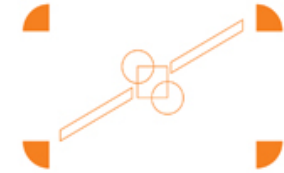




# Workshop on ARTES 11 Small GEO Satellites

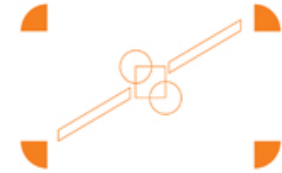
Rottach-Egern, Germany, 29 – 30 June 2006

# Eutelsat's Fleet today



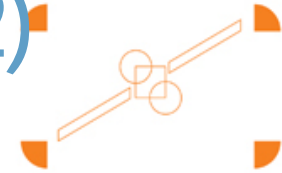
- > 23 satellites in orbit
- > 3 satellites under procurement (HB8, HB9, W2M)
- > 2 satellites under RFP (W7, W2A)
- > 3 small GEO satellites:
  - > Sesat 1 at 36°E
  - > Eurobird 3 at 33°E
  - > W2M under procurement
- > Fleet mostly on larger satellite trend, but small GEO do fit in terms of opportunity:
  - > Sesat 1 : state of the art payload combined with extensive heritage platform delivered in orbit
  - > Eurobird 3 to start new business, specially designed for asymmetrical broadband
  - > W2M as a fast program to add security in orbit

# Potential Advantages of Small Satellites



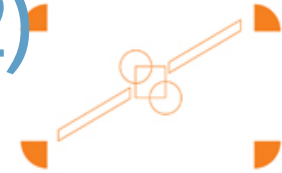
- > Short programme schedules
  - > Faster to the inception point for new business markets
  - > Lower programme risks
- > Smaller could imply more
  - > Easier to provide in orbit sparing
- > Lower initial cost, suited for new business
  - > Lower satellite cost
  - > Launch mass => lower launch cost
  - > Lower insurance cost
- > More agile to the market for new business
  - > Launch one satellite, when market grows launch another one
  - > Invest as you grow

# Challenges for Small GEO Satellites (1/2)



- > Cost per transponder needs to remain competitive
  - > For a satellite half the size, the cost of satellite needs to be less than half (launch costs not proportional). Target range 300 k€/trsp/year
- > Program schedule, and therefore manufacturing process
  - > In case of new business venture, satellite needs to be in-orbit very quickly. Target schedule around 18 – 20 months.
- > Efficient in mass
  - > A launch mass of 2.7 t for a 32 transponder satellite with 15 years lifetime
- > Acceptable payload power
  - > Up to 5kW
  - > Improved solar array technology (multi junction Ga As)

# Challenges for Small GEO Satellites (2/2)



- > Flexibility in payload architecture :
  - > Reconfigurability needs to be provided to match a range of possible missions
- > Accommodation of payload and antennas
  - > Reasonable number of TWTAs (say, 40)
  - > Interesting possibilities for the antenna farms (dual deployment).
- > Easy to operate:
  - > Simplified avionics
  - > Lower ground control investment
- > Direct orbit injection
  - > Maximise payload mass and lifetime