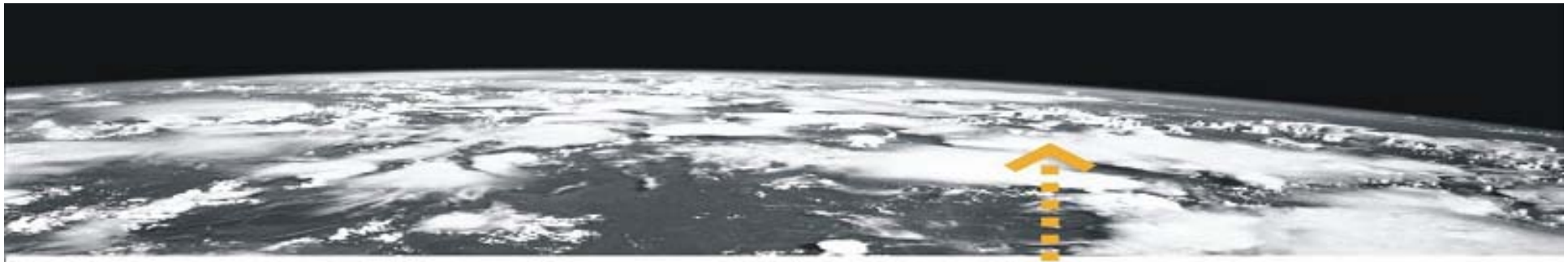

DLR

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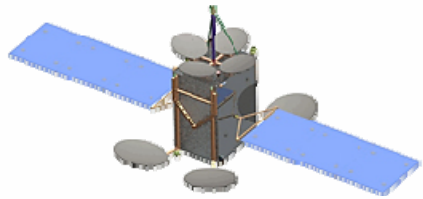
HISPASAT: Presentation to

Workshop on ARTES 11 Small GEO Satellite

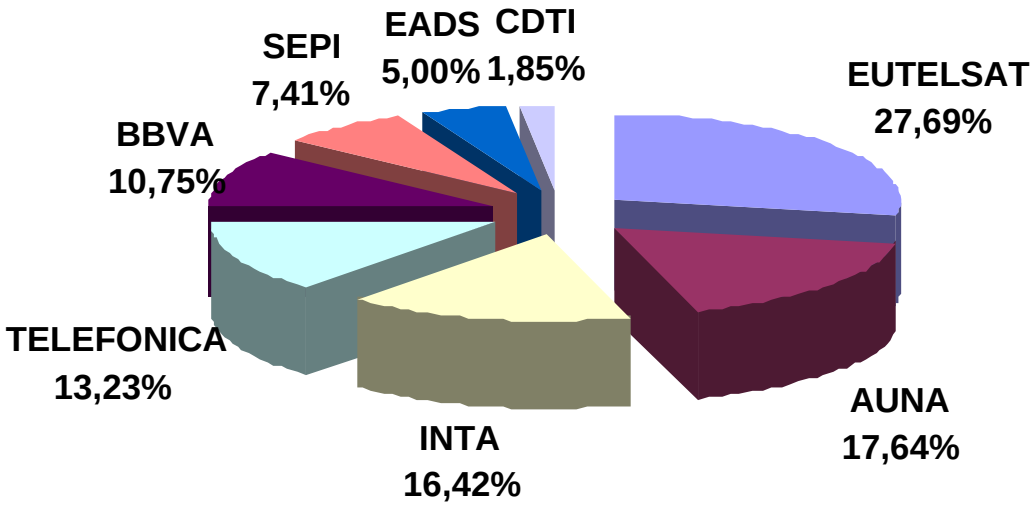
Rottach-Egern, 29 JUNE 2006

THE EARTH REVOLVES AROUND THE SUN. HISPASAT REVOLVES AROUND YOU



www.hispasat.com

COMPANY: SHAREHOLDERS



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SATELLITE SYSTEM

POSITION	SATELLITE	TRANSP.	LAUNCHED
30º W	Hispasat 1C	24 Ku	2000
30º W	Hispasat 1D	28 Ku	2002
61º W	Amazonas	32 Ku, 19 C	2004
29º E	Xtar-Eur	12 X	2005
30º W	SpainSat	13 X, 1 Ka	2006
30º W	Hispasat 1E	Ku, Ka?	UNDER STUDY
61º W	Amazonas 2	Ku, C, Ka?	UNDER STUDY

