ASTRA®

Société Européenne des Satellites

SES in brief (I)

◆ Operator of ASTRA, the leading DTH satellite system in Europe
◆ Satellite fleet:
  ➔ 9 satellites in operation (7 at 19.2° East, 2 at 28.2° East)
  ➔ 4 additional satellites until end of year 2001
◆ ASTRA carries more than 600 digital and analogue TV services and 389 radio services of leading European and international broadcasters for Europe's main language markets
◆ ASTRA audience exceeds 79 million households in 22 European countries

SES in brief (II)

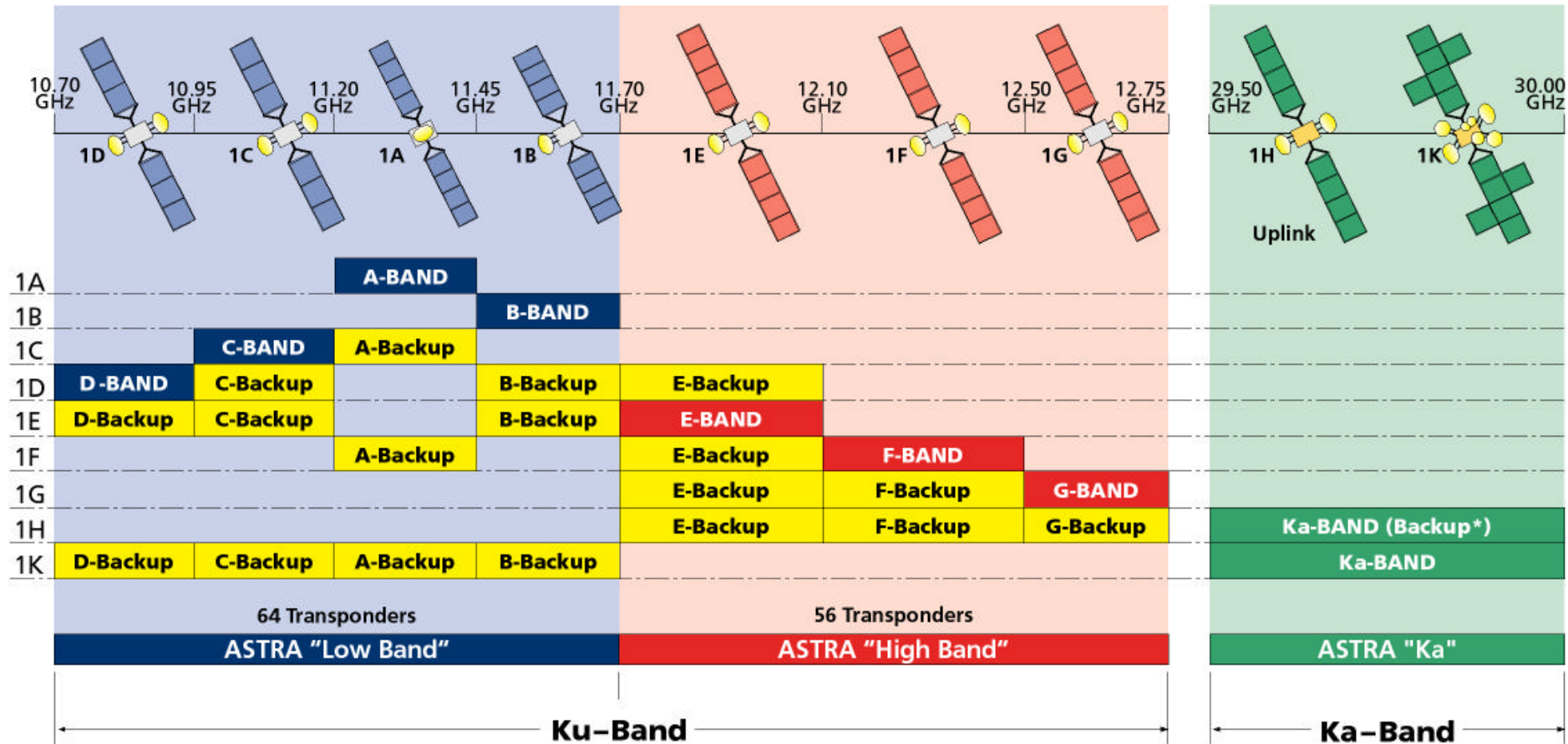- ◆ Company listed on Luxembourg and Frankfurt Stock Exchanges
  - ➔ institutional and private shareholders
  - ➔ Luxembourg State holds 16.67 % of equity
  - ➔ 33% of capital floated on Stock Exchange
- ◆ Operating under a concession agreement with the Luxembourg State
- ◆ 426 employees of 20 different nations
- ◆ Turnover 1999: EUR 725.2 million
  - H1 2000: EUR 403.0 million

The ASTRA Satellite System

The ASTRA Satellite System at 19.2° East

*After OSD of ASTRA 1K

Services on ASTRA (September 2000)

