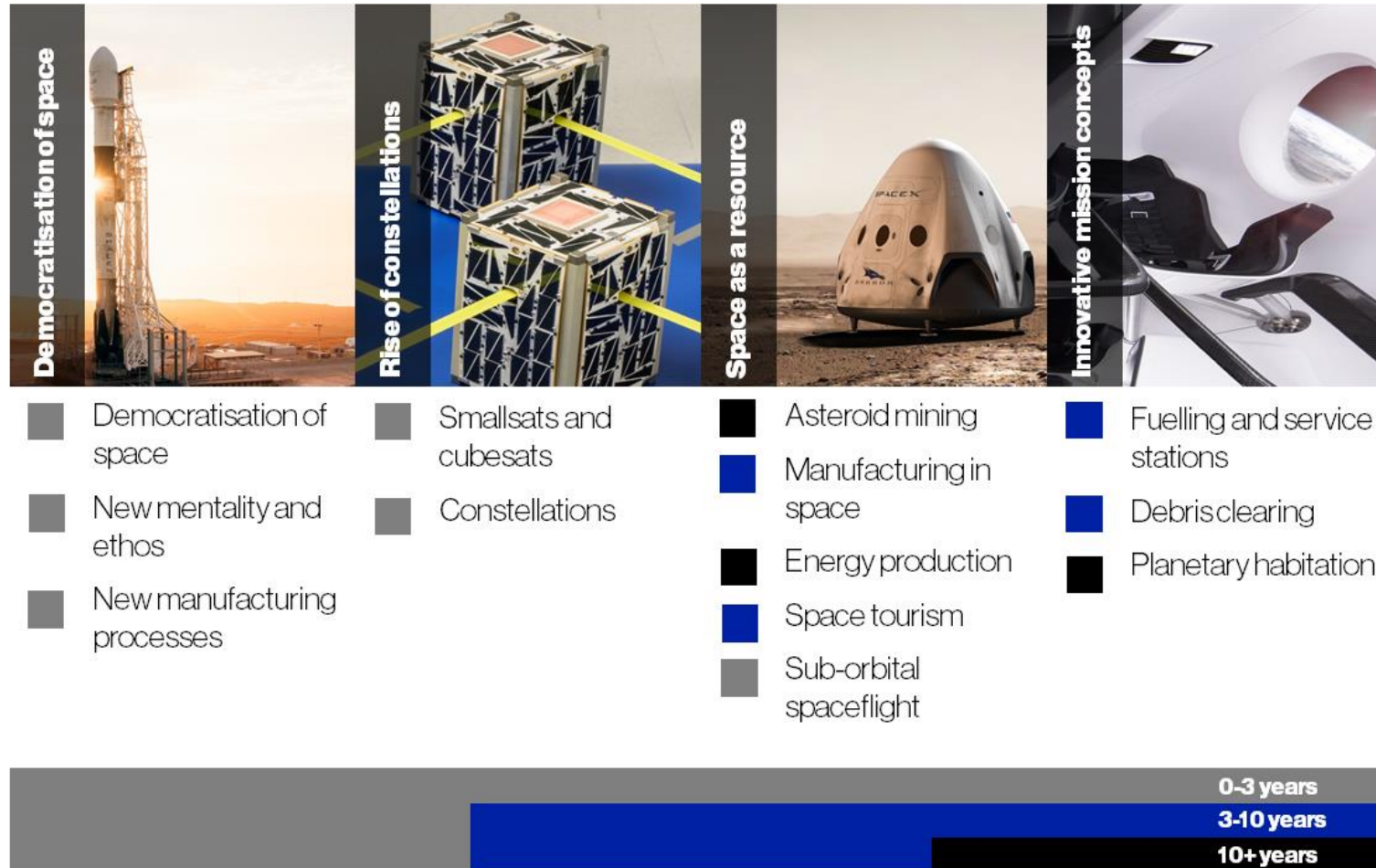
- Space is becoming a more viable market for new entrants

Characteristic	Traditional space	NewSpace
Stakeholders	Governments, military, multi-nationals	Entrepreneurs, start-ups
Innovation	Tried and tested methods, incremental	New design philosophies, spin-in from other sectors, disruption, miniaturisation
Procurement	Bespoke, stringent requirements	COTS , embrace of new entrants , standardisation
Development	Lengthy to ensure quality	Rapid development, mass production where possible, disposable tech (except rockets)
Cost	High procurement costs, funding from institutional customers	Smaller procurement costs, funding from VCs and commercial investors
Volume	Low volume	High volume

Source: London Economics

Future opportunities in space

- New opportunities in space require new supply-chains and innovators



Source: London Economics analysis and Lloyd's graphics

Thank you

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