

# Operational uses of satellite-based applications in the public sector

## A case-study review

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### EXECUTIVE SUMMARY



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Please cite this publication as:

Eurisy (2015), Operational uses of satellite-based applications in the public sector: a case-study review, Paris (France), January 2015.

ISBN 978-2-9551847-0-7

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Editor: G. Fiore

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# Operational uses of satellite-based applications in the public sector

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### EXECUTIVE SUMMARY

The benefits of using satellite-based services in the management of public services, such as transport and environmental monitoring, are becoming more and more visible. Nevertheless, little systematic analysis exists that qualifies and quantifies the nature and extent of such benefits. Evidence-based data on the use of satellite-based services can potentially provide support to public authorities interested in these technologies, and would also help providers (whether public or private) in marketing them within the public sector.

Since 2007, Eurisy has been using a bottom-up approach - based on the experiences and direct testimonials of public managers - to analysing the mechanisms leading to the adoption of satellite-based services, the challenges encountered and the benefits derived from their use for individual public administrations.

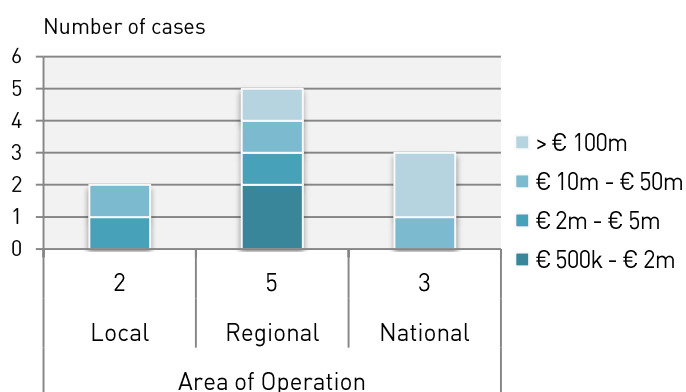
In 2014, the association launched an initiative aiming at reporting - periodically and consistently - on the uses of satellite-based services by public authorities (hereafter referred to as PAs) in Europe. This publication presents the results of the first phase of this initiative. During this phase the Eurisy methodology has been tested by analysing ten case-studies. The cases have been selected from the database of success stories collected by Eurisy under its User Programme, aimed at raising awareness on available satellite-based applications through good practice exchanges among user organisations. The sample does not represent either the range of public authorities using satellite-based services in Europe or the satellite-based services available for use in the public sector.

In 2015, the methodology will be amended and used by Eurisy to launch an online survey aimed at obtaining a wider overview of the uses of satellite-based services within public administrations in Europe.

This Executive Summary presents the main findings resulting from the analysis of the ten selected case-studies. Detailed information on the methodology used, the cases reviewed and the results obtained is contained in the full analytical report.

### PUBLIC ADMINISTRATIONS USING SATELLITE-BASED SERVICES

Public authorities' annual budget ranges



This analysis has included ten public administrations working at the local, regional and national levels in the fields of transport, environmental monitoring and territorial management (see list on page 8).

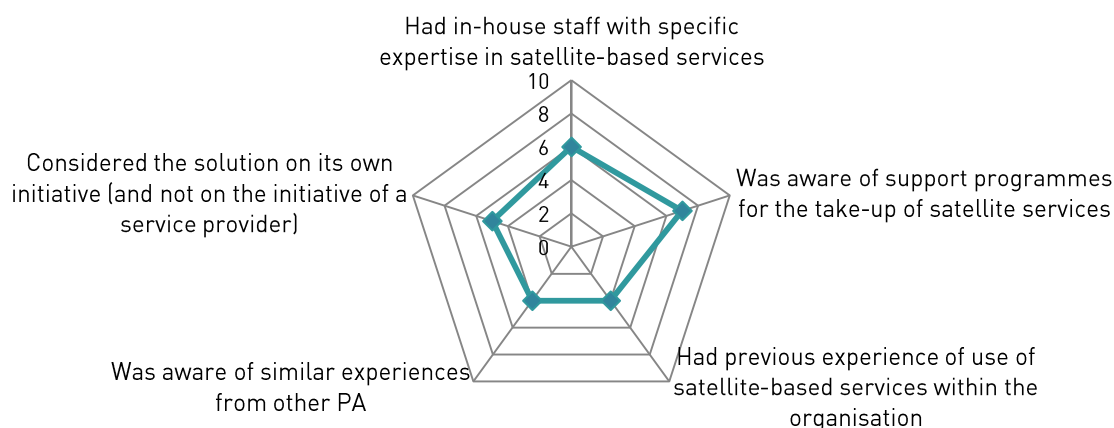
Seven entities had an annual budget between EUR 500k and 50m. The remaining three had budgets above EUR 100m, showing that the size of the public authority is not a discriminatory condition for the adoption of satellite-based services, and that organisations with small budgets can also profit from them.

