



# AC 201 TOMAS

## Inter-Trial Testbed of Mobile Applications for Satellite Communications

TEN Telecom Workshop  
Brussels  
2 February 1999

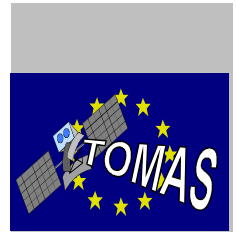
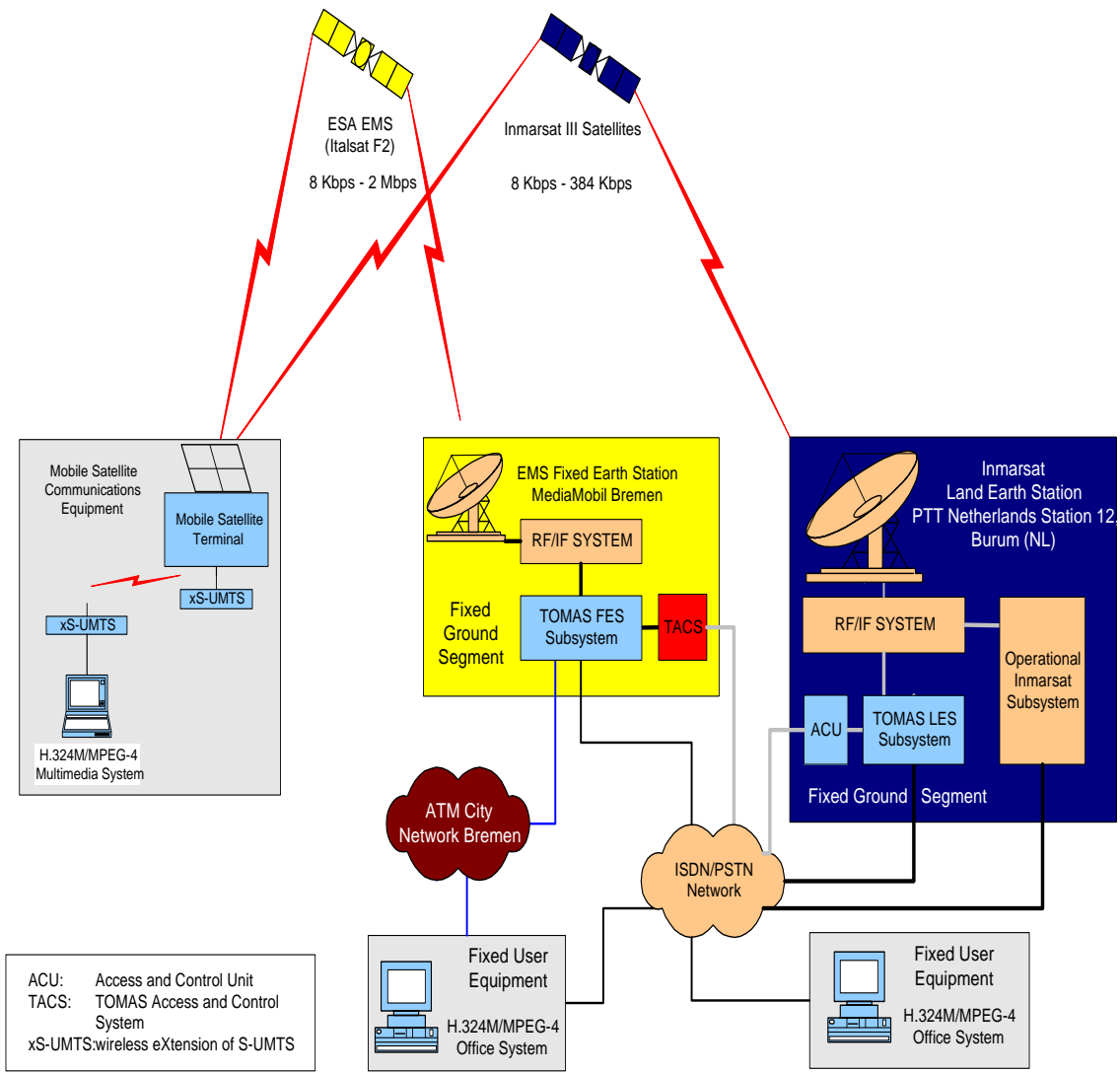


