

Presenting LDACS

A webinar series on a new aviation communication system

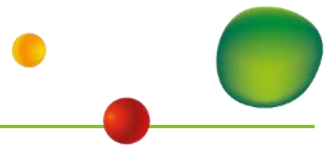


SITA
FOR AIRCRAFT

The LDACS Transition Concept (LTC)

1st July 2021





New ATC Features

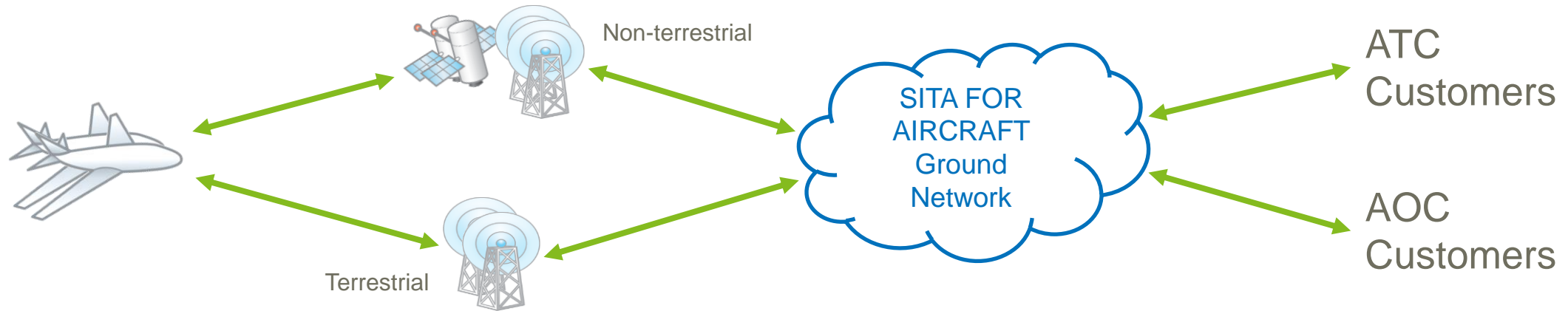
Such as Trajectory Based Operations, which uses 2-4 times the bandwidth of conventional CPDLC.

New Aircraft Types

The volume of AOC in-flight data transmitted typically increases by a factor of four for each new generation of aircraft

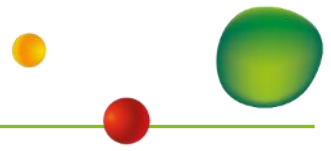
Traffic Recovery and Growth

Europe 2019 traffic levels will be exceeded in 2024 and then continue to grow.



MultiLink Strategy – Providing customers with a **choice** of various **terrestrial** and **non-terrestrial** air-ground communication routes.

- **Redundancy** - to ensure that messages always have a viable delivery route.
- **Customer choice** - to ensure that customers can balance performance against cost.
- **Selective Routing** - to ensure that messages of different types can be matched with the most appropriate technology.



LDACS is a great candidate to compliment the existing VDLm2 terrestrial datalink network.

Performance

At least 50x the VDLm2 bandwidth. Low latency.

Interoperability with VLDm2

Easily deployed in the same areas and ground stations can be reused.

Prioritisation

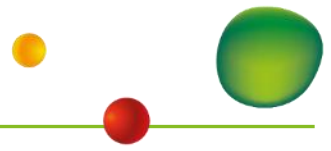
Built-in message prioritisation mechanism. Managed QoS.

Security

Public Key encryption to authenticate all participants.

Digital Voice, Navigation and Surveillance Capabilities

To be implemented in later phases but using the same infrastructure.



LDACS Service Cost

Funding for the CSPs to provide the LDACS service. Organised in a similar way to today's VDLm2 service.

