Cognitive networking
Instant Primer of Large-scale Satellite Networks

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Starting point: Flexible satellite technology

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.

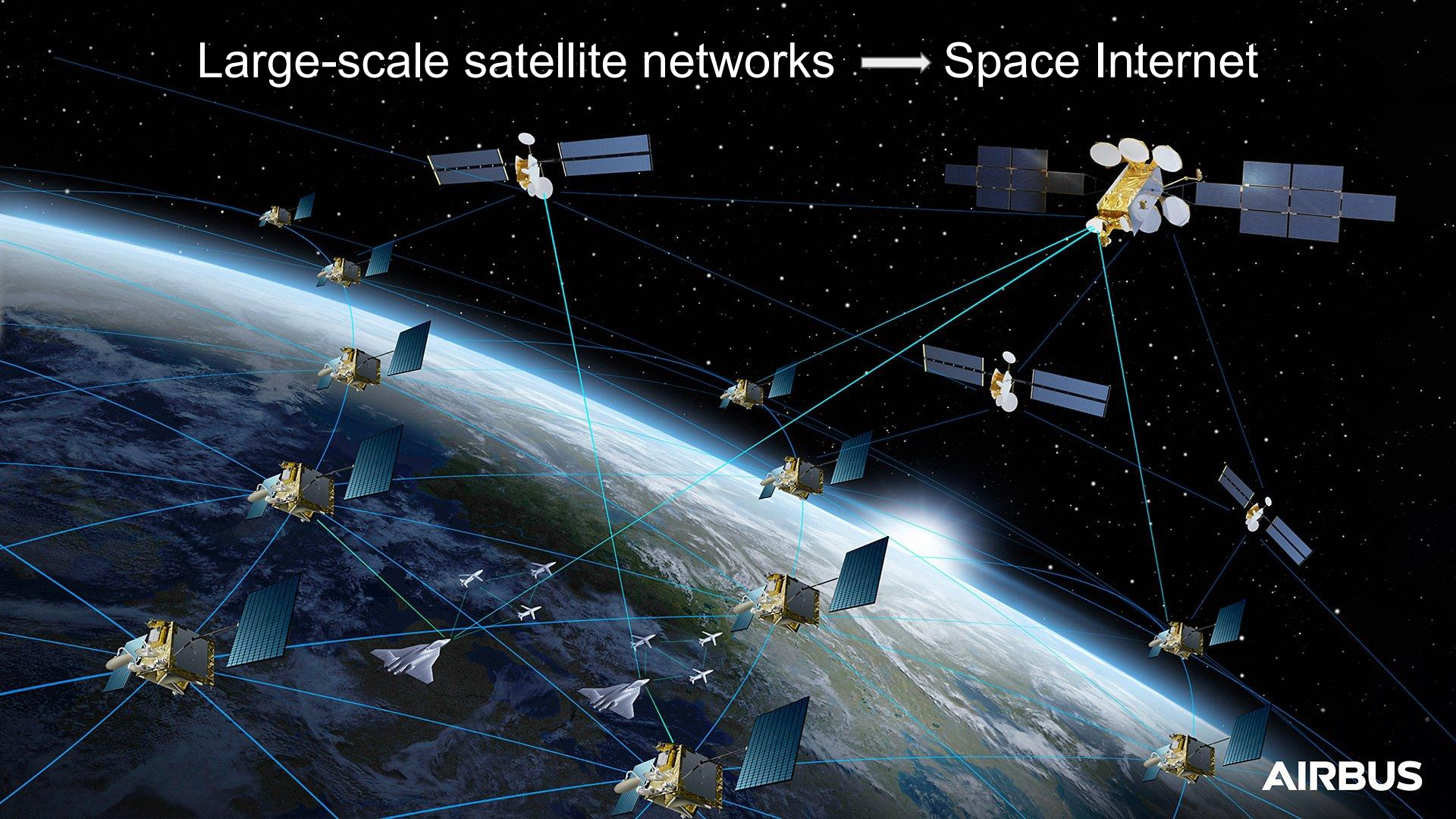
Encompasses active antennas enabling several thousand beams.

