

Cognitive networking Instant Primer of Large-scale Satellite Networks

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Starting point: Flexible satellite technology

Airbus Amber

AIRBUS

OneSat can be fully reconfigured while in orbit – and it is capable of adjusting its coverage area, capacity and frequency “on the fly” to meet evolving mission scenarios.

Encompasses active antennas enabling several thousand beams.

Multi-beam RF technology

Free Space Optical Links

Flexible payloads





The SpaceDataHighway

The 1st Operational Optical Communication system



We have achieved
more than **50,000**
successful relay links since 2016



Outstanding service
availability greater
than **99.5 %**



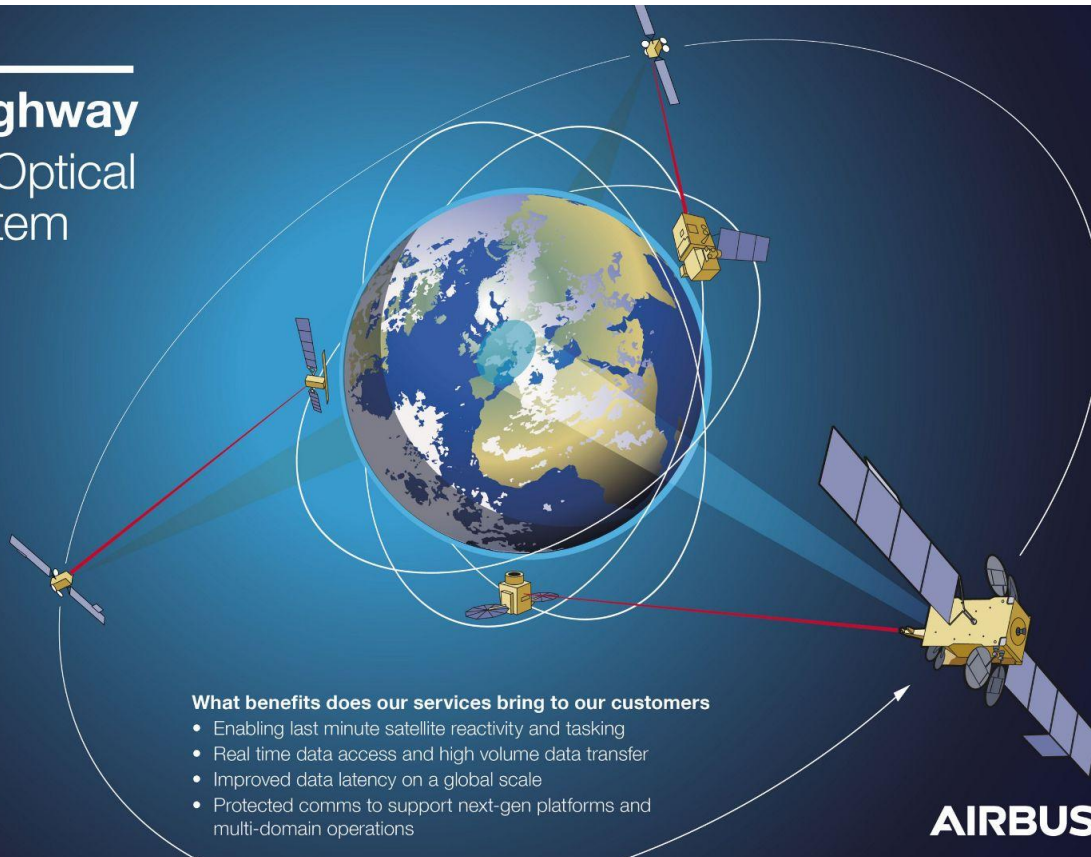
Up to **39** link
sessions per day



Downloaded more than
3,000,000 GB
of data from space



SpaceDataHighway
can download data from space
in near-real-time



What benefits does our services bring to our customers

- Enabling last minute satellite reactivity and tasking
- Real time data access and high volume data transfer
- Improved data latency on a global scale
- Protected comms to support next-gen platforms and multi-domain operations

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Large-scale satellite networks → Space Internet



