kt sat

Where inspiration becomes insight

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T. +82-51-463-0642   E-mail. ktsat.maritime@kt.com

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kt sat

🌐 www.ktsat.com   in linkedin.com/company/ktsat   📷 @kt_sat
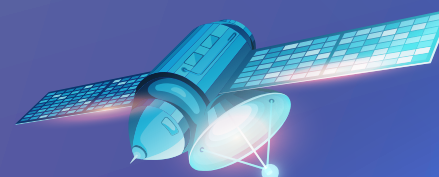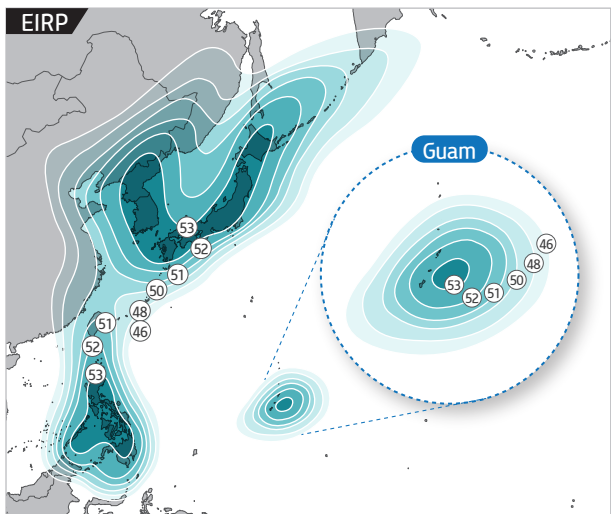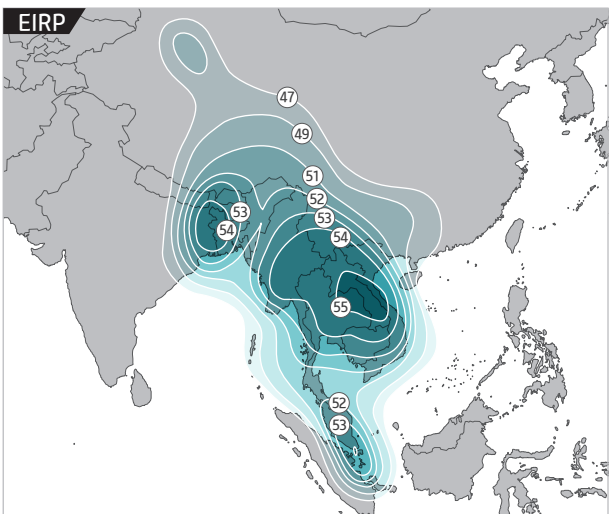
SATELLITE FLEET

KOREASAT-5A

Orbital Location : 113°E
Launch Date : Oct 2017

Manufacturer : Thales Alenia Space
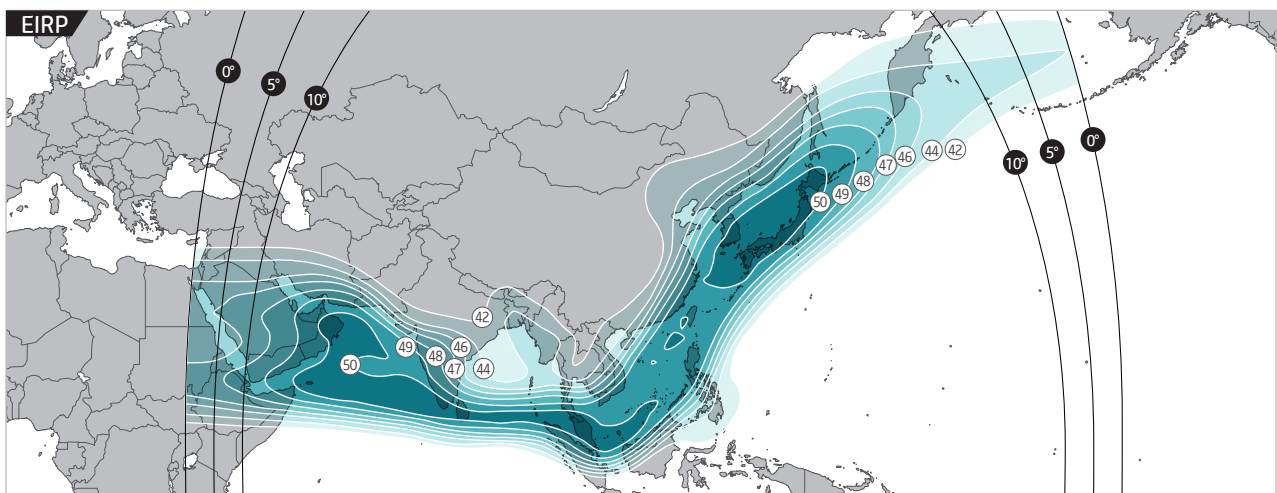Launcher : SpaceX

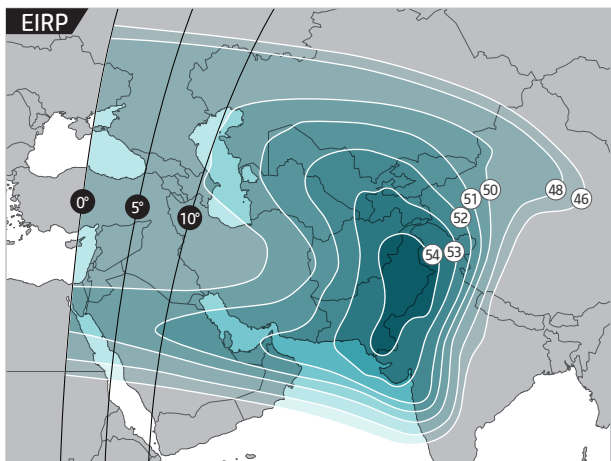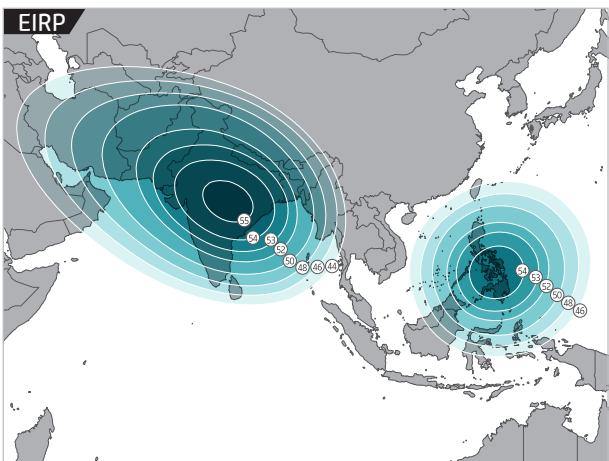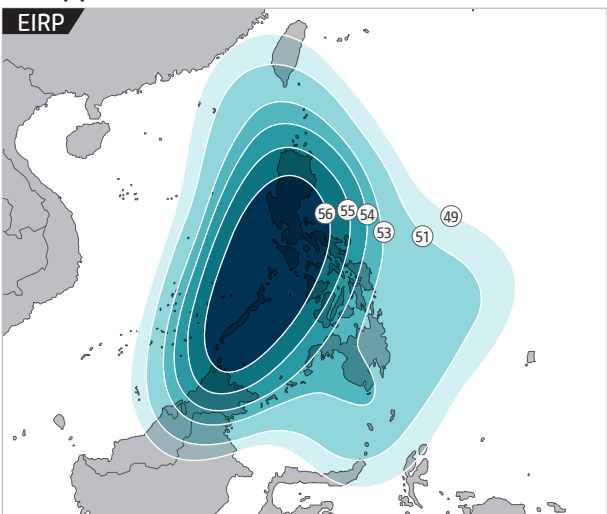North East Asia Ku-band Beam

