



IRIDIUM SATELLITE UPDATE

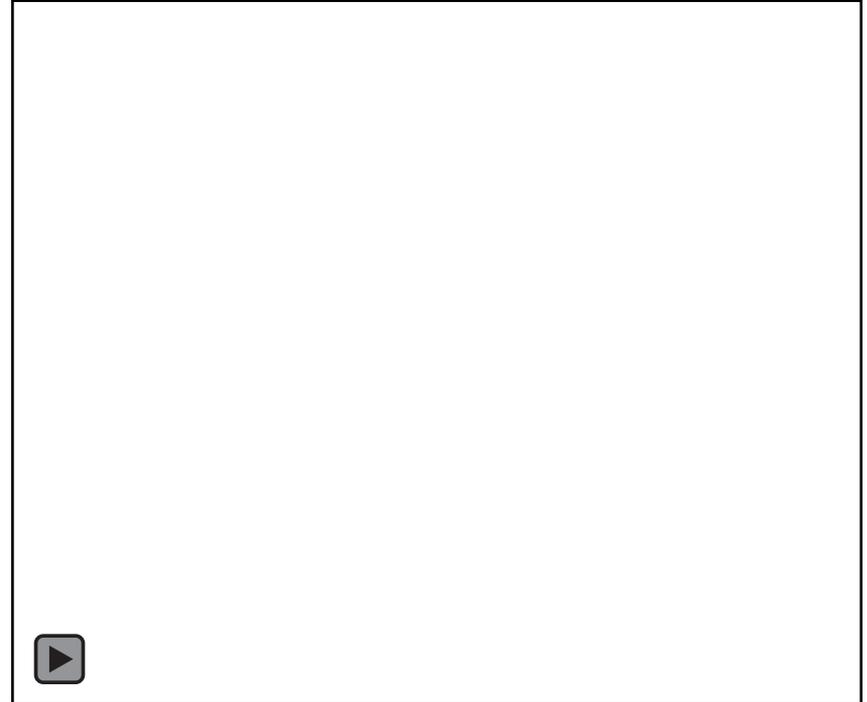
CPWG/21 IATA OFFICES MONTREAL, CANADA

MAY 18-20, 2016

IRIDIUM® - UNIQUE GLOBAL NETWORK

- 66 cross-linked, low earth orbit (LEO) satellites
- Only **fully global** voice and data commercial satellite network
- Messages are routed from satellite to satellite and grounded at teleports around the world
- Highly redundant satellite network with global satellite orbits and footprint overlap

Iridium constellation with 100% global service area



- 6 orbital planes of 11 satellites each + 1 spare
- North bound on one side of earth and south bound on other
- 780 km altitude, 86.4° inclination, 100 minute orbital period

IRIDIUM SERVICE OFFERINGS

Iridium offers a simplex and duplex services to support the communication needs of all market verticals around the world.

Data Services:

- Circuit Switched Data (CSD) and RUDICs
- Short Burst Data (SBD) – used for FANs
- Simplex data – Paging service, Burst