19.2° East

◆ 85 analogue TV services for the German, English and pan-European market

◆ 324 digital TV services for the French, German, Spanish, Dutch, Polish, Italian, Luxembourgish and pan-European market
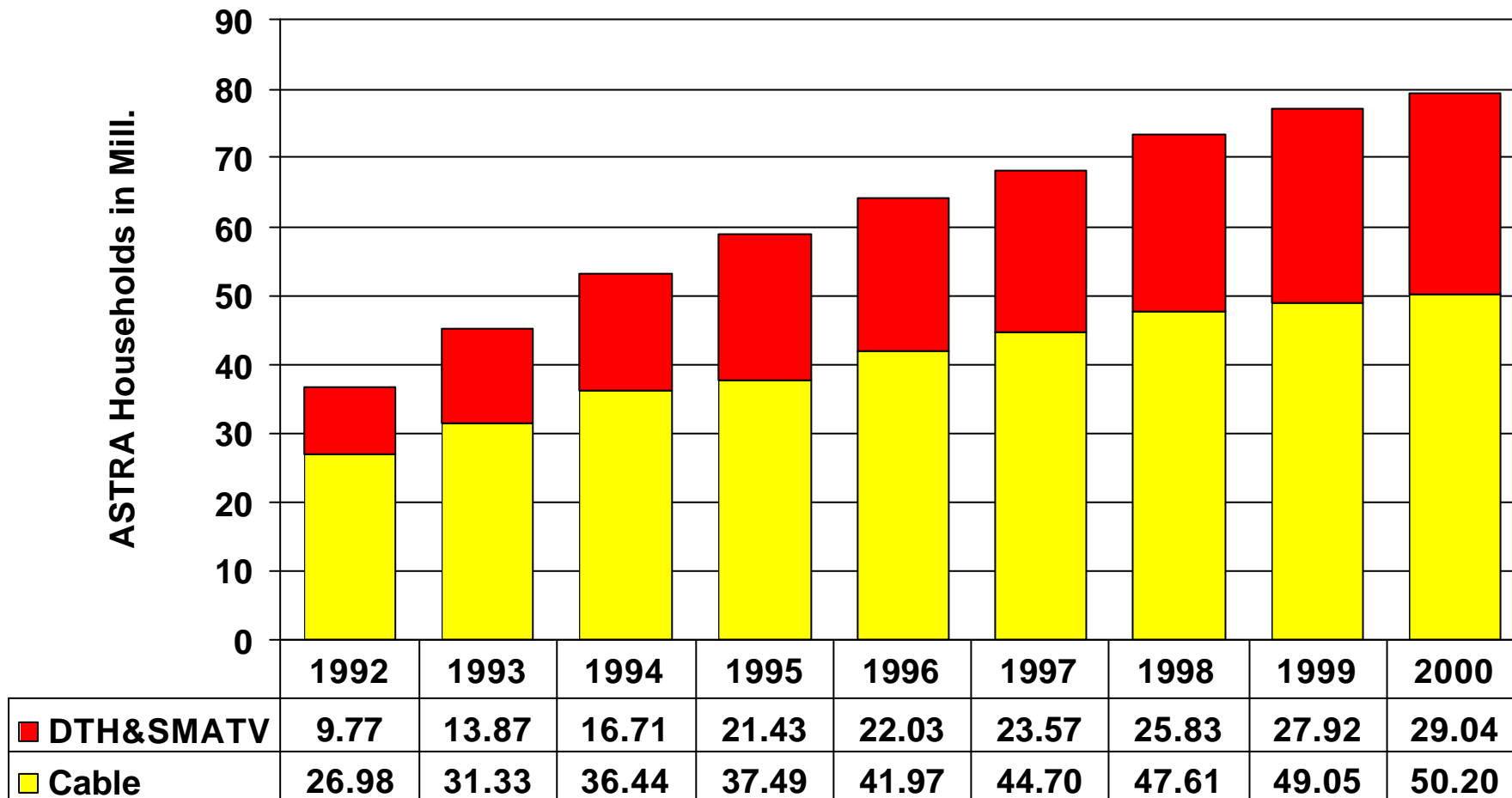
◆ 313 analogue and digital radio services

