



ATLAS: The Portuguese pilot radar system for detection of space debris

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AGA KHAN DEVELOPMENT NETWORK

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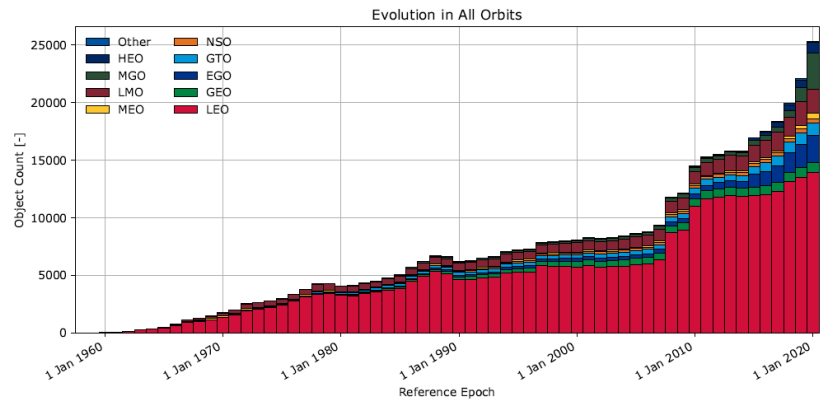
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Domingos Barbosa
Bruno Coelho
Valério Ribeiro

14º Congresso do Comité Português da URSI
10 de dezembro de 2020



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The current state of space debris



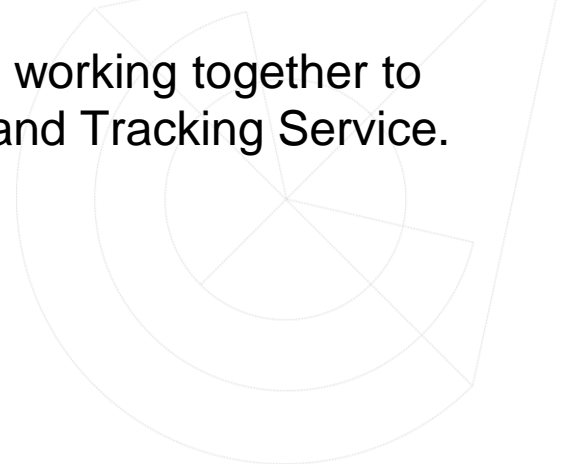
ESA's Annual Space Environment Report - 2020



What is EU SST?



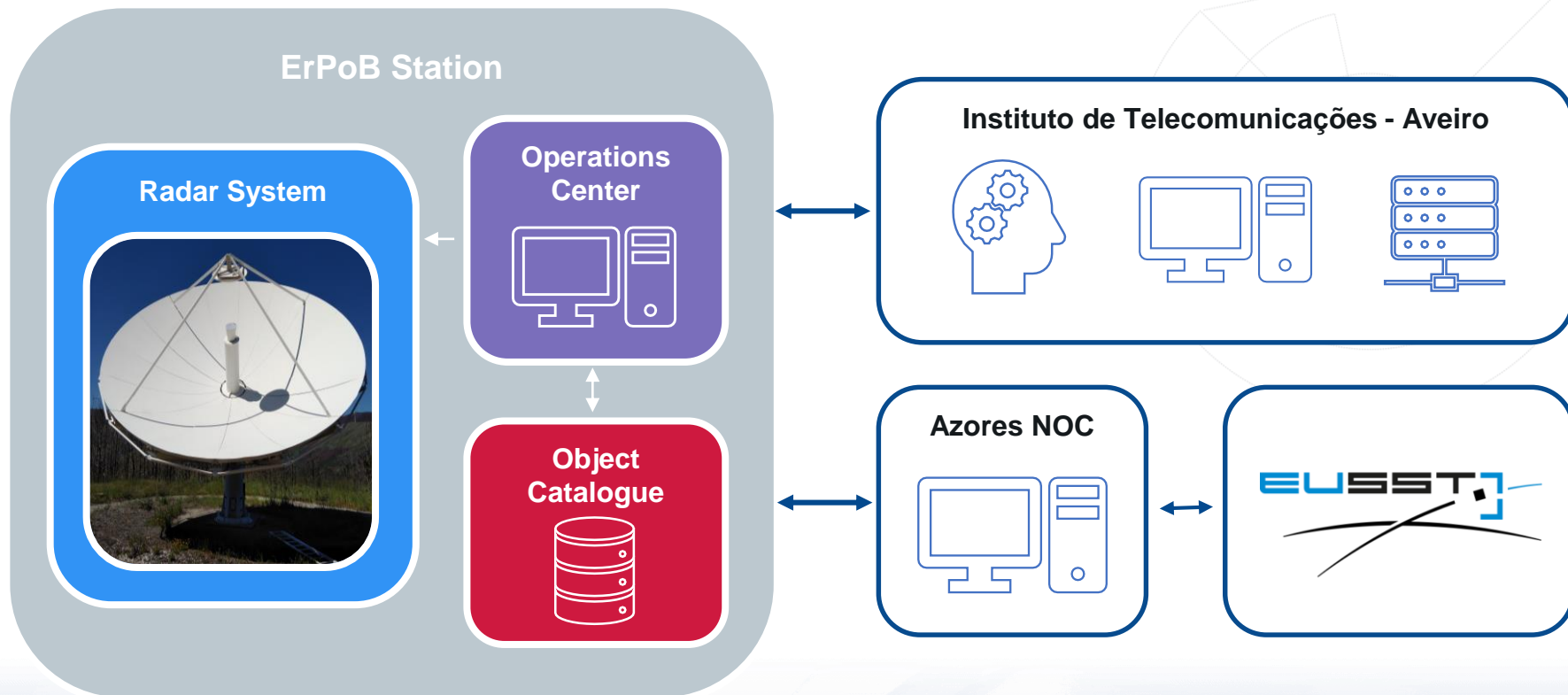
A group of European countries working together to establish a Space Surveillance and Tracking Service.



