

Trends in Direct to Device

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Agenda

- SpaceTec Partners Intro
- SpaceTec in Satcom and in India
- Direct to Device

The management consultancy firm focused on the space sector

Focus



At the cutting-edge

Space

and adjacent sectors (AI, mobility, robotics, security, defence ...)

Structure



Agile, versatile, and independent

100%

European, privately owned by the partners

3 practices

Strategy
Innovation
Market Development

Locations



Situated in major European hotspots

2 Offices
in Munich & Brussels

Hubs in London, Seoul, Copenhagen, Prague, Vienna

Team



International, diverse, multi-cultural

45+ professionals with management consulting and industry expertise

20 Nationalities

18 Languages

Heritage



Reputable and trusted

15 years in the market

100+ institutional and commercial clients

12 years in international cooperation

Defining the right strategy adapted to the client is common amongst our three business lines



Strategy

Providing market & technology insights and developing policy and strategy recommendations leveraging an hypotheses-driven approach

- Market and Technology Analysis
- Business Strategy
- National Space Strategies & Policy Development



Innovation

Advising policy makers and supporting entrepreneurs and early-stage companies with various innovation programmes from hackathons to incubators

- Design of innovation ecosystems
- Implementation of global innovation actions
- Funding & Investment advisory



Market development

Orchestrating the development of innovative solutions that facilitate the uptake of space-based technologies by policy-makers and industry

- Stakeholder engagement
- Developing use cases
- Foster proof of concept implementation with end users

SpaceTec Partners' senior team consists of seasoned space professionals



Rainer Horn

Managing Partner

Leader of Market Dev. Practice
Formerly director Booz Allen Hamilton,
EY, IBM,
MBA (INSEAD), B.A. Eur. Business



Carla Filotico

Partner

Leader of Strategy Practice
Member of European Innovation Council
(EIC), Ex-Booz & Co & Lead of space team,
Aerospace Engineer



Thomas Tanghe

Partner

Leader of Innovation Practice
Ex-ESA, Deloitte Consulting
Masters in General Management and
Masters in Industrial Engineering



Alexander Jeuck

Senior Advisor

ICT, SpaceTech and Asia Expert
Formerly SES, Airbus,
ND Satcom, ST Engineering
Degree in Electrical Engineering / MBA

Selected clients



SpaceTec has strong experience in the SatCom sector



Ground Segment

- Market due diligence for **3D printed antenna business**
- Supporting an **antenna** startup's expansion to Asia

LEO

- Analysis of the potential of **small satellites in military** context
- End-to-end due diligence and execution support for **mega-constellation** investment
- Involvement in **GOVSATCOM and Secure Connectivity Initiative communications and stakeholder engagement strategy assignment** for European Commission
- Organisation of **Secure Connectivity workshops** for the **European Commission**
- Development of a **national strategy** for engagement in SatCom value chain
- Assessment of the wider newspace **innovation landscape** in globally (incl. SatCom)
- Assessment of **3D printing manufacturing** potential in satellite production for automotive supplier

GEO

- Assessment of **hosted payload** options on GEO Satellites
- Review of GEO **capacity** commercial deals
- Assessment of **Smallsat platform** for GEO
- Definition of multi-orbit, multi frequency satcom strategy for emerging telco operator

+ Senior experts with in-depth insight to **LaserComs, quantum, and terminal scene**

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SpaceTec Partners has been working with India since 2013

- **2021** Lecture on GNSS at a [5-Day Workshop on GNSS and NavIC sponsored by All India Council of Technical Education \(AICTE\)](#)
- **2020:** Online [EU-India Industry Workshop on EGNSS for Logistics and eCommerce](#)
- **2019:** [Galileo Hackathon organized in Bangalore with](#) over 100 participants and representatives from companies (e.g Bosch, DTDS Technology) and universities (e.g. PES University, Burdwan University)
- **2019:** Facilitated High-level institutional meeting between EUSPA and ISRO
- **2019:** GNSS.asia hosted an Indian GNSS Delegation visit from ISRO and AAI around Munich Satellite Navigation Conference
- **2018:** Hosted GNSS.asia Workshop with Indian SMEs in Bangalore
- **2018:** Presented GNSS.asia and European Space at Fraunhofer India 10 year congress
- **2017:** Organised meetings for European GNSS companies with Indian Government departments like AAI, Indian Railways, and Department of Telecommunication
- **2017:** Meeting between GSA and GAGAN to discuss EGNOS technology and knowledge transfer as well as European collaboration in SBAS downstream applications

