

Informacione tehnologije u pomorstvu

IV dio

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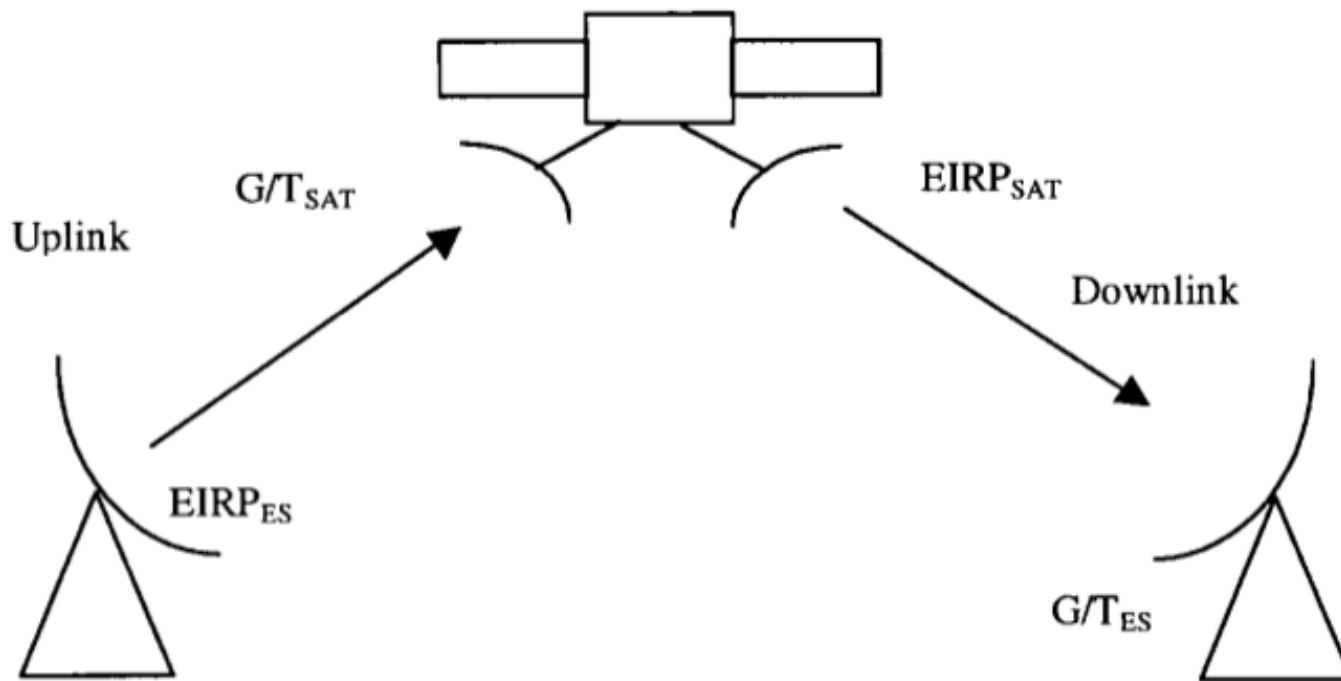
Satelitske ICT i navigacione tehnologije

Satelitski transponder

- Satelitska *payload* tehnologija se može klasifikovati na osnovu načina pokrivanja određenog područja i odgovarajuće kompleksnosti:
- *Simple Wide-Beam* pokrivanje područja
- *Spot-Beam* pokrivanje područja uz primjenu statičke komutacije između *spot beam*-ova
- *Spot-Beam* pokrivanje područja uz primjenu SS-TDMA (*Satellite Switched Time Division Multiple Access*)
- *Spot-Beam* pokrivanje područja uz primjenu rutiranja na satelitu (*Path Routing On-board the Satellite*)