- In orbit
- Under study
- Under manufacturing

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SATELLITE CONTROL CENTERS

Arganda PMC

Amazonas SCC

Arganda GCS

Guaratiba GCS

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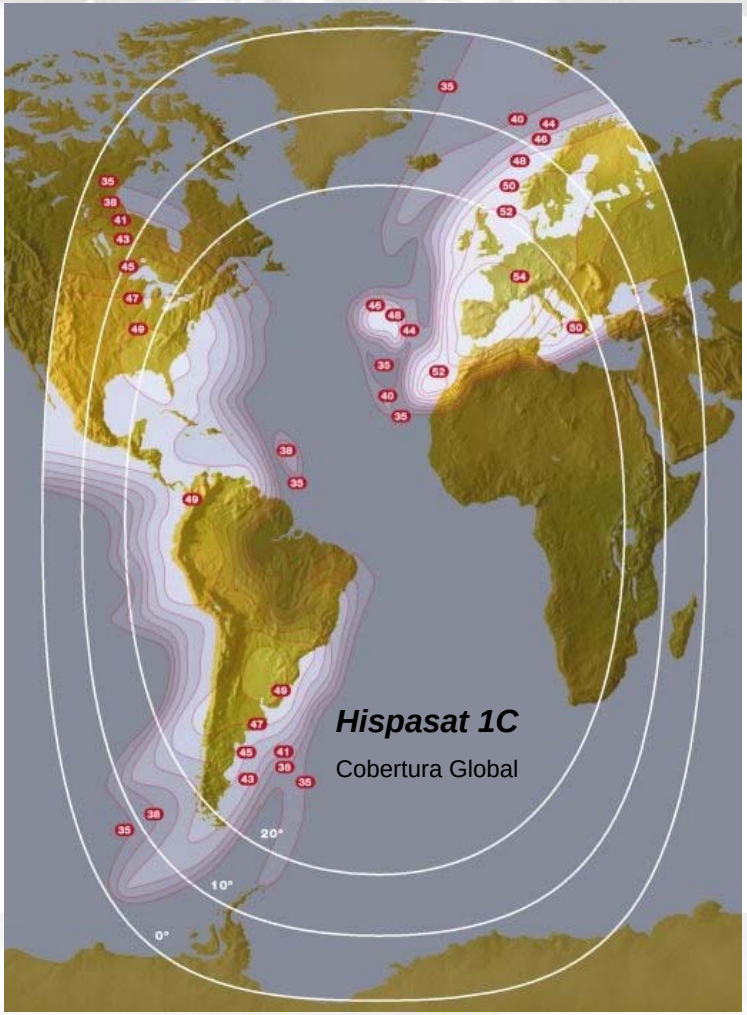
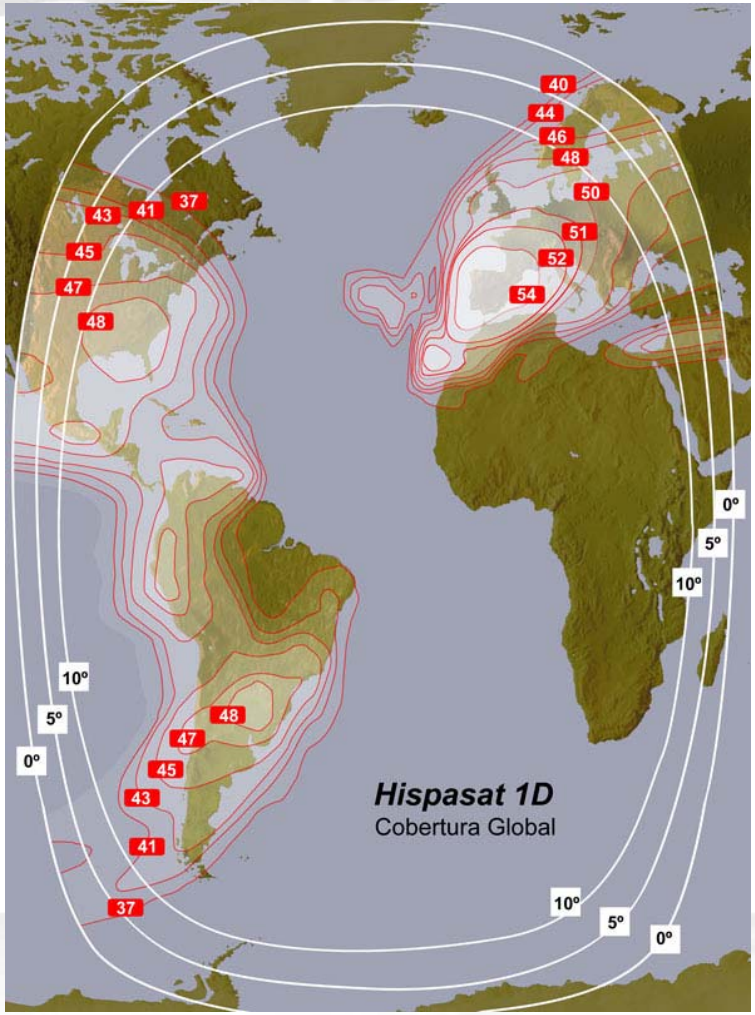
SPACE CAPACITY: HISPASAT 1C & 1D