Indochina Ku-band Beam

Maritime Ku-band Beam

South Asia Ku-band Beam

Steerable Ku-band Beam

SATELLITE FLEET

KOREASAT-7

| Orbital Location : 116°E | Manufacturer : Thales Alenia Space |
| Launch Date : May 2017 | Launcher : Arianespace |

Philippines Ku-band Beam

EIRP

Indochina Ku-band Beam

EIRP

India Ku-band Beam

EIRP
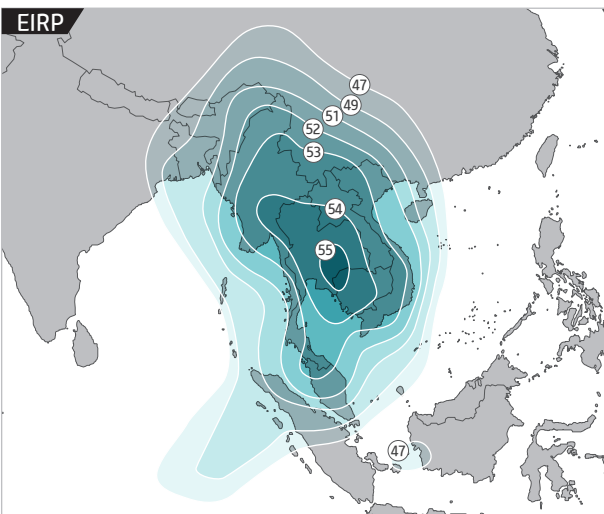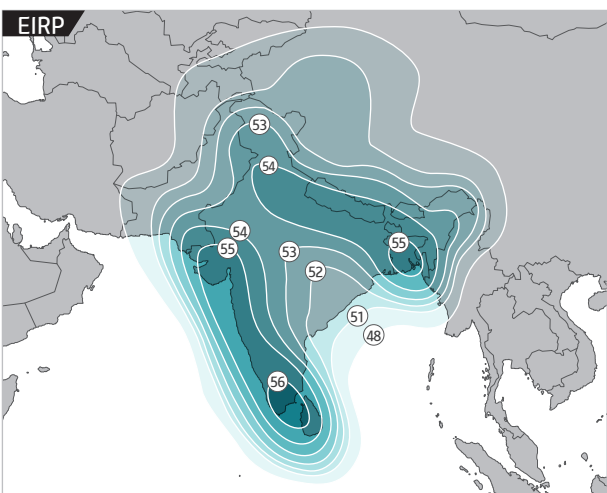
South East Asia Ku-band Beam

EIRP
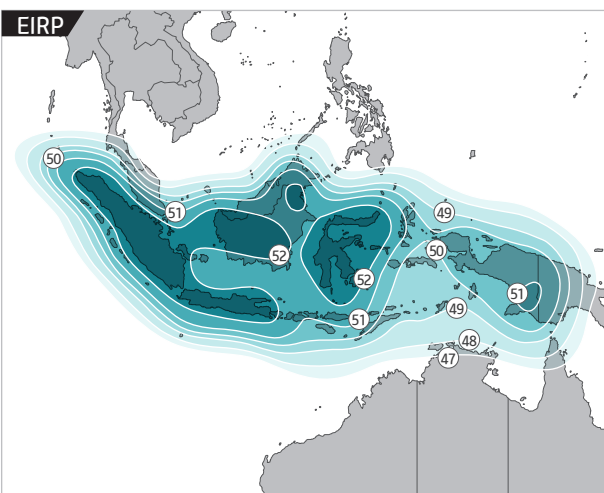
Steerable Ka-band Beam
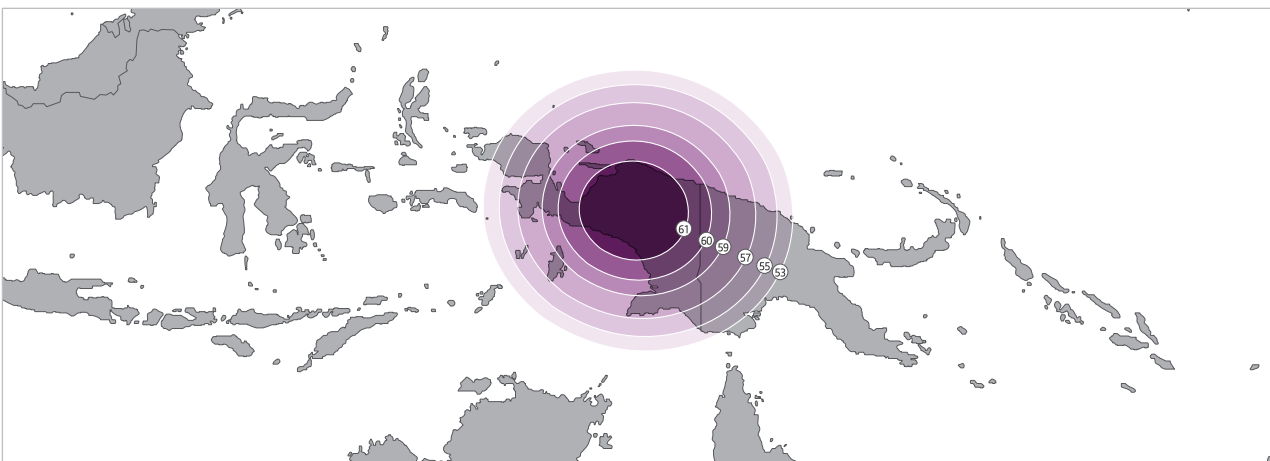
KOREASAT-6