Voice Services

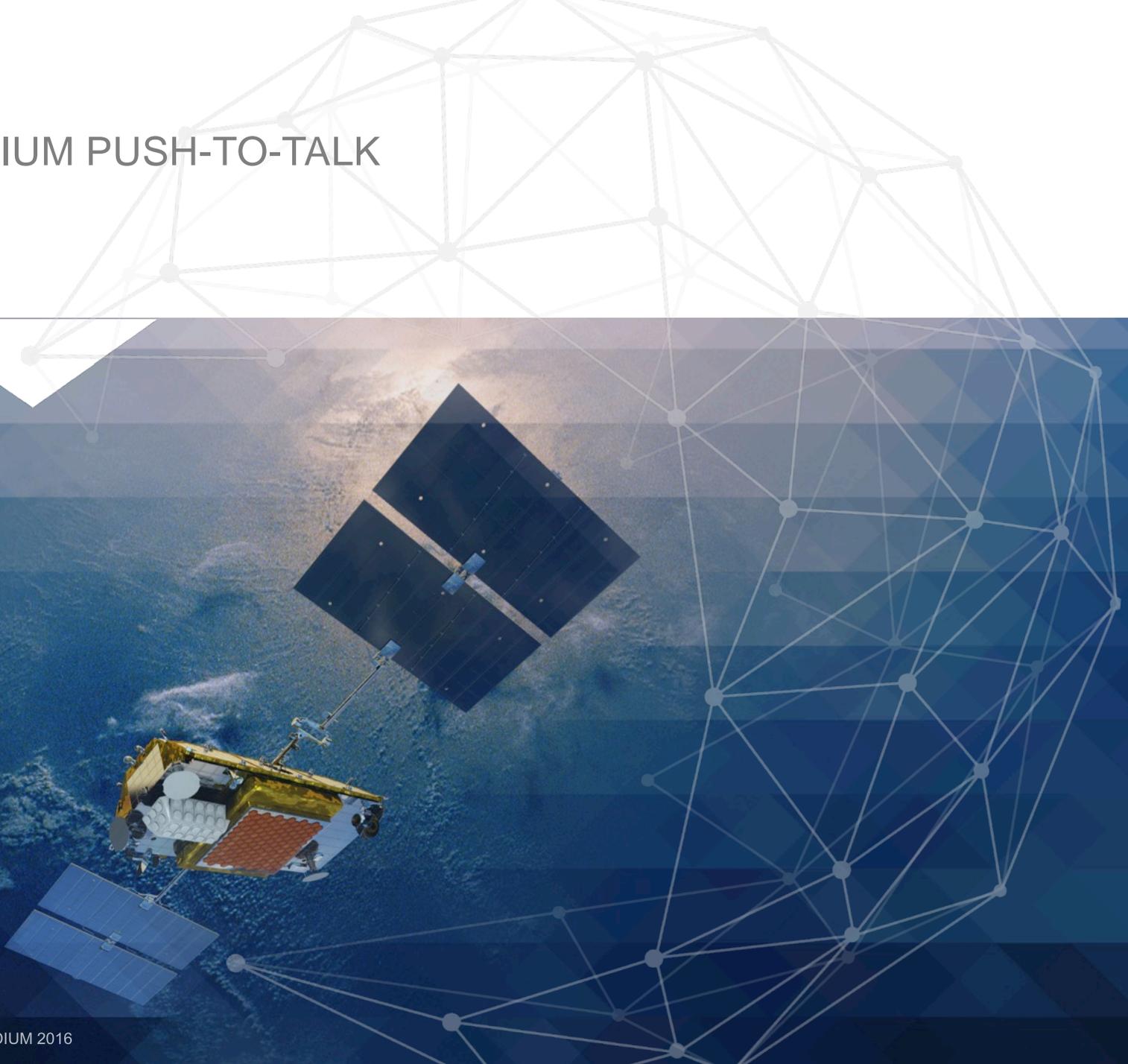
- Low-latency, global voice communications
- Aeronautical Mobile Satellite (Route) Service – AMS(R)S Safety Voice
 - Call Priority
 - Call Precedence
 - Call Preemption
- Iridium Push-to-Talk (PTT)

IRIDIUM NETWORK BRIEFING

- Seamless global coverage – pole to pole
- Iridium owns and operates all satellites and ground stations
- Redundant ground station/TPN setup
 - Encrypted TPN connections between sites
- Over 1,250 years cumulative satellite operations across network to date
- Geo-location ability of LEO network without GPS data
- Resilient Space Network to space weather – LEO orbit shelters
- No retirement of services with Iridium NEXT