Large-scale satellite networks \Rightarrow Space Internet

Airbus Amber

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First Challenge

Packet switching on space platforms

Second Challenge

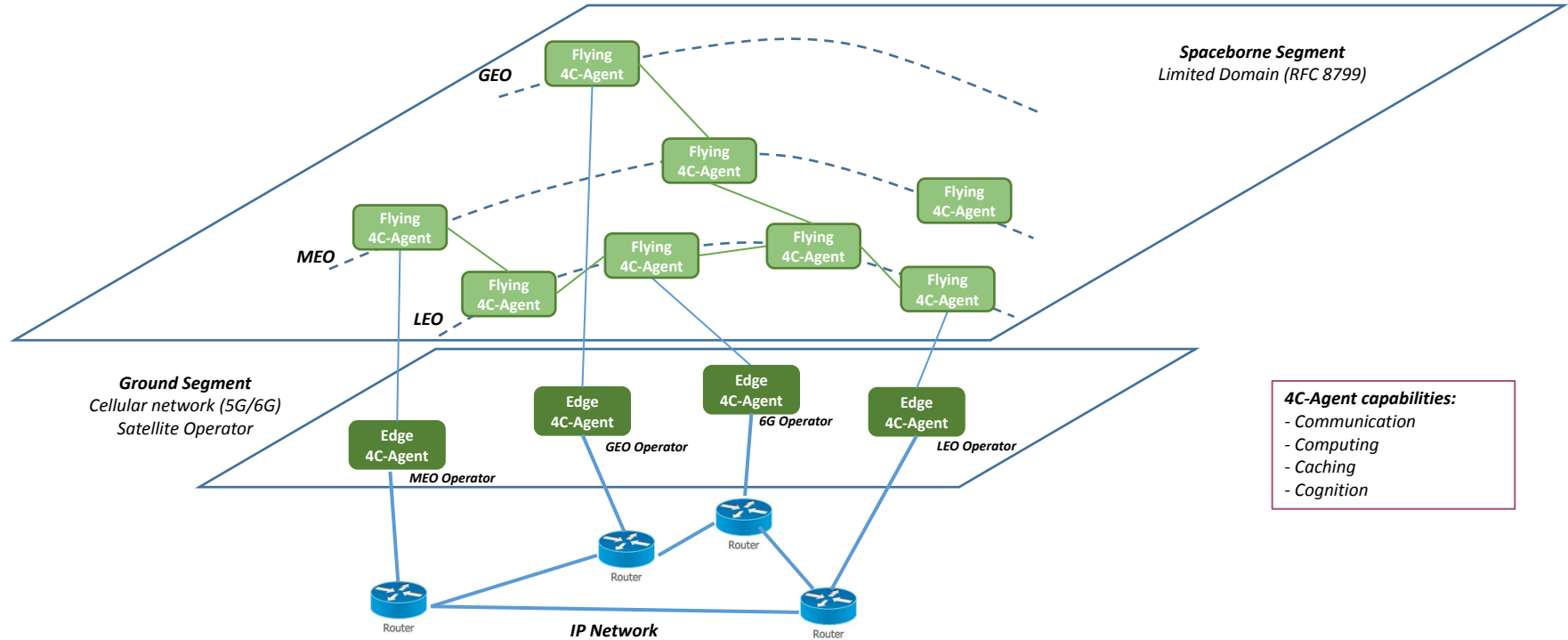
Internetwork Space and others Internet Service Providers



Goal:

- Access to **all 7.3 billion people**.
- Satellites operating at **data rates of Tb/s** in LEO orbit providing overall **capacity of one Zetabyte/month**.
- Important role of **Space Communications**, in the success of the **Digital Age**.