Orbital Location :
116°E

Launch Date :
Dec 2010

Manufacturer :
Orbital Sciences Corporation

Launcher :
Arianespace

FSS Ku-band Beam

EIRP

KOREASAT-8

Orbital Location :
75°E

Launch Date :
Feb 2014
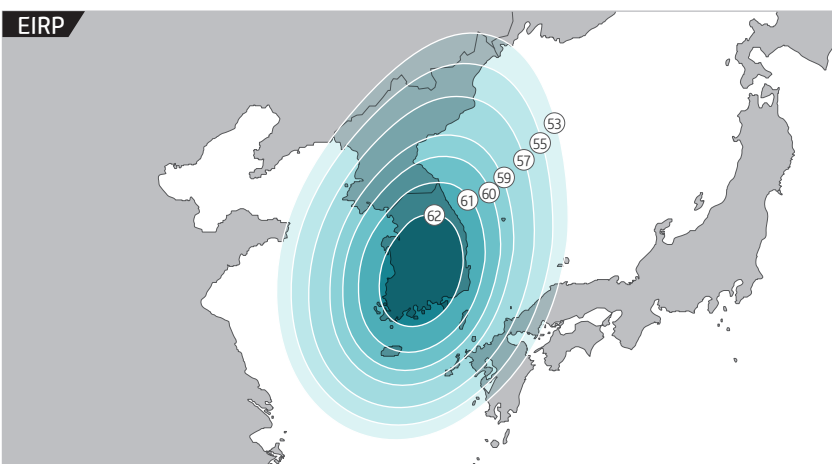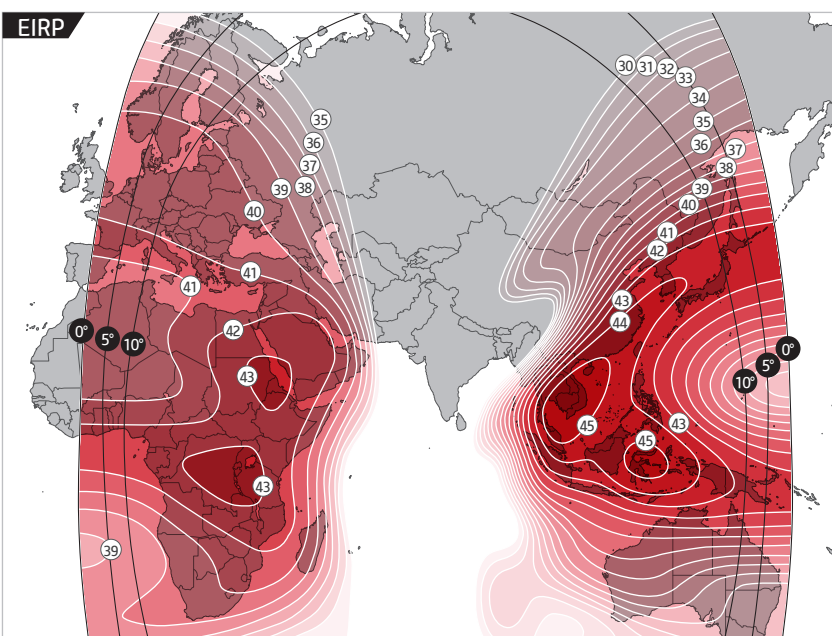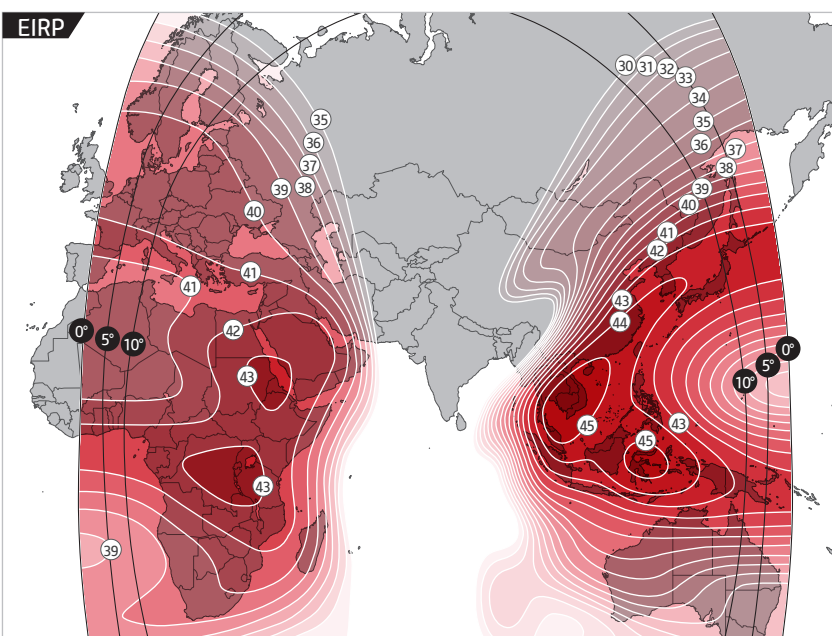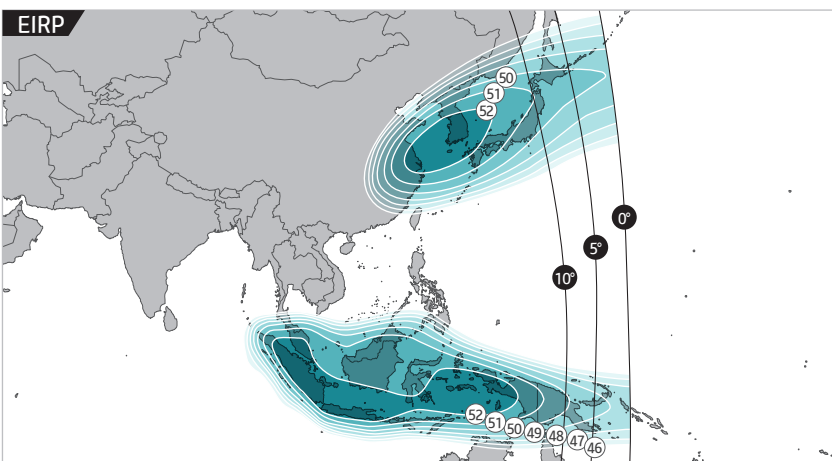
Manufacturer :
Space Systems/Loral