Satelitske ICT i navigacione tehnologije

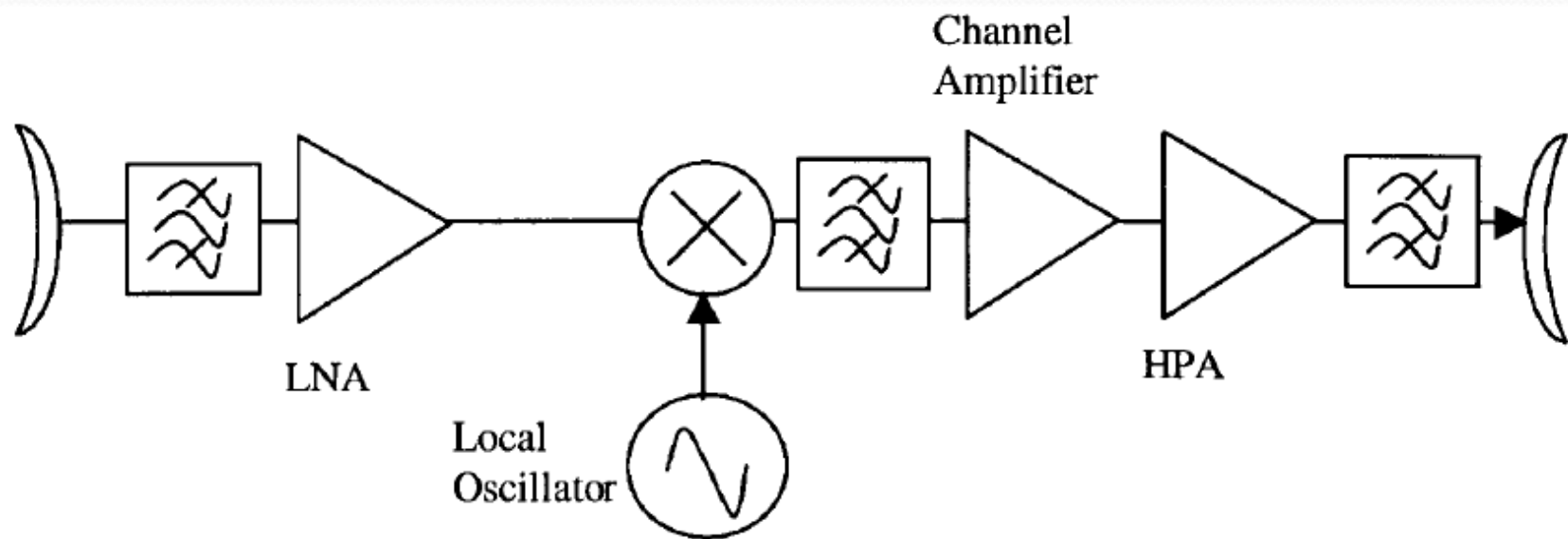
Satelitski transponder



Satelitske ICT i navigacione tehnologije

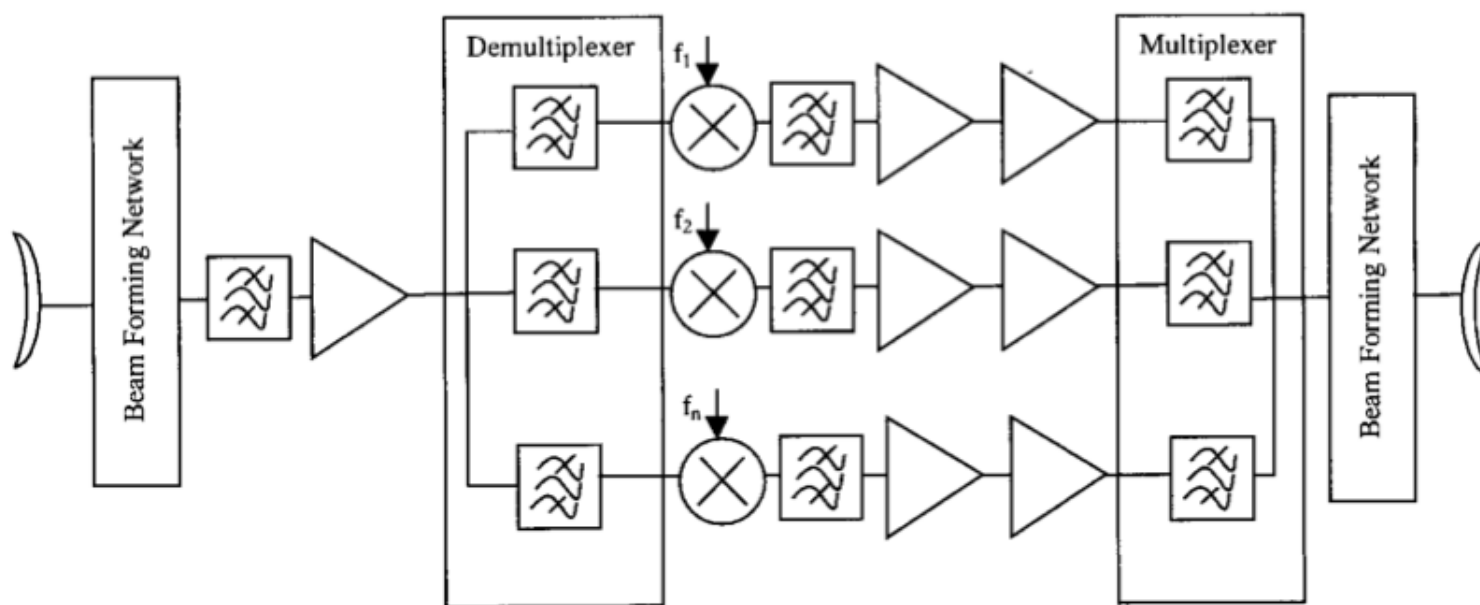
Satelitski transponder, *Simple Wide-Beam*

