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Next generation satellite services

1 September 2022

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who we are
in numbers

regulation
made simple

>35
Years of Experience

4x4
Covering 4 Sectors Across 4 Continents

>270
Clients from

90
Different Countries

70
Countries Covered

>70
Team Members

25
Different Nationalities

26
Different Languages

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Massive transformation

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Satellites skyrocketing

- Satellites/year:
- 1967: 143
- 2020: 1200
- 2021: 1778
  - Similar average for 10 years

Source: Edison Group. Euroconsult.

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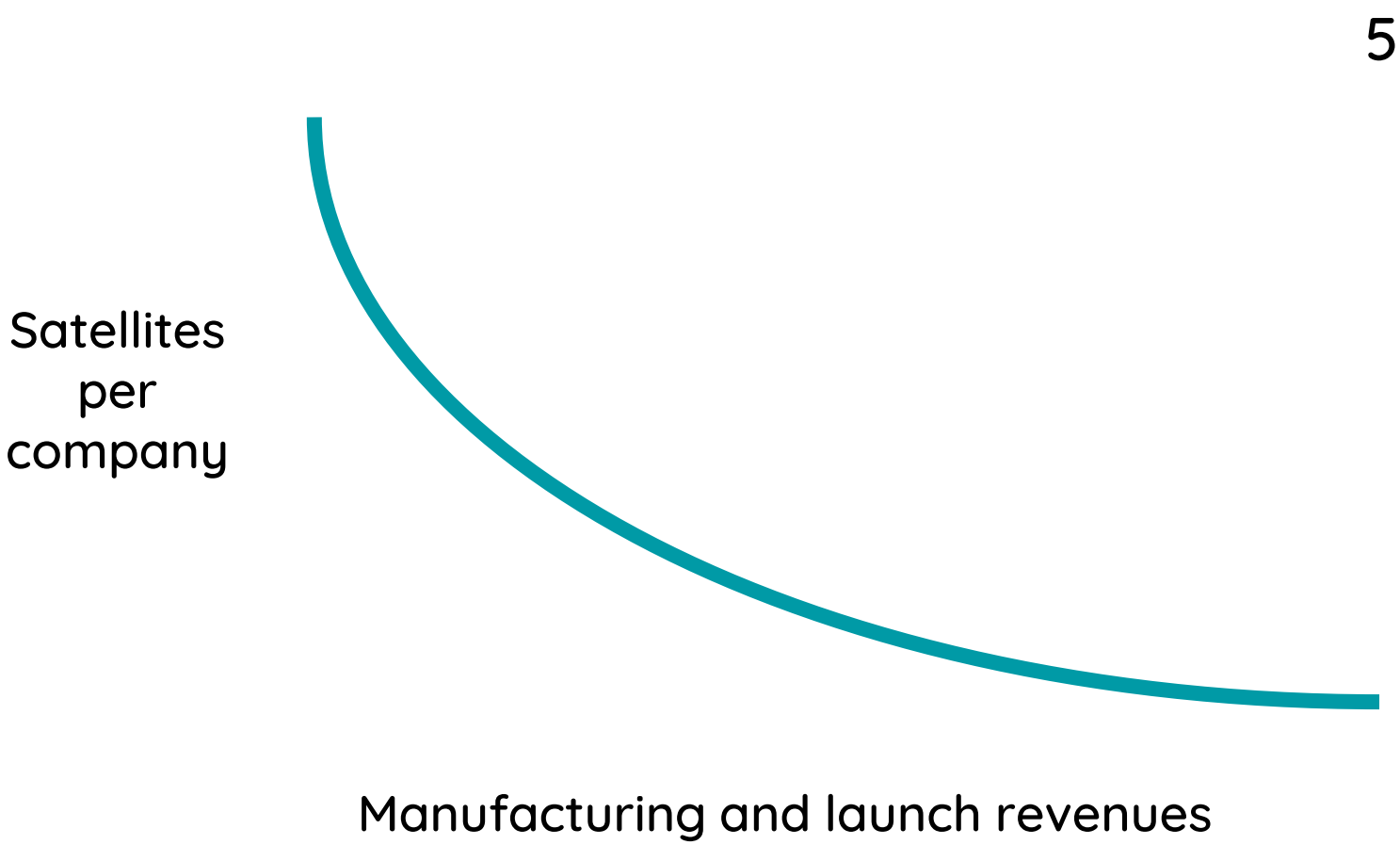
Satellite manufacturing and launch revenues: very long tail



