Trends & Long Term Concepts

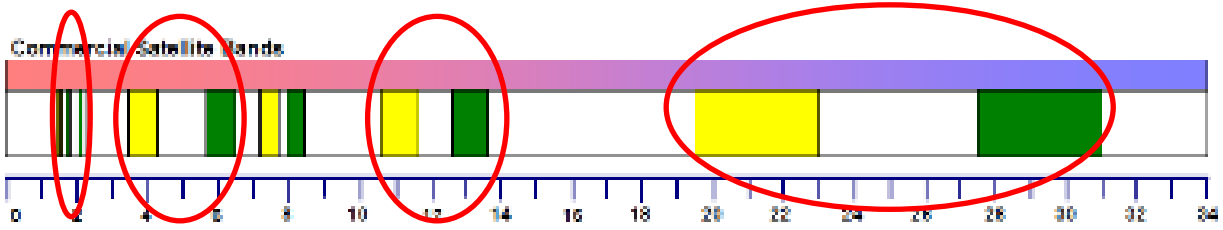
Spectrum Policy Forum Webinar

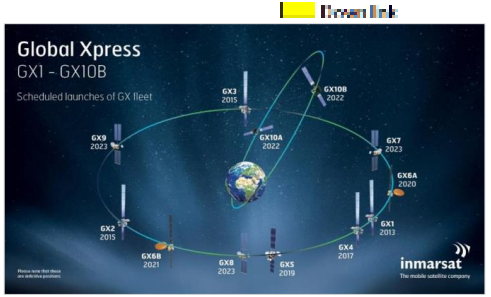
Paul Febvre

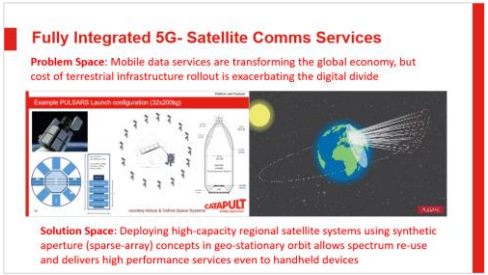
06 October 2020

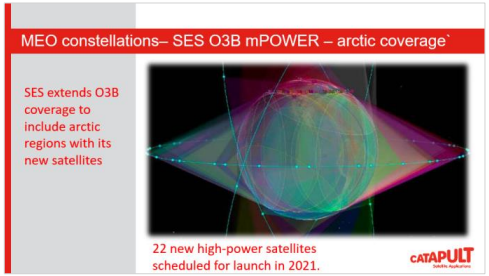
CATAPULT
Satellite Applications

Global Satellite Investment and Spectrum Implications









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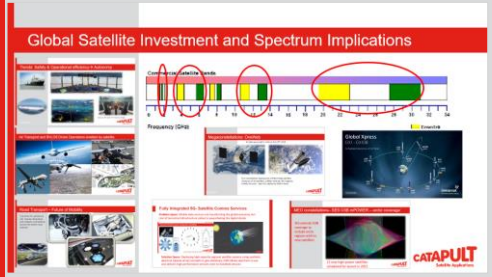
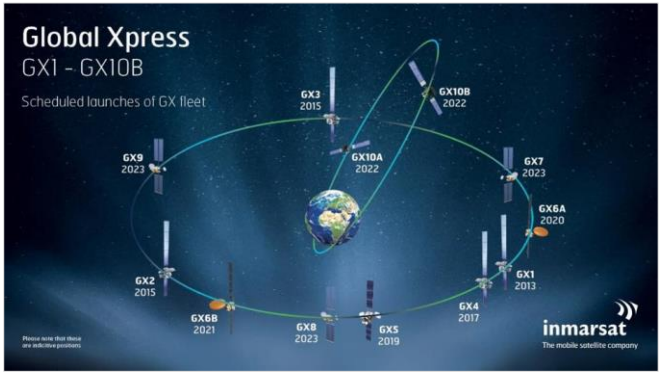
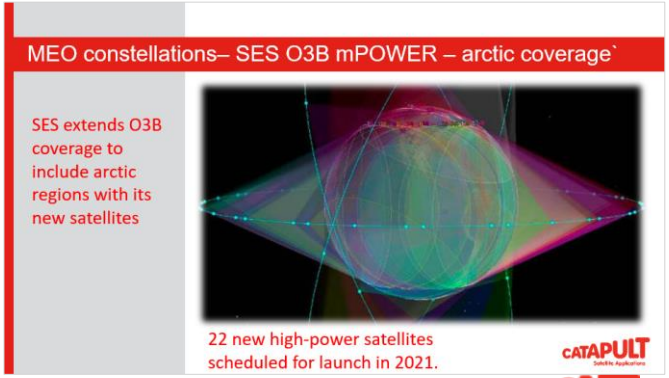
High Throughput Satellite Primary Markets







