



# Monacosat®

## THE FUTURE IS IN SPACE

**Speaker:** Mr. Mesut CICEKER, CCO- Monacosat S.A.M.  
**Presentation to:** TURKMENTEL 2023  
**Date:** 09-10 November 2023

**Ref:** TMT- 20231010  
**Location:** Ashgabat - Monaco  
**Version:** 2.0

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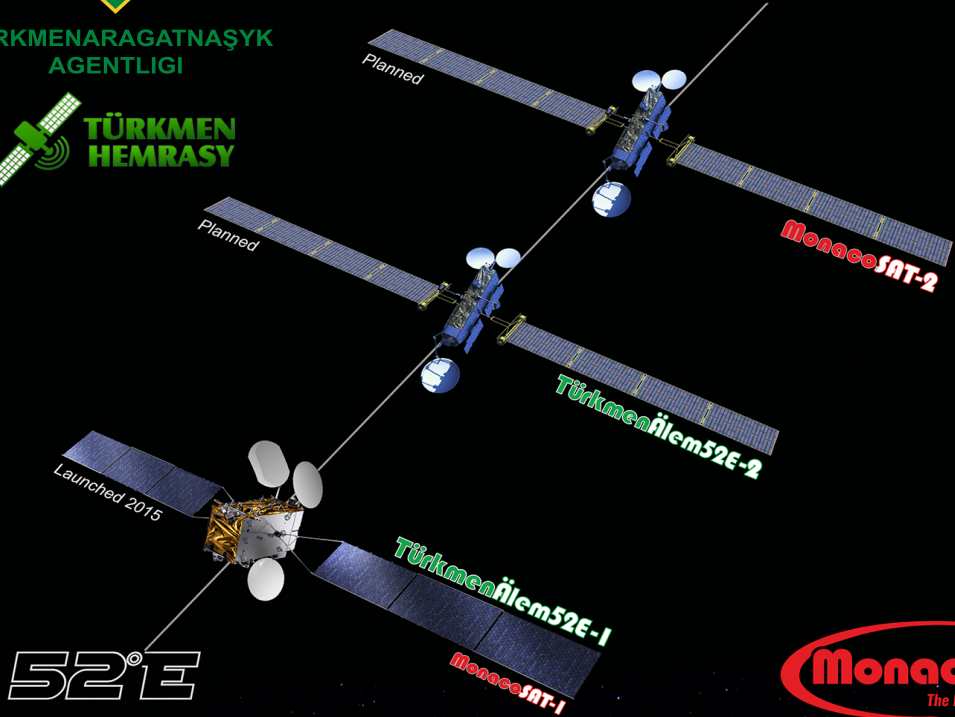
### TURKMENTEL 2023

Telearagatnaşyk, telemetriýa, habar beriş tişimatlarynyň we teleradioýagradys enjamlarynyň Türkmentel atly XIV halkara sergisi

**9-10 NOVEMBER**  
Ashgabat - Turkmenistan  
[turkmentel.net](http://turkmentel.net)



TÜRKMENARAGATNAŞYK  
AGENTLIGI



**LIFETIME PARTNERSHIP WITH TURKMENISTAN**

Direct to Home HDTV, High Speed Broadband Internet connection, VSAT systems

01

SSI-MONACO SAM COMPANY

AND

TURKMENALEM52E/MONACOSAT-1  
SATELLITE PROGRAM

# SSI-MONACO COMPANY STRUCTURE



Who are we?

## MONACOSAT S.A.M.

Monaco Government Partnership  
Fixed Satellite Services Operator  
Future Satellites Investments  
partnership with Monaco  
Acting Monaco Space Agency



## SSI - MEDIA / SUPERYACHT TV

Superyacht TV channel  
Cable TV, Satellite TV, IPTV  
More channels to come

## TURKMENISTAN GOVERNMENT

SSI-Monaco is lifetime partner of  
Turkmenistan.  
TürkmenÄlem52E/Monacosat-1  
common satellite.



## AXIOM SPACE PARTNERSHIP

Private Space Station / Space Tourism  
ISS Replacement  
Monaco Module Project

## SSI-INMARSAT PARTNERSHIP

Mobile Satellite Services  
Global Satellite Coverage for Sea,  
Land, Air and Emergency Services

# MONACOSAT HISTORY



## SECURE ORBITAL POSITION

In 2010, Space Systems International – Monaco S.A.M. (“SSI-Monaco”) and the Government of Monaco have signed a license Agreement for the use of frequencies at the 52° East orbital position.



## SUCCESSFUL LAUNCH FOR MONACOSAT-1

27 April 2015, SSI-Monaco launched its first telecommunications satellite, MonacoSat-1 (Ku band satellite) Manufactured by Thales Alenia and Launched by SpaceX F9. **MonacoSat-1** is a joint project with **Turkmen Government** and also called **TurkmenAlem52E/MonacoSat-1** is mainly for DTH-type services in Europe, Middle East, North Africa and Central Asia.



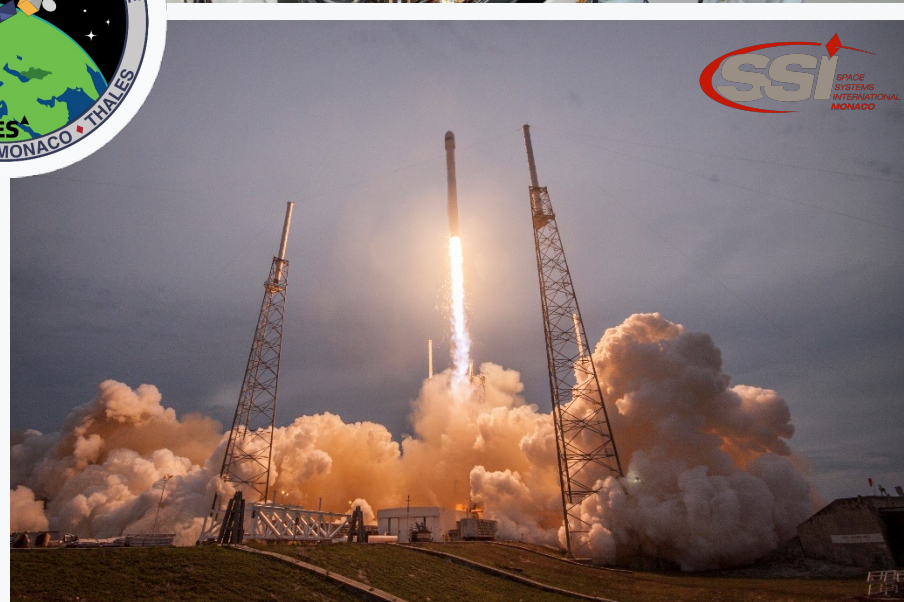
## PLANNING THE FUTURE, MONACOSAT-2

Following this success, SSI-Monaco began to develop a new telecommunications satellite program, **MonacoSat-2**, in which the Principality of Monaco wished to be more involved.