## PRECONDITIONS AND PREVIOUS KNOWLEDGE OF SATELLITE-BASED SERVICES

In-house expertise is not a precondition to the use of satellite-based services by public administrations. Nevertheless, in cases where it exists, it leads to more proactivity in considering them. In-house technical expertise is also correlated with knowledge of support mechanisms and funding sources.

Some 60% of the user organisations had in-house staff with expertise in satellite-based applications. 40% of these organisations had previously used satellite-based services and 40% were aware of similar experiences implemented by other public administrations. Six of them had knowledge of support programmes or mechanisms to facilitate access to satellite-based applications before adopting services relying on them.

### Knowledge of satellite-based services. The public authority...

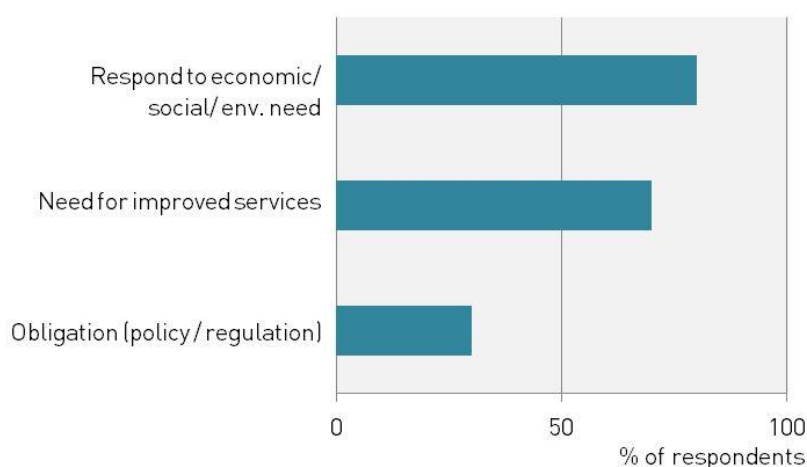


In half of the cases, the satellite-based system was proposed by a service provider, while in the other five cases the public authorities thought themselves about this technological solution.

## DRIVERS AND MOTIVATIONS FOR THE UPTAKE OF SATELLITE-BASED SERVICES

In terms of drivers, 80% of the public authorities consulted adopted a satellite-based solution to respond to social, economic or environmental needs, 70% to improve public services and 30% to implement a policy.

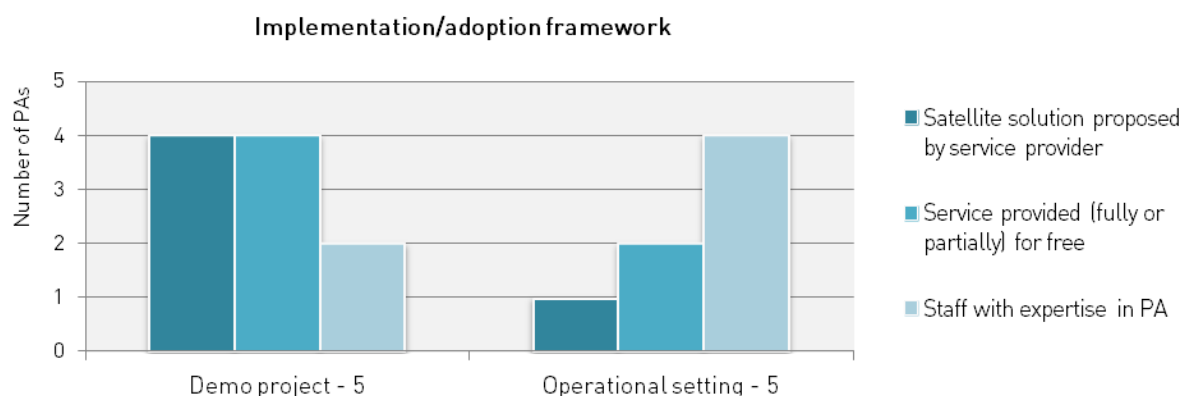
### Main motivations for first investing in a satellite-based solution



Two favourable conditions for the successful and enduring utilisation of these solutions were the adequateness of the satellite-based services to provide answers for strategic needs, and the ability to adapt to pre-existing work procedures and tools. In seven cases, the satellite-based service substituted (fully or partially) a previous solution.

Administrations chose these new solutions not because of their advertised technical merits alone, but because of their competitiveness in terms of efficiency (50%) and costs (40%).