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Trends: Safety & Operational efficiency→ Autonomy

Source: RR and VTT Future Bridge

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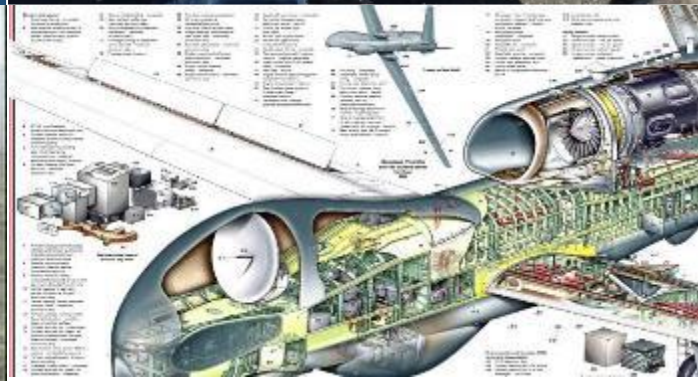
Air Transport and BVLOS Drone Operations enabled by satellite



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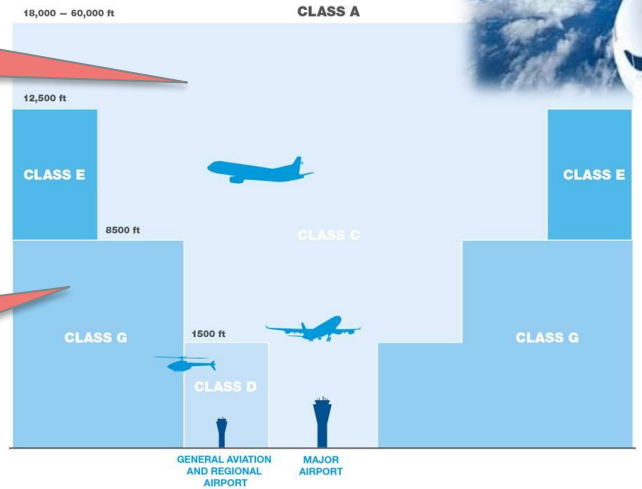
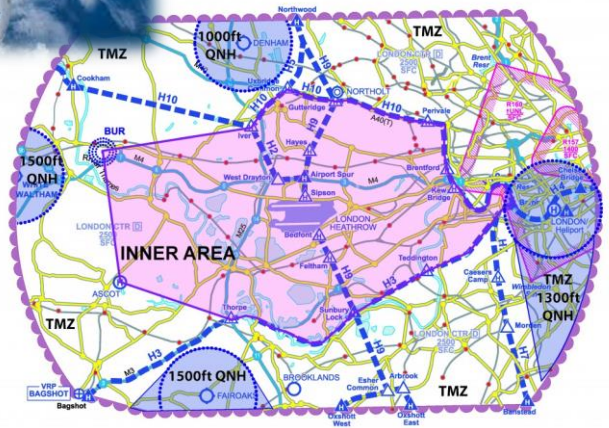
Air Transport Airspace Management → Future of Flight