- Multi-beam RF technology
- Free Space Optical Links
- Flexible payloads

Latest development: Constellations

Large-scale satellite networks: Multi-orbit systems

Large-scale satellite networks ⟶ Space Internet



Large-scale satellite networks ⟹ Space Internet

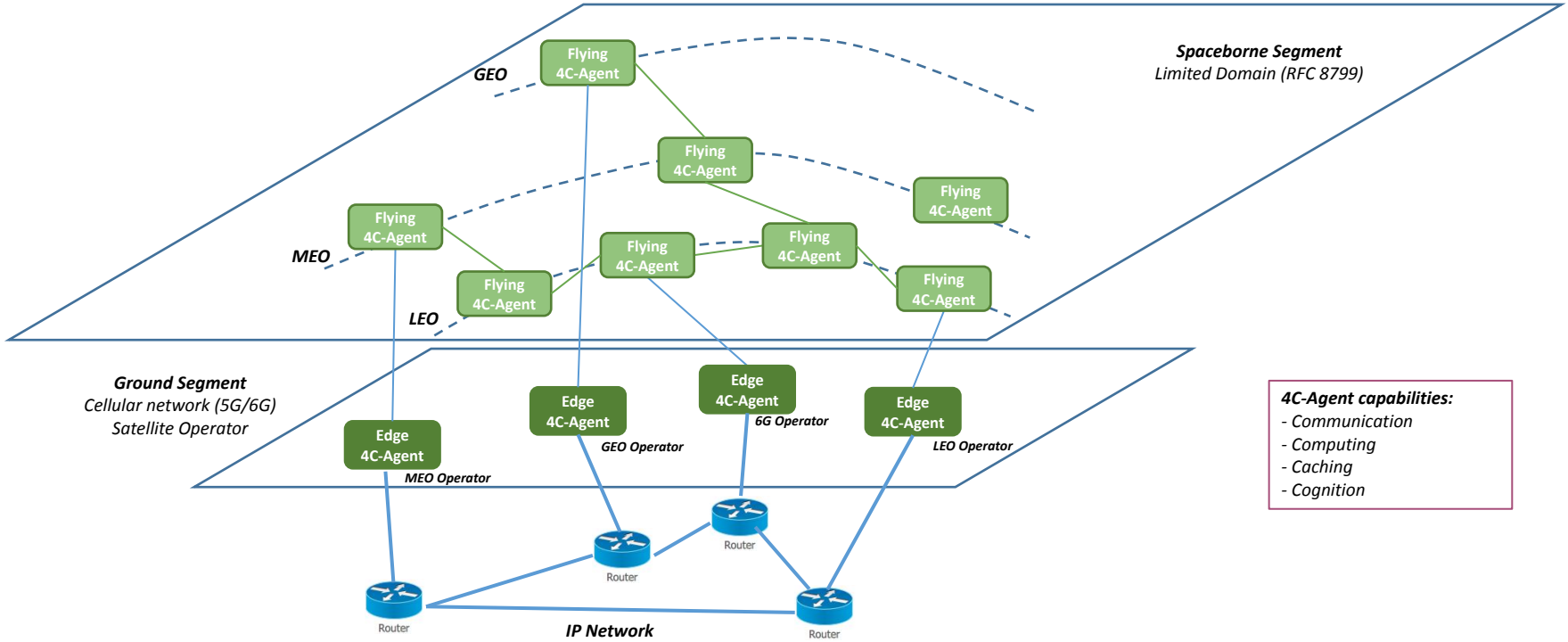
First Challenge
Packet switching on space platforms