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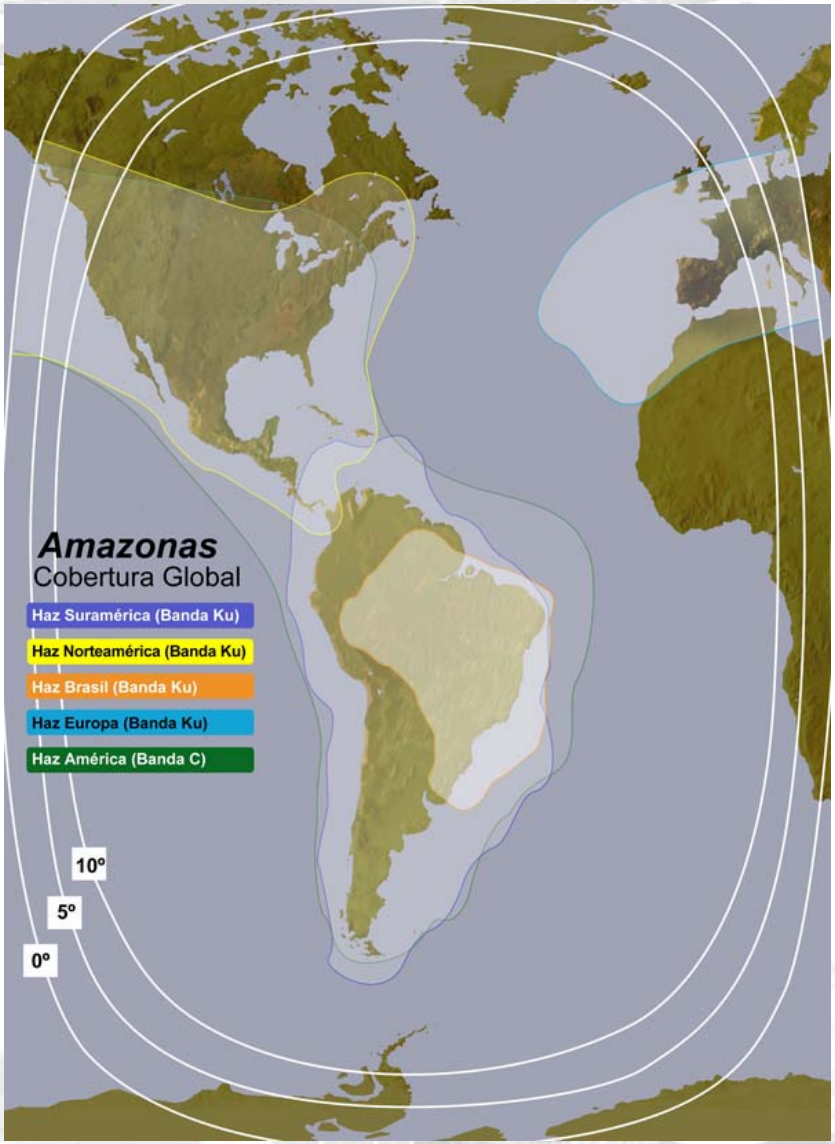
SPACE CAPACITY: AMAZONAS



