PACIS 3

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SPAINSAT NG PROGRAM

The world's most advanced X-band antennas in orbit

PACIS 3 is developing and integrating reconfigurable transmit and receive X-band active antennas and a deployable pallet with individually steerable Ka-band antennas for secure communications.

The X-band active antennas are the most challenging active antennas developed in Europe, positioning Hisdesat and the Spanish space industry at the forefront of space technology in active antennas.

- ✓ Two Direct Radiating Arrays (DRA) for Tx and Rx
- ✓ Software-defined coverage beams
- ✓ On-board geolocation and interference cancellation
- ✓ Beam-hopping compatible with DVB-S2X Annex E
- ✓ Flexibility to adapt the shape and power of each beam
- ✓ Hundreds of simultaneous on-board beam configurations.

The PACIS 3 project is an advanced space project that incorporates **innovative X-band and Ka-band** communication technologies.

The project includes a Ka-band antenna pointing mechanism that achieves highly precise antenna orientation without the need for a Hold-down and Release Mechanism (HRM). This technology ensures accurate communication with ground stations.

In addition, the project uses X-band Multichip Control Modules (MCCM) that are based on high-performance, miniaturised hybrid circuitry. These modules control the X-band beam, ensuring efficient and accurate communication signal transmission.

To maintain the temperature of the high-dissipative Active Antenna, the project utilises X-band Collecting Heat Pipe Assemblies (CHPAs) and Loop Heat Pipes (LHPs), which efficiently transfer heat to the spacecraft wall panels.

Another significant technology being used is the X-band Dual Solid State Power Amplifier (DSSPA) built around a High-Power Amplifier IC and based on gallium nitride (GaN) technology, the first time this technology will fly into space. This amplifier delivers high RF power levels, has high reliability, and performs exceptionally well in high-temperature environments. This makes it highly suitable for space applications where temperature variations can be extreme.

Once in-orbit tests are finalised, potential institutional users will be offered opportunities for early engagement through service field demonstrations using available space assets: communications links, beam-hopping and geolocation.

Overall, the PACIS 3 project is a highly advanced space project that utilises innovative X-band and Ka-band technologies to enhance communication capabilities and temperature control for the active antenna.

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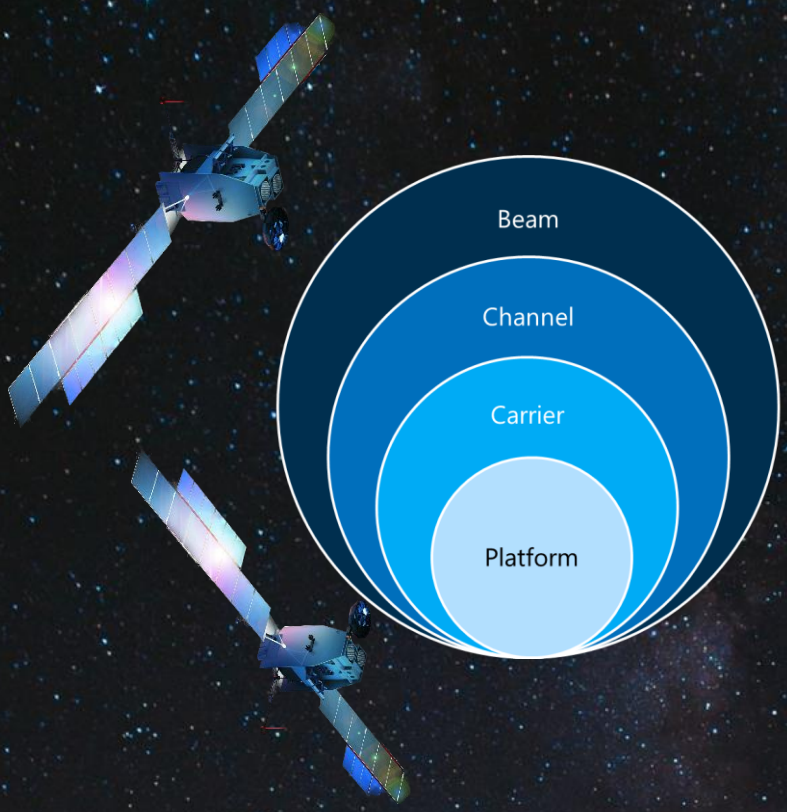


Core Services

Hisdesat managed platform

⇨ Throughput (Mbps) within:
- ✓ pre-defined capacity blocks
- ✓ pre-defined coverage areas
- ✓ pre-defined carriers
- ✓ pre-defined service add-ons

Point-to-point/carrier

⇨ Carriers within:
- ✓ pre-defined capacity blocks
- ✓ pre-defined coverage areas

Dedicated capacity block/channel

⇨ Bandwidth and power within:
- ✓ pre-defined coverage area

⇨ Customer can define:
- ✓ carriers in that channel
- ✓ channel parameters (bandwidth, power…)

Dedicated beam

⇨ Pointing

⇨ Beam forming

Add-ons

Self management: interface to simulate and run calculations for different configurations

⇨ Channel

⇨ Beam

Bandwidth flexibility

⇨ Roaming: possibility to move capacity/power from one beam to another, even while maintaining frequencies

⇨ Multicast: one uplink to several downlinks

Interference mitigation

⇨ Geolocation

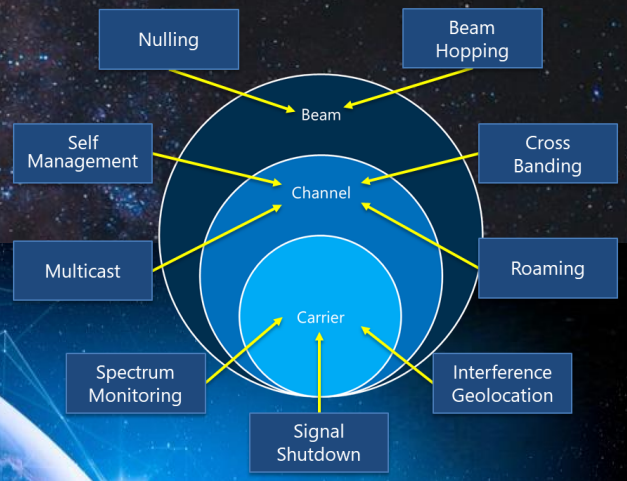
⇨ DTP signal shutdown

⇨ Nulling

Real-time spectrum monitoring from satellite

Beam-hopping

Cross-banding



Find out more:

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