Existing Managed Air-spaces

Exciting New Future Air-spaces of Opportunity





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Road Transport – Future of Mobility

The drive for autonomy will require ubiquitous and resilient connectivity across the entire road network

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Global Xpress

GX1 - GX10B

Scheduled launches of GX fleet

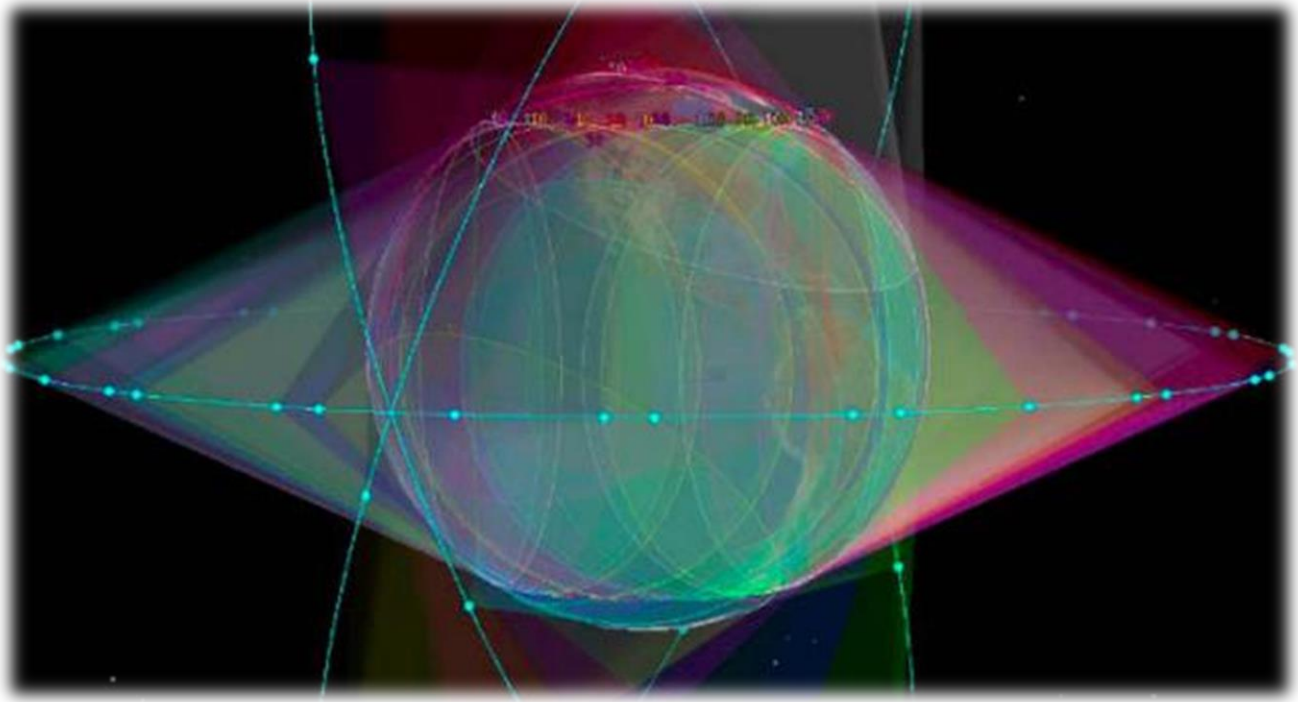
Please note that these are indicitive positions

inmarsat

The mobile satellite company

MEO constellations– SES O3B mPOWER – arctic coverage`

SES extends O3B coverage to include arctic regions with its new satellites



22 new high-power satellites scheduled for launch in 2021.