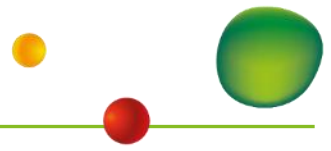
Ground Network Changes

Adding network equipment and adding LDACS support to existing ground stations (SITA has approximately 250 of these)

Airborne Changes

Adding LDACS avionics to aircraft. (12k commercial aircraft in Europe. 6k aircraft = 80% of flights)

LDACS Deployment Strategies



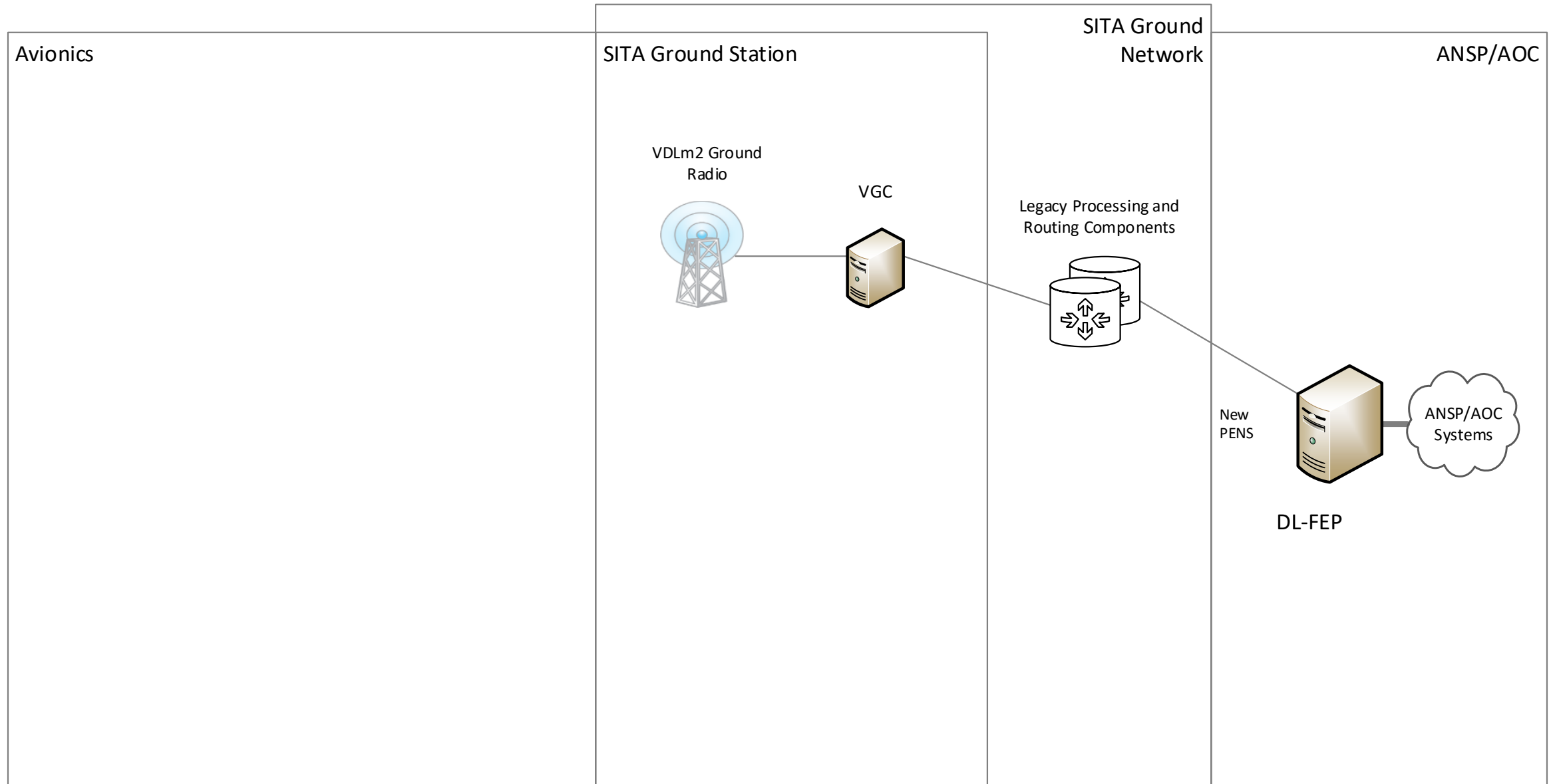
Previous LDACS Deployment Models:

- Required IPS implementation on the ground network and on the aircraft.
- A “big bang” deployment for Europe that required significant upfront investment. Not targeted regionally or scalable.
- “One size fits all” approach to avionics that seemed aimed at forward-fit only.