## CREATION OF MONACOSAT S.A.M.

In October 2017, creation of **Monacosat S.A.M. (Société Anonyme Monegasque)**. The corporate name of Monacosat S.A.M. is to develop and operate the **MonacoSat-2** program as well as future geostationary satellite telecommunications systems.



# GLOBAL OFFICES

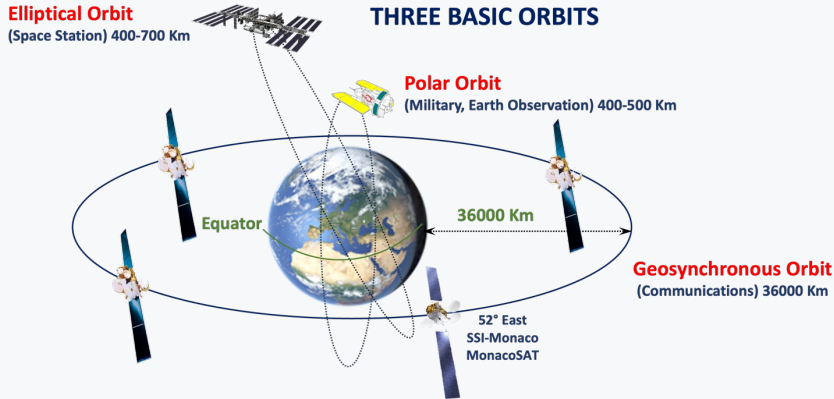
SSI-Monaco



Space Systems International  
- Monaco S.A.M.  
(SSI - Monaco)  
is the parent company of  
**Monacosat S.A.M.** company,  
an integrated  
telecommunications service  
provider specialized in satellite  
telecommunications, as well as  
a satellite operator, formed in  
2004 by the worldwide known  
experts and consultants led by  
Dr. Ilhami AYGUN

# ORBITAL POSITIONS

A priced spot



**SSI-MONACO DEVELOPED AND SECURED  
THE 52°E ORBITAL POSITION FOR THE STATE OF MONACO**



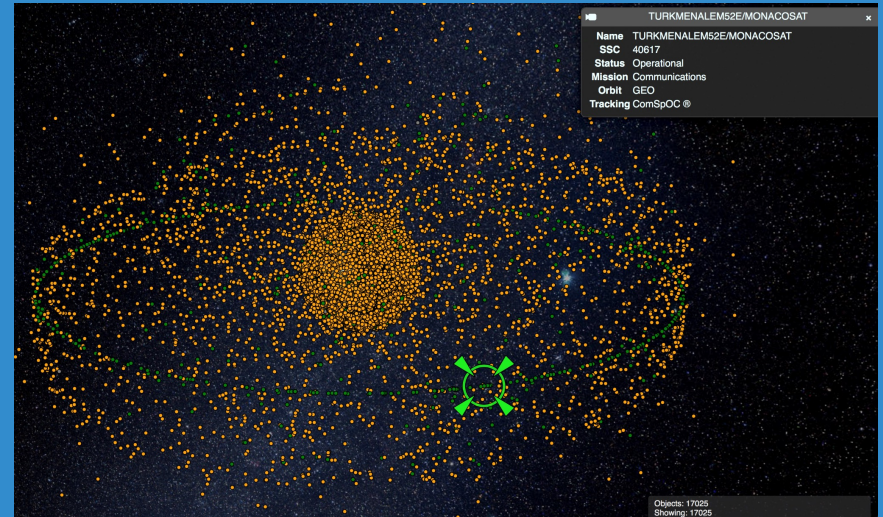
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SSI - MONACO

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# SPACE POLLUTION

Raising awareness about a growing concern



TOTAL SPACE OBJECTS: >25000

ACTIVE GEO SATELLITES: 565

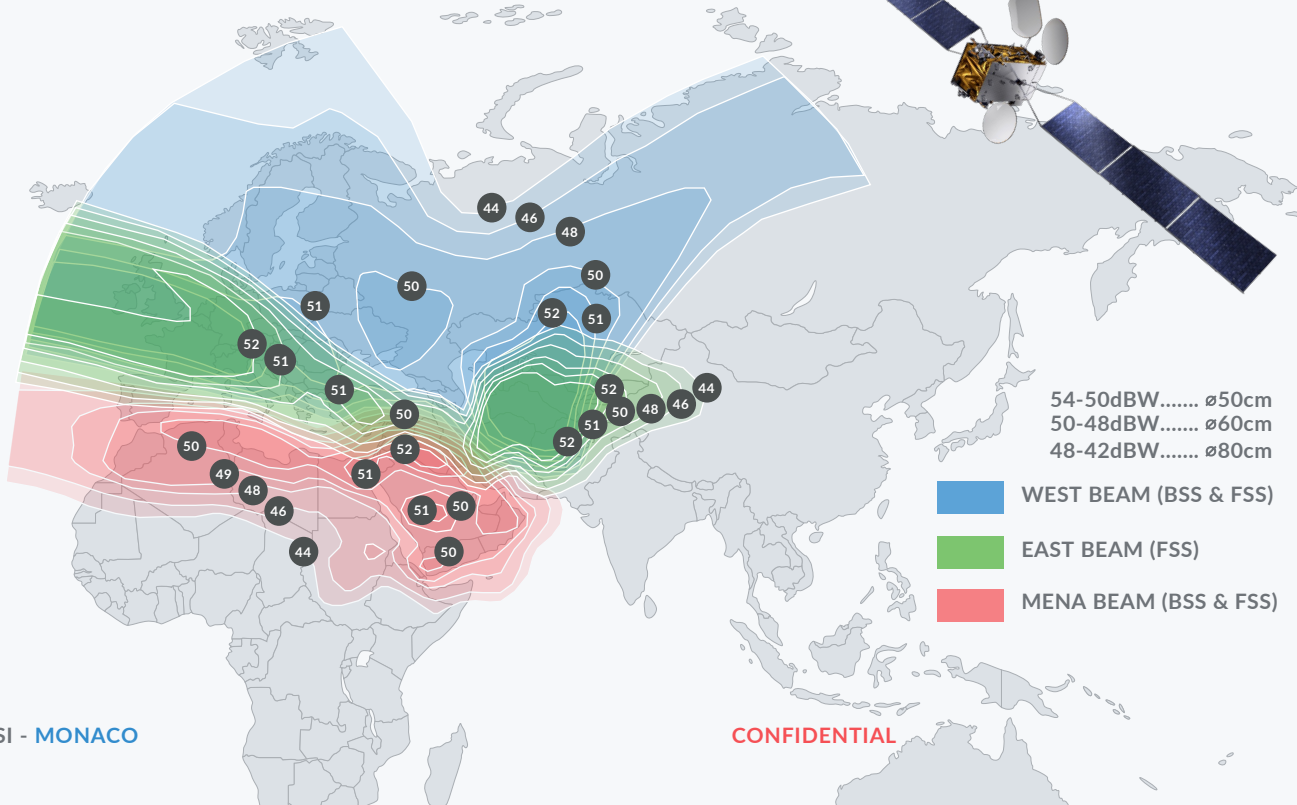
● NON-OPERATIONAL SATELLITES: 8462

● OPERATIONAL SATELLITES: 4852

**GROWING SPACE  
DEBRIS POSES  
SIGNIFICANT  
SAFETY RISK TO  
PEOPLE AND  
PROPERTY IN  
SPACE**

# TURKMENALEM52E/MONACOSAT-1 SATELLITE

Connecting East and West



54-50dBW..... ø50cm  
 50-48dBW..... ø60cm  
 48-42dBW..... ø80cm

- WEST BEAM (BSS & FSS)
- EAST BEAM (FSS)
- MENA BEAM (BSS & FSS)