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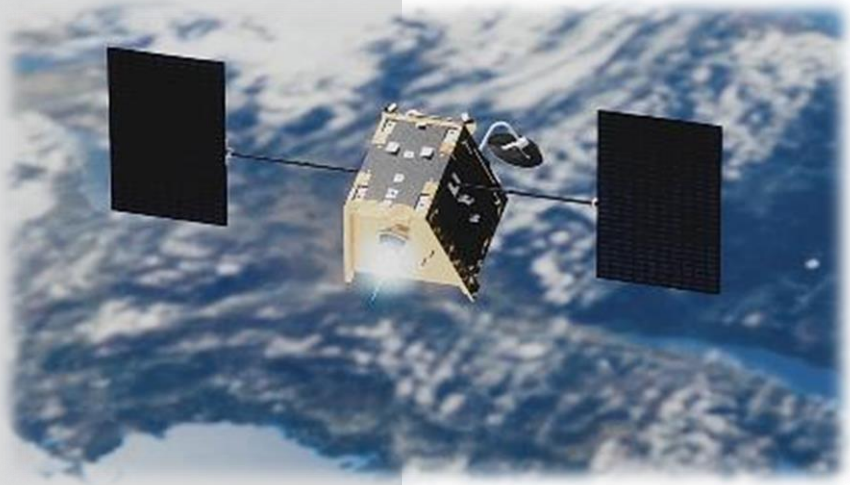
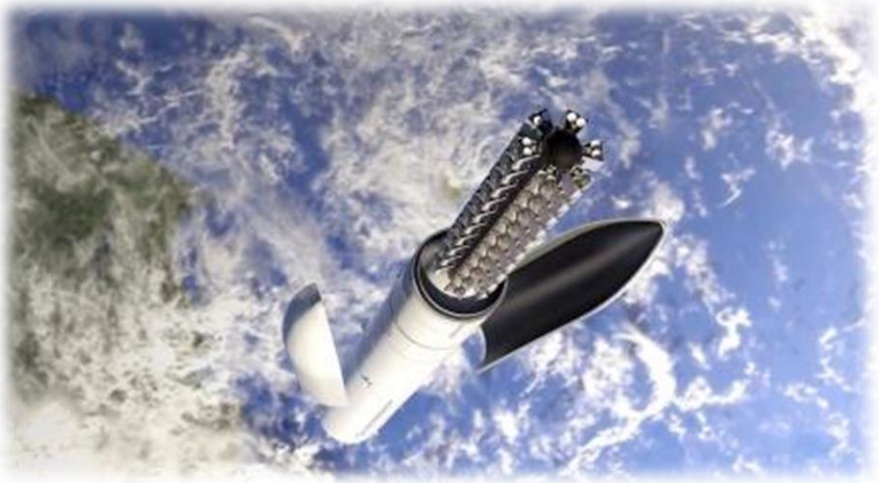
Megaconstellations: OneWeb

6 initial spacecraft in orbit on Feb 19th 2019





First constellation deployment of 648 x145kg satellites
18 planes of 36 satellites, 1200km altitude, 86.4 degrees
Initially Ku band – plans for additional 2000 V-band

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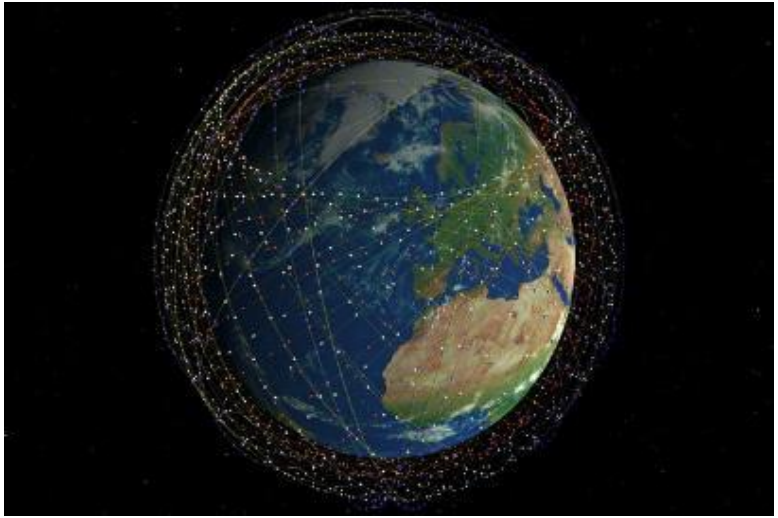
High Availability Positioning Services for CAV