Second Challenge
Internetwork Space and others Internet Service Providers

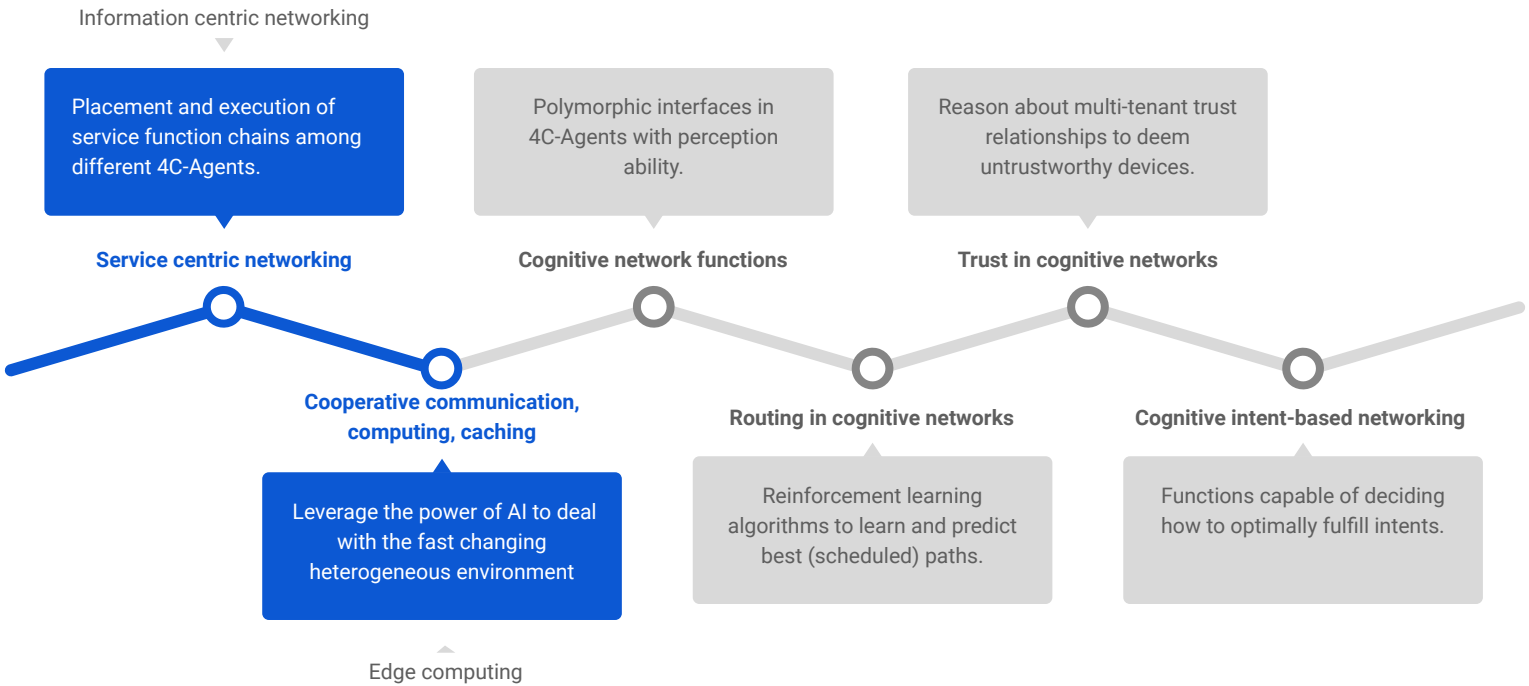
Goal:

- 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**.