# Objectives of ACTS Project TOMAS



- Realisation of Satellite-UMTS test platform for multimedia services up to 2 Mbps channel rate
- Execution of joint trials with cooperating projects
- Identification of generic requirements for S-UMTS services and contribution to technical guidelines
- Cost/benefit analysis from the end user, service provider and network operator perspective
- ACTS horizontal activities and public dissemination

# TOMAS Intertrial-Platform



# Overview of TOMAS Services



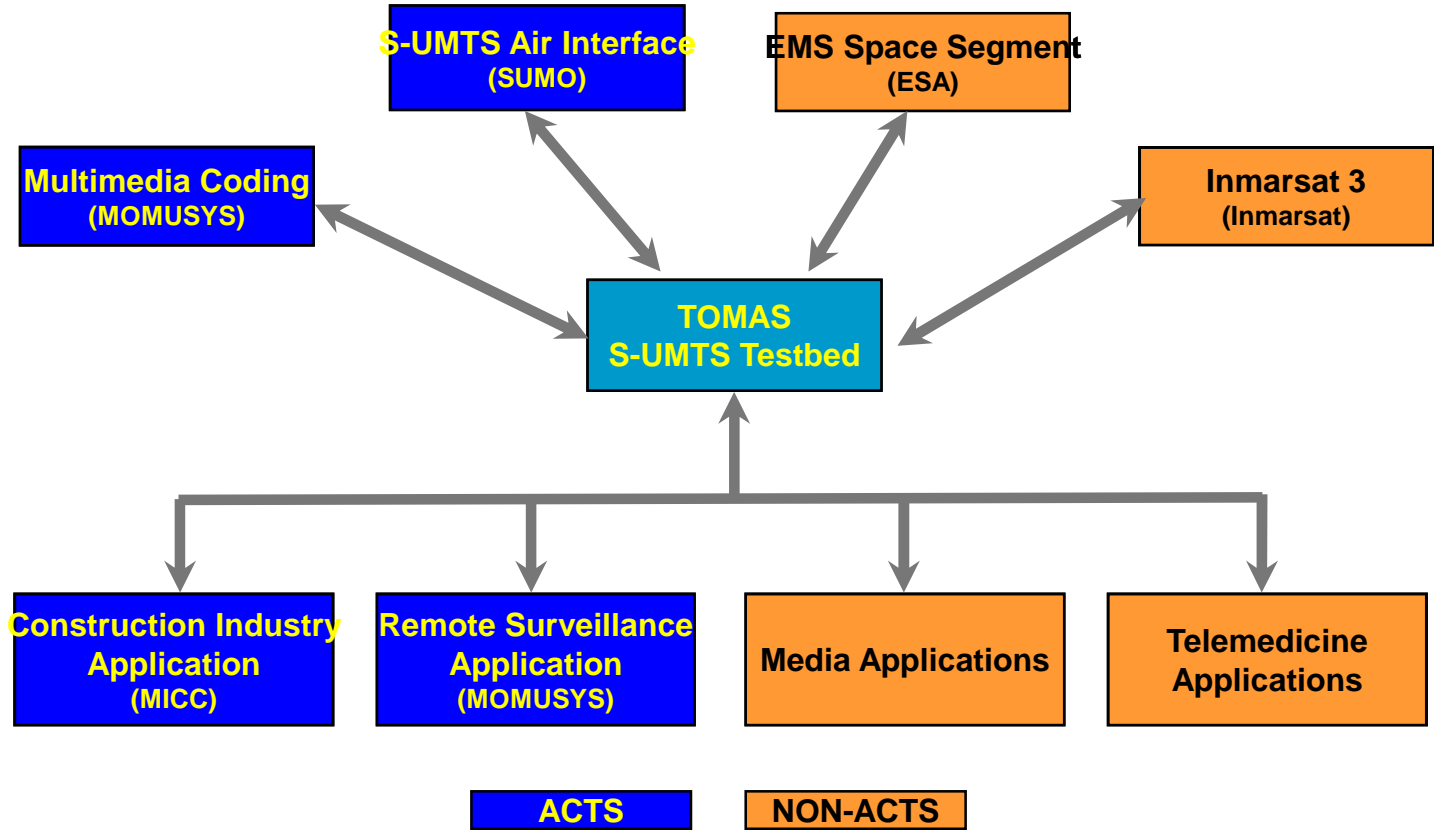
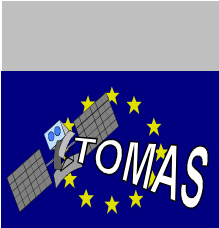
## Bearer Services