More than 75 free-to-air TV services

28.2° East

◆ 207 digital TV services for the UK and Ireland

◆ 72 digital audio services for the UK and Ireland

ASTRA coverage in Europe*
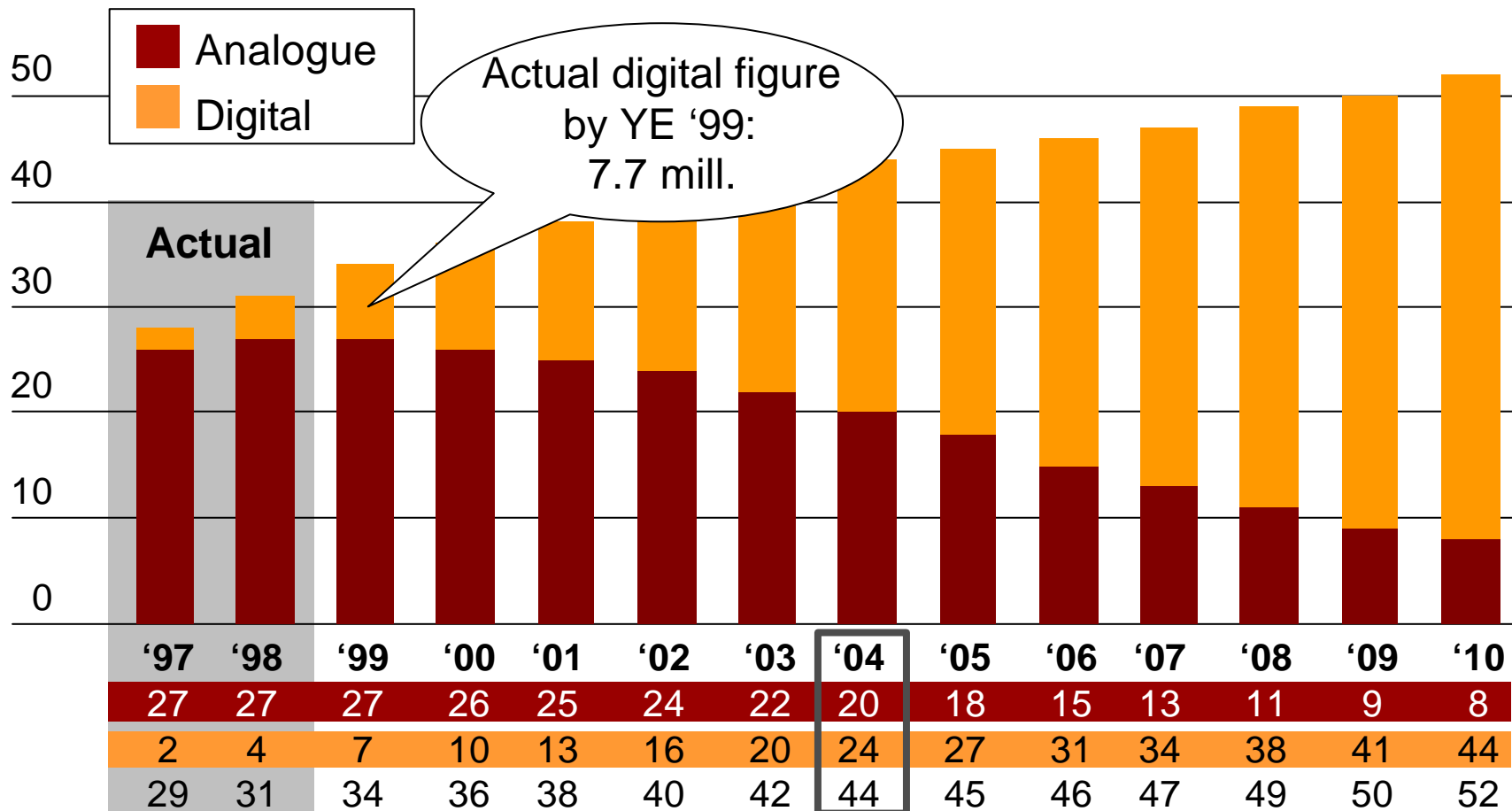## (Mid Year 1992 to 2000)

ASTRA Households in Mill.

	1992	1993	1994	1995	1996	1997	1998	1999	2000
■ DTH&SMATV	9.77	13.87	16.71	21.43	22.03	23.57	25.83	27.92	29.04
□ Cable	26.98	31.33	36.44	37.49	41.97	44.70	47.61	49.05	50.20

*22 European countries within the ASTRA footprint
Source: SES/ASTRA, Satellite Monitors

SES/ASTRA, Market Information Group, August 2000

Forecast of European DTH/SMATV Households 1997 – 2010

ASTRA

DTH/SMATV Households in Mill.

Actual digital figure by YE '99: 7.7 mill.

Actual

	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10
Analogue	27	27	27	26	25	24	22	20	18	15	13	11	9	8
Digital	2	4	7	10	13	16	20	24	27	31	34	38	41	44
	29	31	34	36	38	40	42	44	45	46	47	49	50	52