## PUBLIC ADMINISTRATIONS' IMPLEMENTATION FRAMEWORK

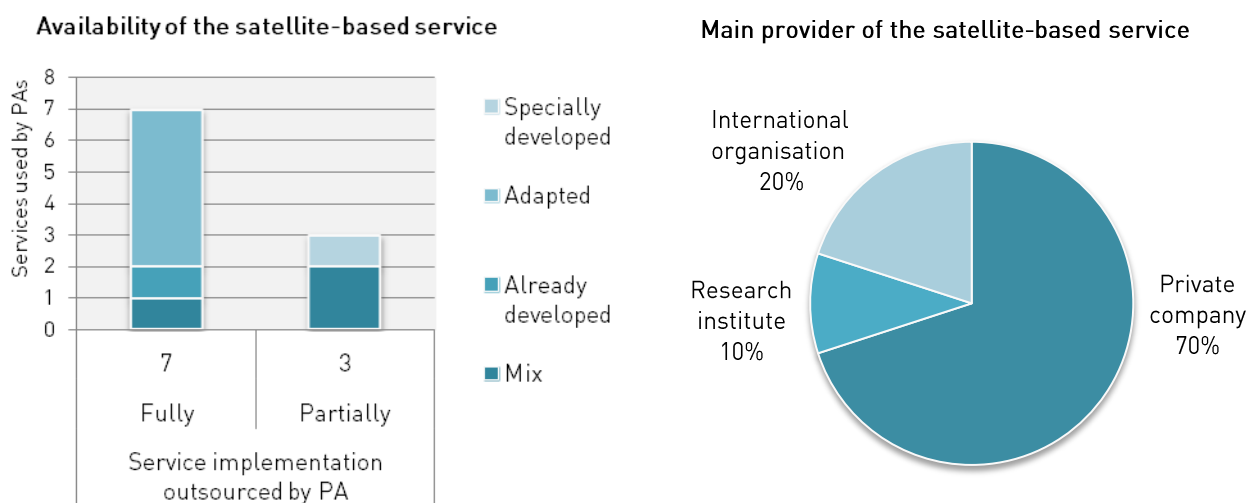


In the ten cases analysed the implementation framework - demonstration project or operational setting - did not emerge as a discriminatory condition to the successful and enduring use of the satellite-based services. In half of the ten cases considered, the satellite-based services were adopted within the framework of publicly funded demonstration projects. In the other five cases, the uptake of the services resulted from an operational decision of the public authorities concerned and was funded with their own budgets.

- The free provision (even partial), of satellite-based information or services appears here as a valuable incentive to innovate within demonstration projects (in four out of five cases), whereas it seems less important when satellite-based services are adopted within operational settings (two out of five cases).
- The decision to invest in the satellite-based solution was taken internally in 80% of the cases, with no need for permission from higher administrative levels. This suggests that public authorities can decide on the tools to be used to implement their mandate. Therefore, providers of satellite-based services have an interest in "marketing" their products directly among public managers working at the operational level.
- Eight public authorities participated in the design and seven in the implementation of the services with their service providers, showing the importance of actively involving public authorities throughout the whole process of implementation or adoption of a satellite-based solution, not only in the pilot phase.
- In all cases, partnerships were established and in eight cases with more than one entity: 30% of respondents partnered with international organisations, 40% with research institutions, 60% with other public administrations, and 80% with private companies, which seem to be placed at the right level to understand the needs of public authorities and to adapt new services accordingly.

## THE SATELLITE-BASED SERVICES

Six of the satellite-based services analysed rely on Earth observation data (EO), two on satellite navigation (Satnav), one on satellite communication (Satcom) and EO, and one on both Satcom and Satnav.



All satellite-based systems had been operationally used for at least one year and 60% of them were implemented at least five years ago. All were still operational as of summer 2014.

In 90% of cases, the satellite-based solution was not off the shelf, but had to be adapted to the requirements of the user organisation.