**1.9 BILLION** PEOPLE  
 ARE UNDER THE SATELLITE'S  
 COVERAGE

**88** COUNTRIES COVERED  
 50 IN THE EAST BEAM  
 16 IN THE WEST BEAM  
 29 IN THE MENA BEAM

**92%** AVERAGE TV  
 PENETRATION  
 IN THE COVERED COUNTRIES

**237 MILLION**  
 TOTAL FIXED BROADBAND  
 SUBSCRIPTIONS  
 IN THE COVERED COUNTRIES

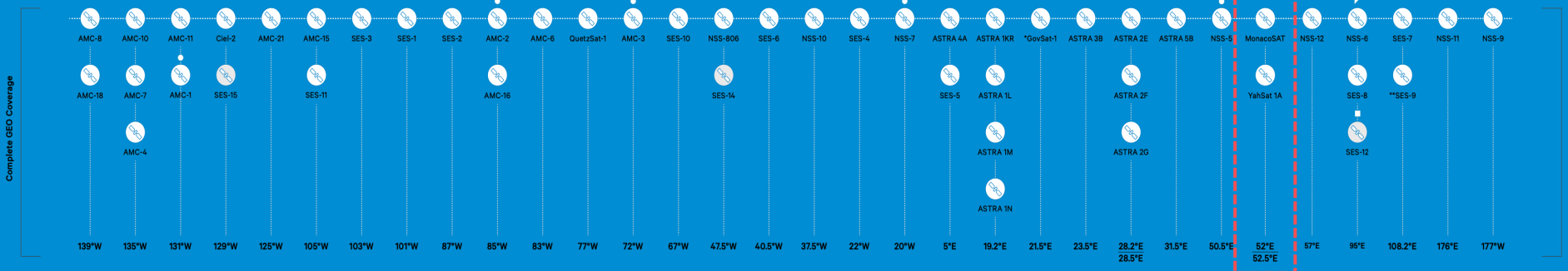
**63%** AVERAGE INTERNET  
 USAGE OF POPULATION  
 IN THE COVERED COUNTRIES

**44%** AVERAGE PAY TV  
 PENETRATION  
 IN THE COVERED COUNTRIES



# MONACOSAT-1 IN THE SES (Luxembourg) FLEET

Collocated with Yahsat 1-A, Monacosat-1 is in the fleet of the world leader satellite operator : SES-Luxembourg



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# TURKMENALEM52E-2 KU-BAND SATELLITE PROGRAM – PLANNED

# SUCCESSFUL TURKMENISTAN - MONACO SPACE COOPERATION



## LIFETIME PARTNERSHIP

Turkmenistan MOC and SSI-Monaco became lifetime partners in developing Turkmenistan's Telecommunications.



## SUCCESSFUL LAUNCH FOR TURKMENÄLEM52E

27 April 2015, Turkmenistan MOC and SSI-Monaco launched their first telecommunications satellite, **TurkmenAlem52E/MonacoSat-1** (Ku band satellite) manufactured by Thales Alenia Space and Launched by SpaceX F9. TurkmenAlem52E/MonacoSat-1 is mainly for DTH-type services in Europe, Middle East, North Africa and Central Asia.



## PLANNING THE FUTURE

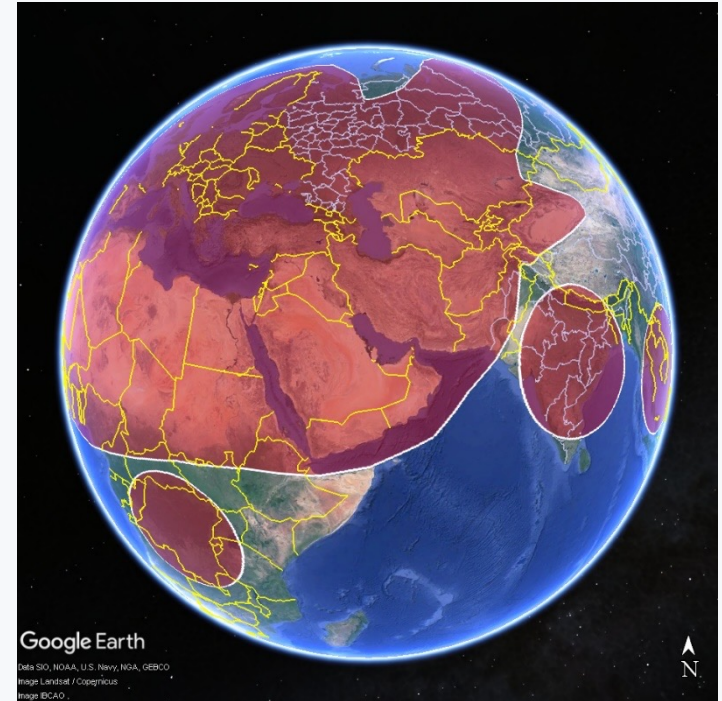
Turkmenistan and SSI-Monaco are continuing to plan the **future follow-on satellite TurkmenAlem52E-2 at 52°E**, as well as keeping the services delivered by TurkmenAlem52E/MonacoSat-1 going for the future.



# TURKMENALEM52E-2 PLANNED MISSION



- Ku band frequency
  - BSS
  - FSS
  - Extended
- Fixed coverages over
  - Europe
  - Middle East
  - Central Asia



- Several steerable antennas
  - Planned in service around 2028

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# MONACOSAT S.A.M. COMPANY AND MONACOSAT-2 KA-BAND SATELLITE PROGRAM

# MONACOSAT S.A.M. STRUCTURE



WHEN IT WAS CREATED, THE CAPITAL OF MONACOSAT S.A.M. WAS SPLIT BETWEEN TWO SHAREHOLDERS:

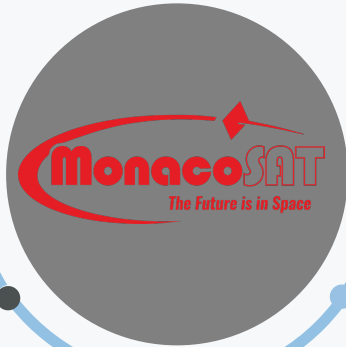
- SSI-MONACO WITH 80% AND,
- THE GOVERNMENT OF THE PRINCIPALITY OF MONACO WITH 20%.

SINCE DECEMBER 20, 2020, A NEW SHAREHOLDER, MV HOLDING GROUP, HAS ENTERED THE CAPITAL OF MONACOSAT AS ILLUSTRATED:

SSI-MONACO S.A.M.

