



ITU Regional Forum for Europe 5G Strategies, Policies and Implementation

Presented by:

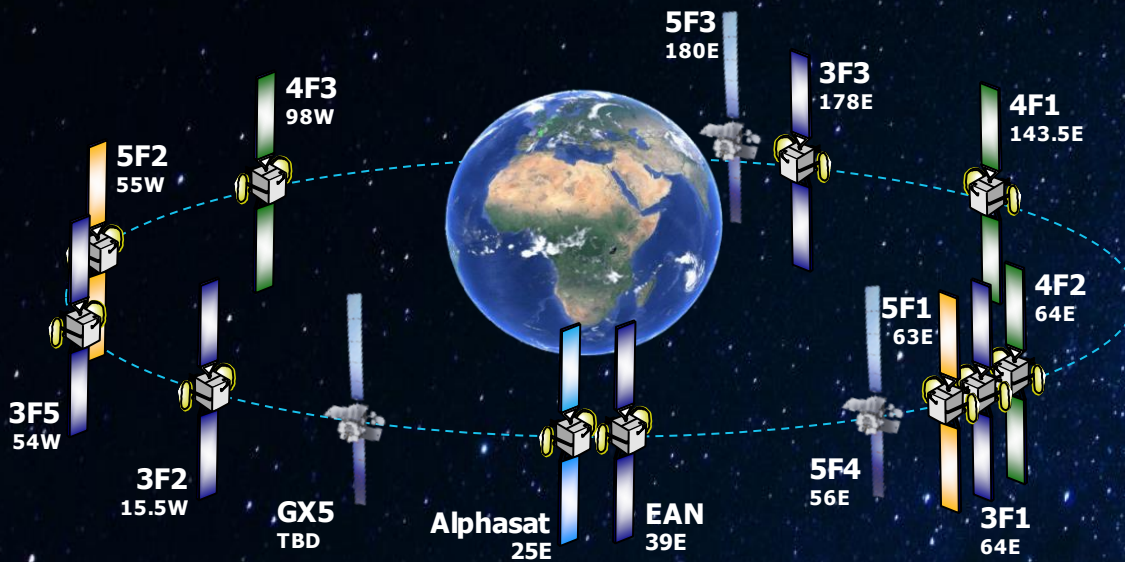
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Introduction to Inmarsat