5 companies will launch 58% of new satellites until 2030

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Examples of mega-constellations

System	Amazon Kuiper	Guowang	OneWeb	SpaceX Starlink	Telesat Lightspeed
Planned satellites	3,276	12,992	648	12,000 30,000	298
Spectrum bands	Ka	Ka, V	Ku, Ka	V Ku, Ka, E	Ku, Ka
Orbital height (km)	590-630	1100	1200	335-570 328-614	1015-1325
Manufacturer	ABL Space System (start-up)	China SpaceSat (R&D and manufacturing)	JV with Airbus	Space X	Thales-Alenia Space
Approx. life	5-10 years				
Approx. data rates	100-400 Mbps				
Approx. costs	LEO: US$ 10,000-20,000 per Kg				

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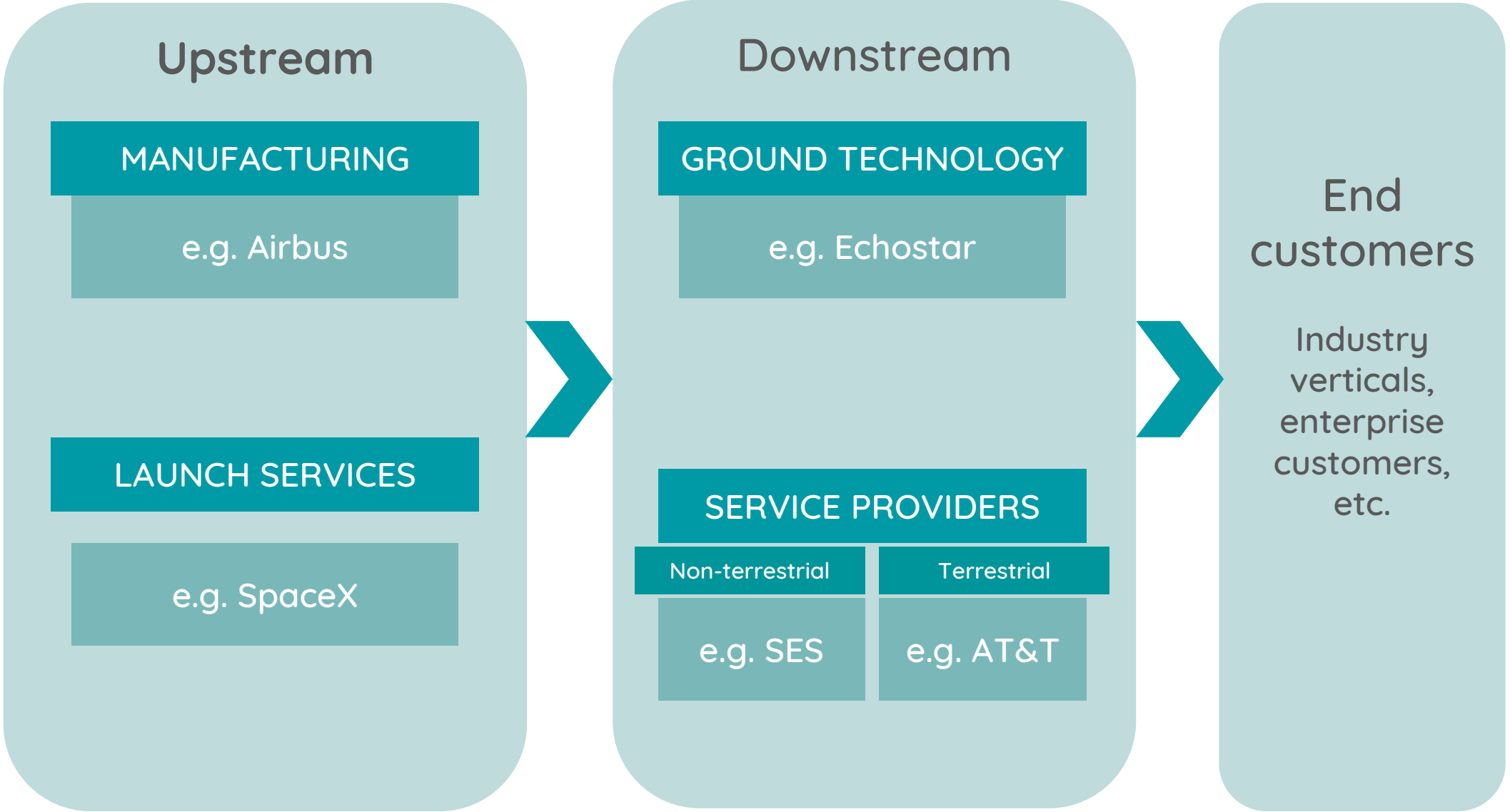
Satellites value chain