*based on 22 European countries within the ASTRA footprint
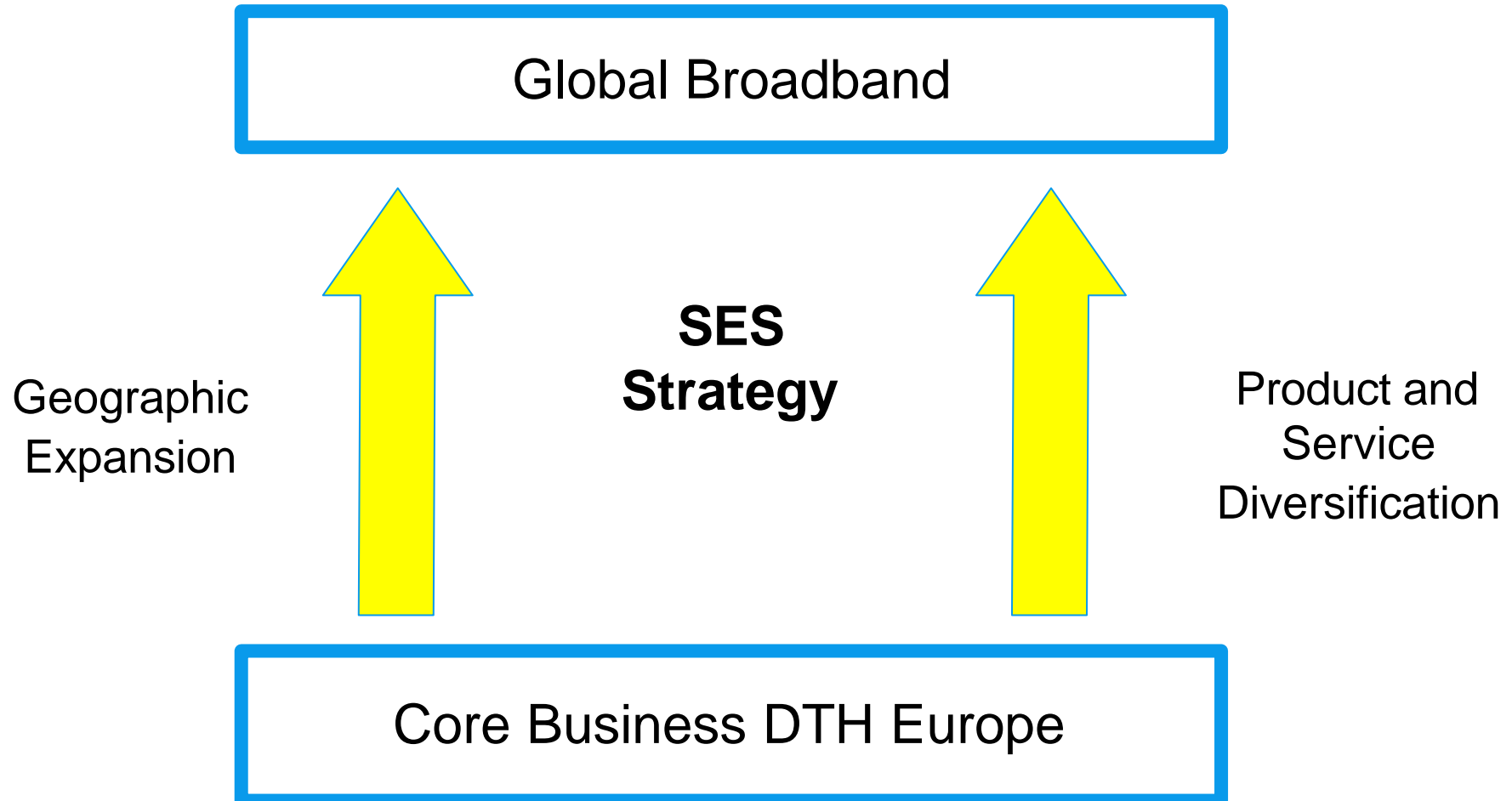Source: SES/ASTRA, Forecast Model, 1997

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Future Strategy

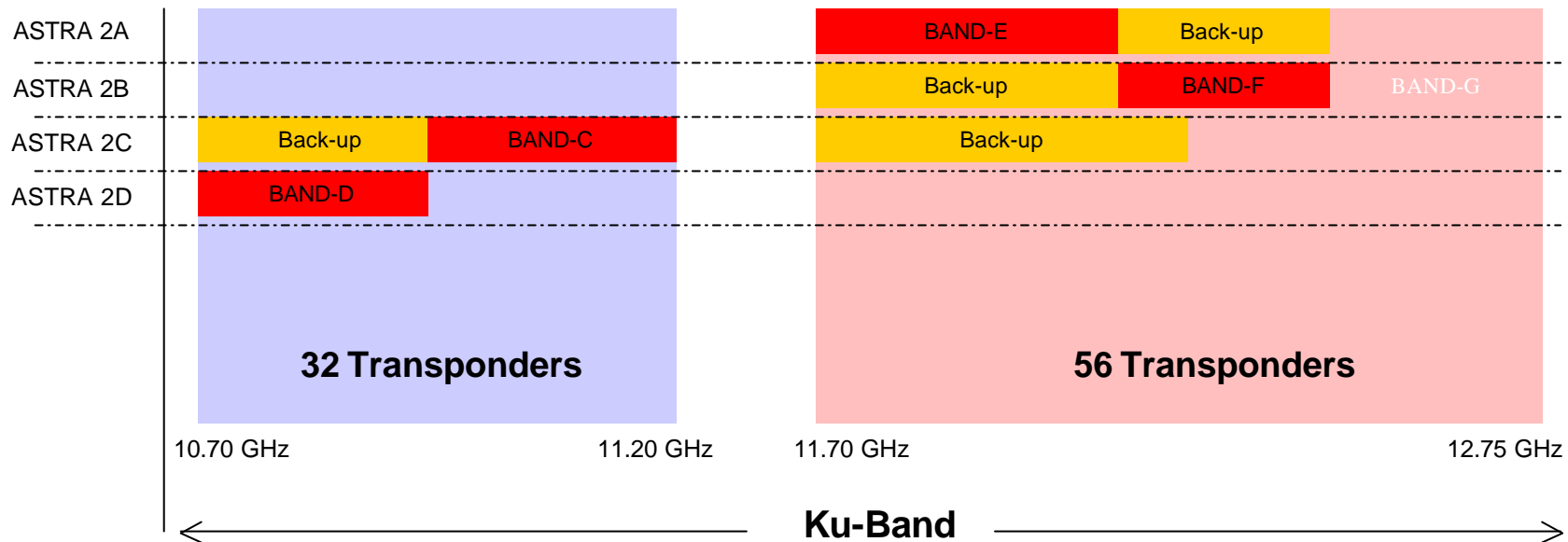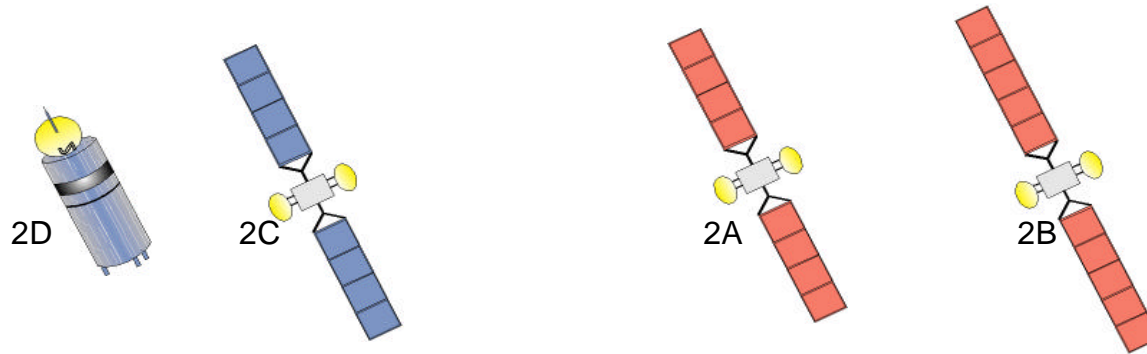# SES/ASTRA: A global broadband communications system