The leaders in global mobile broadband connectivity

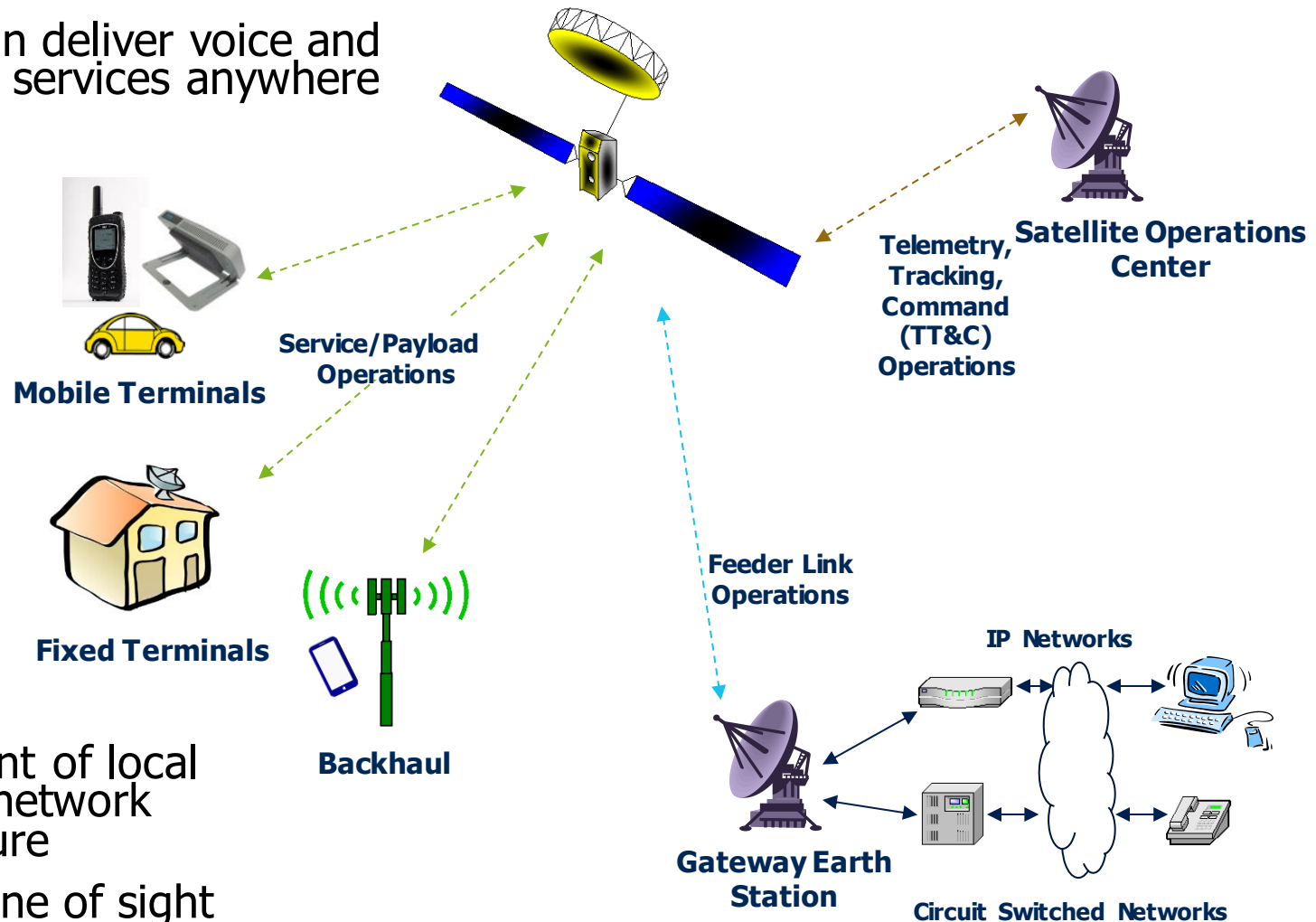


From 300 MB/sec to voice – all on the move globally

History <ul style="list-style-type: none">- 41 years- Started as IGO- 14 satellites in 5 generations	Global Focus <ul style="list-style-type: none">- 200+ nations served- 70 nationalities in 42 offices
Breadth <ul style="list-style-type: none">- Government, Consumer and Enterprise users- Land, sea & air	Networks <ul style="list-style-type: none">- Broadband GX- L-band- EAN hybrid
Services <ul style="list-style-type: none">- Safety of Life- Mobility- Broadband- IoT/Smart Society	Innovative <ul style="list-style-type: none">- R&D \$600m pa- VHT Satellites- Products- Digital agenda

Satellite system architecture

- Satellite can deliver voice and broadband services anywhere



- Independent of local terrestrial network infrastructure
- But need line of sight
- Great distances = sensitive receivers

5G Ecosystem

What 5G is about



Key 5G Use Cases



Enhanced Mobile
Broadband (eMBB)



Massive Machine-Type
Communications (MMTC)

Ultra-reliable and Low Latency
Communications (URLLC)



“Anyone and anything will be connected at anytime and anywhere...”

But only with satellite as a key component

Source: ESOA "5G Ecosystems Executive Summary"

Why is Satellite Essential to 5G and Emerging Applications?

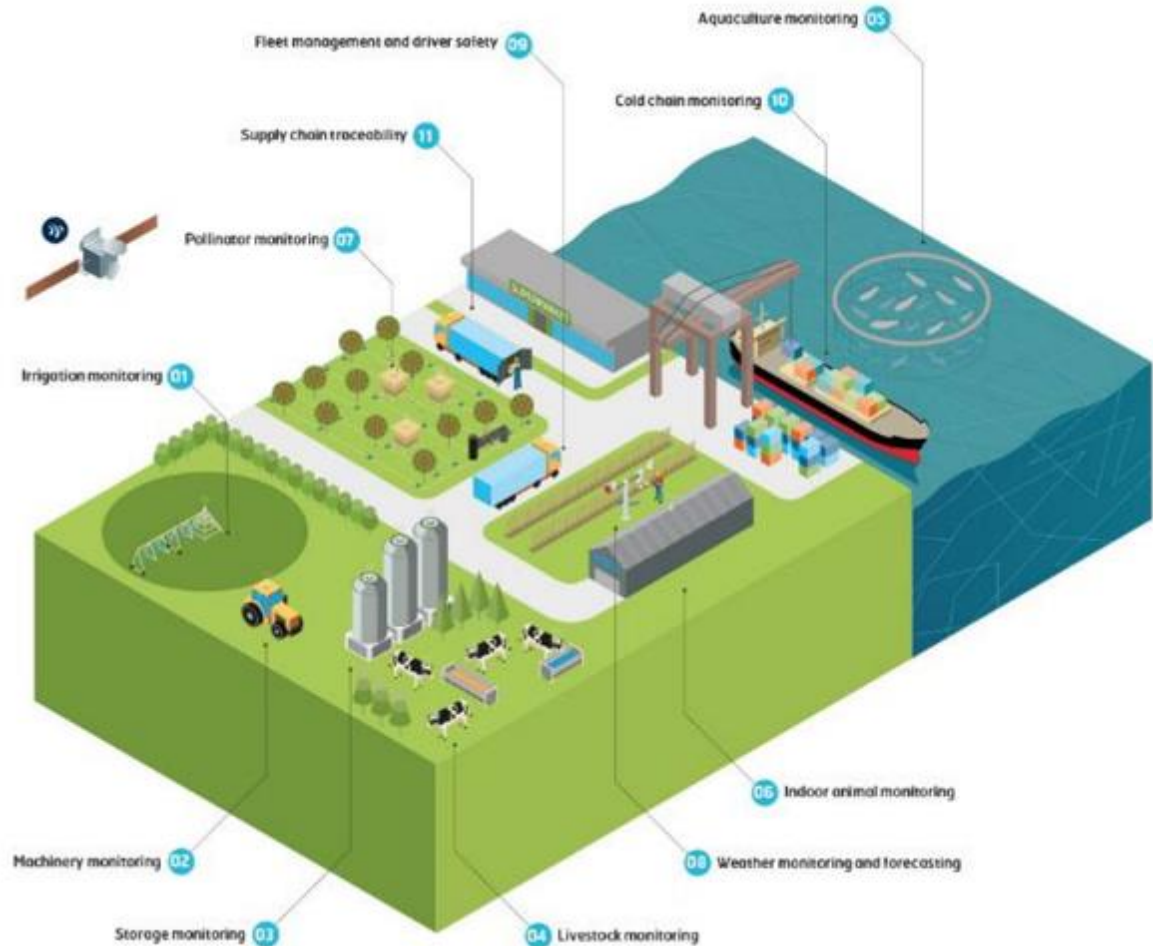
Robust Capabilities	<ul style="list-style-type: none">• High quality voice and high-speed broadband service• Versatility of mobile, fixed, data broadcast• Complementary to other networks
Flexible	<ul style="list-style-type: none">• Ideal for rapid deployment• Variety of frequency bands, form factors, price points• Experience partnering with manufacturers and service providers
Global coverage	<ul style="list-style-type: none">• Remote site connectivity• Extended team coverage
Portable	<ul style="list-style-type: none">• Compact terminals ideal for anyone travelling alone and moving from site to site
Secure	<ul style="list-style-type: none">• Communicate globally without using public Internet• Control access and use by device or location
Reliable	<ul style="list-style-type: none">• Maximum reliability for critical data• Independent of the terrestrial infrastructure
Provides essential connectivity	<ul style="list-style-type: none">• Backhaul for terrestrial infrastructure• Broadband connectivity at cost independent of deployment density