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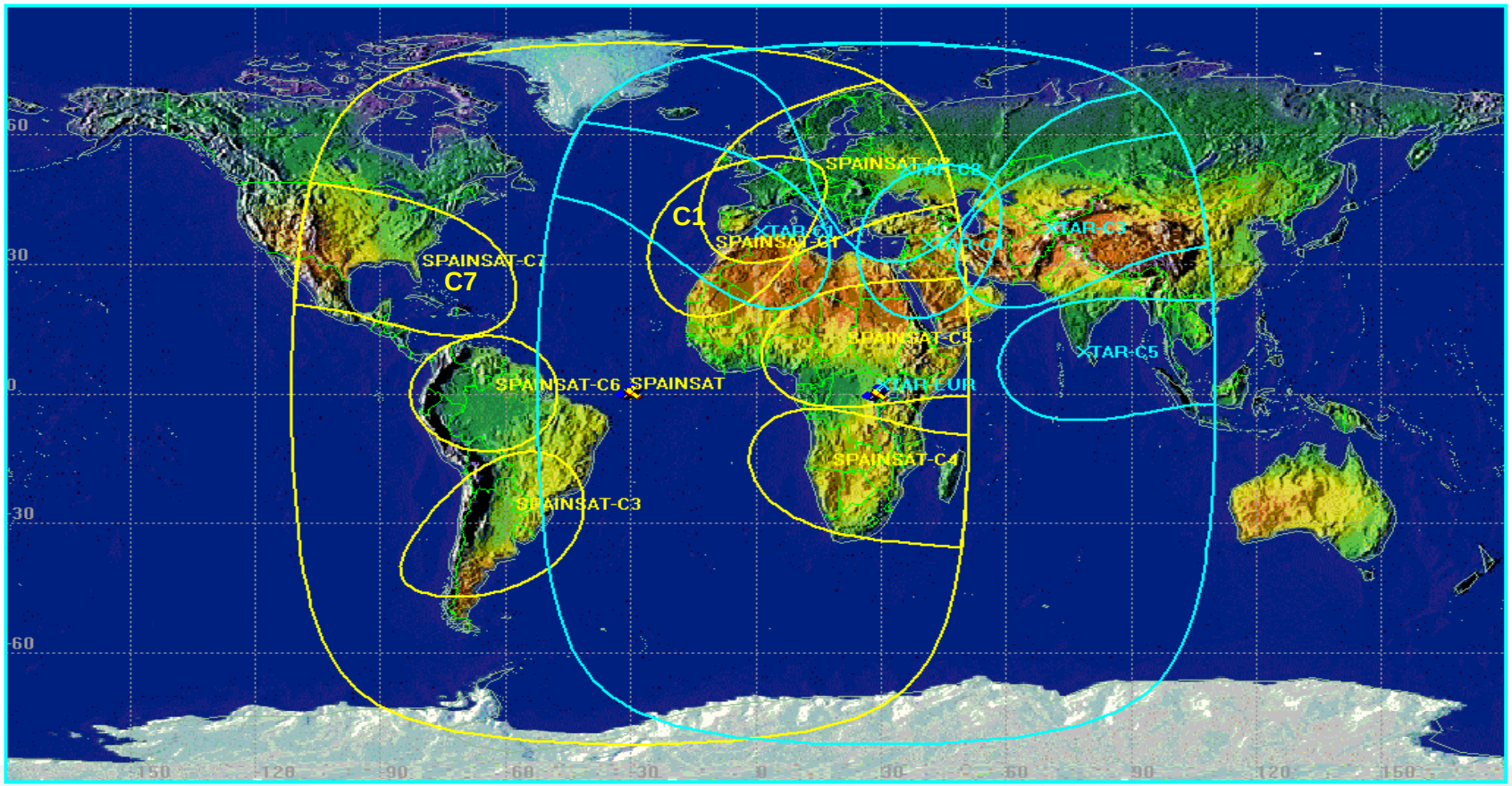
SPACE CAPACITY: SPAINSAT & XTAR