Launcher :
Arianespace

West Hemi C-band Beam

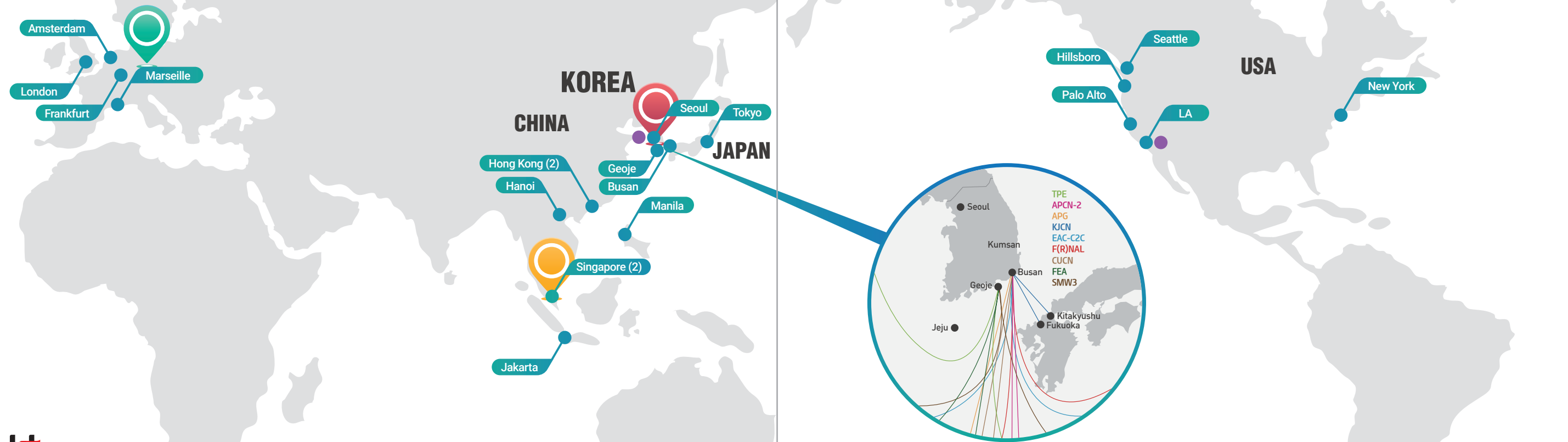EIRP

East Hemi C-band Beam

SEA / Korea Ku-band Beam

EIRP

TELEPORT & MANAGED SERVICES

Global Network Infrastructure

Customers can benefit from KT SAT's 50-year-experience managed services from our most strategically located teleports.

Amsterdam
London
Frankfurt
Marseille

KOREA
CHINA
Seoul
Tokyo
JAPAN
Hong Kong (2)
Hanoi
Geoje
Busan
Manila
Singapore (2)
Jakarta

Seattle
Hillsboro
Palo Alto
USA
New York
LA

Seoul
Kumsan
Busan
Geoje
Jeju
Kitakyushu
Fukuoka

TPE
APCN-2
APG
KJCN
EAC-C2C
F(R)NAL
CUCN
FEA
SMW3

kt Korea Telecom Group Resources

▶ IPLS
• Global end-to-end connectivity including backhaul and local loops
• 14 Global PoP locations (LA/NY/PAL/LDN/FFT / HNO / SGP / JKR / MNL / HK / TKY & etc.)

▶ Global IDC & Managed Hosting
• IDC bundled solutions with co-lovation, hosting and bare metal
• Direct Internet accesss to domestic & global major ISPs

▶ Submarine Cable Capacity
• Cable system in possession (APCN-2, KJCM, SMW-3, TPE, APG, NCP)
• APG, NCP(Asia) NOC Operator
• Operating cable landing Stations in Korea : Busan, Geoje

Teleport Locations

📍 Kumsan Satellite Service Center
📍 Yongin Satellite Operation Center
📍 Cheonan NGSO Teleport
📍 Singapore Service Teleport
📍 Germany Service Teleport

Service Use Cases

Slot Leasing & Hosting
• Platform by KTSAT or customer, operated by customer
• Reducing CAPEX while maintaining security

kt sat	Customer
Satellite Capacity	Operation
Antenna System	Platform Equip.
Rack, Chassis	Line cards, N/W equip.
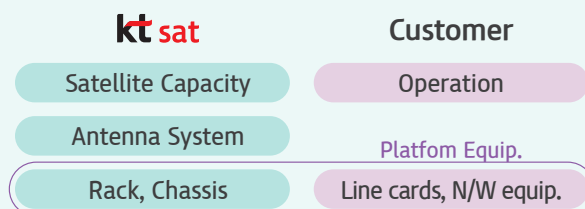
Platform Hosting
• Customer-owned plaform, operated by customor
• Suitable for high-security or big-size existing networks

kt sat	Customer
Satellite Capacity	Platform Equip.
Antenna System	Operation
Rack Space	
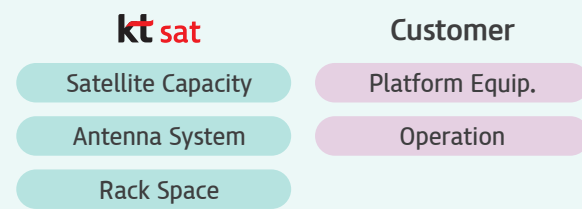
Customized Managed Services
• Service scope and structure is fully customizable, from platform provision, ownership to operation etc.

kt sat	Customer
Satellite Capacity	
Antenna System	
Platform Equip. — Operation	Customizable
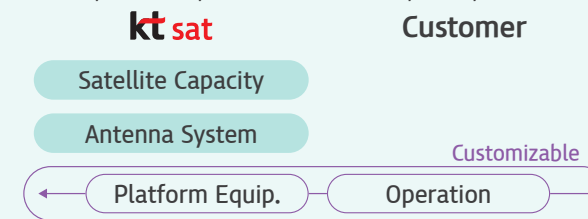
Fully Managed Services
• End-to-end service including equipment and operation
• Customer can focus on its own business and end-users

Satellite Capacity
Antenna System
Platform Equip.
Operation

Fully Covered by kt sat
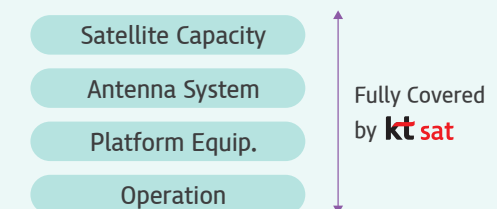
MARITIME SERVICE

KT SAT provides end-to-end maritime connectivity services customized for all types of vessels. We launch our maritime brand XWAVE with the vision to lead the wave of change in maritime communications.