- Collision Avoidance
- Re-entry Analysis
- Fragmentation Analysis

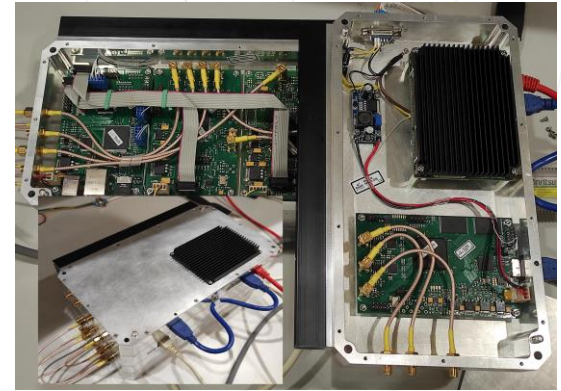
- Portugal is a member of EUSST, contributing with both optical and radio sensors (us!).
 - Instituto de Telecomunicações is a linked third party to Ministry of Defence. (2-3SST2018-20)

ATLAS Infrastructure



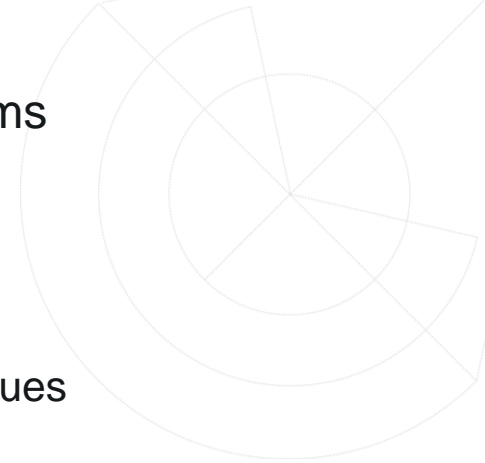
ATLAS Specifications

- Monostatic pulsed tracking radar
 - Peak power of 5 kW @ 5.56 GHz
 - GaN based SSPA -> Efficiency and upgradability
 - Digital waveform synthesis
 - Coherent Receiver with 50 MHz of bandwidth
 - Signal processing fully in the digital domain
-
- Measurement of 10 cm² targets at 1000 km range with an error < 0.05%



ATLAS is a unique platform for research and development!

- Commercial of the shelf components and Open Systems
 - Easy to replicate and upgrade
- Waveform synthesis and signal processing in digital
 - Advanced waveform design and signal processing techniques
- **Transfer knowledge on the operation, research and development of radar system to the national industry.**





Thank you!

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