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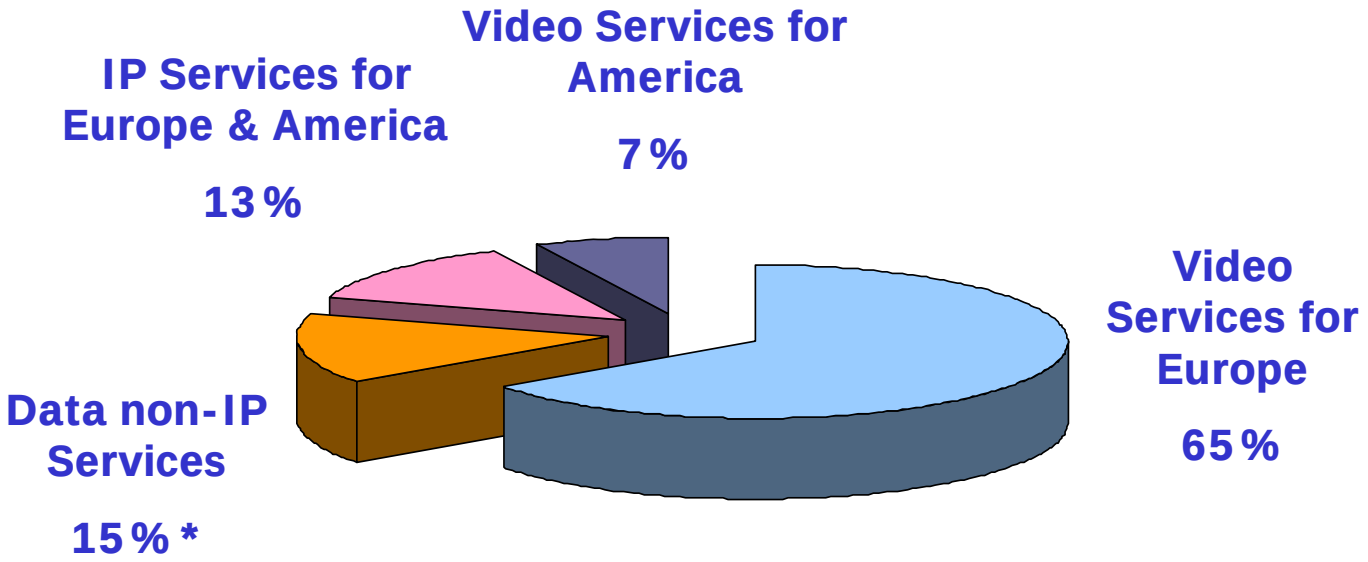
SATELLITE SERVICES