XWAVE ∞ MVSAT

XWAVE Global-MVSAT (Ku-band)

Always-on Connectivity with enhanced coverage

XWAVE Regional-MVSAT (Ku-band)

Well-designed & Customized solutions for APAC Region

XWAVE Fleet Xpress (Ka-band)

XWAVE Fleet Broadband(L-band)

XWAVE ∞ Solution

XWAVE Value-Added Solutions

- **Ship Office**
  Shipmail, Anti-virus, Blacklist/Whitelist, Web-filtering browser

- **Sea Black-box**
  Realtime/High-quality video recording
  Remote searching and playing of the videos

- **VoIP**
  High quality voice with QOS,
  Free extension call among user groups

Primary — kt sat — **MVSAT**
Back-up — kt sat — **L-Band**

Below Deck Device | ACU | Modem | Firewall | Switch | BDU

VoIP | On board CCTV | Ship office | Internet | Wi-Fi | Satellite based LTE | Remote medical service
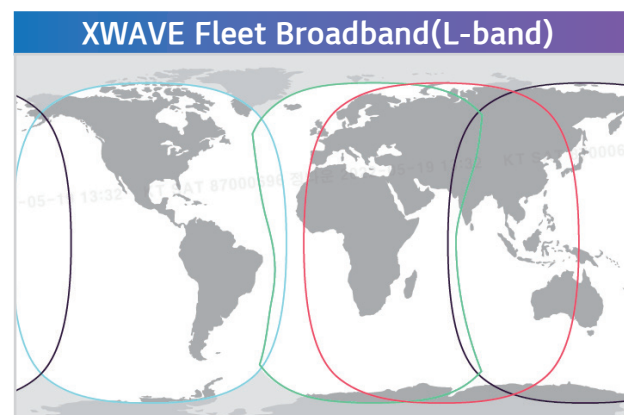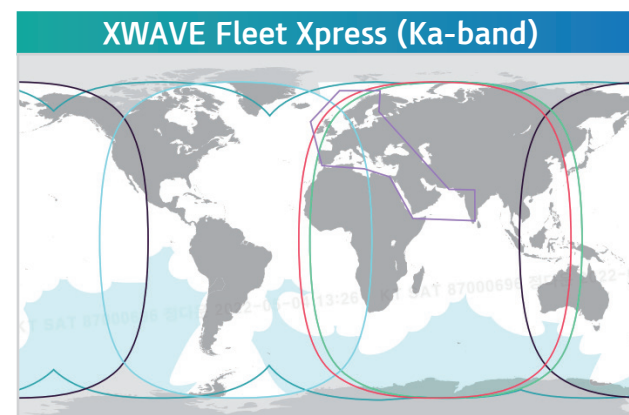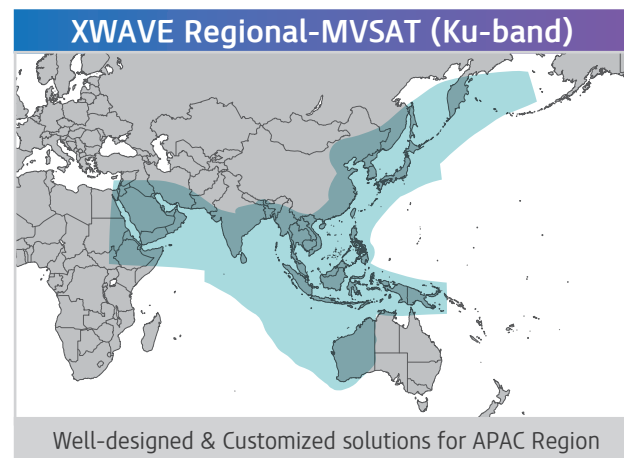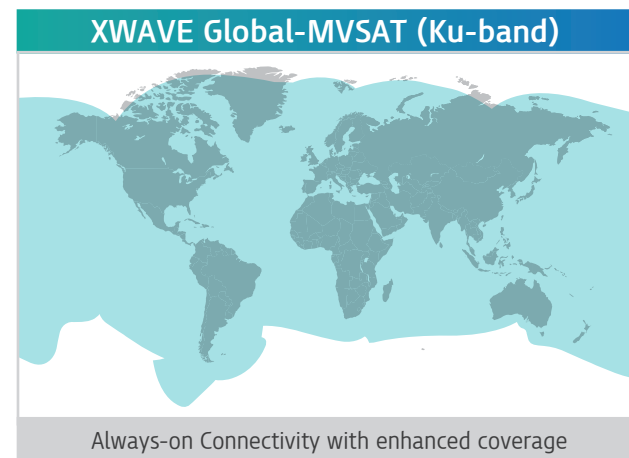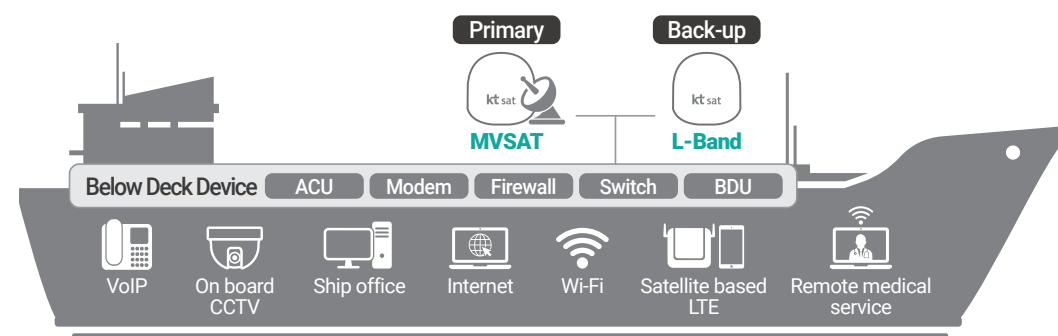
XWAVE Vessellink

▶ Key Features

For Ship
- Automated data reporting system
- Reducing fuel oil consumption based on data analysis
- Data verification system

For Shore
- Intelligent fleet monitoring system
- Marine weather forecast service
- Management of fuel oil consumption
- Vessel performance analysis services

Navigation Data → Vessellink → kt sat → MVSAT → KT SAT Satellite
Engine Data
Ship Management Company
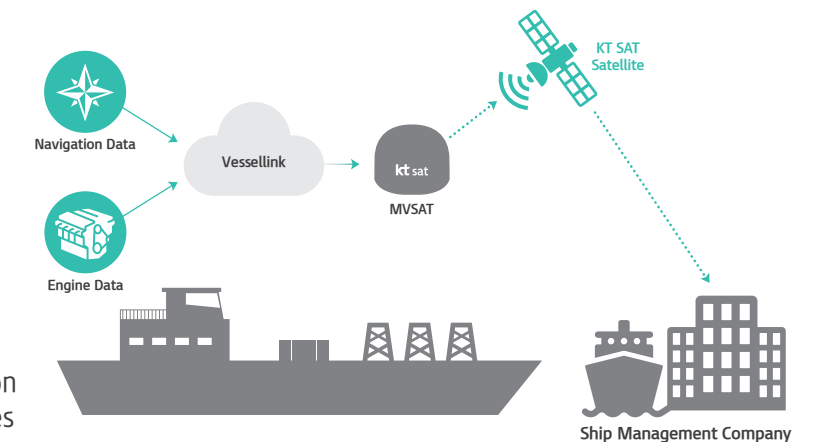
XWAVE VNMS (Vessel Network Management Solution)