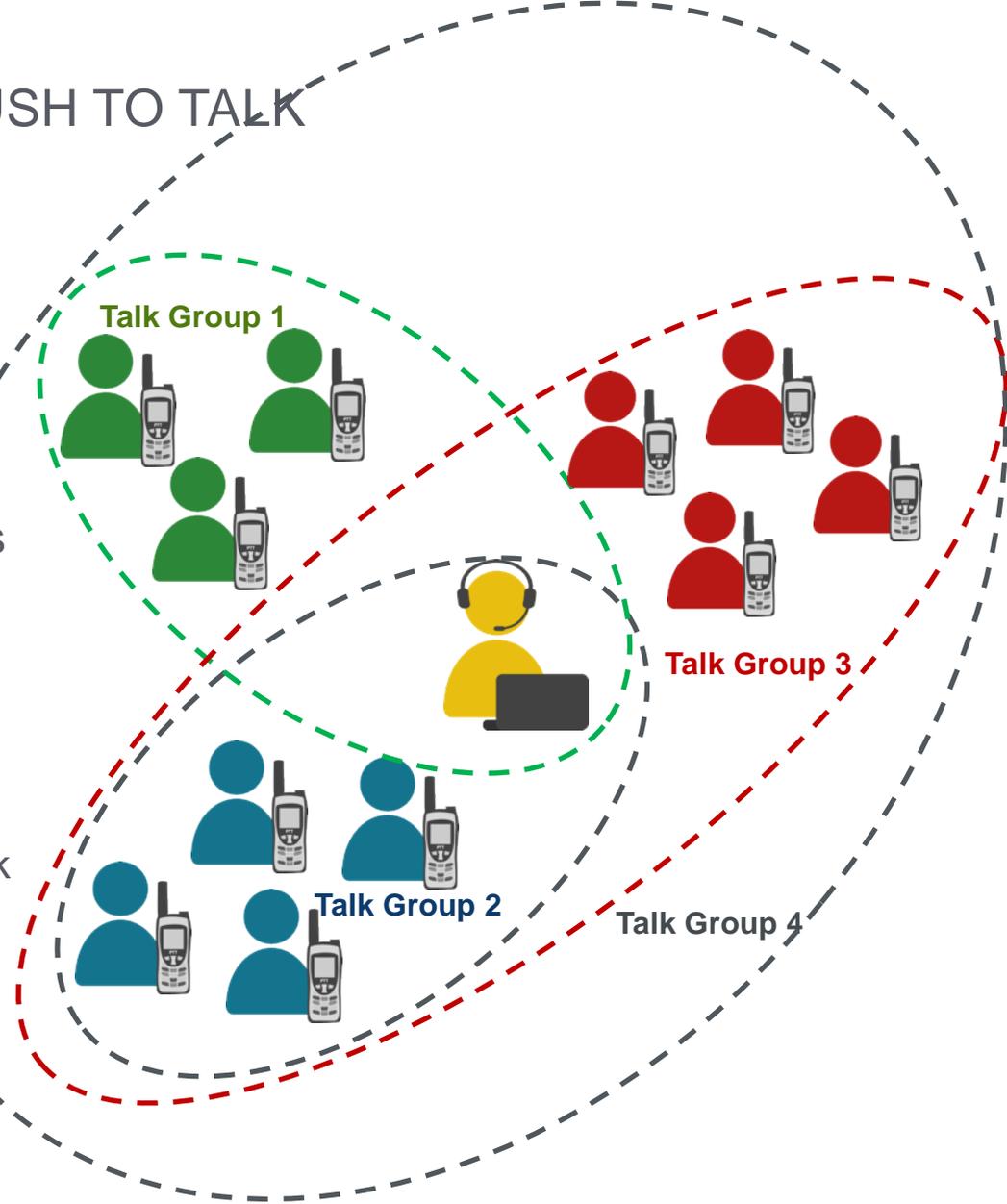


IRIDIUM PUSH-TO-TALK



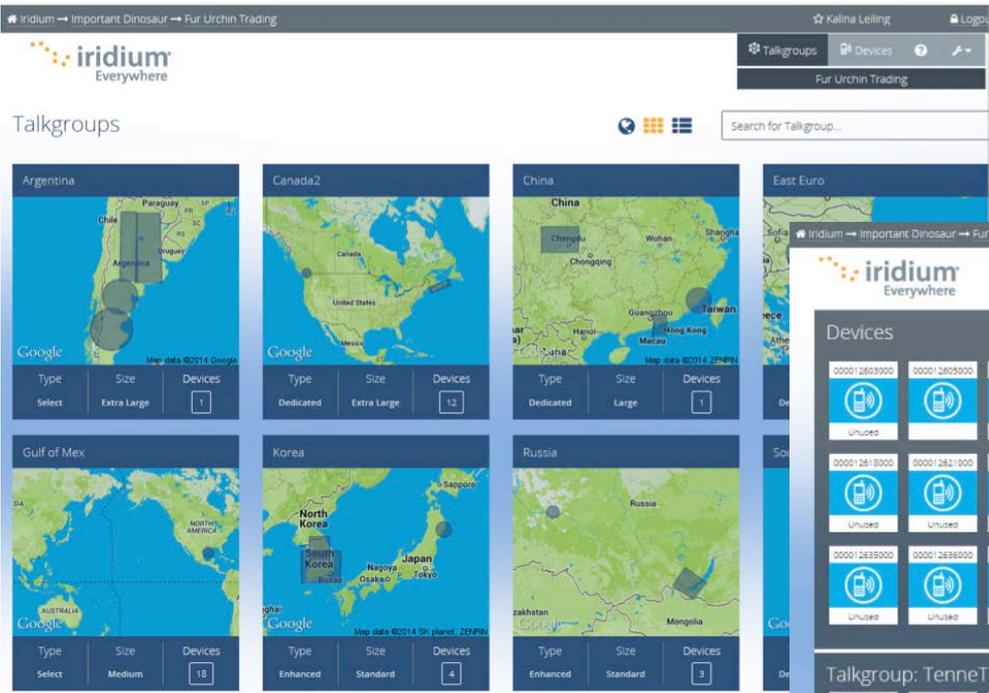
ONE TO MANY – IRIDIUM PUSH TO TALK

- Everywhere
 - Local → Regional → Global
- Improve operational communication and coordination
- Secure– AES 256 Encryption
- Flexible Talkgroup configurations
 - Programed over the air in real time for fast and simple deployment