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APPLICATIONS

TELEVISION

- Direct Digital TV (DTH/SMATV). Interactive Services
- Distribution (CATV, TV analog & digital)
- Contribution (SNG)

PRIVATE NETWORKS

- Companies (VSAT)
- Ambient Media (SCADA)
- Audio Distribution (SCPC)
- Links PAP (DAMA, permanent)

PUBLIC NETWORKS

- NETWORKS Links for Europeans & Latin-American operators
- Overload & backup circuits
- Infrastructure for transatlantic & international connections

BROADBAND AND INTERNET ACCESS

- IP Service Providers

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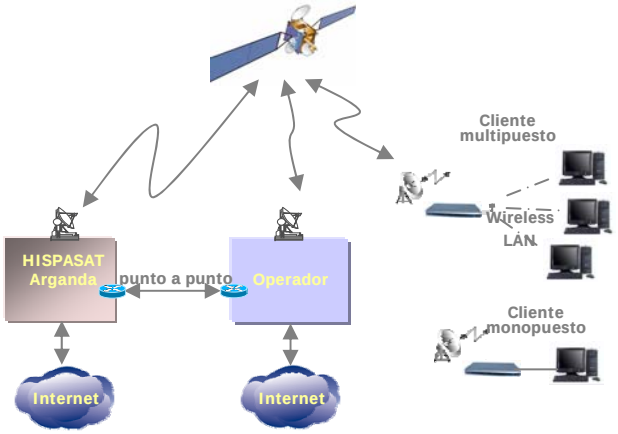
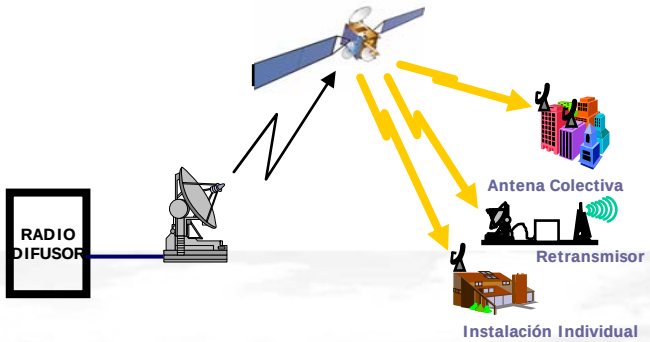
NEW APPLICATIONS





- BROADBAND PLATFORMS OVER HISPASAT
  - ⇨ PROPIETARY
    - HUB ALLOCATED IN MADRID OVER H1D FOR EUROPE AND AMERICA
    - HUB ALLOCATED IN RIO DE JANEIRO OVER AMAZONAS
  - ⇨ AGREEMENTS
    - SPAIN: TELEFÓNICA, GLOBECAST, UNIÓN FENOSA
    - BRAZIL: VICOM
    - MEXICO: COMSAT, ELARA
    - PERU: TELEFÓNICA PERU
- BROADBAND FOR MOBILES
  - ⇨ EQUIPMENT DEVELOPMENT & SERVICES IN EU PROYECTS (MOBILITY,...)
  - ⇨ SERVICES ON TEST
    - TRANSMEDITERRÁNEA
    - TGV FRANCIA
    - AIRPLANES
- HIGH DEFINITION TV (HDTV)
  - ⇨ SATELLITE IS THE NATURAL MEDIA FOR THE HDTV DEVELOPMENT