Market Development: Building and maintaining ecosystems

GNSS.asia

- Facilitate Industrial Cooperation
- Support Institutional Relations
- Promote Galileo in Multi-GNSS context



DR. M.R. DORESWAMY SILVER JUBILEE COMPLEX



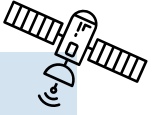
Galileohackathon
by **GNSS**
asia
16-17 March www.gnss.asia
PES University **Bangalore**



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- **Direct to Device**

Direct to Device (D2D) can integrate satellite with terrestrial mobile networks



Satellite connectivity generally needs antenna / dish on user side to receive signals



Direct-to-device (D2D) enables **direct connection between satellite and user devices** (e.g., mobile phones) – wholesale business model most likely scenario



Complementary to terrestrial mobile coverage, reach **new customers**, fill coverage gaps and **connect the unconnected**

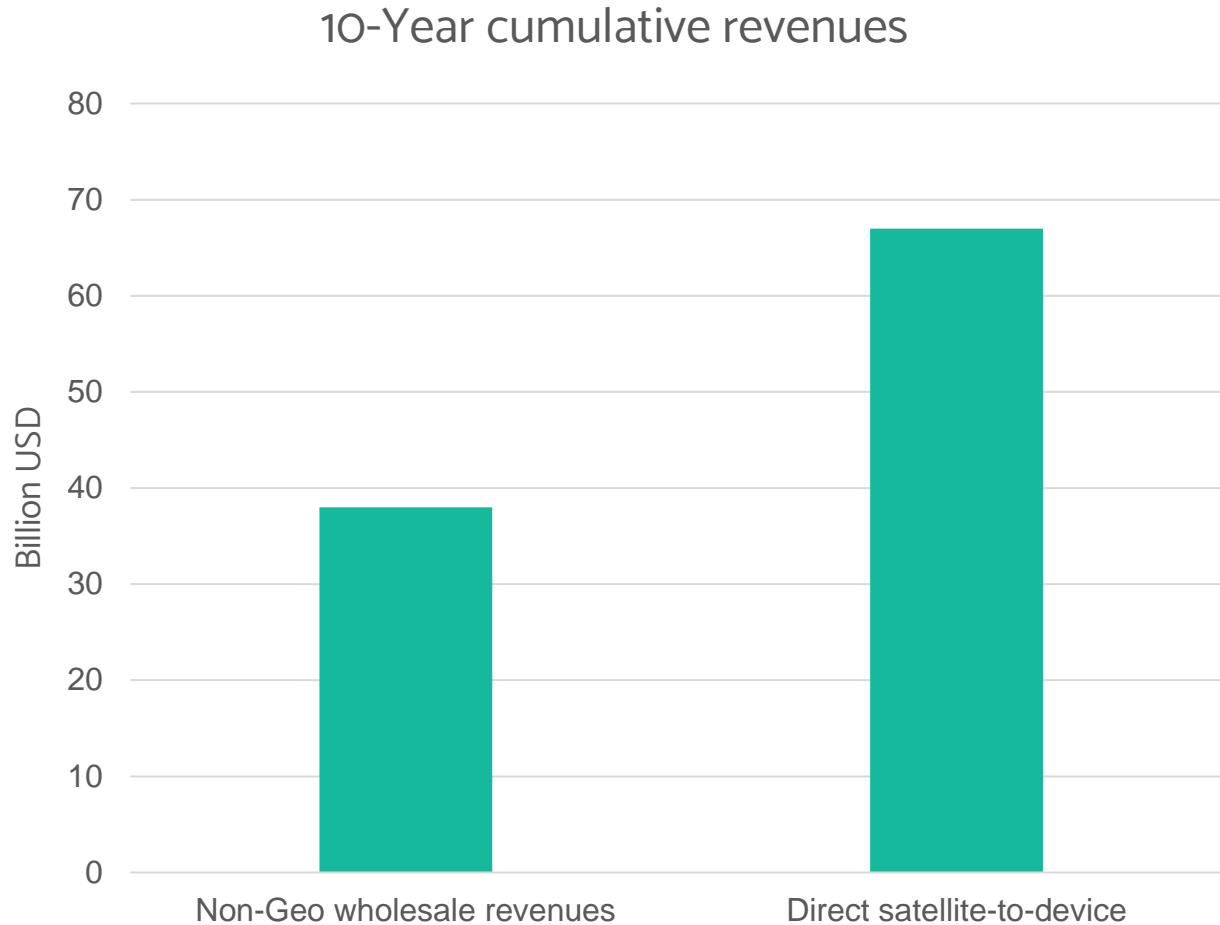


Lower costs (less infrastructure on user end & fewer terrestrial cells required) and **faster time to market**



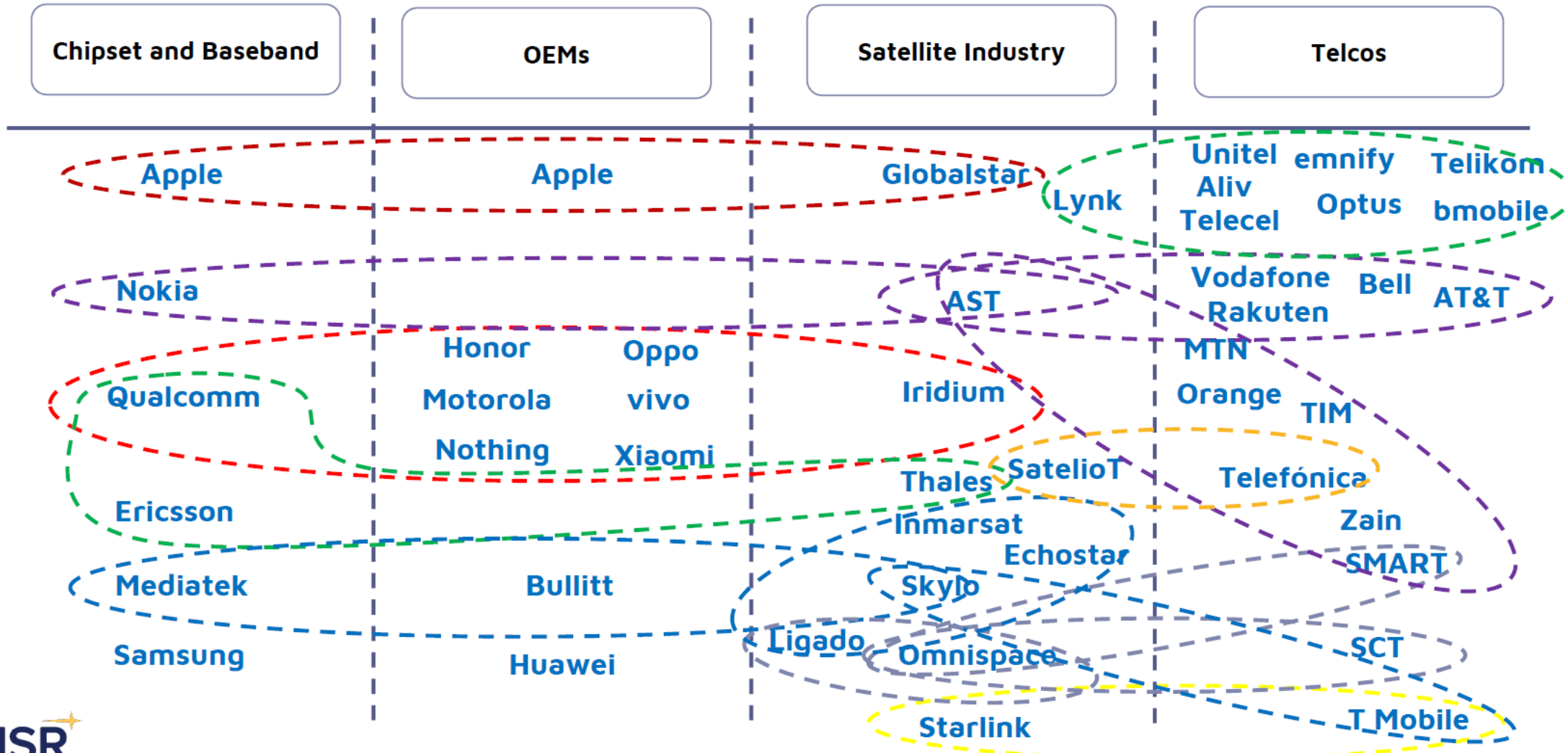
Implementation even more straightforward thanks to **3GPP integration into non-terrestrial networks** via 5G NGR standard

