

Romanian projects for monitoring Space Frequencies and Space Debris

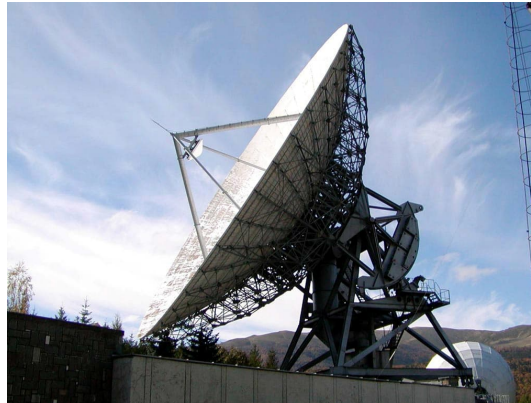
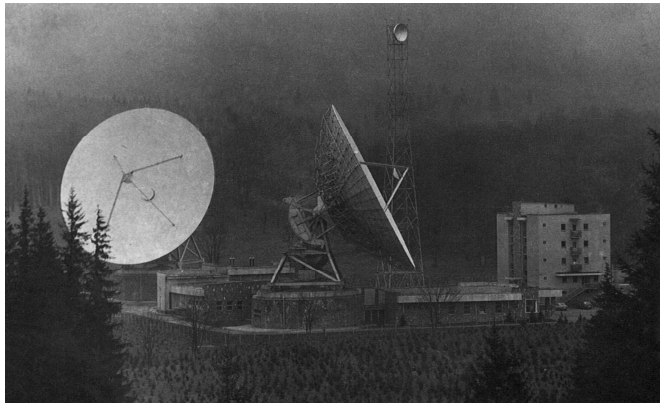
Bucharest, 1st September 2026

Please avoid printing this colourful slide. Let's save the planet together.



Cheia Earth Station

- ✧ The Cheia Earth Station is the Romanian National Teleport since the 1976
- ✧ It is property of the National Company of Radiocommunications (Radiocom), a fully state-owned company
- ✧ RARTEL (62% Telespazio – Leonardo Group, 38% SNR) operates from Cheia a variety of satellite and space management services