As majority shareholder

65%



MV HOLDING GROUP

As a shareholder

15%

THE GOVERNMENT OF THE PRINCIPALITY OF MONACO

As reference shareholder

20%



# MONACOSAT-2 KA BAND SATELLITE

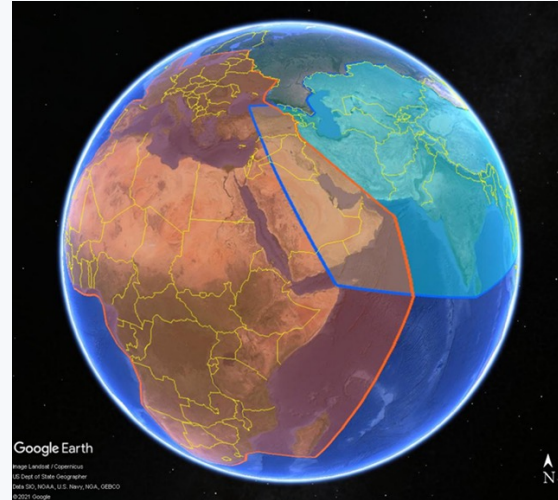


## MONACOSAT S.A.M. JV COMPANY BETWEEN SSI AND MONACO GOVERNMENT

After the creation of JV between SSI and Monaco Government , the objectives of the **Monacosat Company** is to develop **MonacoSat-2** program to provide the following applications in Africa, Europe, Middle East and Central Asia: based on new kind of telecommunication satellite called Software Defined Satellite (SDS)



VISIBLE EARTH FROM 52° E



Future MonacoSat-2  
Ka Band Service Area

# MONACOSAT-2 KA BAND APPLICATIONS PORTFOLIO



Example of Development / Improvement of internal / external telecommunication Applications

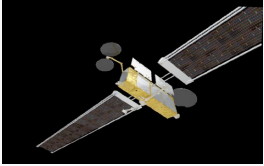
	Broadband connectivity for businesses and consumers. In areas where internet access via terrestrial infrastructure is not available, the satellite solution is the most appropriate.
	Standard connection in isolated areas.
	Mobile telephony: provision of high capacity links to support base stations isolated from a terrestrial mobile network (3G, 4G, 5G...)
	Maritime: Operational communications and security services.
	Internet in commercial flights (In Flight Connectivity - IFC)
	Robust media links and connections: Provide high capacity and robust network links for industries (media, banking, insurance, lotteries, etc.)

	Satellite TV (HD,4K): Direct to Home Service (DTH) and Satellite News Gathering (SNG)
	Offshore energy: customer platforms located at sea, and not connected by submarine cables
	Onshore Energy: Robust communications are necessary to manage disturbances/failures and thus continue to control installations remotely
	Government: security enhancement of government communications (embassies, emergencies, etc.)
	E-Education
	Telemedicine





# MONACOSAT-2 KEY TECHNICAL FEATURES

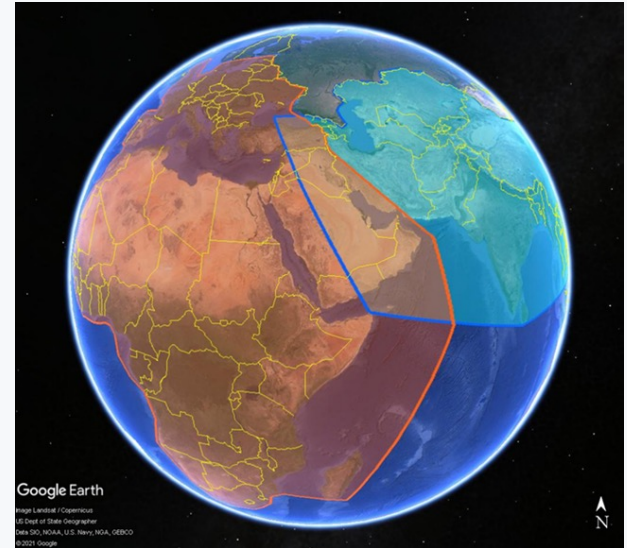


- MONACOSAT-2 IS PIONEERING THE SOFTWARE-DEFINED SATELLITE REVOLUTION. MonacoSat-2 is based on Space Inspire, Thales Alenia Space's most advanced telecommunication spacecraft offering unprecedented flexibility in coverage, frequency and power to address any market and any customer demand over the life of the satellite.



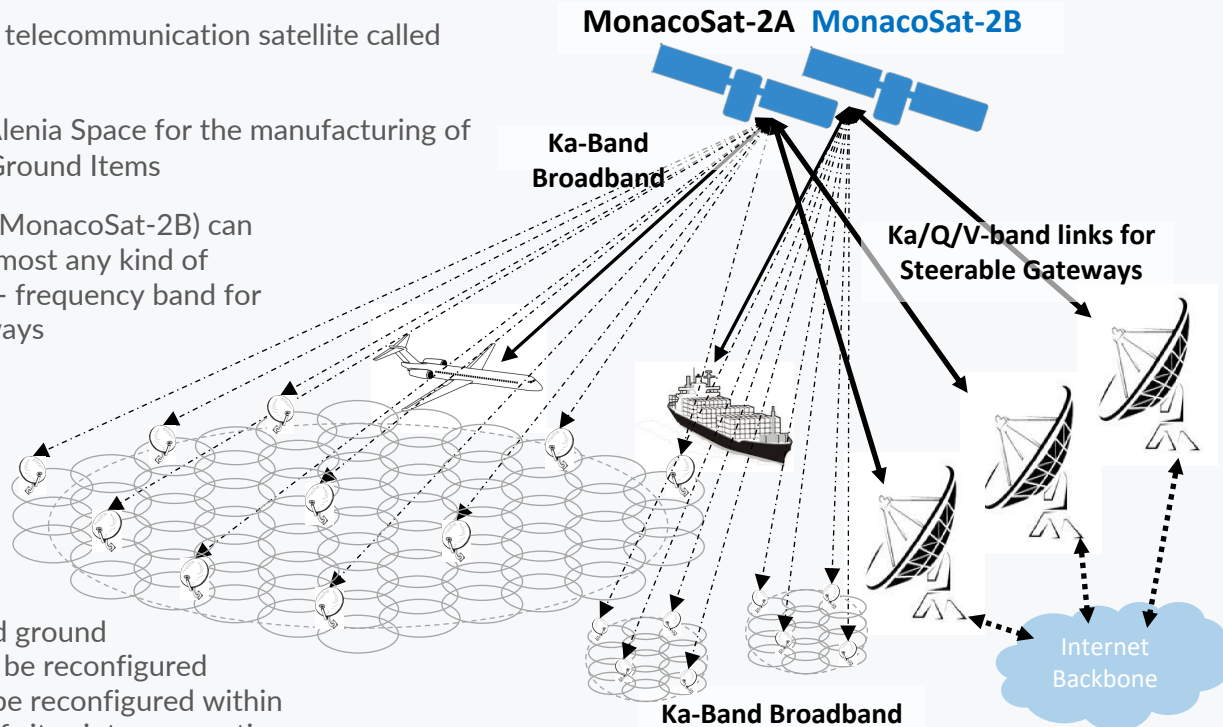
- Space Inspire provides dynamic reconfiguration capability to maximise the monetisation of the spacecraft resources in real time.