Fleet Tracking and Data Traffic Monitoring Solution

Total Amount
Total 762
TCP 458 GByte HTTP 107 GByte
UDP 352 GByte Other 4 GByte

Time series
DOWN - | UP -
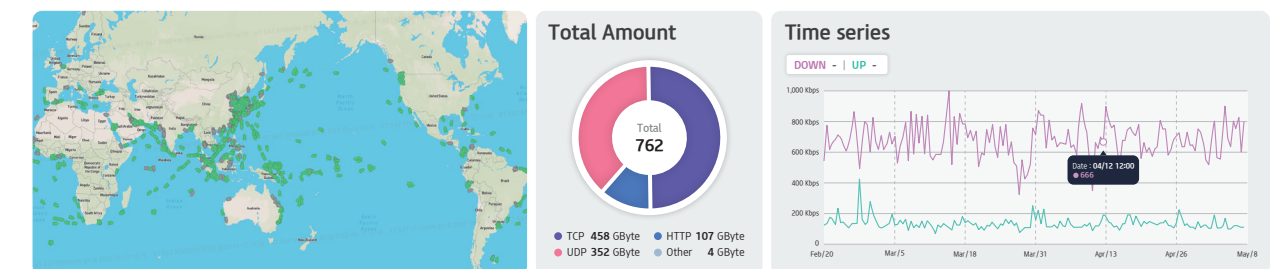
XWAVE APMS (Access Point Management Solution)

BYOD Data Solution for Seafarers' Communication

WI-FI Zone (Lounge, dinning room) | WAP | Captain | MVSAT
Crews | OWN (On-ship WiFi Manager) | L2 Switch | L2 Switch
Vessel

KT SAT Kumsan NOC
Operator
IWM (Integrated WiFi Manager)
KT U - Cloud
Customer
HQ

XWAVE APMS
MVSAT APMS WiFi
MVSAT APMS system WiFi use authentication
ID
Password
OK
Copyright © 2017 KT SAT All rights reserved.

XWAVE APMS
MVSAT APMS use authentication is completed.

Data remaining
Monthly supply	Remaining amount
100,000 MB	96,396MB
Additional data remaining	Total remaining amount
230 MB	96.626 MB

*Bring-Your-Own-Device : BYOD

XWAVE LIVE Broadcasting

"ON Live!"
Watch live TV news on board 24/7.
KT SAT delivers HD live broadcasting service to the customer using our maritime connectivity.
No need to install additional TV antenna on board. As long as you have the connectivity you will be on-live.

NEWS TODAY | THE K-POP ON AIR LIVE STREAMING

VIDEO SERVICE

KT SAT provides uplink / downlink service via satellite for various video contents, complemented by our 24-hour customer support from Kumsan Teleport.

Satellite

SNG   Broadcaster / CP / Telco / Occaslonal   Teleport

▶ Service type

Broadcaster / Telco

PP / SO Sites

Enterprise / DTH Platform

News, Sports, Special Events
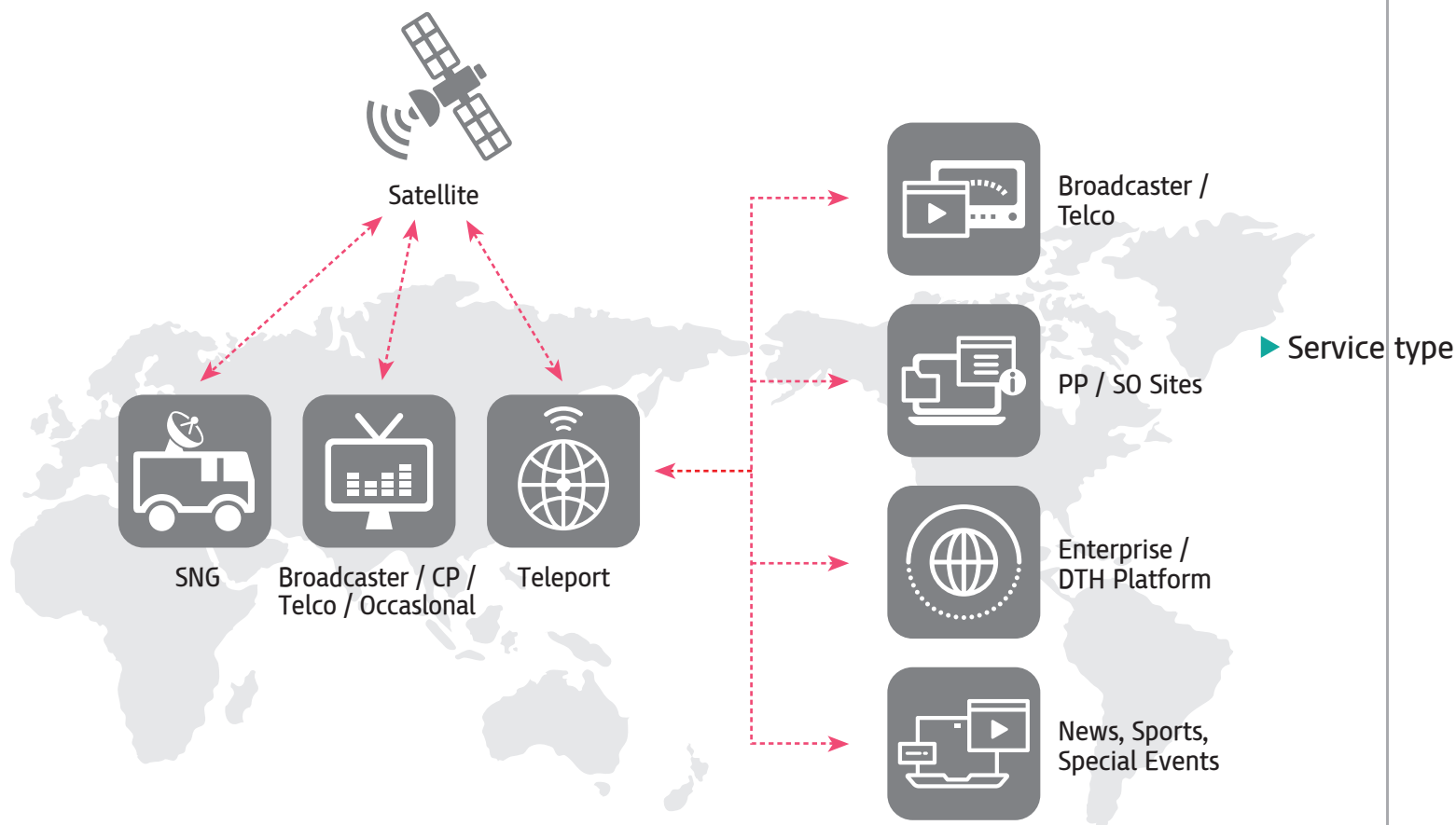
▶ Broadcasting & Media Service