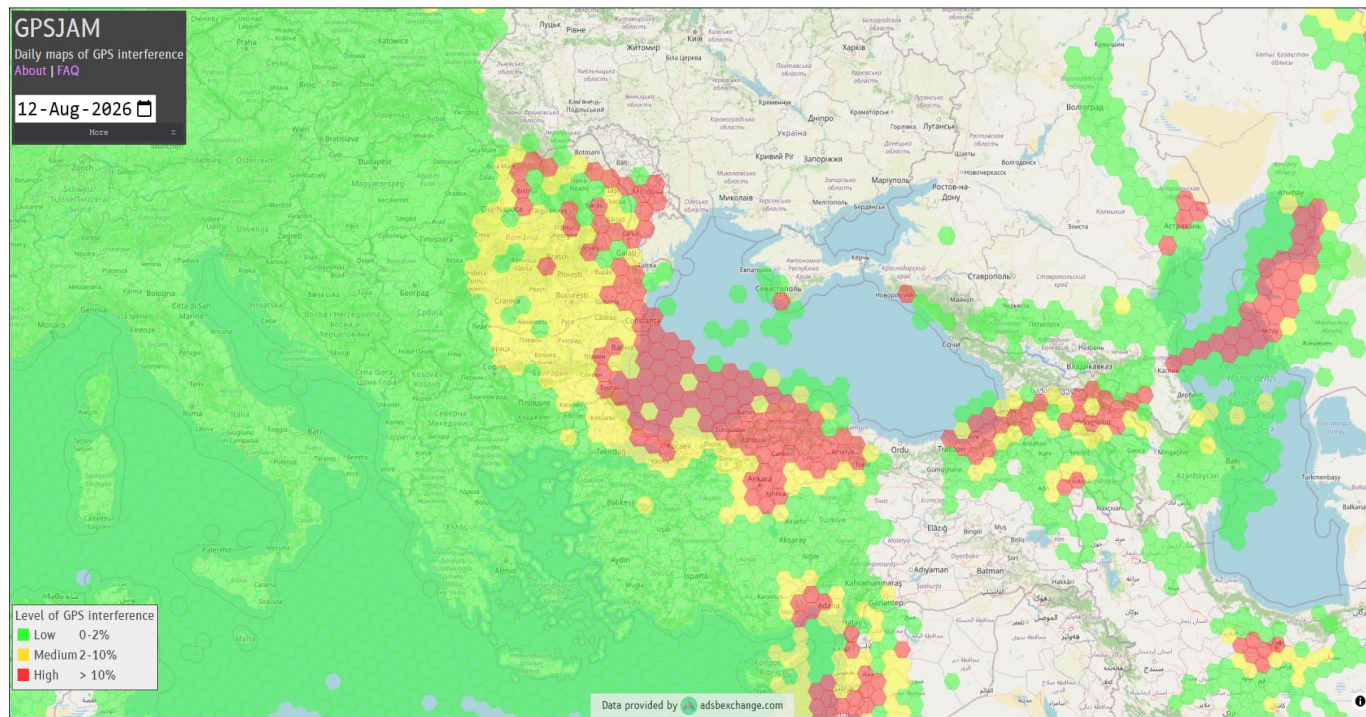


- ✧ Spectrum management is by nature a key aspect of the operation of satellite services
- ✧ The proximity of Romania to the Eastern border of EU and NATO, as well as the situation in Ukraine, makes the country subject to continuous risk of interference
- ✧ RARTEL's direct experience in the last years has shown many cases of hostile interference most of them affecting services used by Defense and Security entities
- ✧ Interfering carriers appears over the allocated spectrum, using various strategy to avoid identification (short periods of transmission, change of centre frequency, different bandwidths, etc.)
- ✧ These kind of events affect the service functionality for various days or even for weeks until detected and corrected
- ✧ The only solution is a change of frequency, agreed with the satellite capacity provider





- ❖ The most harmful situation is related to GNSS systems (GPS, Galileo) frequencies, which makes this service completely unusable
- ❖ The Black Sea area is heavily affected by interference
- ❖ Users (including Defense and Security) have to often face service unavailability