- **MonacoSat-2 program : 2 Space Inspire satellites MonacoSat-2A and 2B**
  - Co-located at 52°E orbital position.
  - Service area covering from Western of Africa to Asia.
  - Ka-band & Multispot Beams satellites up to 200 Gbps per satellite.
  - 6 gateways ( each 30 Gbps) per satellite steerable one by one on the visible earth.
  - Control and Command from Monaco and/or partner countries.



# MONACOSAT-2 SPACE SEGMENT

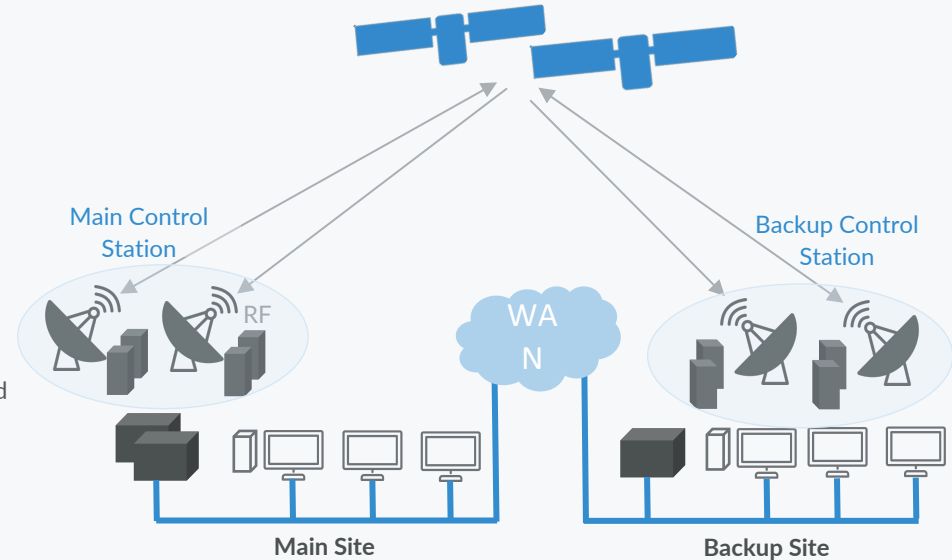
- ✓ MonacoSat-2 program is based on new kind of telecommunication satellite called Software Defined Satellite (SDS)
- ✓ MonacoSat has signed a contract with Thales Alenia Space for the manufacturing of 2 Space Inspire satellites and their associated Ground Items
- ✓ Each MonacoSat-2 Satellite (MonacoSat-2A & MonacoSat-2B) can provide a coverage area up to  $120^\circ$  in which almost any kind of mission can be implemented, in real time, in Ka- frequency band for users and in Ka/Q/V frequency band for gateways
- ✓ On ground:
  - Satellite Control Center (SCC) will operate both MonacoSat-2 satellites in Ka frequency band
  - Mission Control Center (MCC) will manage(implement, modify or delete) missions in Ka/Q/V frequency band
- ✓ Thanks to Space Inspire concept and associated ground infrastructure, each MonacoSat-2 missions can be reconfigured almost in real time and the whole Payload can be reconfigured within 5 min and ensure services continuity because of sites interconnection



# MONACOSAT-2 GROUND SEGMENT



MonacoSat-2A MonacoSat-2B



✓ The Command and Monitoring of MonacoSat-2 satellites will be performed through SCC with 2 different RF link depending on the phase:

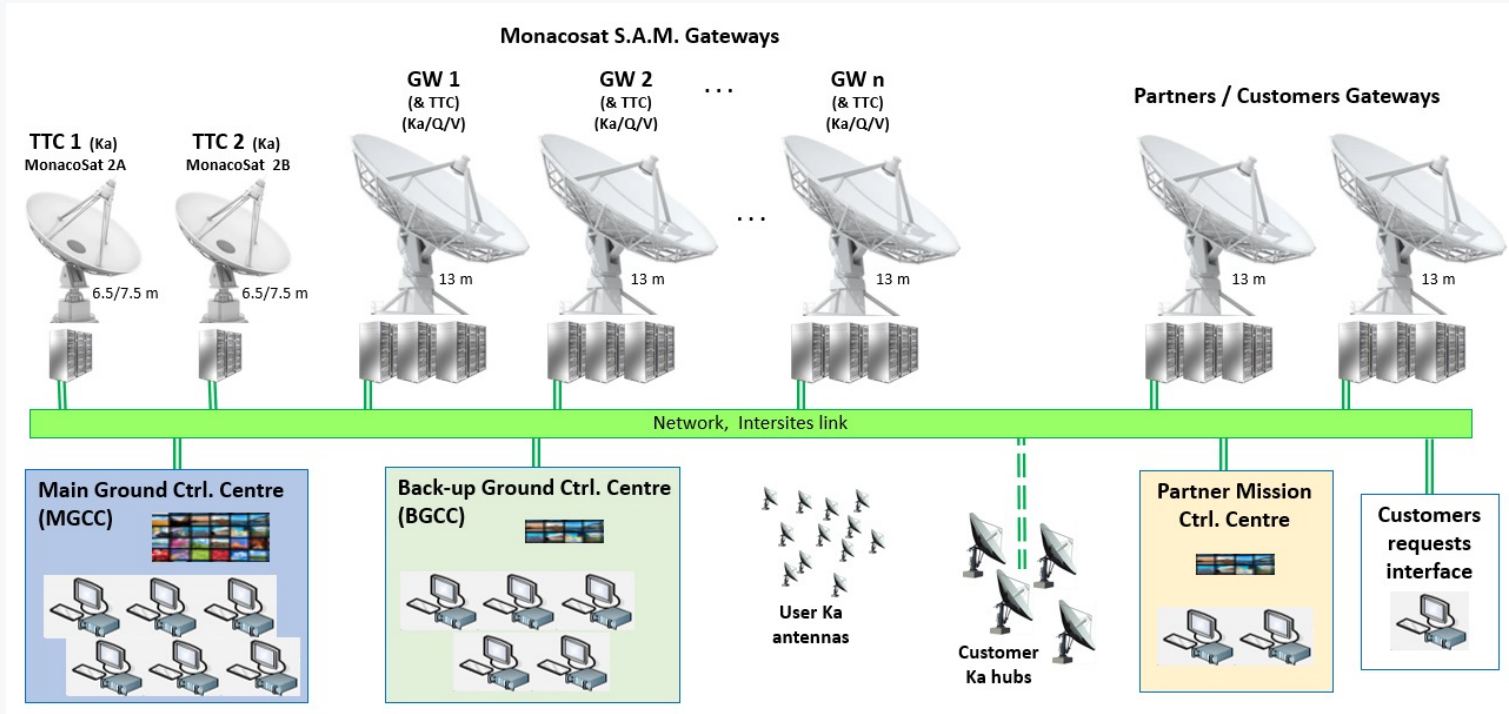
- In case of emergency or during Orbit Raising Mode (ORM), the Low-Speed Link (LSL) will be used.
- During Nominal Mode (NM), the High-Speed Link (HSL) will be used.