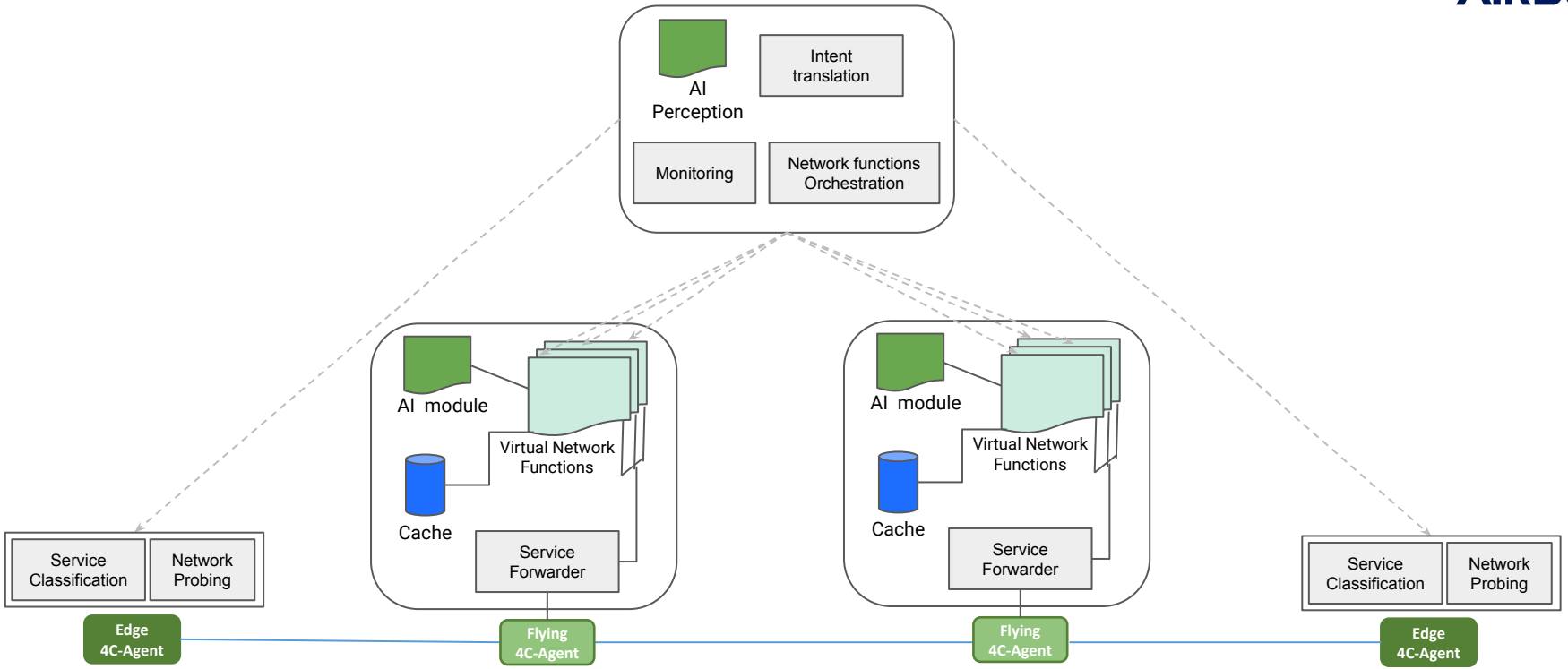
Model of large-scale satellite network



Path towards an 4C based service centric networking

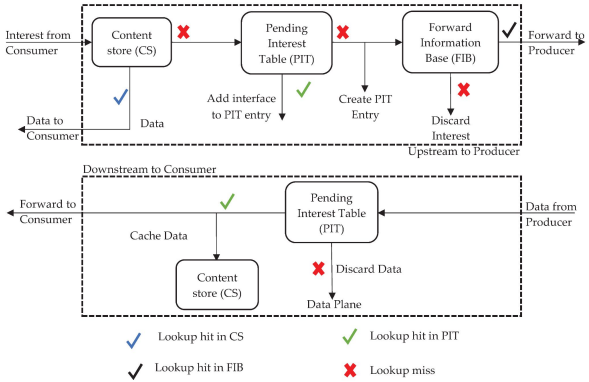


Orchestration of service chains based on Intents

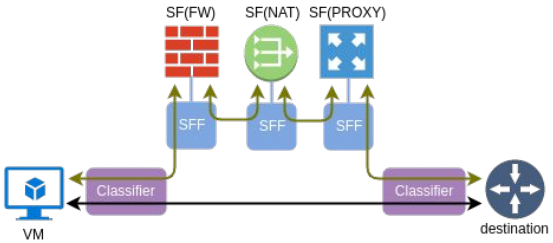


Orchestration challenges in satellite networks

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



Information Centric Networking



Service Function Chaining

Thank you!

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