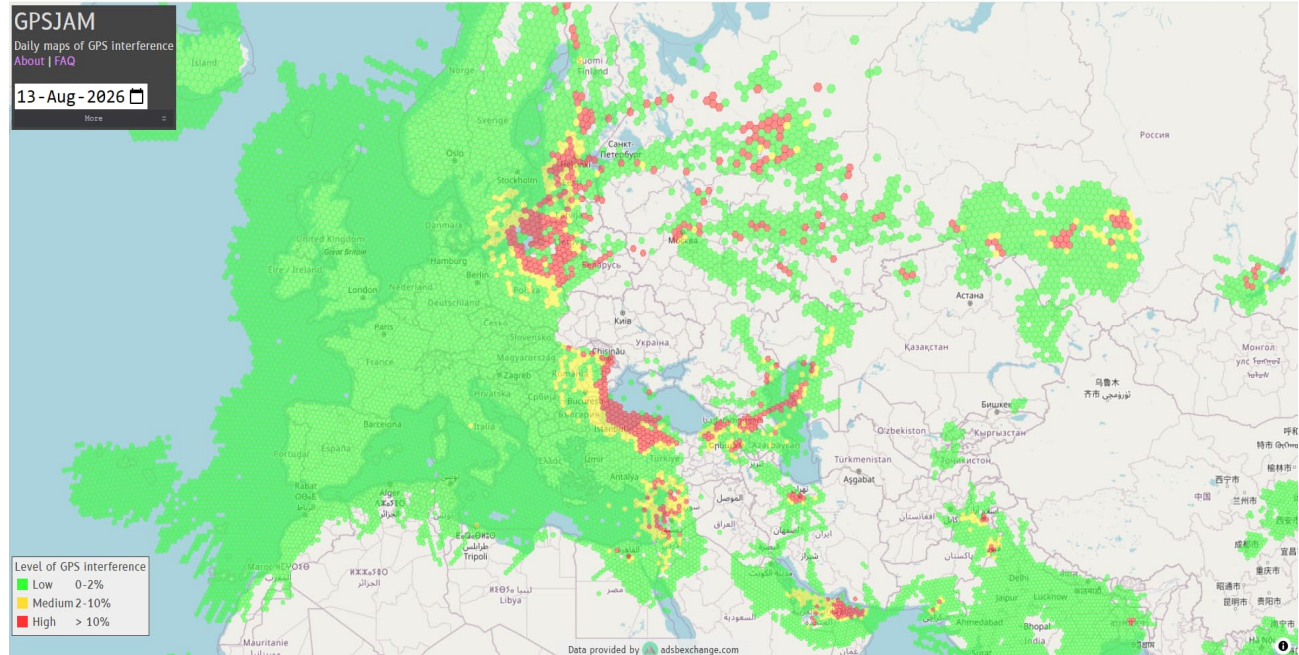


Real time interference monitoring: <https://gpsjam.org/>



☼ The same conditions are spread all along the EU Eastern Border

☼ Spoofing is also used extensively, leading in some cases to very dangerous situations (hostile uptake of Unmanned Vehicles)

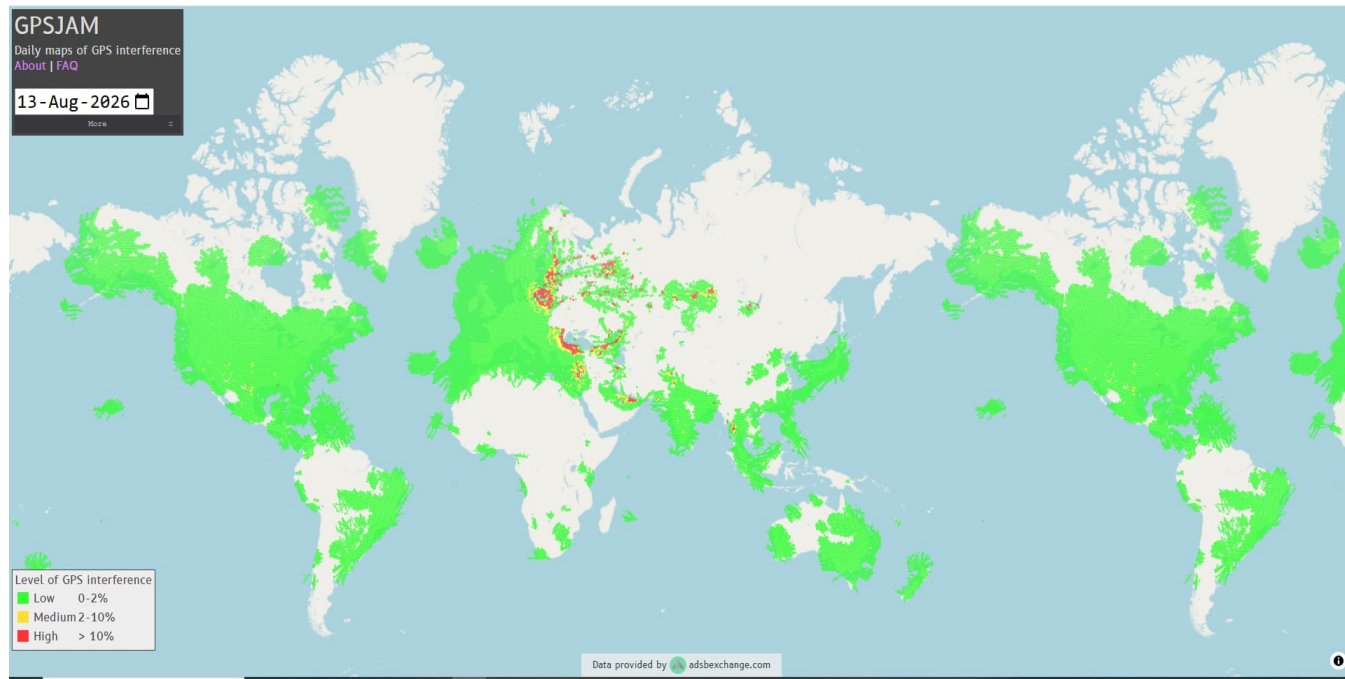


Real time interference monitoring: <https://gpsjam.org/>



By the way...