- Ovo je najjednostavniji tip transpondera. Satelit jednostavno obavlja funkciju relay-a. Ovaj tip transpondera je primijenjen kod INMARSAT-2 satelita. Transponder se u ovo slučaju koristi za prijem/predaju *single carrier*-a kao što je prikazano na slici



Satelitske ICT i navigacione tehnologije

Satelitski transponder, *Spot-Beam*



Satelitske ICT i navigacione tehnologije

Satelitski transponder



Thor 7 [Proizvodnja, SSLoral]

Satelitske ICT i navigacione tehnologije

Satelitski transponder, Telenor THOR 7 Ka satelit

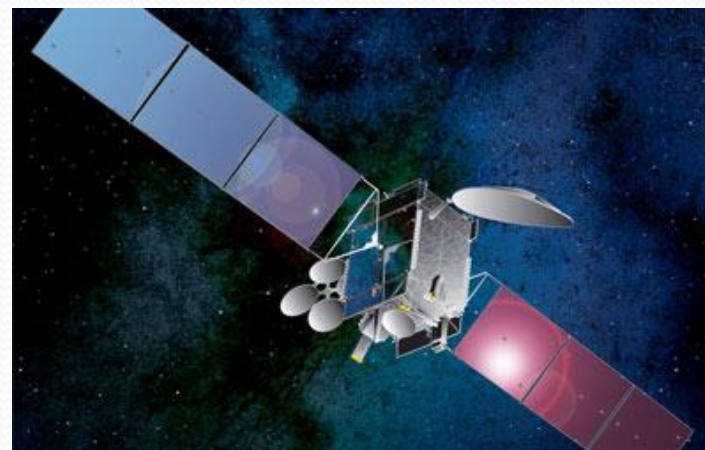
Telenor je izabrao SS/Loral u junu 2011. da bi obezbijedio telekomunikacioni satelit Thor 7.

Thor 7 je baziran na SS/L platformi serije SSL-1300 i opremljen sa dva payload-a.

Prvi *payload* sadrži 11 aktivnih Ku band transpondera, koji će se koristiti za rastuće potrebe broadcasting-a u Centralnoj i Istočnoj Evropi.