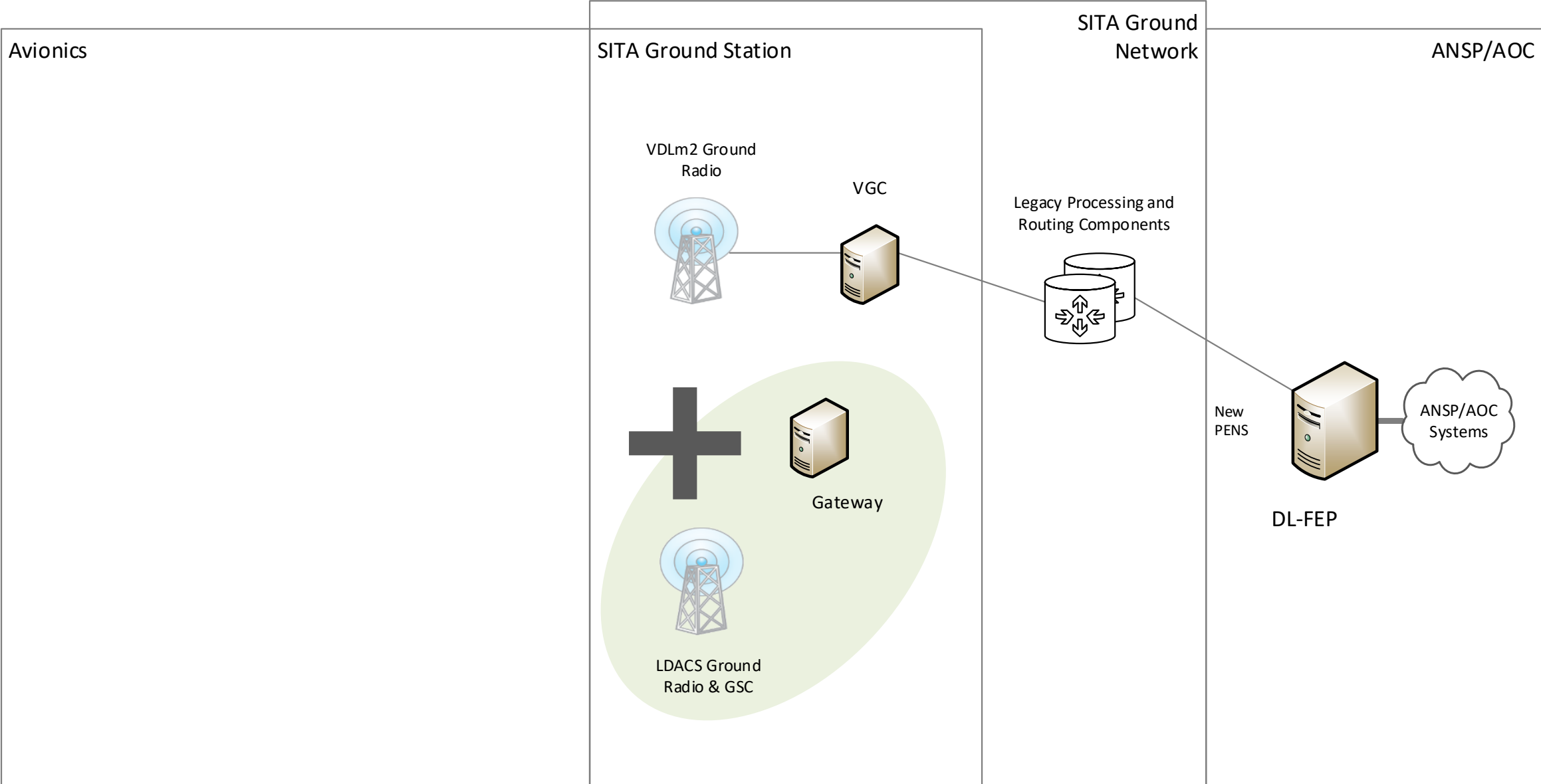
The SITA FOR AIRCRAFT LDACS Transition Concept (LTC):