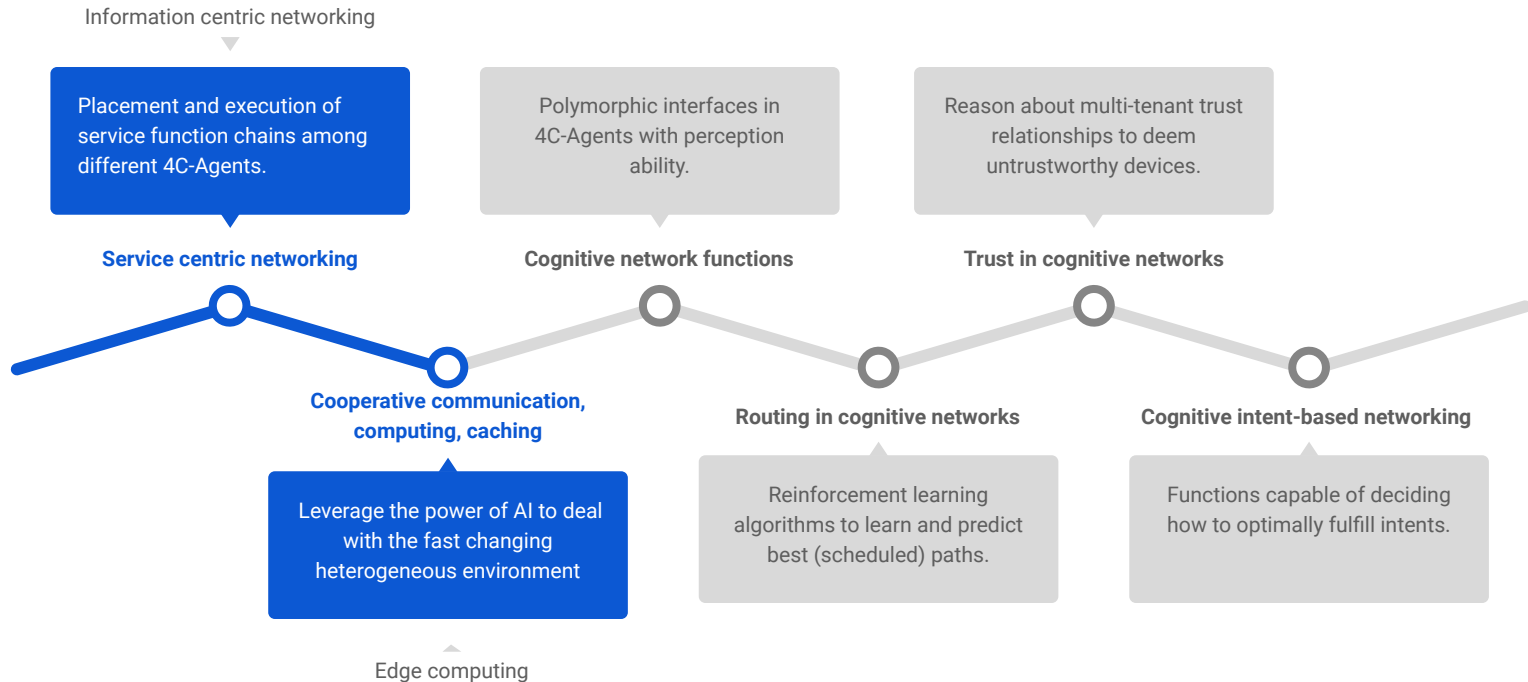
Model of large-scale satellite network



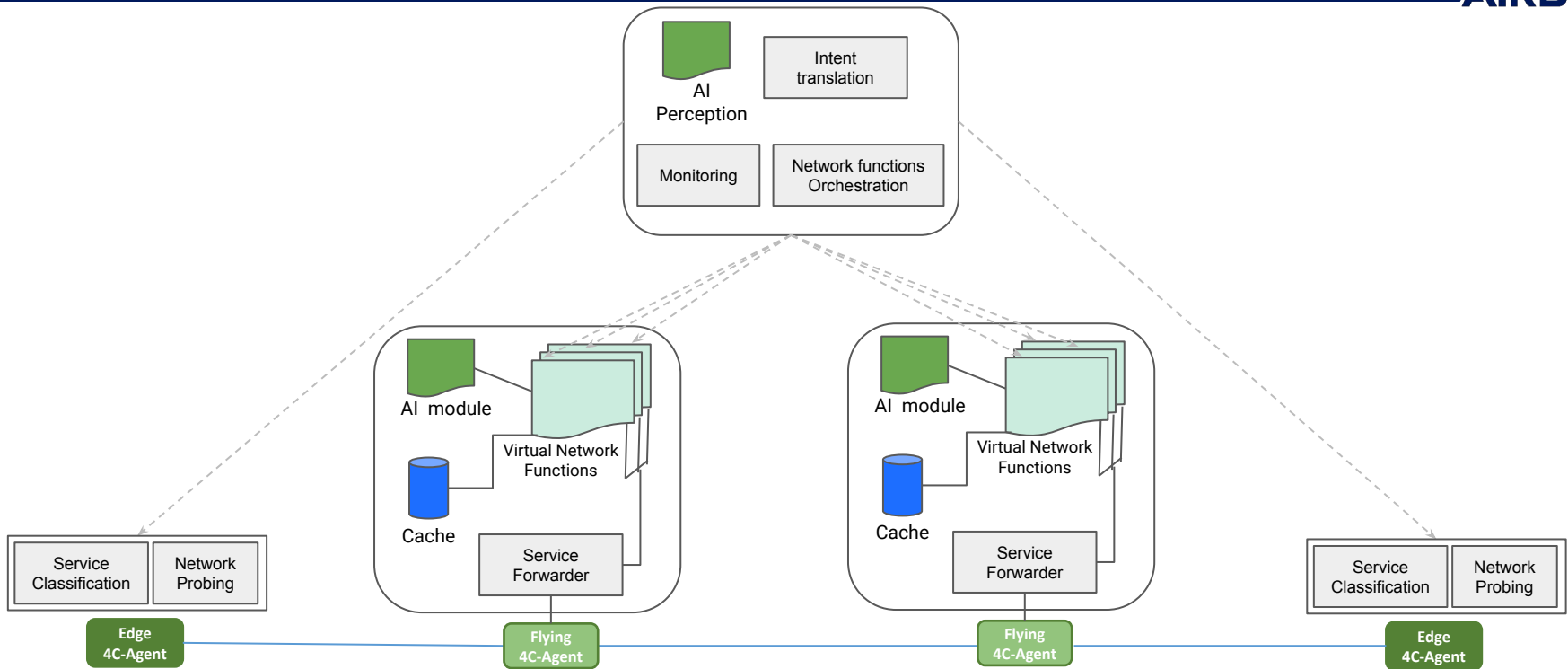
Path towards an 4C based service centric networking

Airbus Amber

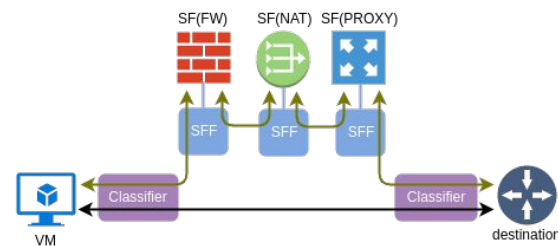
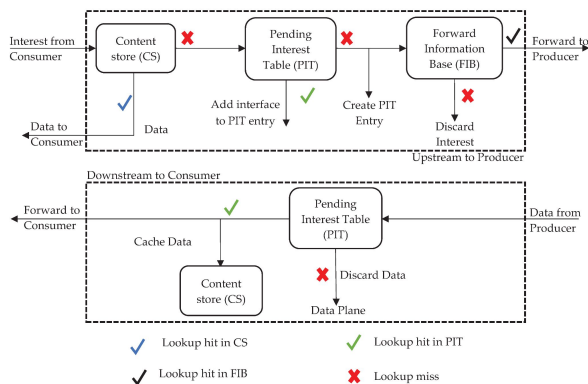
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Orchestration of service chains based on Intents



Current situation	Expected operation
Static services	Dynamic services
Data / computation separation	Integration of computing and caching resources
Hop-by-hop service deployment	Interoperability between service chains
Context agnostic	Contextual awareness
Dependent on host addressing	Agnostic of host addressing



Thank you!

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