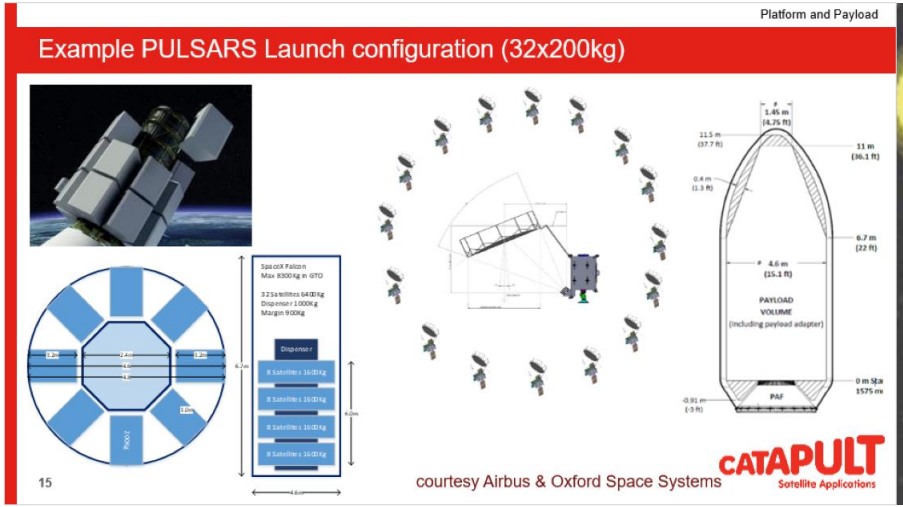
Problem Space: High accuracy GNSS positioning require long acquisition time and is sensitive to interference and environmental factors. CAV requirements onerous.

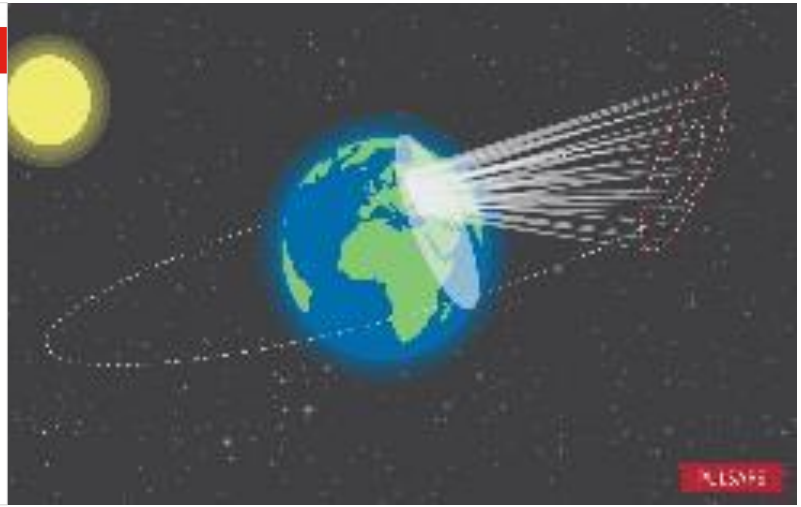


Solution Space: Mega-constellations generate high-power wide-band signals that when combined with calibration systems and specific antenna technology can provide high-accuracy resilient positioning solution for autonomous vehicles.