ASTRA

Global Broadband

SES Strategy

Geographic Expansion

Product and Service Diversification
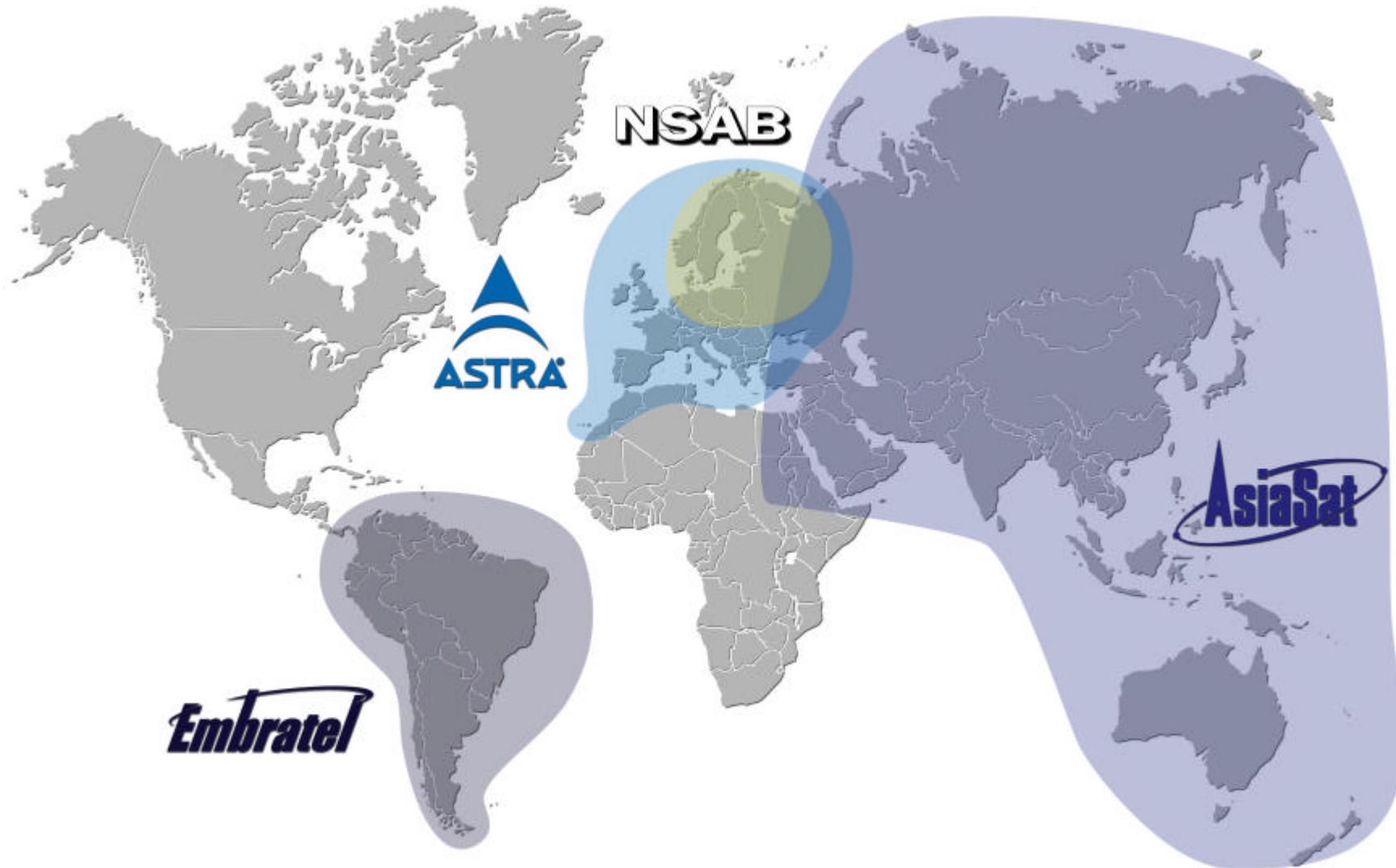
Core Business DTH Europe