✓ Each MonacoSat-2 satellite will be operated from its main site

✓ A backup site will be available when needed

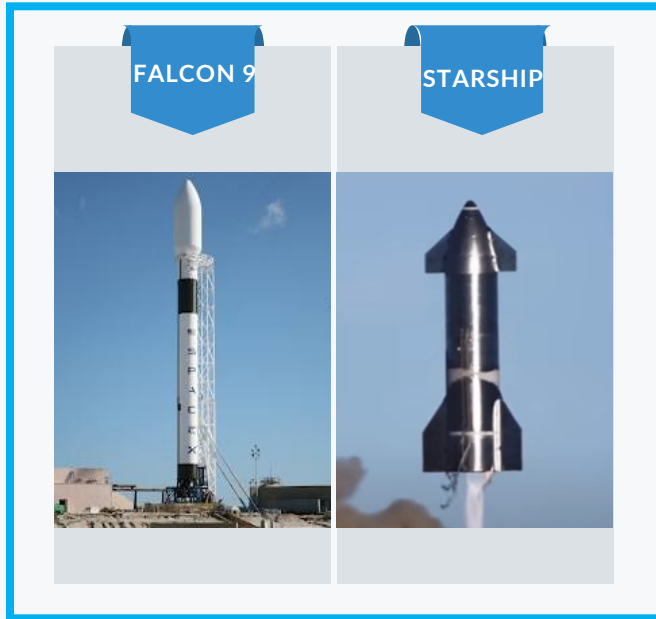
# MONACOSAT-2 GROUND SEGMENT

Overall view of Monacosat-2 Ground Segment network:



# LAUNCHER CONFIGURATION

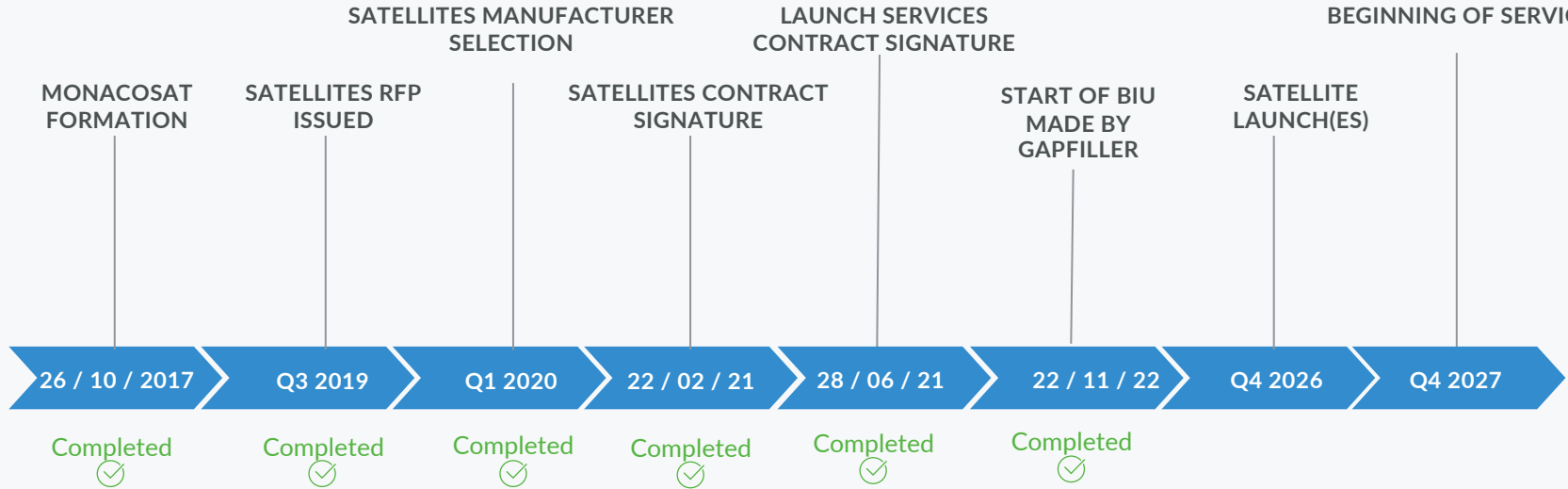
MonacoSat satellites shall be compatible with the following launchers :