In these days, GNSS interference world map it's a map of geopolitical instability

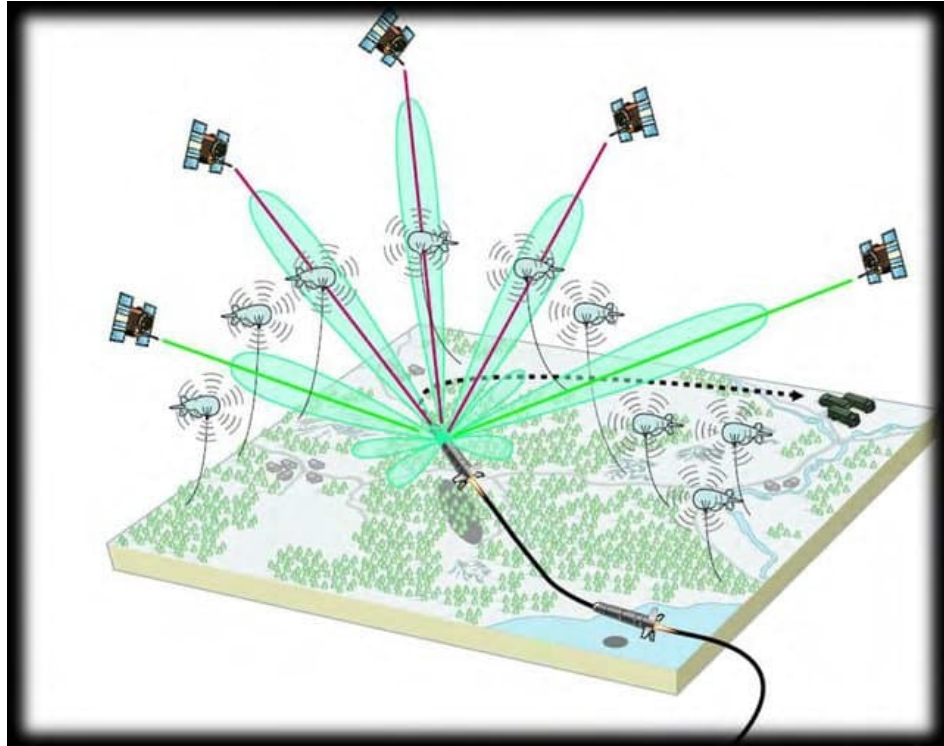


Real time interference monitoring: <https://gpsjam.org/>



☼ Solutions to this problem are complex and expensive:

- Anti-jamming antennas
- Galileo (only EU countries) or M-Code (only US)
- Spectrum monitoring to implement specific countermeasures