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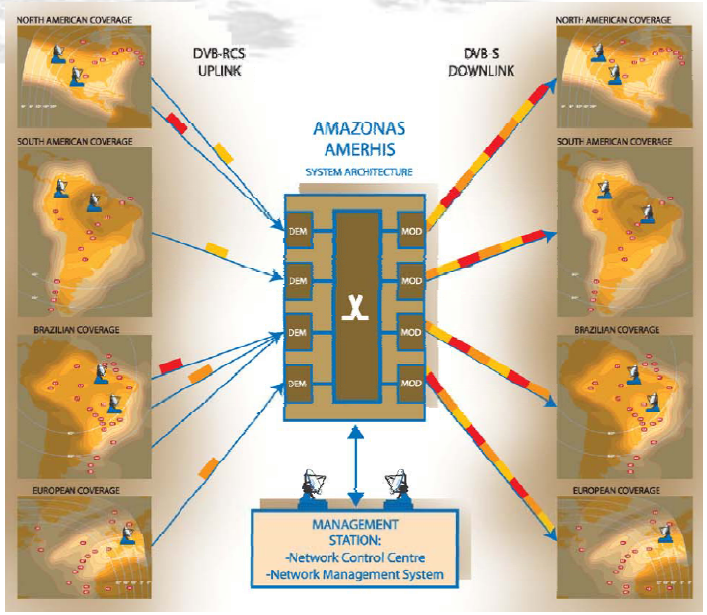
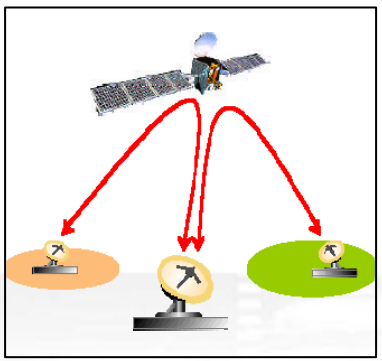
NEW APPLICATIONS: AMERHIS

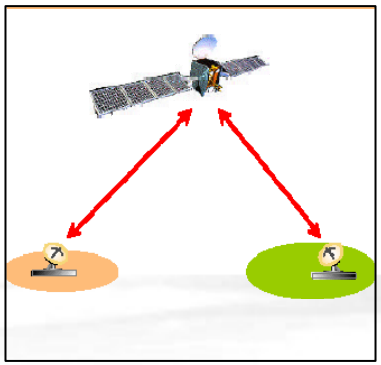
- Development of new broad band services
  - ⇨ Ground equipment more simple
  - ⇨ Reduction of the Master Station size
  - ⇨ Reduction of the user terminal size.
- Allows connections from one to several coverage area using one transmission
- Allows on board multiplex, including signals from different coverages with smaller user terminals.
- Development of mesh networks that allows new services: Voice over IP, Videoconferences
- Reduction of spatial capacity necessary for these applications
- User Terminals similar to the transparent system ones



TRANSPARENT



AMERHIS



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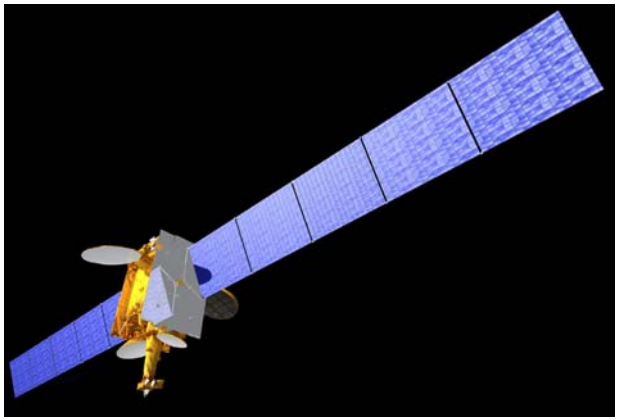
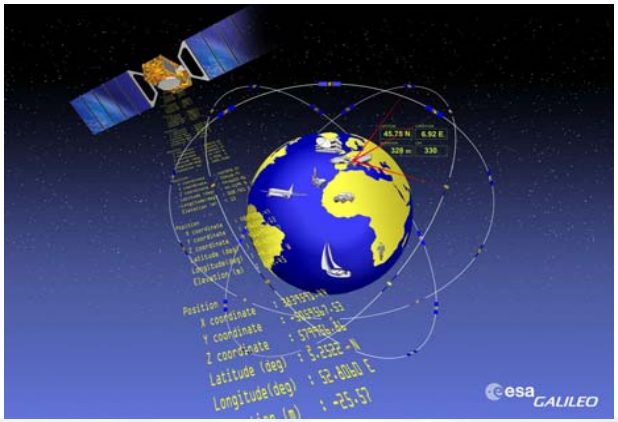
FUTURE PROJECTS