**SPACEX Launchers already Contracted**

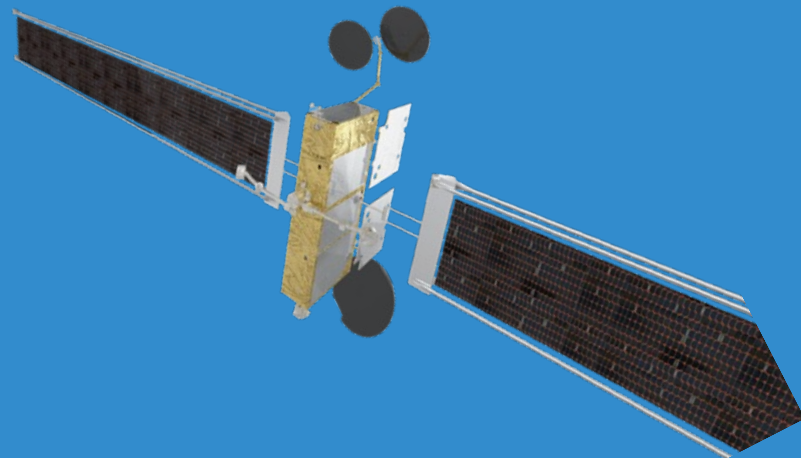


# MONACOSAT-2 SCHEDULE



04

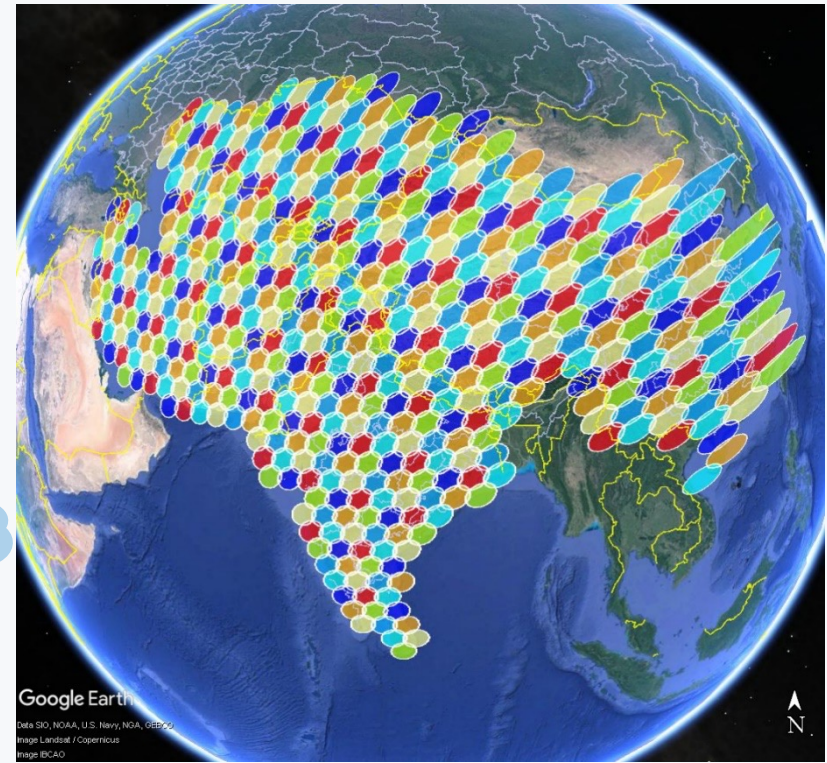
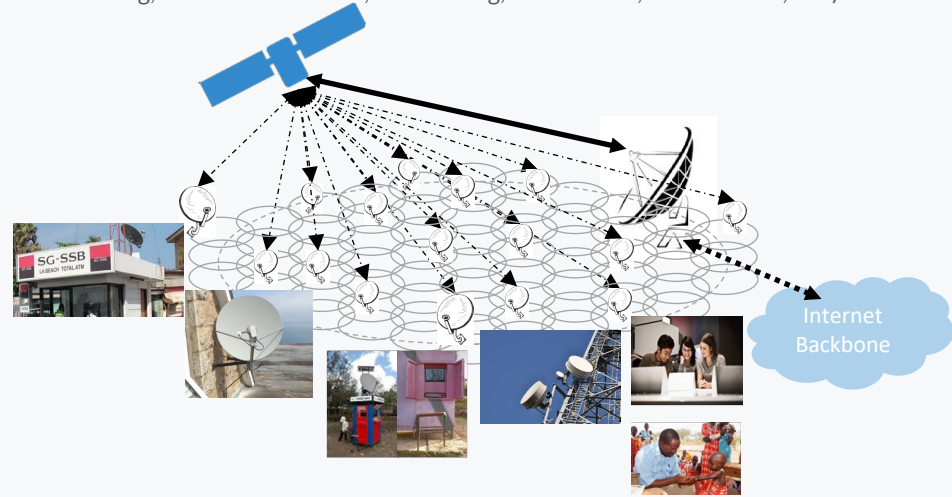
## MONACOSAT-2 EXAMPLE OF MISSIONS



# MONACOSAT-2 : EXAMPLE OF MISSIONS FOR “CENTRAL ASIA”

Provision of fixed and / mobile services on national territory and to neighbouring countries:

Direct two-way connection between any one of the Central Asian Country and all other national mobile or fixed land services / needs or with its partners. Whether for state, commercial or private needs / services visible in the coverage area. (secure trunking, broadband internet, backhauling, e-education, telemedicine, etc.)



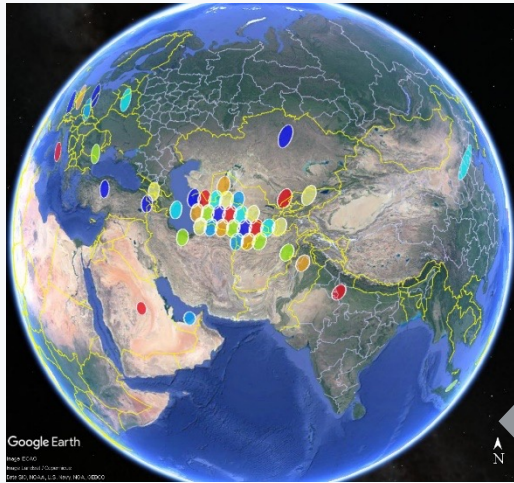


# MONACOSAT-2 : EXAMPLE OF MISSIONS FOR “CENTRAL ASIA”

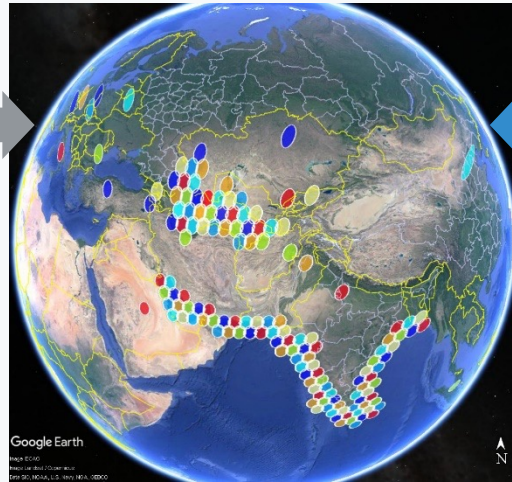
Illustration of the Space Inspire dynamicity:

As presented previously, this new type of flexible satellite allows real-time evolution of coverage, flow rates, power, etc., depending on market developments

PROVISION OF FIXED AND / MOBILE GOVERNMENTAL SERVICES

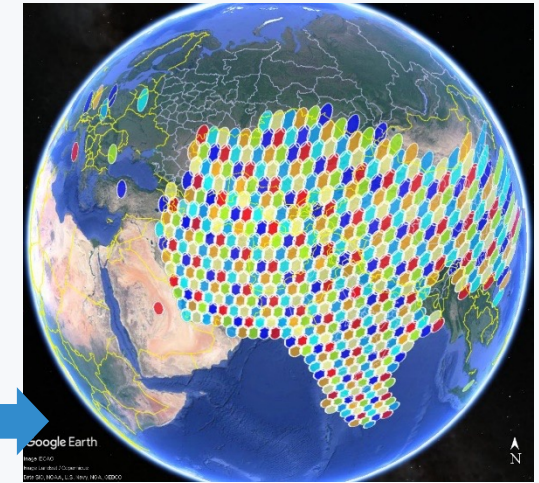


IN-ORBIT RECONFIGURATION

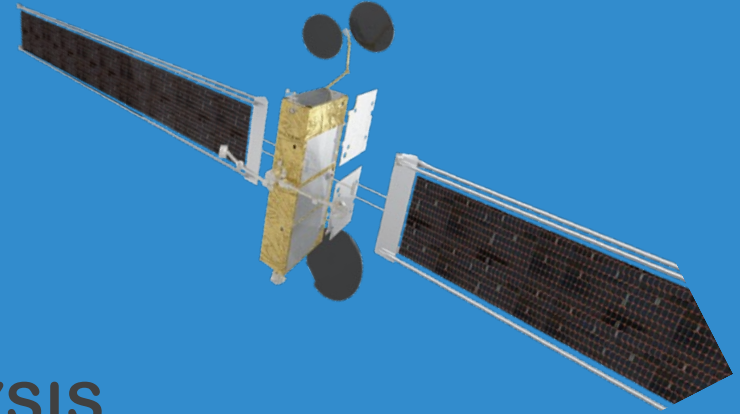


INTRODUCTION IN REAL-TIME OF MOBILE AND / OR FIXED MARITIME SERVICES IN ADDITION TO PREVIOUS SERVICES

IN-ORBIT RECONFIGURATION



INTRODUCTION IN REAL-TIME OF MOBILE AND / OR FIXED SERVICES ON THE NATIONAL TERRITORY AND ECONOMICAL PARTNER IN ADDITION TO PREVIOUS SERVICES