The D2D market might generate \$66.8B in 10-Year cumulative revenues

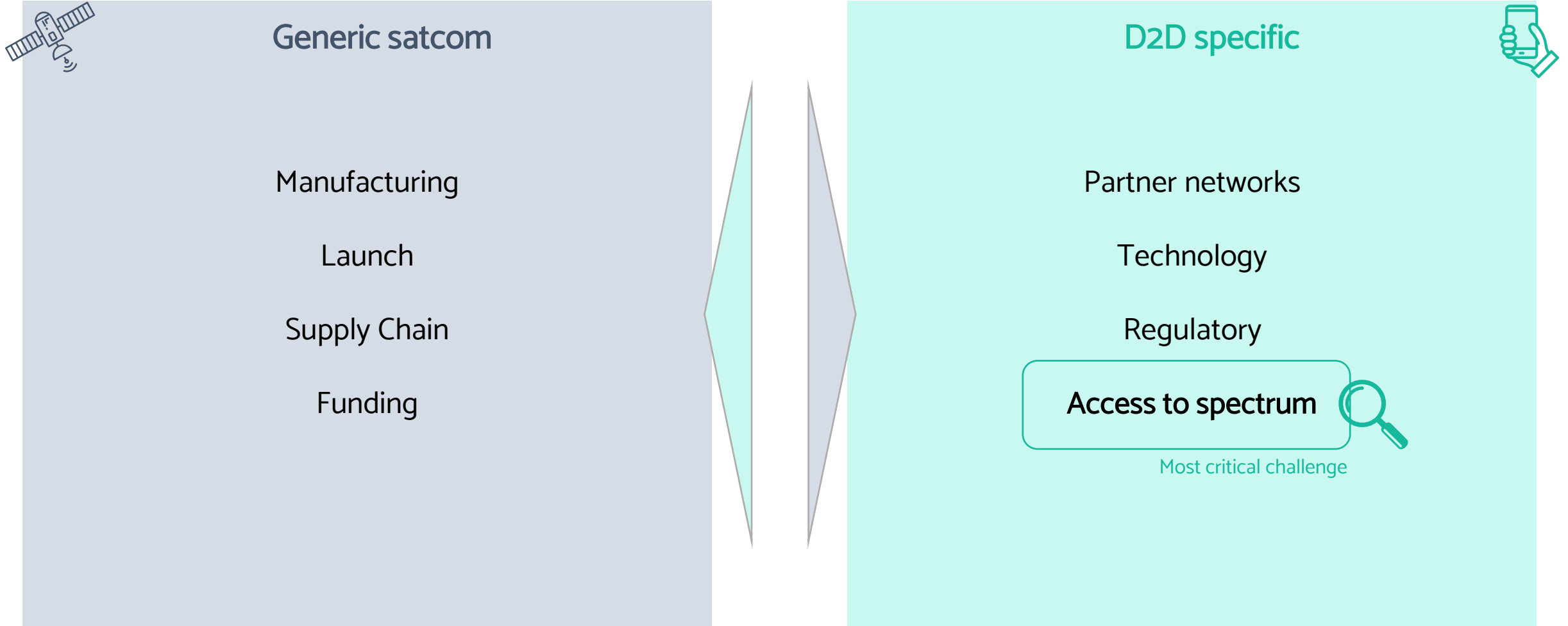


- **MNO subscribers** that temporarily roam outside of terrestrial coverage but want to keep connectivity on, form the largest opportunity
- **IoT, Enterprise, first responders and Gov/Mil users** & opportunities in the IoT space (tracking, agriculture, smart grids, etc.).
- **Users living outside of terrestrial coverage** could subscribe to a mobile service once satellite connectivity is available (sometimes with support from digital divide programs)