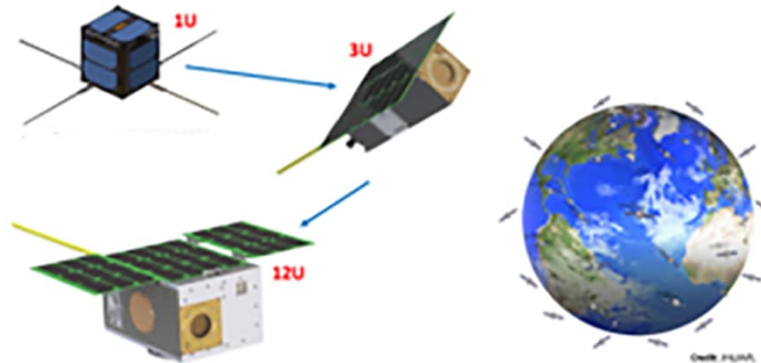


Real time interference monitoring: <https://gpsjam.org/>



CORVUS

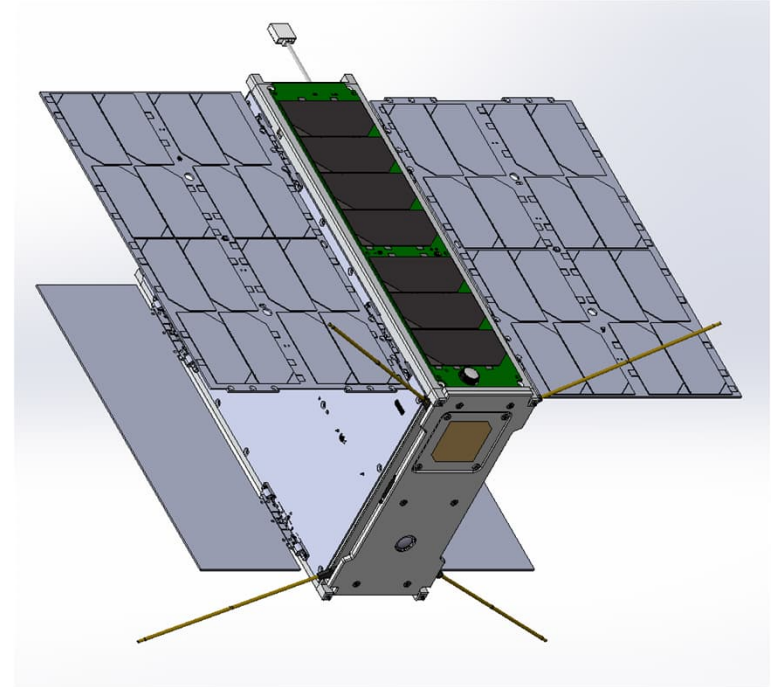
- ✧ Romania started an experimental program for the spectrum monitoring from space
- ✧ A 6 Units CubeSat (Corvus) has been developed by the Romanian industry and is now waiting to be launched
- ✧ Monitored frequencies: UHF and GNSS L-band
- ✧ The project has been financed through R&D MoD funds
- ✧ This solution allows fast implementation, extension to a small constellation for global coverage and other frequency bands at relatively low costs.