Nominal fleet development of the ASTRA Satellite System at 28.2° East
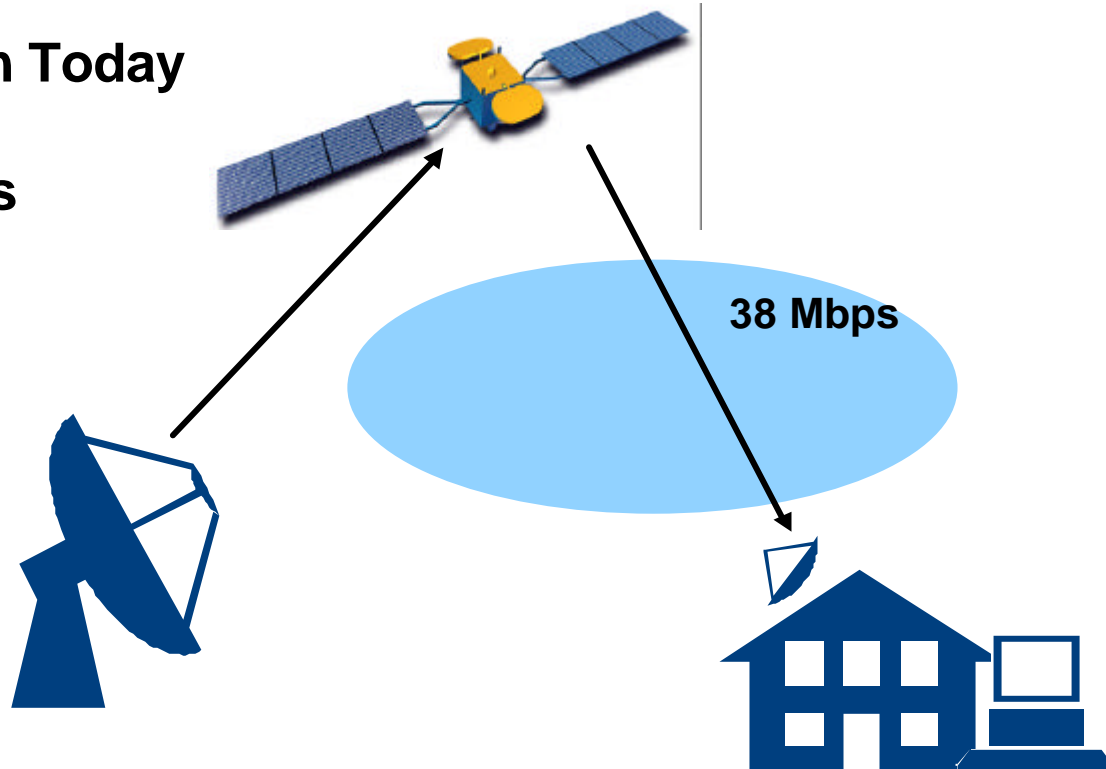
Intercontinental Coverage

"ASTRA Connects" - Broadband Distribution Today

Multimedia Distribution Today (ASTRA-NET)
Distribution of services in Ku-band

- High speed broadband distribution
- Fully addressable
- Point to multipoint
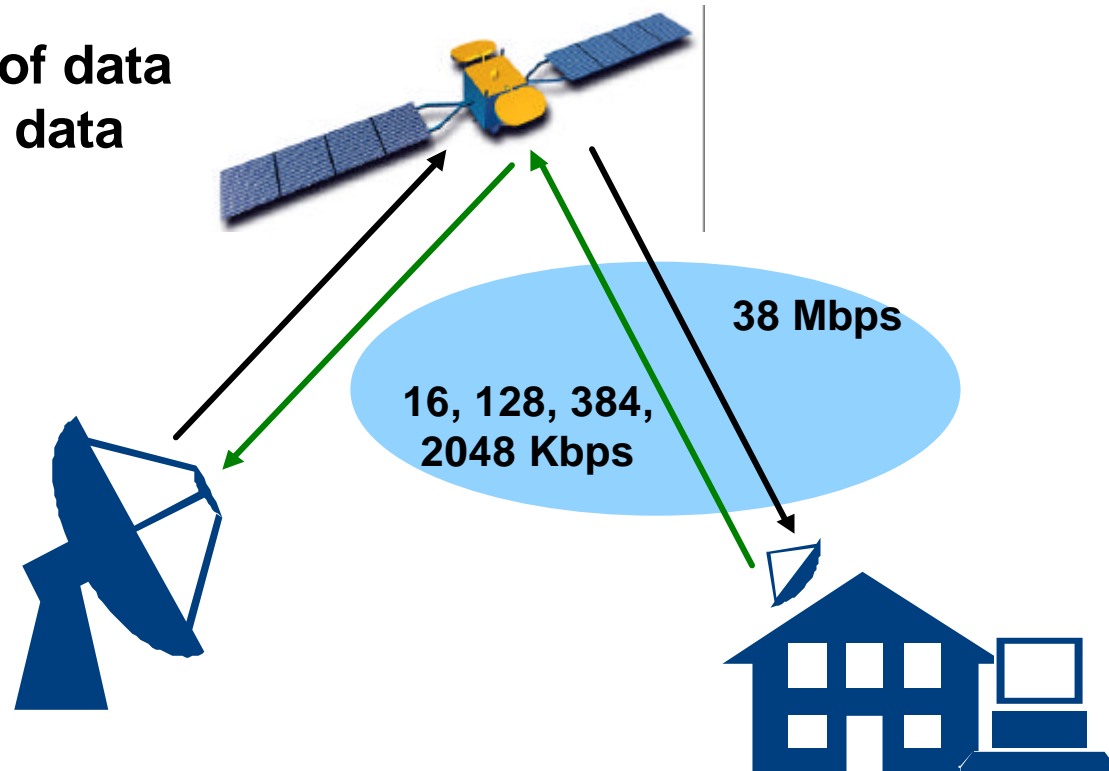- Open platform, based on existing standards (DVB, IP)