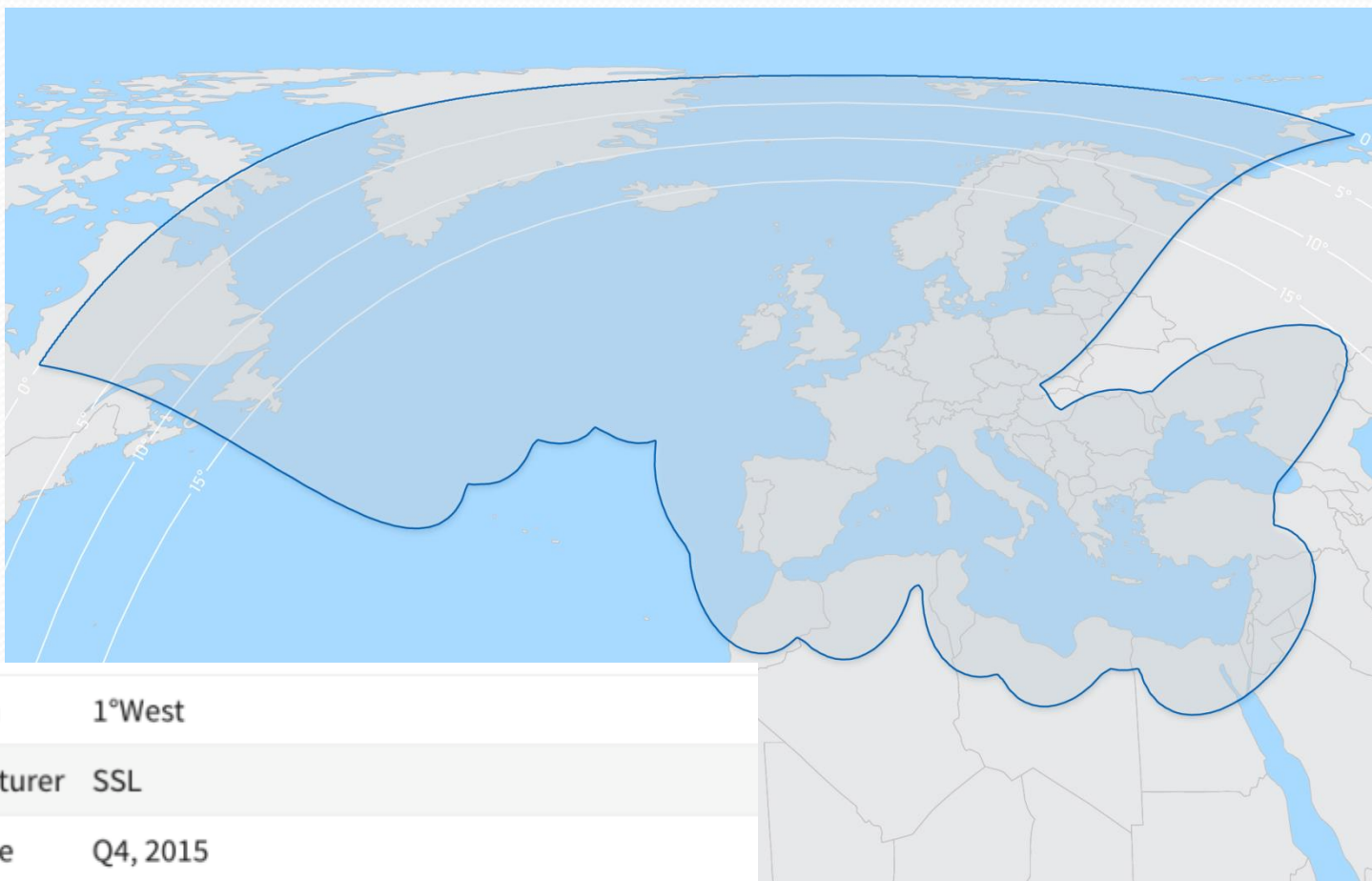
Drugi *payload* funkcioniše u Ka-opsegu, opremljen multi-spotovima koji pokrivaju Sjeverno more, Norveško more, Crveno more, Baltičko more, Persijski zaliv i Mediteran. Ključna uloga je omogućavanje velikih brzina prenosa podataka u okviru pomorskog sektora.

Proizvođač - Space Systems/Loral, Palo Alto, u Kaliforniji.



Satelitske ICT i navigacione tehnologije

Satelitski transponder, Telenor THOR 7 Ka satelit



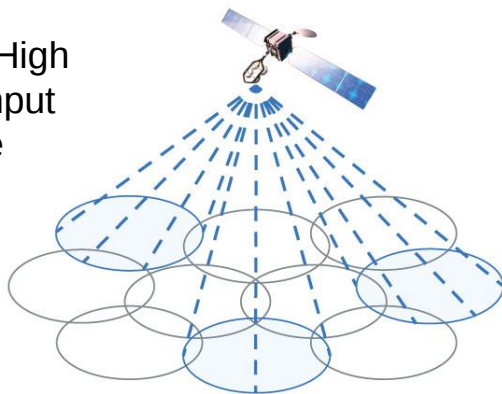
Location	1°West
Manufacturer	SSL
In-service date	Q4, 2015
Target area	Mobility services: North Sea, Red Sea, Baltic Sea, Persian Gulf & Mediterranean Sea