Fully Integrated 5G- Satellite Comms Services

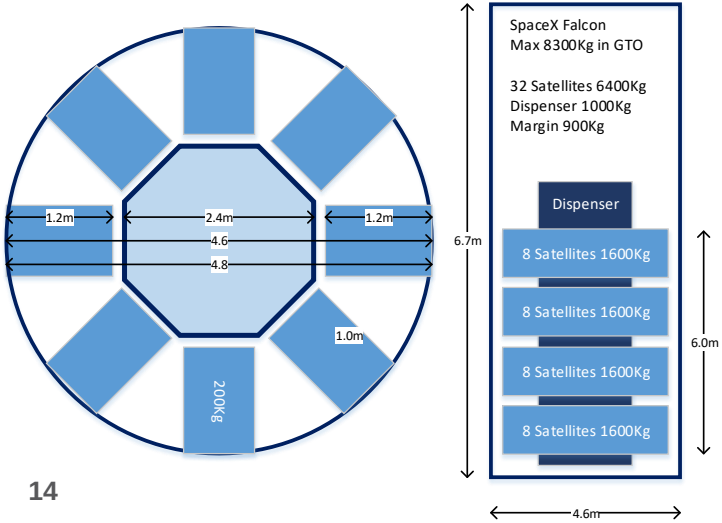
Problem Space: Mobile data services are transforming the global economy, but cost of terrestrial infrastructure rollout is exacerbating the digital divide

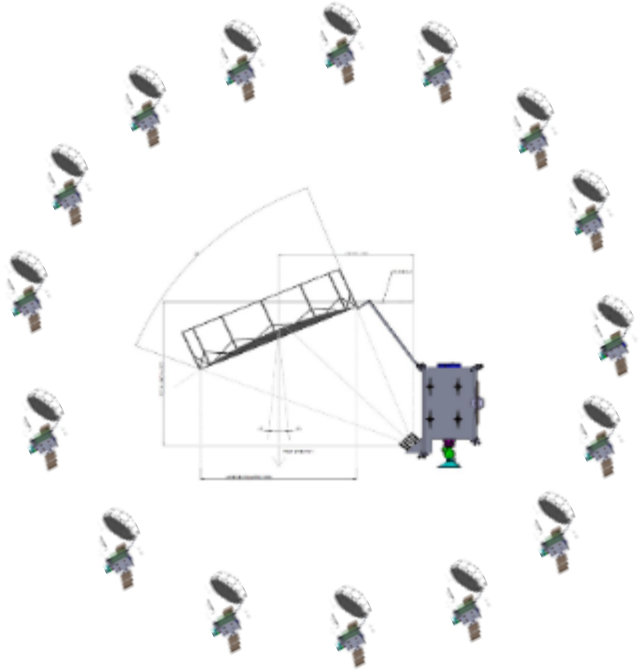


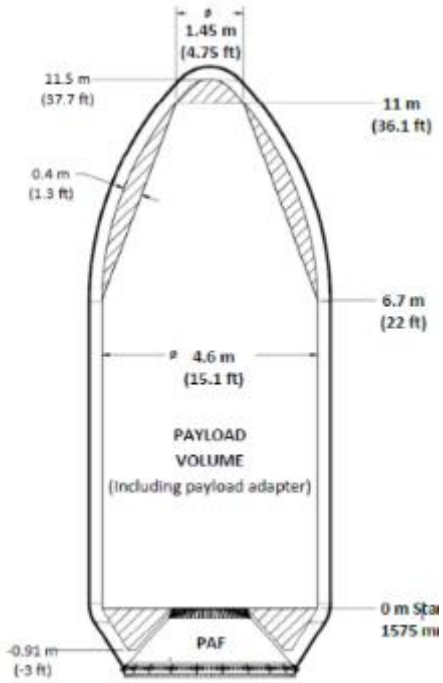


Solution Space: Deploying high-capacity regional satellite systems using synthetic aperture (sparse-array) concepts in geo-stationary orbit allows spectrum re-use and delivers high performance services even to handheld devices

Example PULSARS Launch configuration (32x200kg)







courtesy Airbus & Oxford Space Systems

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