- Enables a gradual transition to LDACS connectivity by **supporting both legacy and IPS** infrastructure, in the ground network and in the air (avionics).
- Can be easily **targeted to geographic regions** where it is needed and then gradually scaled up.
- Makes use of existing infrastructure and thus **minimises deployment costs both in the air and on the ground.**

The SITA FOR AIRCRAFT LDACS Transition Concept (LTC)

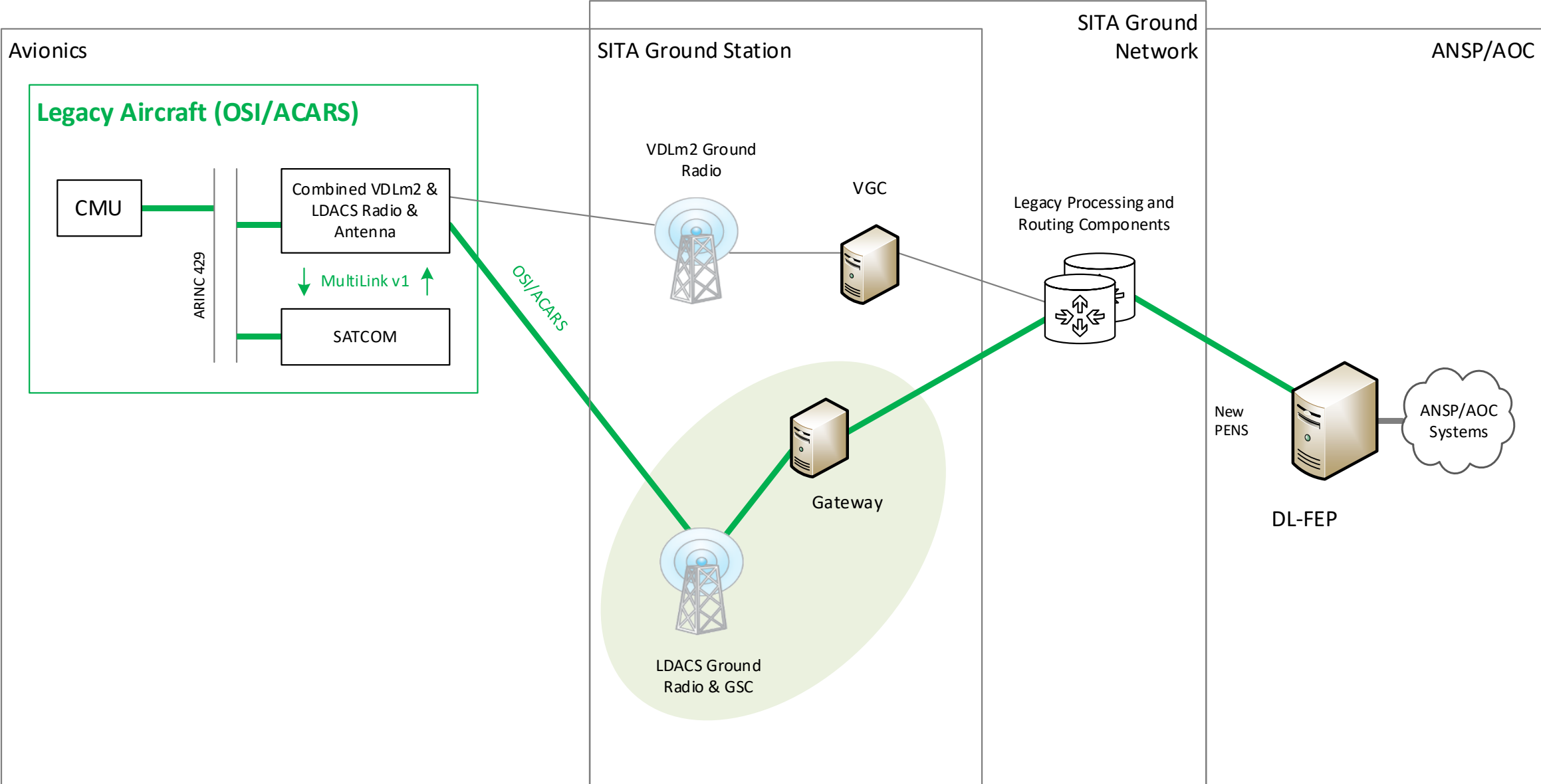


The SITA FOR AIRCRAFT LDACS Transition Concept (LTC)