 - Talkgroups can be shared, enabling global interoperability
 - Each radio can be in up to 15 talk groups
 - Each talk group can have up to 10,000 members
- LEO network – low latency and fast access to talk groups.



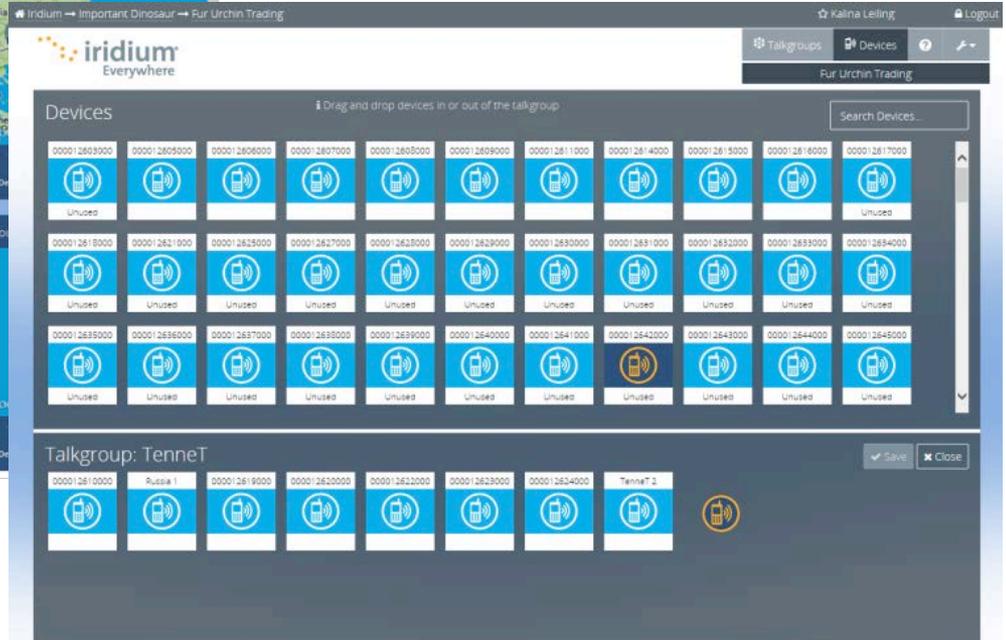
IRIDIUM PUSH-TO-TALK COMMAND CENTER

The Iridium PTT Command Center provides simple configuration and fast operation.



