



# TWISTER

Terrestrial Wireless Infrastructure integrated with Satellite Telecommunications for e-Rural

## SATELLITE COMMUNICATIONS TO CONNECT RURAL REGIONS

Today, broadband connectivity is a feature as important for everyday life as the quality of roads and public transport networks. Through their immediate and far-reaching connectivity, satellite communications allow the extension of the broadband networks to rural and isolated areas.

The TWISTER project supported the development and widespread application of bi-directional satellite services combined with wireless local networks to provide reliable and sustainable broadband internet access to rural regions.

Over a period of more than 3 years TWISTER deployed and operated 105 satellite access points in 9 different countries, of which 69 have been combined with wireless local loops. The deployed broadband solutions have been used to provide innovative applications to more than 900 users in the domains of agriculture, education, community services, health care and e-business.

TWISTER has investigated and validated a number of hybrid satellite-wireless system architectures and has analysed the results of the deployed sites in terms of network usage and performance. TWISTER provided recommendations on how to provide an optimal trade-off between quality of service to the end-user and cost effective network operations.

The project has also provided a return of experience on network management methods allowing the efficient monitoring, operation and supervision of a large number of hybrid satellite-wireless sites deployed in different regions of Europe.

## HYBRID NETWORKS PROVED SUCCESSFUL

TWISTER has proven the technical and operational maturity of hybrid networks integrating satellite solutions with wireless terrestrial technologies.

Close cooperation with local and regional authorities as well as with service and technology providers have ensured the sustainability of the TWISTER project developments. More than 40% of all sites continue with satellite broadband access on a commercial basis indicating that even three years after the start of the project (in February 2004) terrestrial ADSL solutions have not progressed as promised and showing the satisfaction of the end-users with the solutions that have been proposed by TWISTER.

The project has concluded with the identification of a number of target areas for further enhancement of the satellite broadband services, such as increased mutualisation factor, combined broadband internet and TV, easy access to public authorities and reduced satellite bandwidth costs.

The TWISTER hybrid satellite-wireless solution can also provide an immediate and wide reaching answer to the needs of the remote and isolated regions in Africa, South-America as well as Eastern European & Balkan countries.



Satellite backhauling and central wireless base station  
Source: TWISTER

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## LIST OF PARTNERS

- EADS Astrium, France
- Ouranos Networks, Belgium
- Aramiska, Belgium
- Cemagref, France
- University of Malta, Malta
- CNES, France
- Diputacion Provincial de Zaragoza, Spain
- Eutelsat, France
- Warsaw University of Technology, Poland
- NERA, Norway
- Ansur SA, Norway
- Marratech, France
- Picopoint, The Netherlands
- Aneto, France

## COORDINATOR

### EADS ASTRIUM

Telecom Systems Department  
31 Avenue des Cosmonautes  
31402 Toulouse Cedex 4  
France  
<http://www.twister-project.net>

## CONTACT

### Greet Verelst

Tel: + 33 5 62 19 63 64  
Fax: + 33 5 62 19 94 94  
E-mail: [greet.verelst@astrium.eads.net](mailto:greet.verelst@astrium.eads.net)

## PROJECT INFORMATION

TWISTER: Terrestrial Wireless Infrastructure integrated  
with Satellite Telecommunications  
for e-Rural  
Integrated Project  
Contract no: SIP3-CT-2003-502928  
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Estimated total cost: € 8.512.617