- *Low Speed* with data rates of  $n \times 8$  Kbit/s ( up to 64 Kbit/s) and interconnection to ISDN,
- *Medium Speed* with data rates of  $n \times 8$  Kbit/s (up to 384 Kbit/s) and interconnection to ISDN,
- *High Speed* with data rates of  $N \times 8$  Kbit/s (up to 2 Mbit/s) and interconnection to ATM
- All data rates can be symmetric or asymmetric and can be selected on demand

## Tele Services

- H.324 real time multimedia service
- MPEG-4 real and non-real time multimedia service
- IP Connectivity
- Service rates can be symmetric or asymmetric and can be selected on demand

# Overview of TOMAS Trials



# Joint Trials Performed in 1998



- MoMuSys Expert User trials with TOMAS H.324M and MoMuSys MPEG-4 terminal: Verification of H324M/MPEG-4 developments for S-UMTS
- MICC trials with ISDN satellite services supporting construction site applications: Web Browsing and data transmission/retrieval and Video conferencing
- Support of HECTOR telemedicine applications with TOMAS mobile satellite equipment and bearer service
- MoMuSys End User trials with end-to-end MPEG-4 multimedia transmission: Remote video surveillance trials by security services

# Evaluation of System Performance:

## TOMAS H324 and MoMuSys MPEG4 Multimedia Terminal



### Configuration

- Comparison and validation of TOMAS H.324M and MoMuSys MPEG-4 terminals over satellite
- Configuration 1: via live geostationary satellite link
- Configuration 2: via satellite simulator

### Satellite Delay

- In interactive communications the effect of the satellite delay is noticed by the users
- Users get accustomed to the delay after a number of conferences

### Bit Error Rate

- For H324M and MPEG4 coding standard up to a BER of  $1E-6$  no degradation in quality can be identified
- H324M and MPEG4 standard cope with a BER up to  $1E-5$  (some errors are noticeable)

# Economic and Social Impact



## **TOMAS provides Infrastructure and Mobile Services**

- Full real-time multimedia functionality including voice, still pictures, motion video, file transfer
- Video Conferencing, Telephony, Internet and Data B. Access

## **Economic and Social Impact**

- Requirements of modern society for increasing mobility and increasing bandwidth are met by achievements
- More information at any time in any location leads to higher reliability of decisions and reduces costs
- Less waste of time and efforts for travel to come to a conference. Transport of information instead of human beings



# Exploitation of the Achievements



- **TOMAS S-UMTS Bearer and Tele Services**
  - ❑ Inmarsat and MediaMobil intend to provide TOMAS services as commercial services. Developments will be continued in the TEN-Telecom project SATISFY2000
- **TOMAS Mobile Satellite Terminals Version A and B**
  - ❑ Nera and MARAC intend to transfer the technology of TOMAS prototype MST in commercial products
- **TOMAS Fix and Land Earth Stations**
  - ❑ Inmarsat and MediaMobil intend to implement billing and accounting as well as fraud protection features in upgraded prototype FES and FES for commercial use
- **TOMAS Multimedia System**
  - ❑ Further developments will be done by Bosch to use the multimedia coding technology in commercial products