38 Mbps

Return Path: PSTN or ISDN

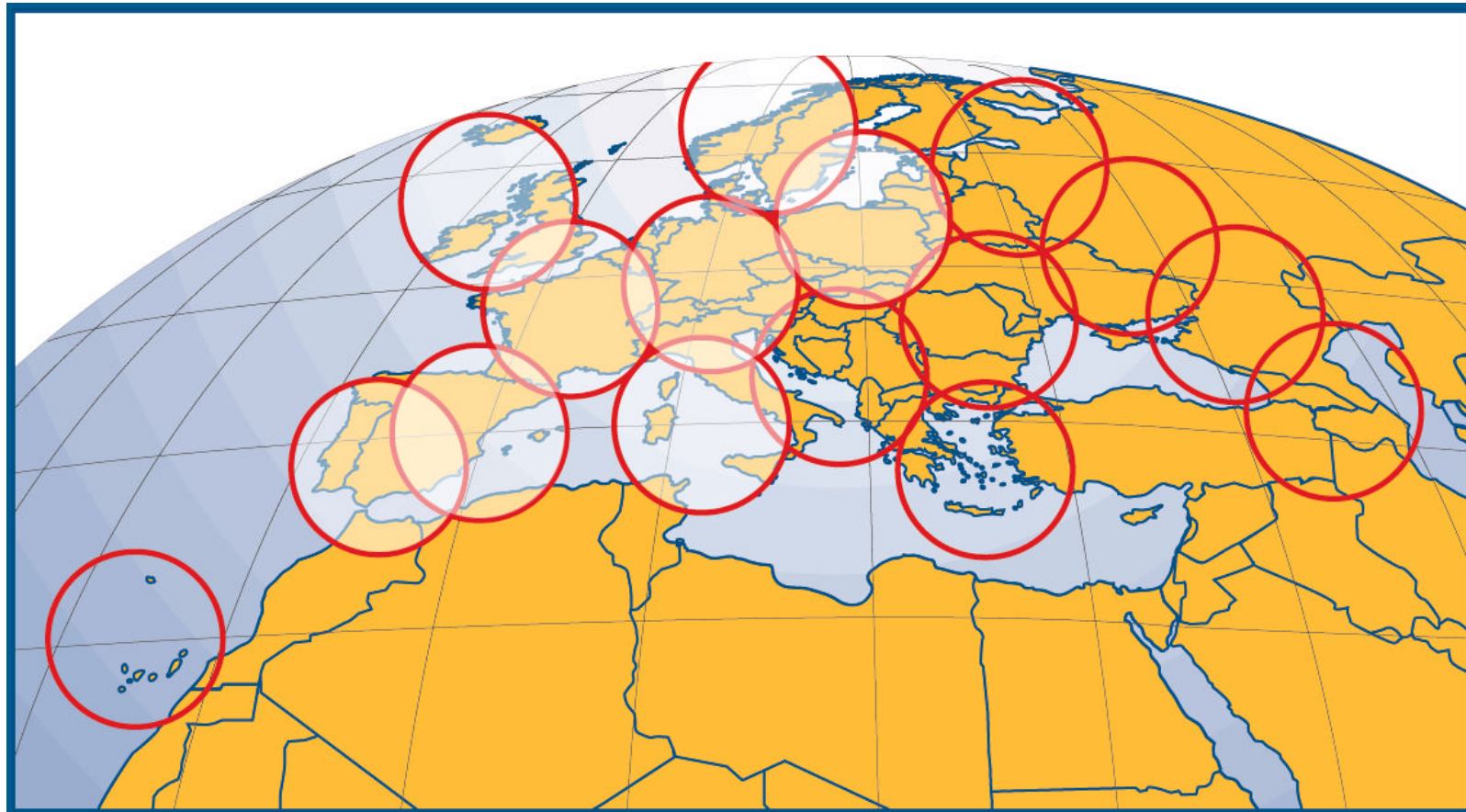# "ASTRA Connects" - Broadband Interactive System