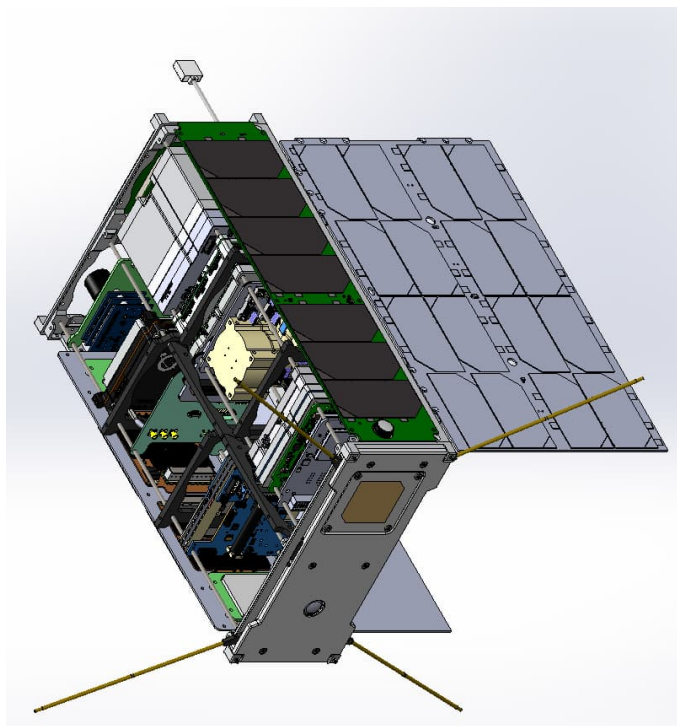


CORVUS

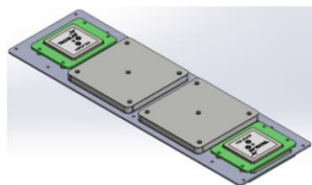
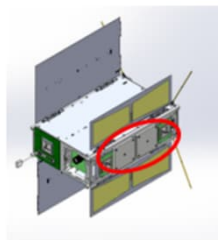
- 6U CubeSat
- Total mass: 9Kg +/- 10%
- Ready to delivery: April 2025
- Target Orbit:
 - LEO. 350-500km. SSO (LTAN 6:00-9:30) preferred, but other options can be accepted
- Monitored frequencies:
 - UHF (200-500 MHz)
 - GNSS L-Band (1,1 – 1,3 GHz; 1,5 – 1,6 GHz;



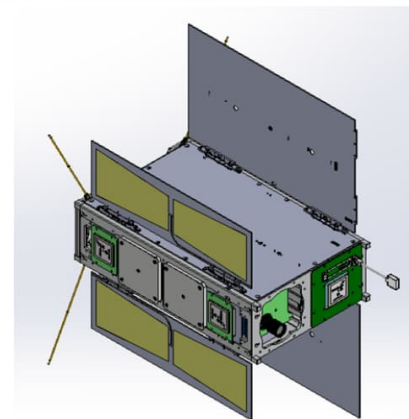
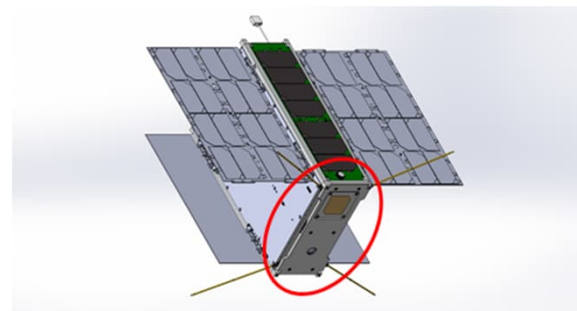
CORVUS



On board Antennas



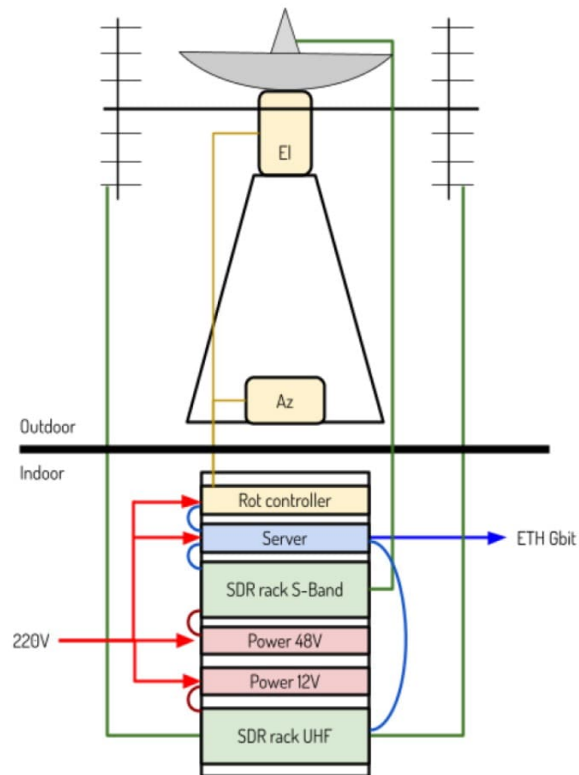
UHF TM/TC



CORVUS



Ground station





Space Debris monitoring

- ✧ Romania has implemented in Cheia a radar for Space Debris monitoring
- ✧ The radar has been built under a European Space Agency – Romanian Space Agency contract, reusing two old 32 meters C-band antennas
- ✧ The architecture is based on a quasi-monostatic configuration, with one antenna transmitting and the other receiving the impulse
- ✧ Precision is approx. 30 meters in AZ-EL and ranging
- ✧ The radar is being included in the EU SST (Space Surveillance & Tracking) network
- ✧ The main scope of the radar is to provide Orbital Refinement services, starting from Catalogue data of known objects