Satelitske ICT i navigacione tehnologije

Satelitski transponder

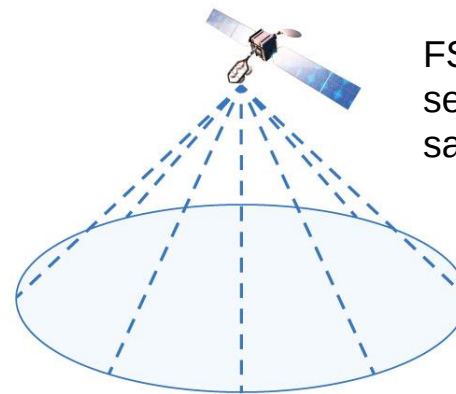
HTS SATELLITES

HTS – High throughput satellite



REGULAR FSS SATELLITES

FSS - fixed service satellite



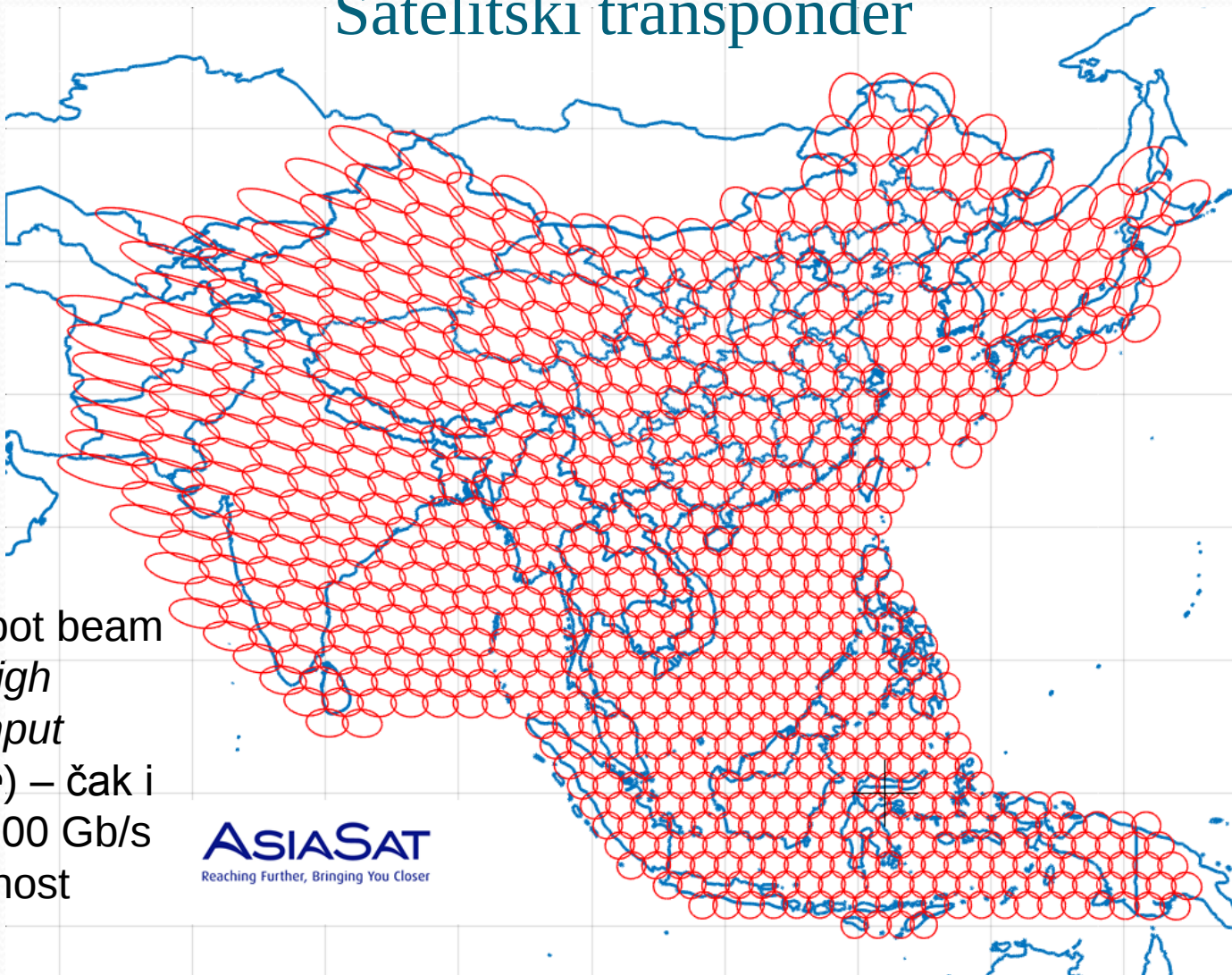
Ku-band, Ka-band	<i>FREQUENCY</i>	C-band, X-band, Ku-band, Ka-band
Up to 140 Gbps depending on size and frequency usage per satellite. Up to 2 Gbps within a spot beam.	<i>CAPACITY</i>	1-10 Gbps per satellite (depending on number of transponders)
Increased bandwidth for a lower cost per bit. Preferred solution for point to point broadband communication.	<i>ADVANTAGES</i>	Wide coverage of up to 1/3 of the earth surface. Preferred solution for point to multipoint communication such as TV broadcasting as well as large VSAT networks.