Ku-Band: Distribution of data
Ka-Band: Collection of data

- Live testing
- Commercial roll-out in 2000
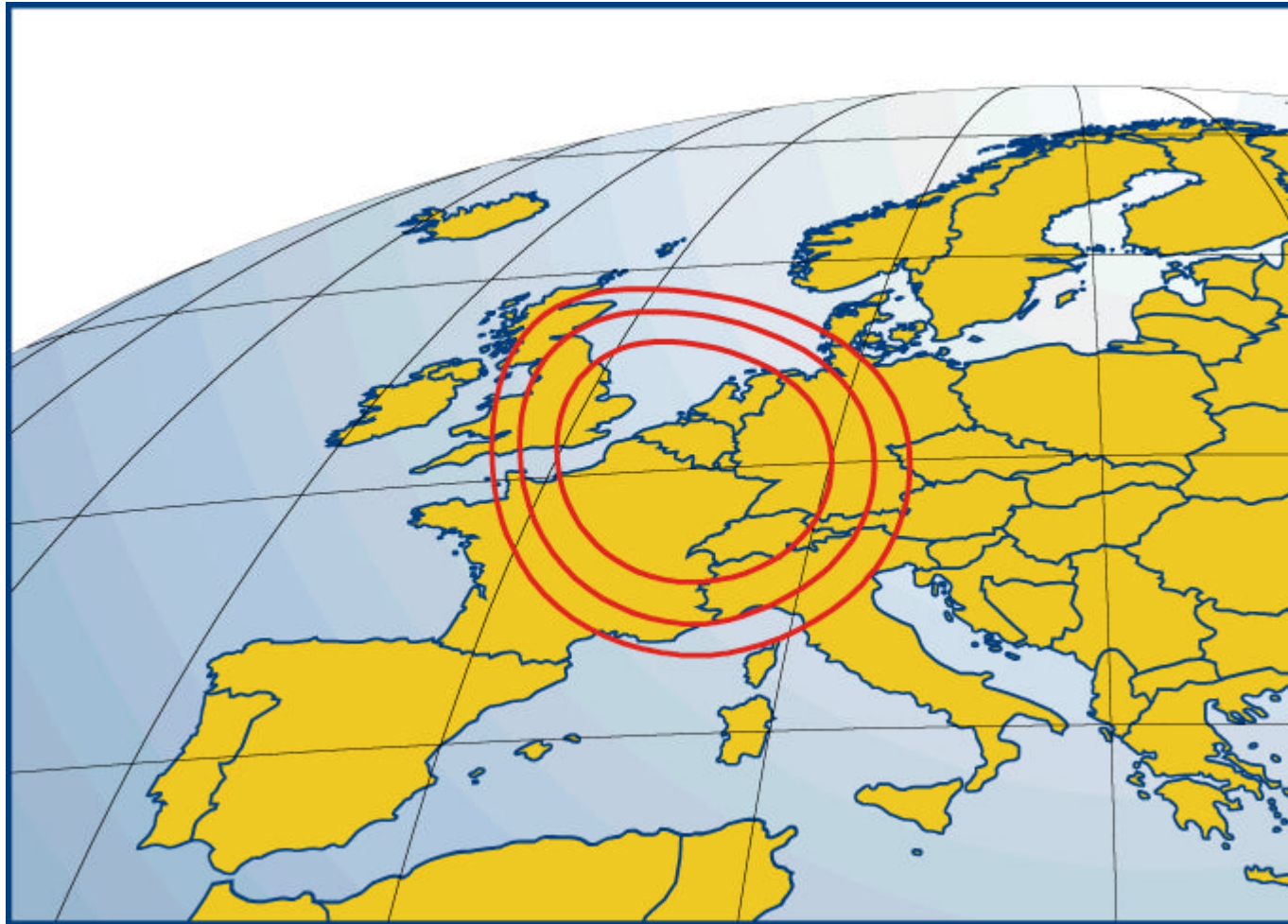- Complementary to terrestrial infrastructure

38 Mbps

16, 128, 384, 2048 Kbps

Return Path: ASTRA Ka-band payload

"ASTRA Connects" -
Ka Band Uplink Coverage (1H/1K)

ASTRA BBI System
Customer Gateway Location (1H)

SES plans next generation Ka-band satellites

◆ RFP issued for one or more dedicated Ka-band satellites

◆ Features:

➔ bent-pipe satellites

➔ spot-beams for frequency re-use

➔ capacity of up to 6 Gbit/s per satellite

"ASTRA Connects" - Broadband Interactive System

- ◆ Commercial launch H1, 2001 with launched Astra 1H
- ◆ Multiple advantages:
  - ➔ Lower cost, Higher speed
  - ➔ Richer content, DVB-compliant

- ◆ Satellite Interactive Terminals (SIT) initial pricing from Euro 3,000, with target price in 2 years < Euro 500
- ◆ Initially B2B; consumers from 2001 onwards, starting with multiple-dwelling units

SIT (Satellite Interactive Terminals)

Type	Dish size*	Transmit Bitrate	Power	Receive Bitrate
SIT I	65-75 cm	144 kbit/s	0.5 W	38 Mbit/s
SIT II	75-95 cm	384 kbit/s	1.0 W	38 Mbit/s
SIT III	95-120 cm	2,048 kbit/s	2.0 W	38 Mbit/s

* dependent upon manufacturer

Strategic Development - Preferred Partners

◆ Strong regional satellite operators

◆ Audiovisual/broadband service providers

◆ Companies developing broadband technologies which support SES business objectives