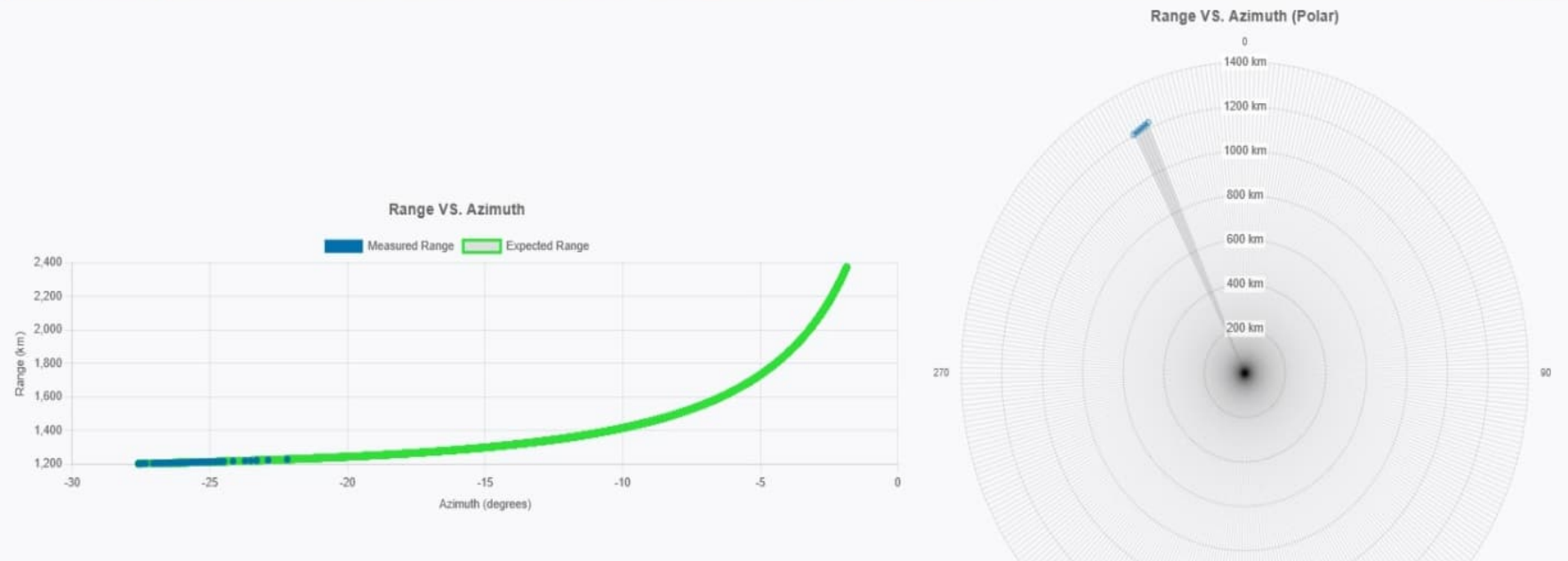




Detection capability

Final trajectory - Norad: 1520 - Name: CALSPHERE 4A - (11/21/2023 14:55:15 - 11/21/2023 14:59:36)

<< Back



Calsphere 4A (Norad ID 1520), RCS= 0.0448m² (dry weather)



Visit in Cheia

The Cheia Earth Station hosts, among others, the In Orbit Control and the Data Reception stations of the EUMETSAT (Meteosat) Geostationary constellation.

Here is the time-lapse of the 12th August Sun Eclipse as seen from the MTG-I1 satellite. Images have been received in Cheia!





RARTEL

Roberto Scagnoli

President & CEO

Mob. +40 724 252 300

roberto.scagnoli@rartel.ro

... see you tomorrow in Cheia



Thank you for your attention

Please avoid printing this colourful slide. Let's save the planet together.

artel.ro