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Business models: relationship with telecoms operators

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Mergers and acquisitions

Eutelsat & OneWeb

Viasat/Inmarsat merger EU (pending case)

Case information

Theme: Mergers

Subtheme(s): Merger: horizontal

Satellites + Add to myFT

Satellite operators SES and Intelsat in deal talks

US and Luxembourg groups exploring tie-up as challengers like Elon Musk push into space industry

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Relationships with governments

	Amount	Description	Covered period
US 	US$24.00bn	Proposed funding for NASA in FY 2022. (But only US$224m for NASA's commercial LEO development programme). SpaceX (supplier of NASA).	Proposed FY 2022
EU 	US$15.44bn	Total budget of the EU Space Programme. (Proposed: US$2.69bn to be allocated for the Secure Connectivity Programme)	2021-2027
Japan 	US$4.50bn	Total space-related budget (of these, US$71.4m are for satellite quantum cryptography R&D projects)	2022
China 	US$3.15bn	First phase of deployment of the Hongyan constellation. (No information available on other constellations)	2016–2021
Canada 	US$1.14bn	(69% repayable loan and 31% equity) for Telesat Lightspeed	2021
UK 	US$1.00bn	Equity stake in OneWeb	2020
Korea 	US$530.90m	Space-related budget	2022
South Africa 	US$293.52m	Government funding for the National Space Agency's space infrastructure hub	2020
Singapore 	US$110.92m	Flagship space technology development programme	2022

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Key issues in satellite services regulation

Licensing

- Satellite capacity and satellite services providers (concession/ licence/ authorisation)
- Earth stations (permit)
- Duration: 3-5-10-20 years, satellite lifespan
- Fees: per terminal or blanket licensing

Interference and coexistence

- Regulators impose technical rules to avoid interference
- Service providers must avoid interferences/ report if existent

- Each country has own coexistence parameters
- Varies per spectrum band

Migration

- Per spectrum band

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Licensing requirements can be challenging

No separate licensing requirements for spectrum use

Need of multiple licences to offer satellite-based services, including for spectrum use

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Main takeaways - opportunities

- **Technical characteristics & performance of new generation satellites present opportunities and challenges**
- Some **governments** see new opportunities in this field. Direct funding, equity investor, as clients, or a combination of the above. Bridge coverage gaps, development opportunities for the domestic industry, competitive advantage.
- New dynamism in the **industry**. Incumbent groups, start-ups, new partnerships of different sizes. Vision and business models vary.
- Long-term promises: R&D on quantum cryptography for enhanced security, and on hybrid networks (combination of terrestrial and satellite in view of 6G).

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Main takeaways – open issues

- Due to the current **high CAPEX** requirements, revenue uncertainties and short lifespan of LEO satellites, concerns over the **economic sustainability** of many of these systems.
- Capability to **address "global" challenges** (accidents, space debris, liabilities, how to collaborate, relations among governments) in an increasingly “crowded” satellite space.

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Thank you!

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