- ✓ High throughput
- ✓ Dedicated beam for mobility
- ✓ Designed for data
- ✓ Lower cost per Mbps

- ✓ Large coverage
- ✓ Broadcasting
- ✓ Designed for TV
- ✓ Lower throughput

Satelitske ICT i navigacione tehnologije

Satelitski transponder

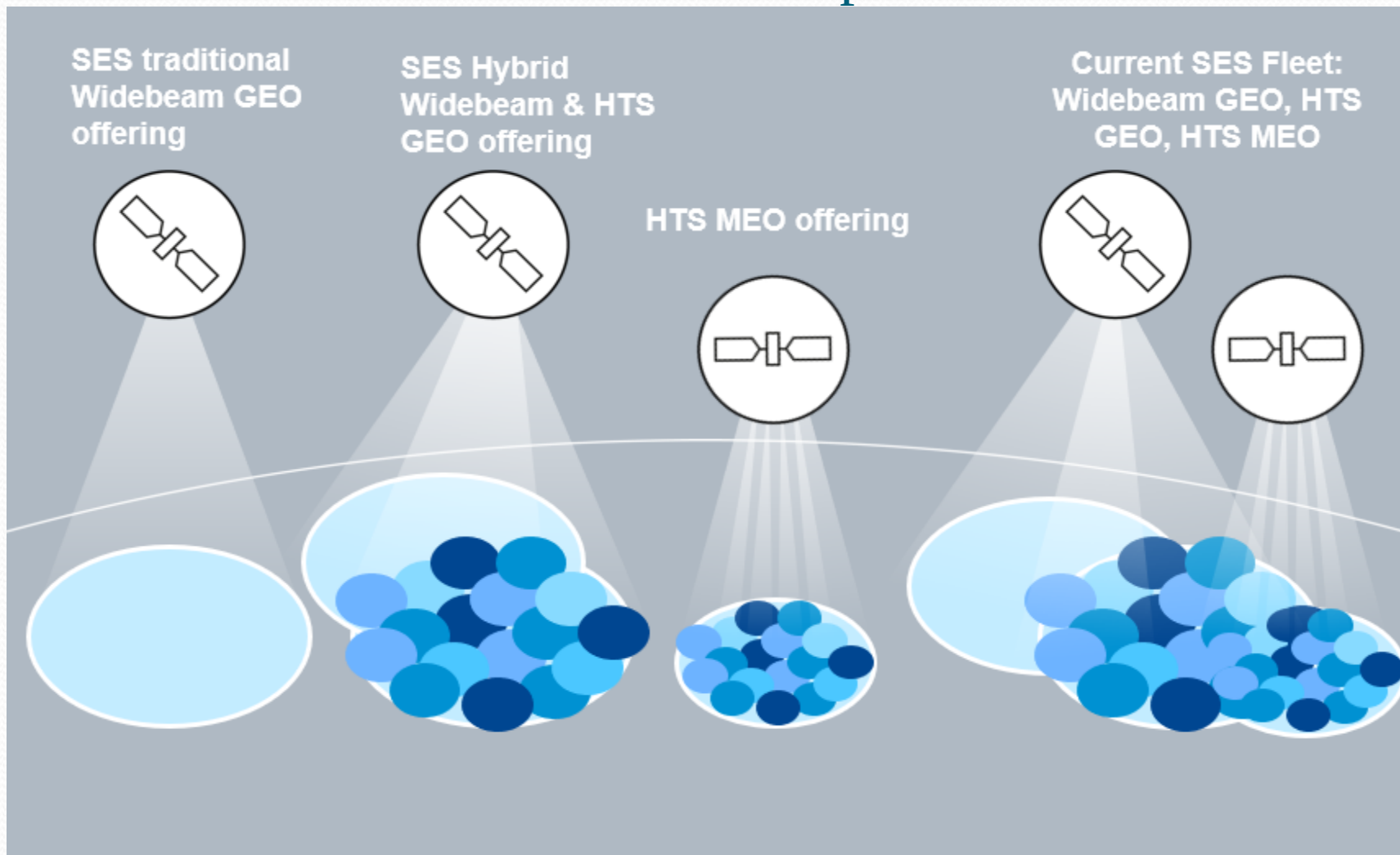


Multi-spot beam
HTS (*high
throughput
satellite*) – čak i
preko 100 Gb/s
propusnost