05

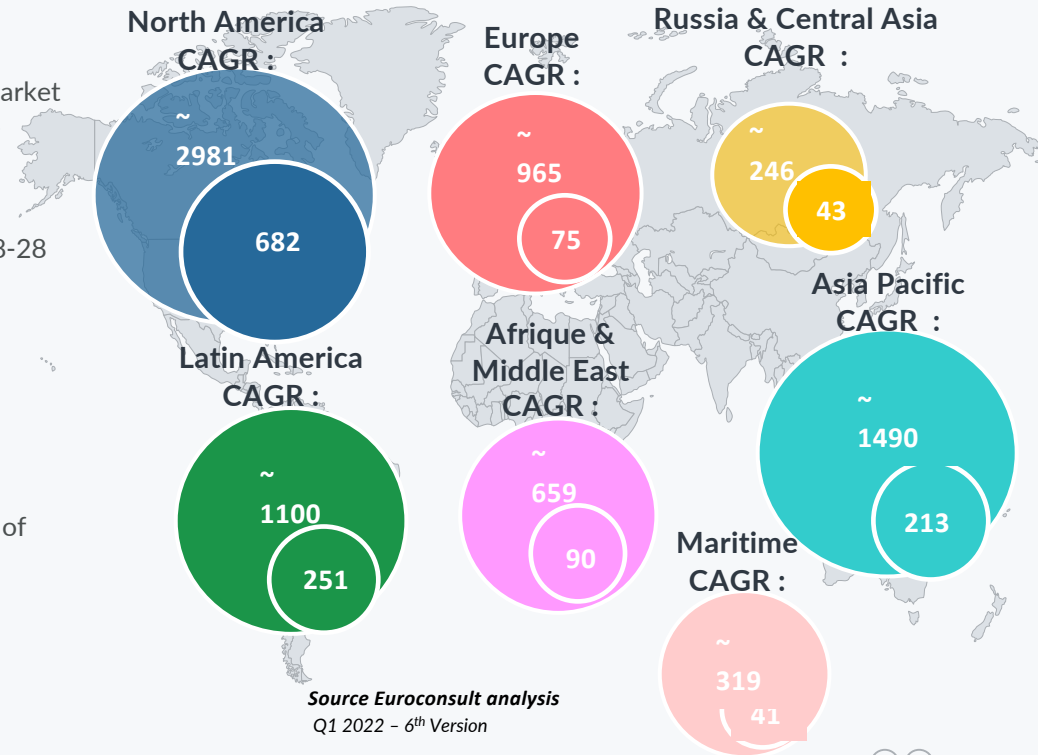
# MARKET & DEMAND ANALYSIS FOR HTS SATELLITES

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By Euroconsult updated report :  
“ *High throughput Satellites - Q1 2022 - 6<sup>th</sup> Version* ”

- According to Euroconsult, HTS demand for Geostationary satellite is projected to grow six-fold (21% CAGR) from 1,395 Gbps in 2021 to ~8 Tbps in 2030.
- Consumer broadband is expected to continue being the leading market segment, growing from 876 Gbps in 2021 to 4,885 Gbps by 2030, equivalent to 21% CAGR.
- Regions where demand is expected to grow fastest between 2018-28 include:
  - Russia + Central Asia with 21,3% expected CAGR
  - Middle East + Africa with 24,8% expected CAGR
  - Europe with 32,9% expected CAGR
- With its two upcoming flexible satellites to be located at 52°E, Monocosat will be ideally positioned to capture a sizeable portion of these three fastest growing regions.

## HTS Capacity Demand Overview (in Gbps) for 2021 and 2030

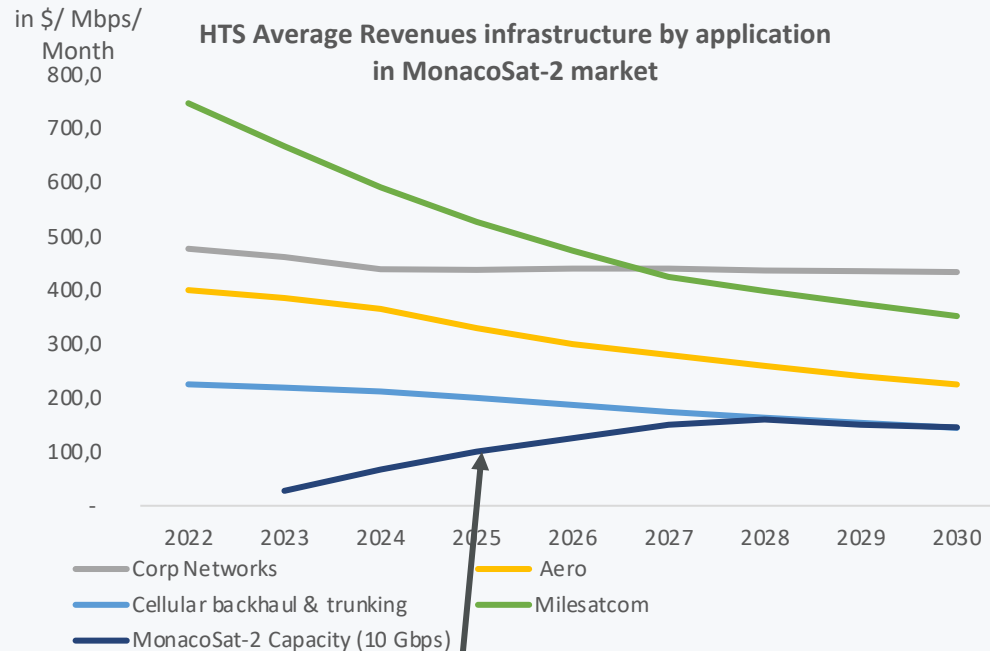


Today, the price of satellite capacity is:

- **Classic Satellite (single large coverage) in Ku band :**
  - ✓ Ex: MonacoSat-1
  - ✓ Max total Capacity : 2,5 Gbps
  - ✓ Raw capacity price : 1200 \$/Mbps/Month
  
- **HTS Satellite (Multi Spots) in Ka band :**
  - ✓ Ex: Hylas 4, Global Express...
  - ✓ Max total Capacity : 50 Gbps
  - ✓ Raw capacity price : 800 \$/Mbps/ Month

## Tomorrow,

- **Flexible HTS Satellite (Multi Spots) in Ka band :**
  - ✓ **Ex: MonacoSat-2**
  - ✓ Total Capacity Max : 200 Gbps
  - ✓ Raw capacity price: 100 - 150 \$/Mbps/Month



Source Euroconsult analysis  
Q1 2022 - 6<sup>th</sup> Version

**Price of MonacoSat-2 capacity for partners at the date of committing throughout the life of the satellite (minimum 10 Gbps for 15 years)**

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# THANK YOU

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**MESUT CICEKER**

Chief Advisor to President & CCO

**MONACOSAT S.A.M.**

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