Global Coverage Management

Dynamic Talk Group Management

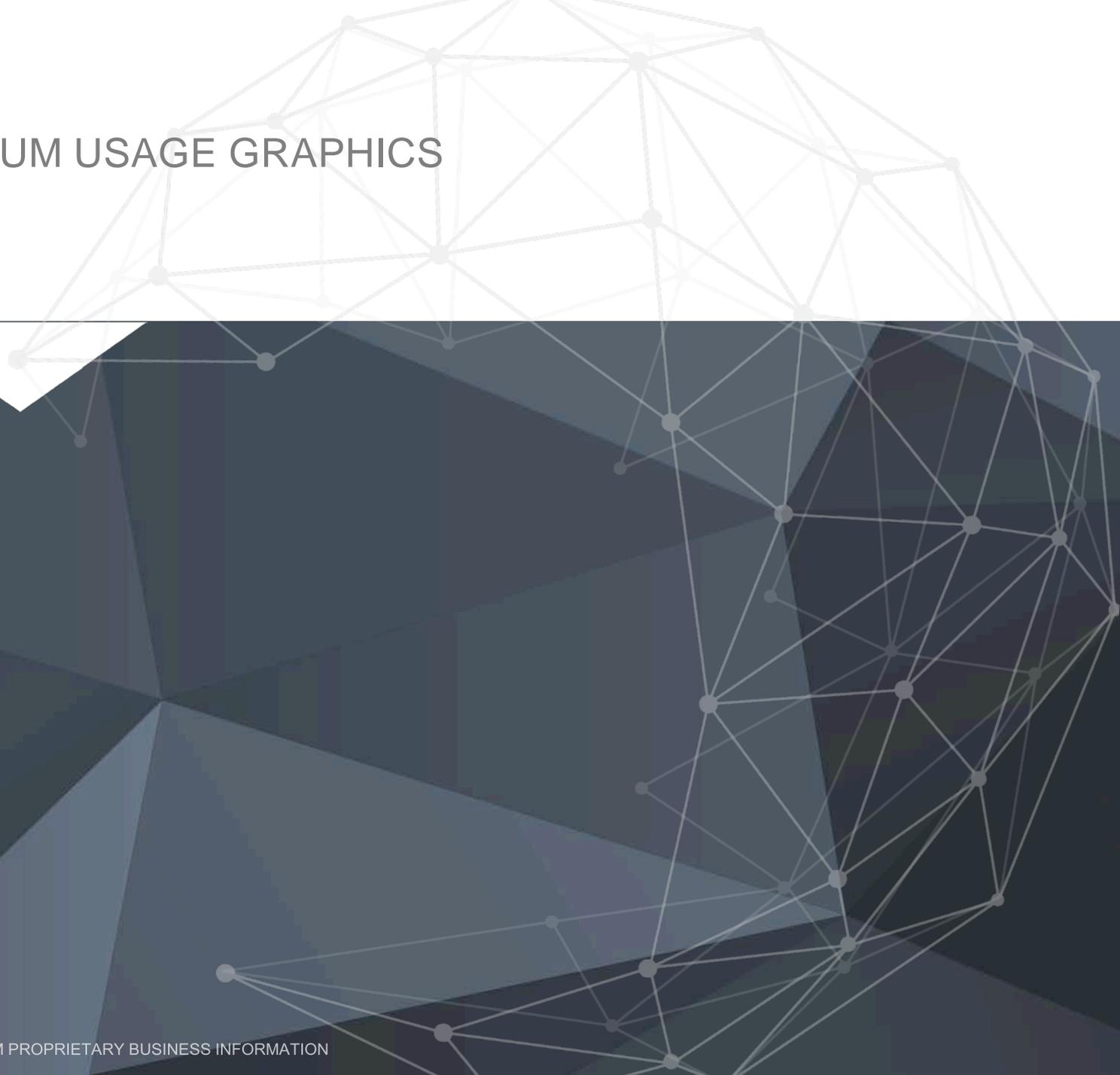


INTEROPERABILITY WITH IRIDIUM PTT

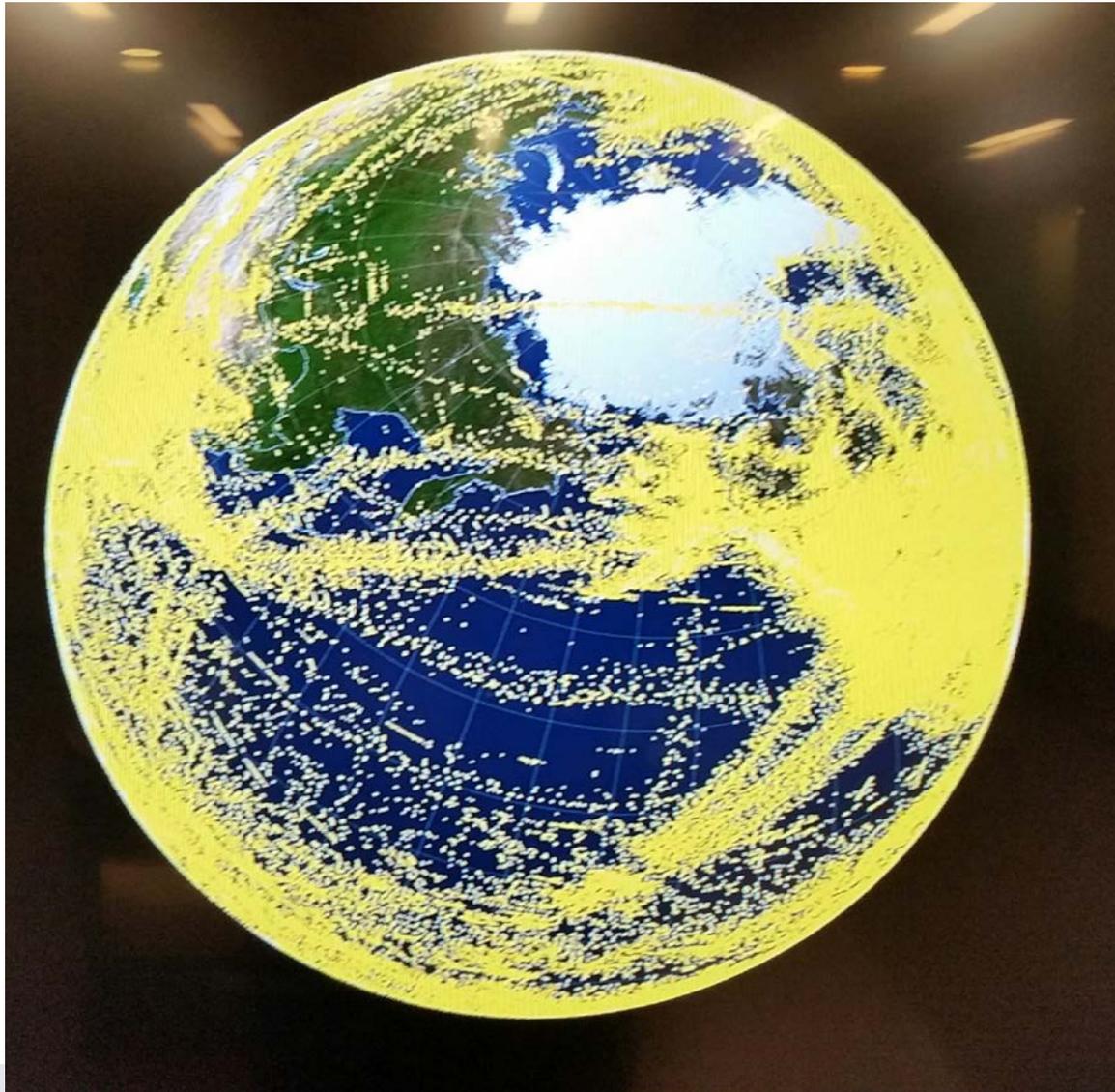
Enables two different radio systems to work together; LMR, P25, Tetra, UHF/VHF/MF, Lightsquared MSAT and other satellite PTT to work with Iridium PTT

- One Solution is Currently Available for Land Mobile:
 - Communications-Applied Technology (C-AT) <http://www.c-at.com/>
 - Historically proven interoperability solution for government, military and public safety
 - Validated for use with over seventy (70) LMR, SMR, VoIP, RoIP and other hardware provider solutions.
- Aviation solutions are in development and will be launched in the future.
 - Requires use of latest Iridium 9523 LBT for Iridium PTT