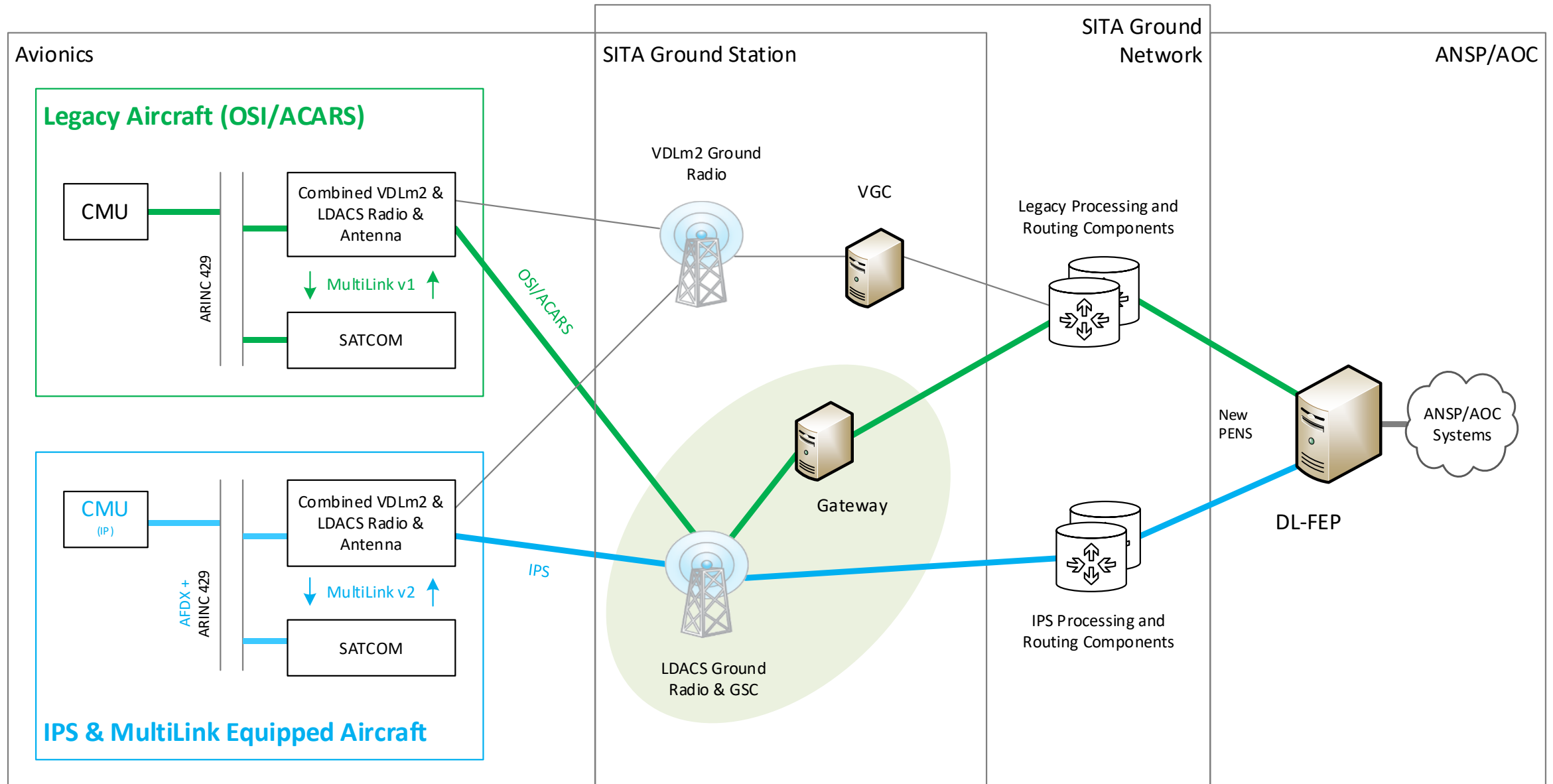
The SITA FOR AIRCRAFT LDACS Transition Concept (LTC)

Providing the benefits of LDACS connectivity in both the legacy environment and...