- Global Contribution and Distribution Service
- TVRO and DTH Platforms
- Occasional Use and SNG Service
- Turn-Around Service
- Fully redundant MPEG-2/4, HD/SD, DVB-S/S2/NS3, U/L and D/L systems
- 24/7 Customer Support

※ Kumsan Teleport

DATA SERVICE

KT SAT provides customized data solutions through seamless satellite connectivity optimal for enterprises, governments and individuals across the world even in Antarctica.
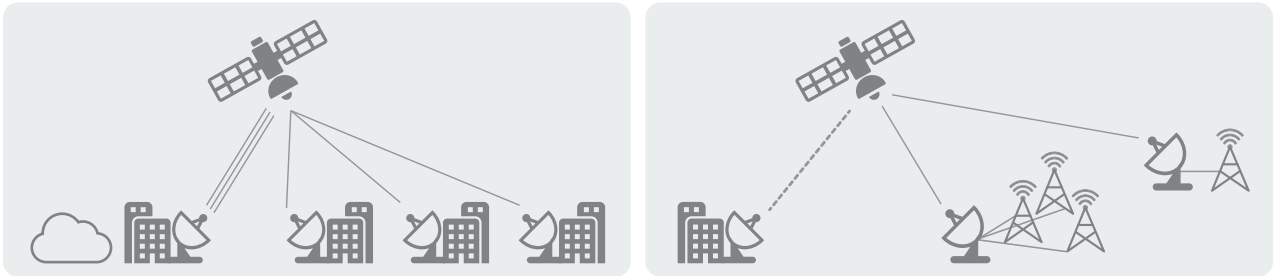
Premium VSAT Services

- Point-To-Point managed satellite solutions for voice, data and Internet service applications
- Guaranteed Committed Information Rate
- Access to global internet backbone and fiber network for seamless connectivity

Broadband / Mobile Backhaul Services

- TDMA VSAT by iDirect
- Price Plan optimized to network size and customer demands
- SOHO network backup for private networks and mobile operators
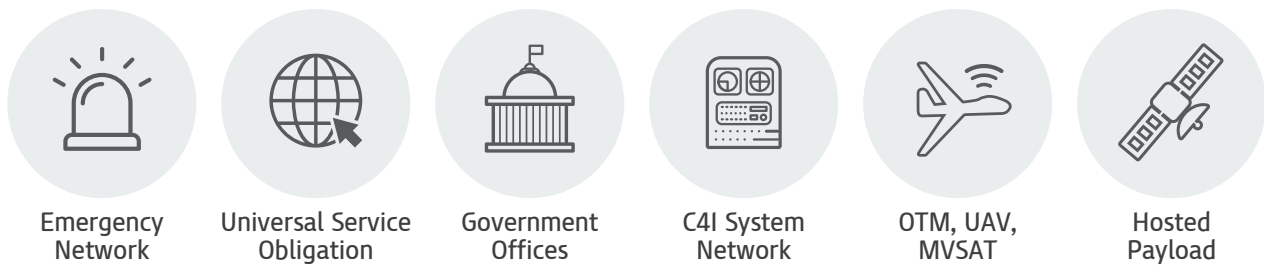
Additional Services

- VPN(Virtual Private Network), WAN Accelerator
- Video teleconference solution between HQ and remote sites
- Installation & consulting services for security, voice, and data solutions
- Cellular backhaul service for disaster and emergency

GOVERNMENT & MILITARY SERVICE

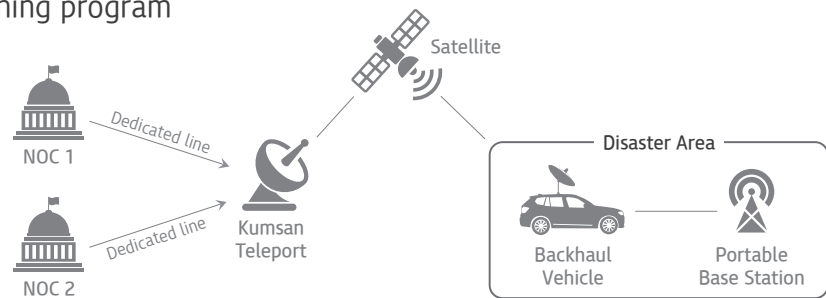Long-time experience in Government/Military total solutions from satellite services to system integration

| Emergency Network | Universal Service Obligation | Government Offices | C4I System Network | OTM, UAV, MVSAT | Hosted Payload |

Emergency Network

▶ Key Features

- Satellite capacity & teleport service (hub located in KT SAT teleport)
- **Easy-to-deploy remote terminals :** Fly-away antenna, modem, BUC, LNB, generator
- Maintenance and operator training program

▶ Value-added Solutions

- IP-Mesh
- LTE Drone Base Stations
- AR-based Medical Assistance

Satellite

NOC 1
Dedicated line

NOC 2
Dedicated line

Kumsan Teleport

Disaster Area

Backhaul Vehicle · Portable Base Station

## Fisheries Monitoring & Management

▶ Infrastructure

- **Hardware :** Servers, network equipment, alarms and consoles
- **System Software :** DBMS & WAS, operating software etc.