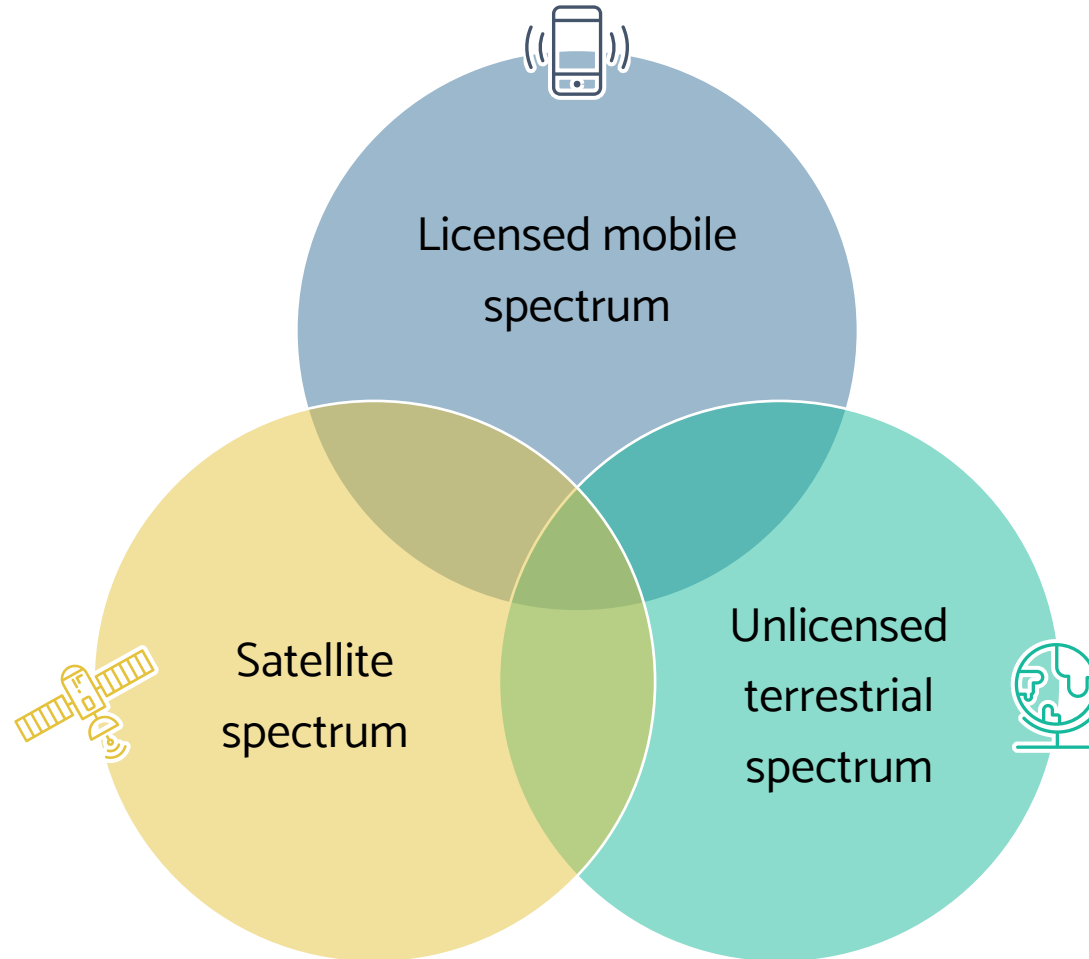
Emerging alliances & partnerships



Generic satcom challenges and D2D specific questions remain

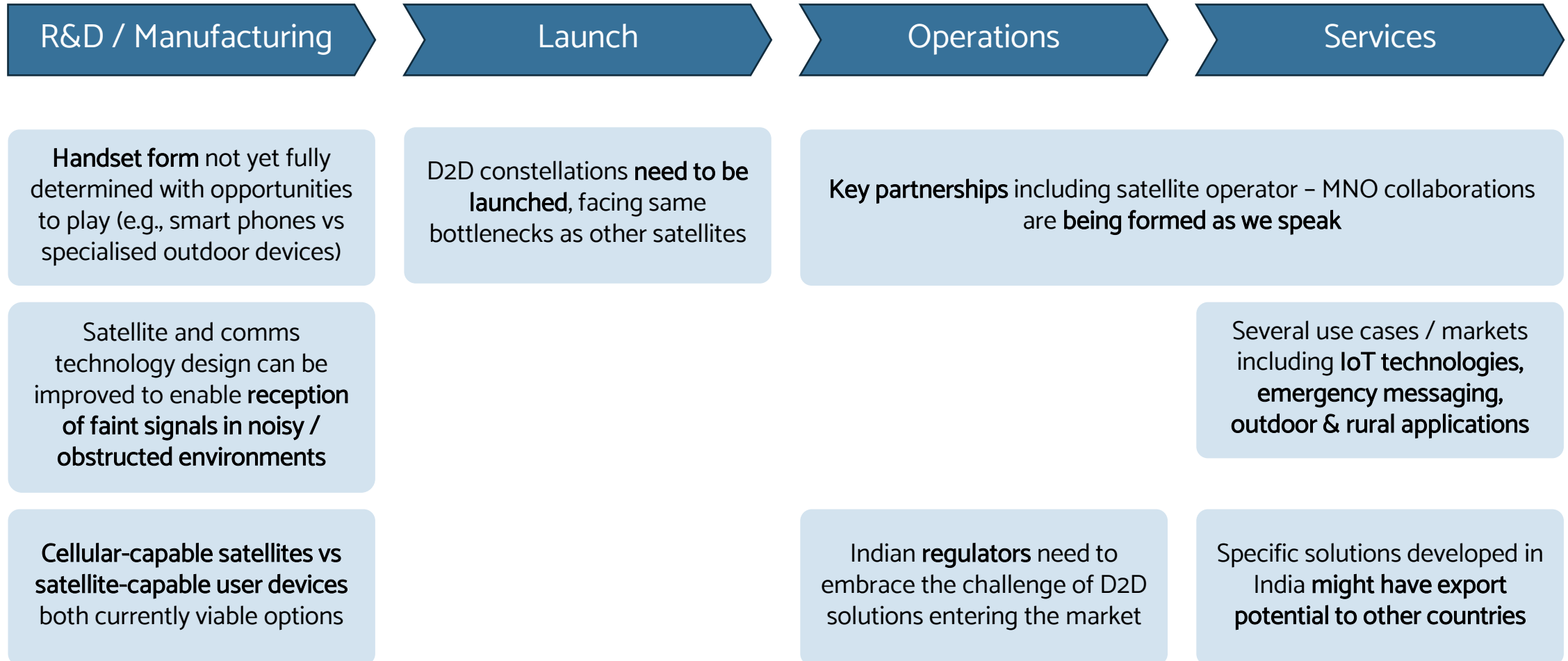


Access to spectrum is the key challenge – different types are available



Source: Xona Partners

For India opportunities and challenges exist along the D2D value chain



**Thank you
for your
attention!**



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