ASIAsat
Reaching Further, Bringing You Closer

Satelitske ICT i navigacione tehnologije

Satelitski transponder

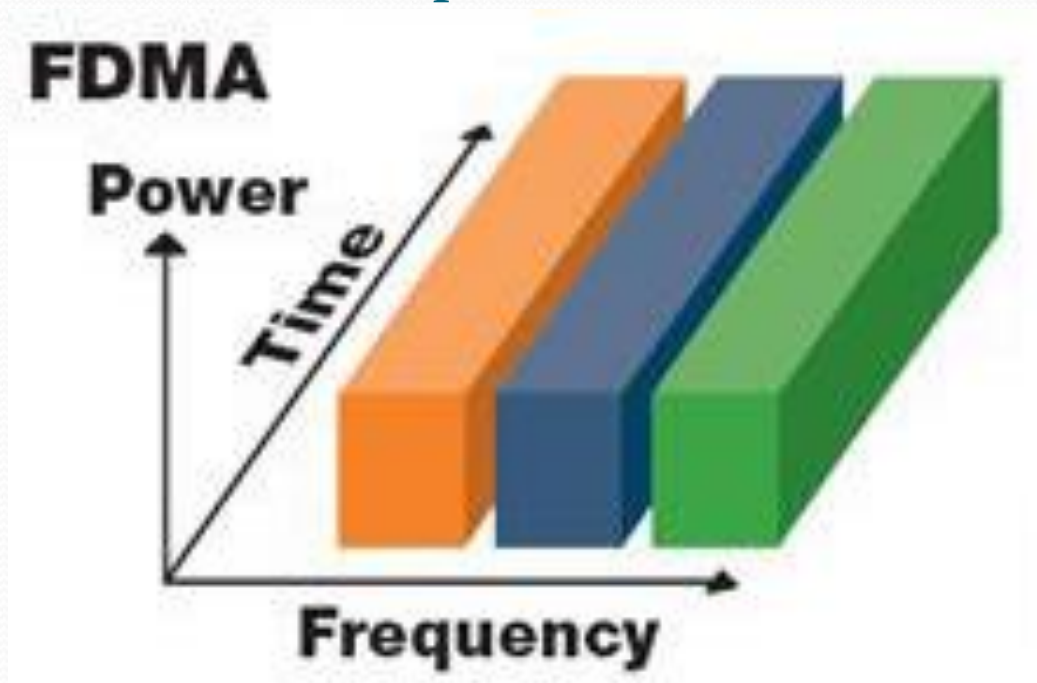


Satelitske ICT i navigacione tehnologije

višestruki pristup korisnika

FDMA – *Frequency division multiple access*

Različitim korisnicima se dodjeljuju različiti frekvencijski opsezi

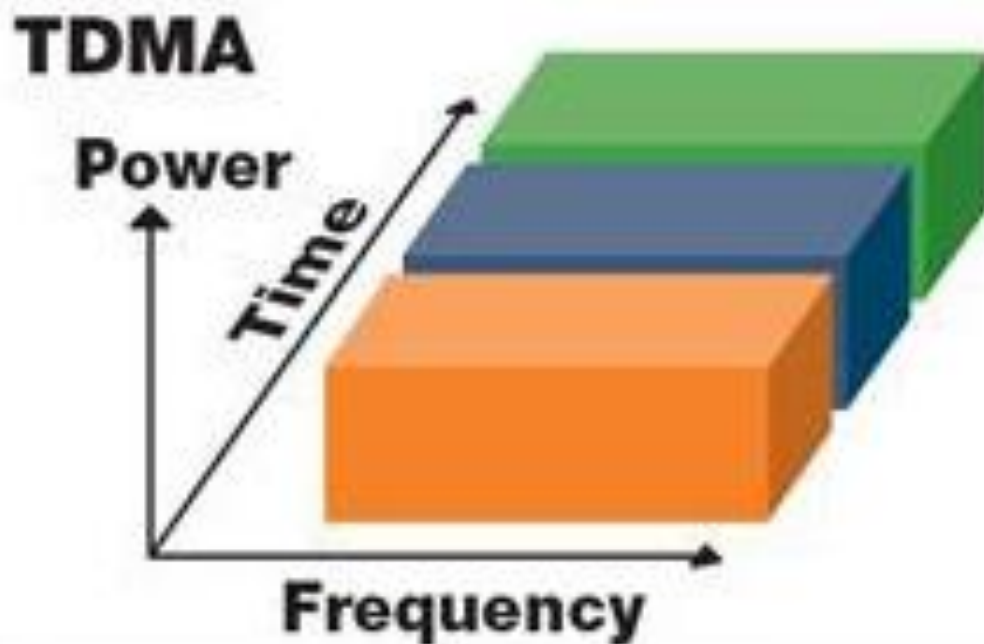


Satelitske ICT i navigacione tehnologije

višestruki pristup korisnika