- DESATCOM
  - ⇨ DEVELOPMENT OF AN ADVANCED COMMUNICATIONS PAYLOAD
  - ⇨ SPANISH INDUSTRY AS PRIME CONTRACTOR
  - ⇨ LOOKING FOR FINANCIAL SCHEMES
- FUTURE SATELLITES
  - ⇨ Use of advanced technologies
  - ⇨ Reconfigurable Antennas in orbit
  - ⇨ On Board Processor Systems
  - ⇨ Flexible Payloads
- GALILEO
  - ⇨ HISPASAT is one of the consortia founders that will become concessionaire of Galileo for the deployment and exploitation of the navigation system constellation

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HISPASAT VIEW OF SMALL SATELLITES

- HISPASAT IS INTERESTED IN SMALL SATELLITES SINCE 1995.
  - ⇨ STUDY PERFORMED WITH INTA: “FEASIBILITY STUDY FOR A COMMUNICATIONS MINISATELLITE”

- ADVANTAGES:
  - ⇨ ACCESS TO SPACE CAPACITY AT LIMITED CAPEX
  - ⇨ CAN COVER SMALL/LIMTED MARKET OPPORTUNITIES
  - ⇨ DIVERSIFY LAUNCH/IN FLIGHT RISKS

- CONDITIONS
  - ⇨ PRICE PER TRANSPONDER SHALL BE SIMILAR TO STANDARD SIZE SATELLITES
  - ⇨ LAUNCHER PRICES SHOULD BE ALSO SCALED DOWN
  - ⇨ SHORT SCHEDULES WOULD BE DESIRABLE
  - ⇨ PERFORMANCES SHOULD BE SIMILAR TO STANDARD SIZE SATELLITES

- DISADVANTAGES
  - ⇨ OCCUPATION OF THE ORBITAL WINDOW: COLOCATION STRATEGIES
  - ⇨ INCREASE OF THE COMPANY OPEX

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DESATCOM MISSION

- First steps in the definition of the DESATCOM Payload concept were carried out along 2004 and 2005 within National R&D Program
- The Program develops the concept of an Advanced Regenerative Payload that includes:
  - ⇨ Receive Active Antennae
  - ⇨ On Board Processor
- Prepares for the future generation of multimedia telecommunication satellites that will be using on board processing and active antenna technologies to counteract current commoditization trend of space capacity
- Allows on orbit capacity adaptation to the trends in an emerging market, optimizing the use along lifetime
- Fosters the development of new broadband services,
  - ⇨ IP content delivery
  - ⇨ Tele education
  - ⇨ Mobile applications (ships, trains, planes,...)
- GOAL:
  - ⇨ **DEVELOP DESATCOM MISSION FLIGHT HARDWARE AND GROUND SEGMENT**
  - ⇨ **FLY DESATCOM MISSION IN FLIGHT OPPORTUNITIES AVAILABLE**

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FLIGHT OPPORTUNITIES

- DESATCOM was originally conceived for a flight opportunity in a future HISPASAT satellite:
  - ⇨ Financially neutral
  - ⇨ Schedule neutral
  - ⇨ Risk neutral

- Additional flight opportunities have been considered, with the following conditions:
  - ⇨ HISPASAT to have **program control** in order to drive the performances and schedule, and manage the risks according to company policy.
  - ⇨ HISPASAT to have the **TTC control** of the satellite in orbit in order to ensure adequate service quality to HISPASAT customers.

- Previous opportunities considered: Alphasat, Agora/Athena

- Potential opportunity in Small-GEO program: P/L 300 kg, 3 kW
  - ⇨ DESATCOM budgets reviewed specially in power

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