So let's start with satellites...

Agricultural Technology and the Role of Satellite

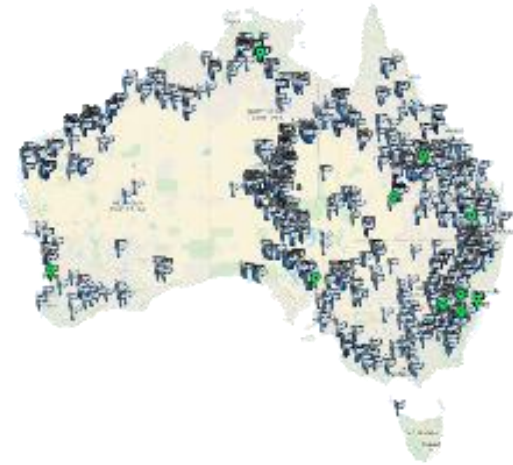
Helping produce more with less in rural areas

- World population growing to 10 billion by 2050 (7 billion in 2011)
- We have no more land to produce food – must intensify (sustainably)
- IoT enables better decision making and increased efficiency
- Remote field environments, with no terrestrial connectivity or power – satellite is the cost effective, easy to deploy choice



Water: the lifeblood of agriculture

- Weather and water – the first thought of the day
- You can't manage what you can't measure
- But...
 - 85,000 farming business in Australia
 - 430,000 + rural water tanks
 - 1,000,000 + dams & reservoirs
- Costs of monitoring and management is HUGE
- So an easy to use, simple to install, cost-effective monitoring device is a game changer!
- Remote environments with no infrastructure for 100's of miles – satellite is the ONLY choice



Satellite as an Enabler of Next Generation Signalling Systems in Europe

- The European Rail Traffic Management System implemented in Europe by 2035 – means signals on the side of the track will be replaced with signals directly to the train
- Comms on European railways provided by GSM-R – being replaced by FRCMS
- Communications must provide high reliability and coverage
- Cellular remains primary, with satellite extending coverage and providing a highly resilient back-up
- Satcom expected to provide coverage 10-20% of the time in Europe





SOMOS
O BRASIL
EM MOVIMENTO

LARGEST HEAVY HAUL OPERATOR IN BRAZIL, WITH 12,900 KILOMETRES OF RAILWAYS

In remote areas connectivity is unreliable making transfer of telemetry data and communication between drivers and staff challenging.

Inmarsat's Rail Telemetry & Communications Solution expands radio coverage and real-time data transfer from train technology on 300 locomotives.

The ability to communicate is maintained whatever the conditions which is vital to operational efficiency and safety.



Avoiding a 5G Digital Divide

- 5G offers benefits for people everywhere
- COVID-19 has highlighted that connectivity is a basic need to ensure socio-economic inclusion and the functioning of economies and governments
- Existing mobile networks have not achieved ubiquitous coverage and there is no reason to expect 5G will change this.
- Terrestrial 5G in the C-Band or mmW bands will rely on denser network topographies of small cells. Infrastructure that may be too expensive to be profitable in some communities.
- 5G must not be reserved for the urban elite.
- Only a heterogeneous 5G network with multiple technologies will connect the excluded and allow them to participate in a world that is racing ahead with technological developments.





Thank You

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