TDMA – *Time division multiple access*

Različitim korisnicima se dodjeljuju različiti vremenski slotovi

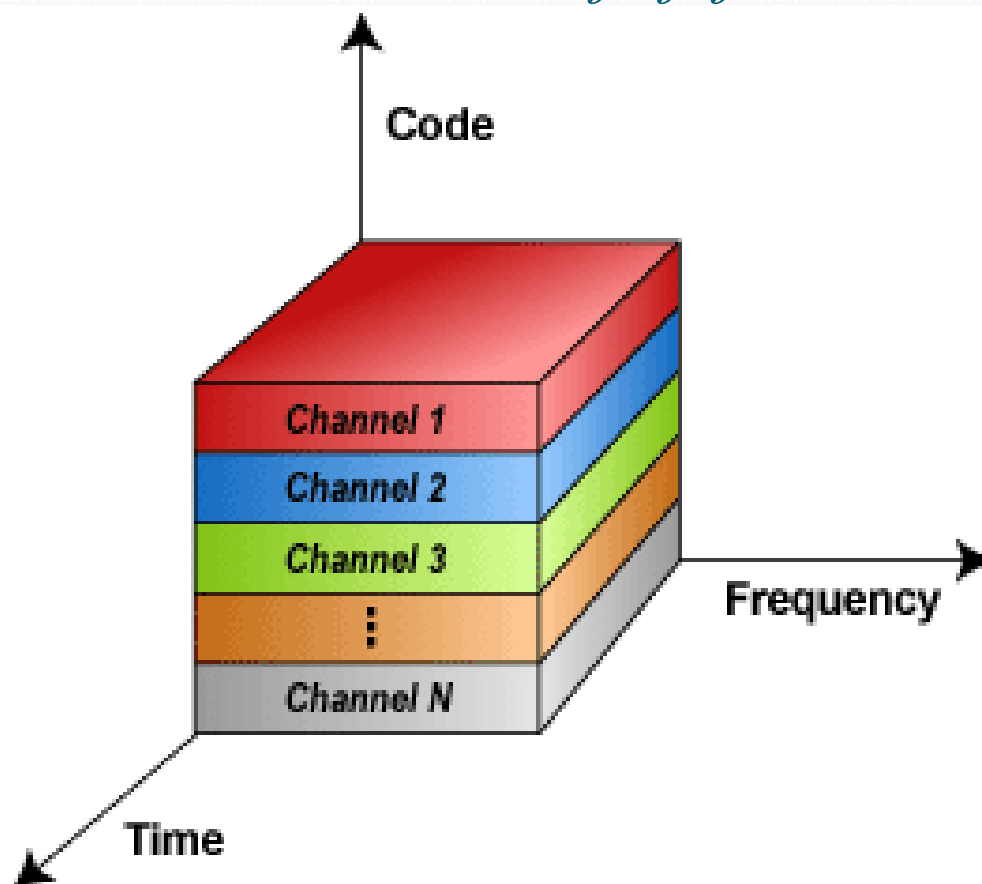


Satelitske ICT i navigacione tehnologije

višestruki pristup korisnika

CDMA – *Code divison multiple access*

Različitim korisnicima se dodjeljuju različiti kodovi



Satelitske ICT i navigacione tehnologije

višestruki pristup korisnika

SDMA – *Space division multiple access*

Različitim korisnicima se dodjeljuju različiti beam-ovi