IRIDIUM USAGE GRAPHICS



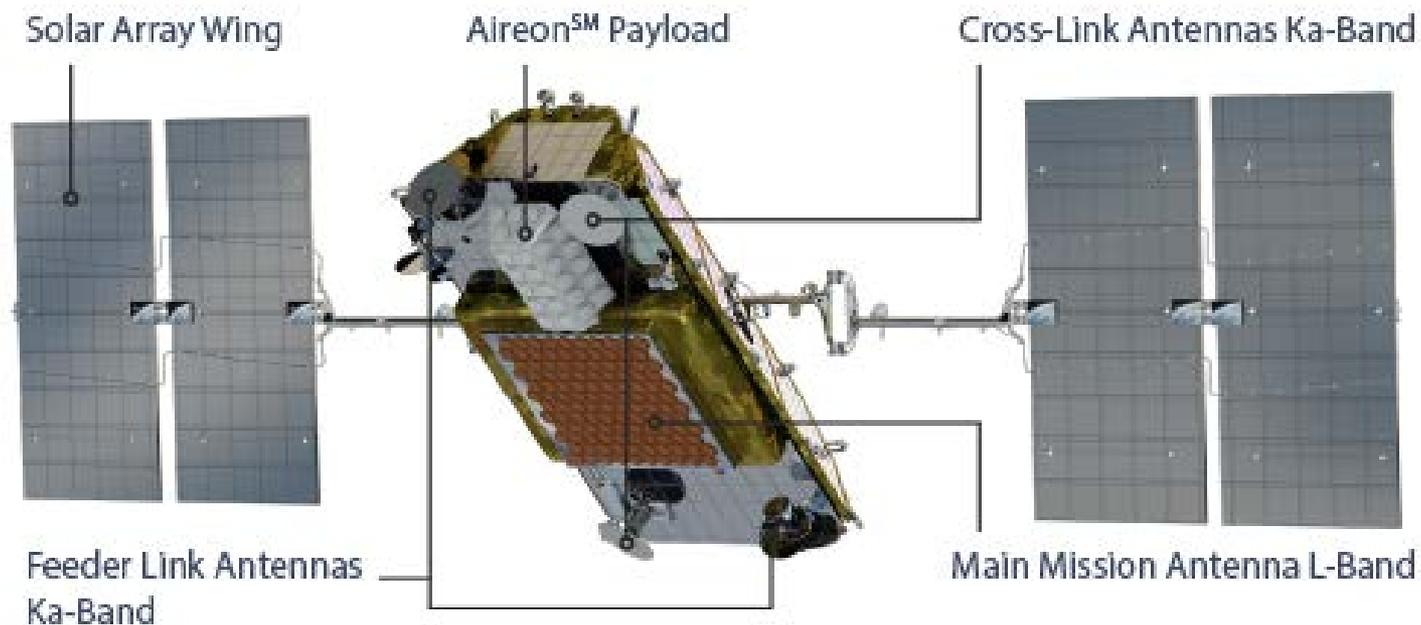
IRIDIUM USAGE MAP



IRIDIUM NEXT



NEXT SATELLITE



Iridium NEXT Satellite Specifications

Deployed Wingspan	9.4m
Weight	860 kg (approx.)
Stowed Dimensions	3.1m x 2.4m x 1.5m