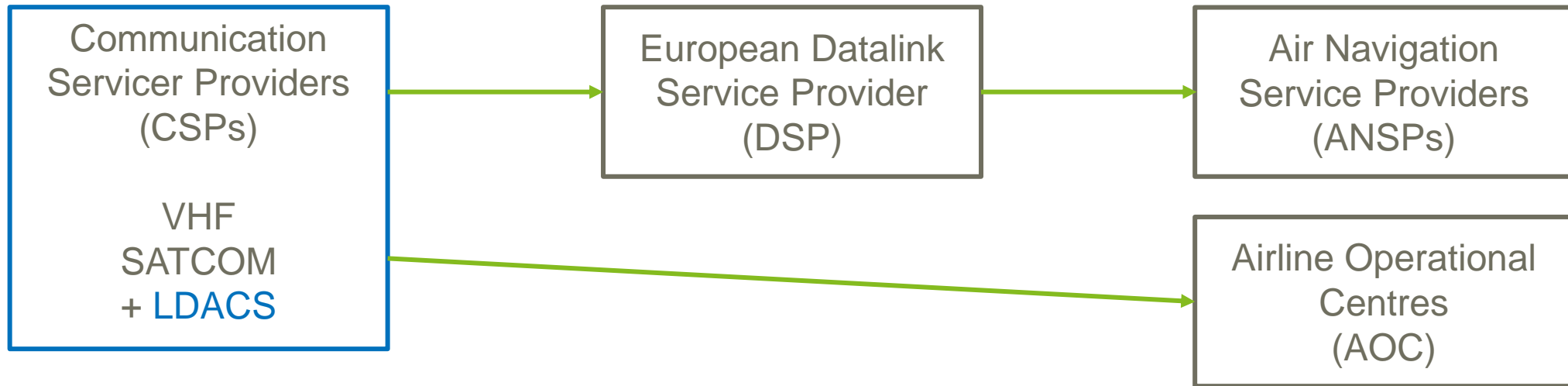


The SITA FOR AIRCRAFT LDACS Transition Concept (LTC)

Providing the benefits of LDACS connectivity in both the legacy environment and the IPS network of the future.



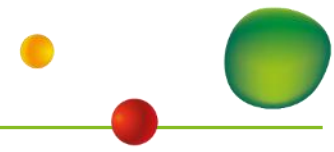
Probable Organisation



In the likely timescales of the LDACS deployment, we expect the European DSP to be in place. This means the LDACS deployment and transition would get the benefits of centralisation. The VHF network should have already been migrated to this model so LDACS would not be the first DSP service.

LDACS LTC is not dependant on the DSP. The LDACS service could be provided to ANSPs in the way the VHF service is today.

Steps Towards LDACS Ground Deployment



Period	Phase	Scope
<Q4 2023	Development Phase	Development of LDACS ground equipment and integration into ground infrastructure.
Q2 2024	Validation Phase 1	Formal non-operational (lab) validation of the concept.
Q4 2024	Validation Phase 2	Operational validation of the concept.
2025	FCI Pioneer Phase	Initial operational deployment of LDACS to a “targeted” European area. ~300 equipped aircraft.
2025-2030	FCI Migration Phase	Operational deployment of LDACS to “core” European area. ~1300 equipped aircraft.
2030-2040	FCI Full Operational Phase	Full European deployment of LDACS. +500 Equipped Aircraft per year.

SITA & Frequentis to collaborate on the development and validation of LDACS equipment for the SITA Ground Network.

SITA Begins to offer operational LDACS Service