▶ System Integration

- **Fisheries Monitoring :**
  IUU & distant water vessels monitoring, illegal vessels detection & alarming, automatic reports
- **Fisheries Monitoring Data Management :**
  vessel info management,
- Fishing restriction areas data management, etc.
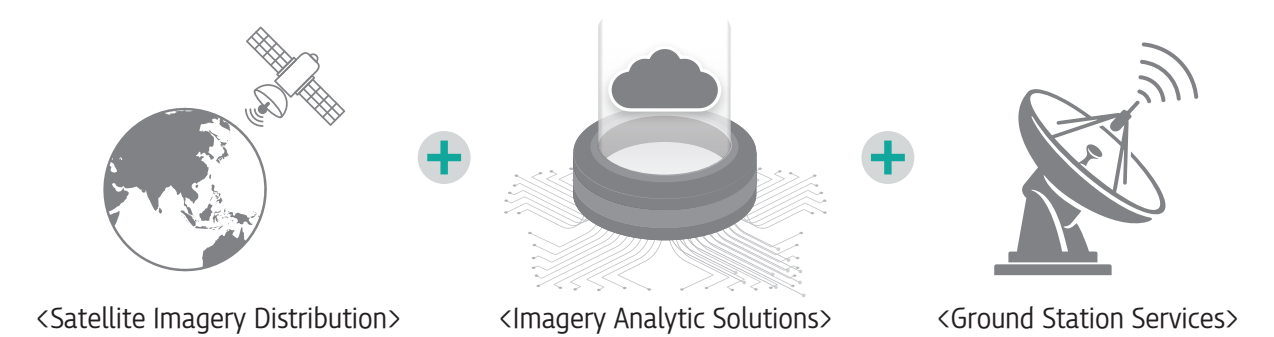
MVSAT + M2M + Monitoring System

▶ Standardization & Security Solutions

- Standardized module-type system with guidelines
- Enhanced security through data protection, security guidelines, data encryption

Satellite

Satellite M2M Terminal

Fishing Vessels

Fisheries Monitoring Center
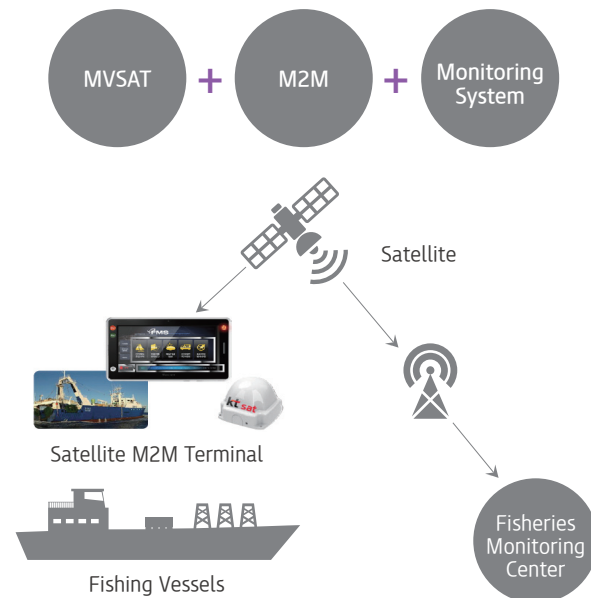
SPACE DATA

KT SAT provides customized Space Data, delivering insights for users prior to their decision making. To know, before you decide.

<Satellite Imagery Distribution> + <Imagery Analytic Solutions> + <Ground Station Services>

▶ Service type

Earth Observation Satellite Imagery

- Both EO & SAR imagery
- VHR imagery with higher temporal resolution

Satellite Imagery Analytic Solutions

- Object detection, Change detection, Site monitoring, Supply chains monitoring
- Insight for D&I, Energy, Financial, GIS, and Manufacturing industries
- Customized solutions using AI and deep learning

Ground Station Services

- Leasing ground stations for satellite operators and users
- Data transferring, Data processing, and Data delivery

Disaster · Energy · Agriculture · Ecosystem · Biodiversity
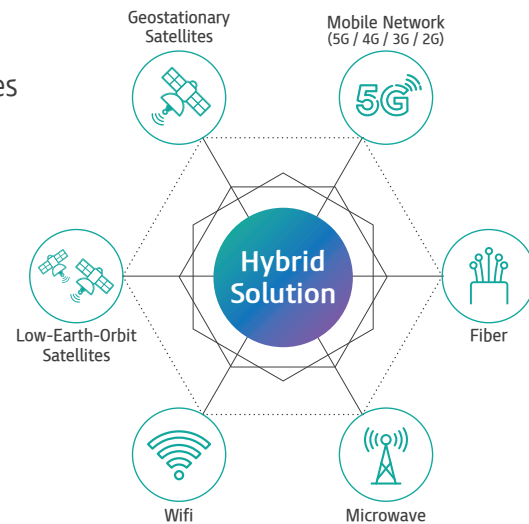
FEATURED SOLUTIONS

Hybrid Solution

Complete integration of multiple networks with combined bandwidth and true seamless switchover.

▶ Key Features

- True seamlessness – traffic flows through multiple routes
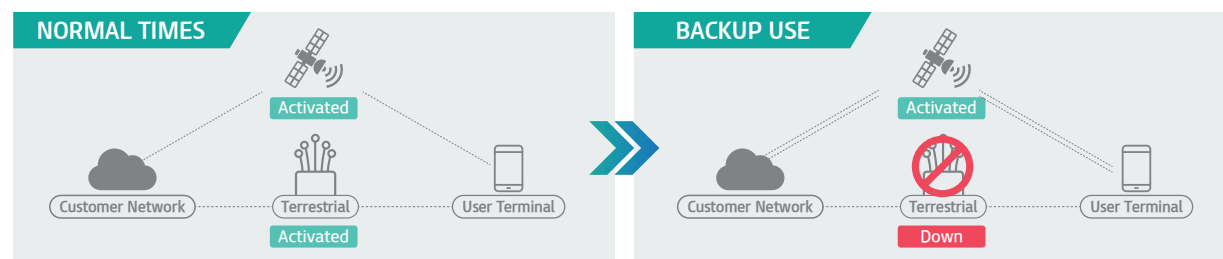- Aggregated transmission between different latency networks

▶ Use Case Examples

- **5G + Satellite Mobile Backhaul:** enhanced service quality to minimize maintenance burdens
- **Mission Critical:** business continuity, real-time monitoring
- **Mobility:** merge of terrestrial + satellite by coverage availability
- **Multi-Orbit Service:** GEO + NGSO by application

Geostationary Satellites · Mobile Network (5G / 4G / 3G / 2G) · Fiber · Microwave · Wifi · Low-Earth-Orbit Satellites — **Hybrid Solution**

KT SAT Hybrid Solution

- Traffic is always flowing, causing no glitch
- Combined bandwidth allows more data on normal times

NORMAL TIMES — Customer Network · Terrestrial (Activated) · User Terminal · Activated

BACKUP USE — Customer Network · Terrestrial (Down) · User Terminal · Activated

EdgeCloud over Satellite

5G EdgeCloud in a lightweight hardware(Private 5G Core+MEC) is mounted on mobile vehicle and can offers private 5G connectivity and applications in order to provide wireless network /applications in areas where commercial networks are not reached or in a disaster zone.

5G Core / MEC · Integrated Infra for Control / App

Wireless Network In a poor-connected Area

GEO Satcom Antenna (Flat-panel) · 5G Smallcell (4.7GHz) · 5G EdgeCloud H/W and Satcom Modem

Mobility (Land, Ocean, Aero) · Disaster Recovery (War or Disaster) · Network Redundancy (South Pole, Oil & Rig)