CONCEPTUAL Launch Deployment Scenario



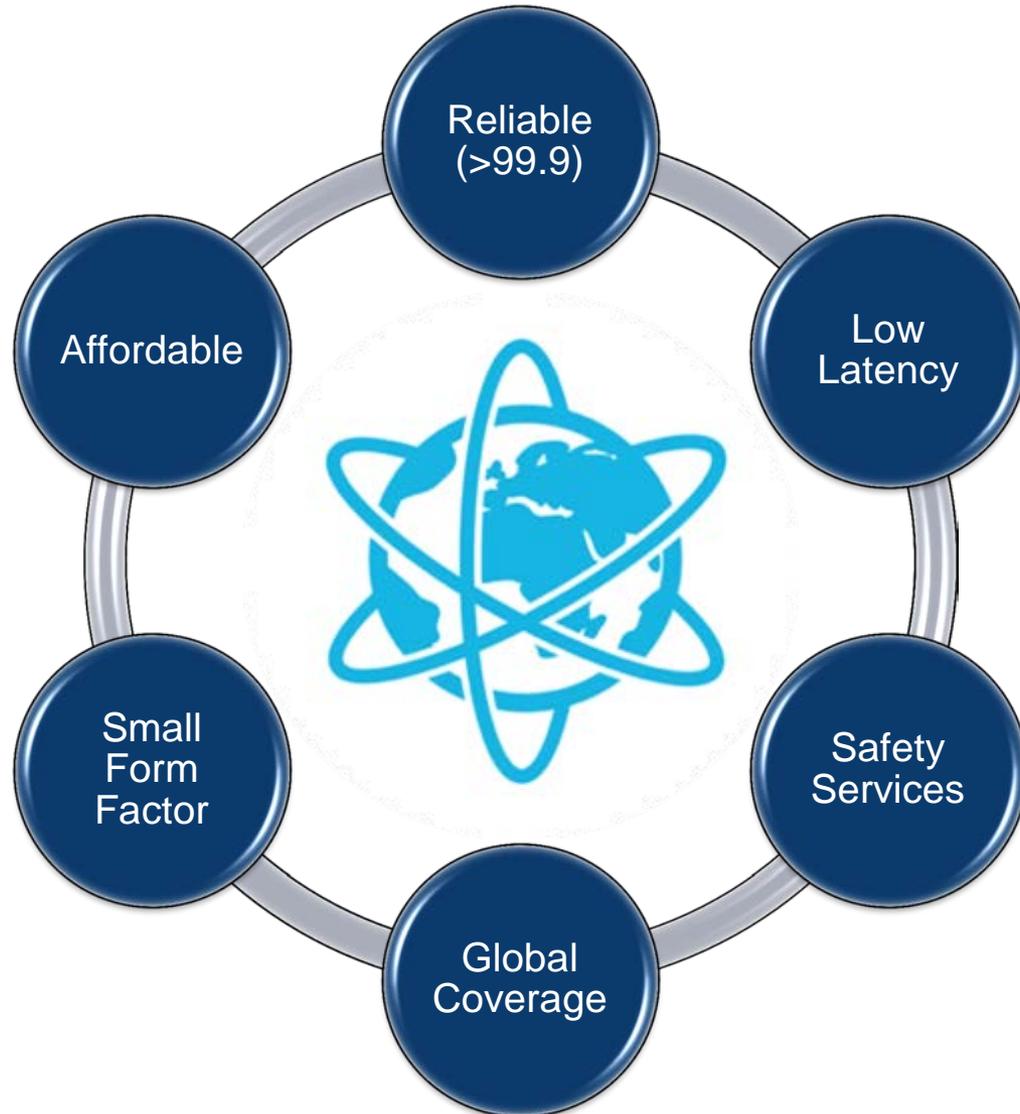
SATELLITE NETWORK TRANSITION 2016 -> 2017

- Iridium will have a mixed network for approximately 15 months
 - First 10 Iridium NEXT satellites launch begin in July 2016 – Space X 9 Heavy rockets
 - Soak period for approximately 3 months
 - Second launch in October 2016
 - Successive launches of 10 satellite every 60 days
 - Dnepr launch of two satellites timing under discussion and independent of Space X
 - Completion of launch and drift of satellites by end of 2017
- All current Block 1 devices will work seamlessly under mixed satellite condition with no changes
- Iridium will launch first Iridium NEXT services in early 2017 under mixed satellite network with Certus 350 service
- The network is called Iridium NEXT but the new broadband services provided is called Iridium Certus Broadband

IRIDIUM CERTUS BROADBAND OVERVIEW

- Iridium Certus Broadband will ultimately support five service classes (Iridium Certus 100, 200, 350, 700 and 1500)
 - Iridium Certus 100 and 200 service will become available upon full Iridium NEXT constellation deployment, enabling products using a low gain antenna
 - Iridium Certus 350 being the exclusive service available at service launch
 - Iridium Certus 700 and 1500 availability post constellation completion
- All Iridium Certus devices are multi-service terminals and will support a myriad of services:
 - Background IP data
 - Standard IP data
 - Broadcast IP data (one to many)
 - SBD
 - Voice x 3 independent lines (standard, high quality and/or safety voice)
 - PTT (global push to talk service)

IRIDIUM CERTUS BROADBAND - KEY ATTRIBUTES



IRIDIUM CERTUS BROADBAND MANUFACTURERS

COBHAM



Aviation Products

**Rockwell
Collins**

THALES

CERTUS SERVICE – FUTURE AVIATION RETROFIT OPPORTUNITY

- Current “hockey-puck” antenna used on Block 1 can be used for Certus 100 and potentially Certus 200 services.
- Requires updated SDU with the Iridium broadband core transceiver but existing LGA antenna and coax can remain*.
- Upgrade opportunity post full constellation completion in late 2017
- This usage will be covered in ARINC 771 as well as DO-262C MOPS.



*Requires PA/LNA to work with the specific LGA antenna to ensure require EIRP and G/T



Thank you!



iridium[®]
Everywhere