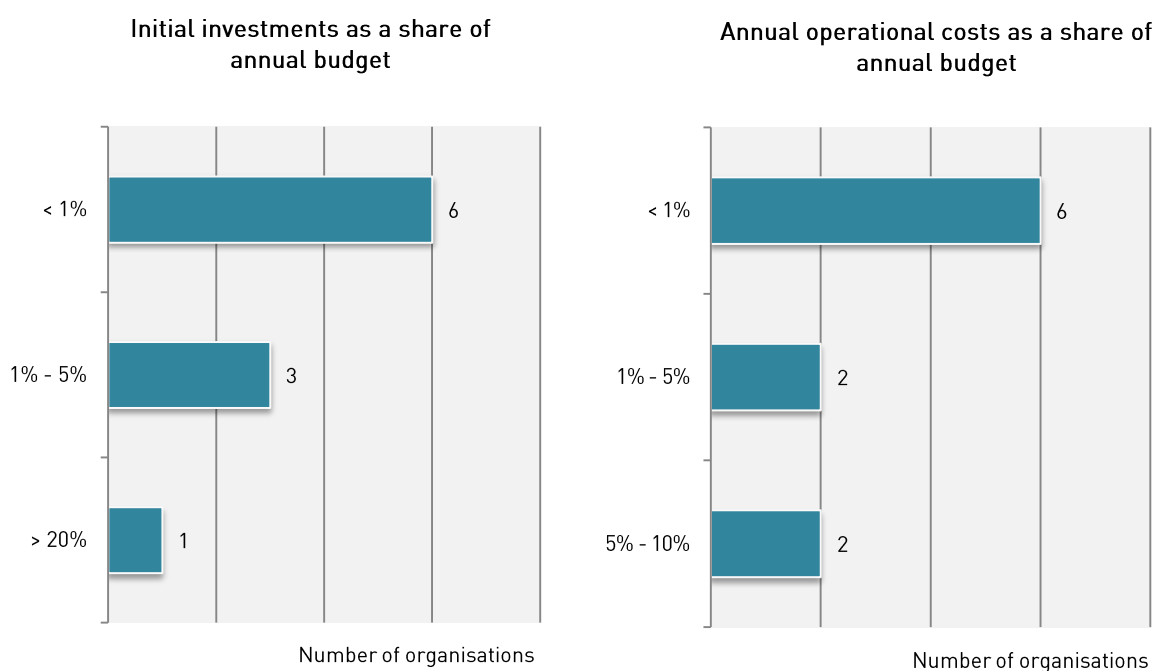
The cases reviewed indicate that public authorities do not necessarily have the capacity to develop the satellite-based services needed in-house. This could be partially explained by the fact that most of the experiences reviewed concern the use of services based on Earth observation. All respondents outsourced (fully or partially) the implementation of the satellite-based services to private companies (70%), international organisations (20%) or to research institutes (10%).

In seven out of the ten cases analysed, the main service provider is located within the country of the user public authority. Indeed, geographical and cultural proximity of service providers makes it easier for public authorities to procure the services needed and simplifies communication.

## FUNDING AND COSTS OF THE SATELLITE-BASED SERVICES

The cases reviewed highlight the relatively small cost of both adopting and operating these services, despite the fact that six of the systems considered are based on EO.

In the cases analysed, both implementation and operational costs are lower when the services are adopted within regular operations (as opposed to demonstration projects).

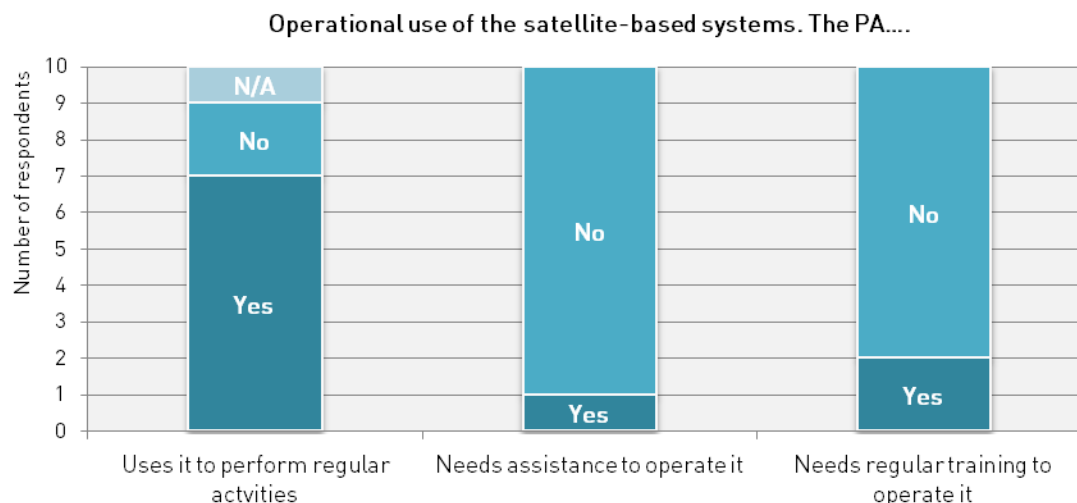


In five out of ten cases, the uptake of the satellite-based service was technically or financially supported by national programmes or international organisations.

- Initial investments: the initial adoption of the satellite service cost less than EUR 20,000 for 70% of the organisations. For 90% of them, this investment represented less than 5% of their annual budgets. Four out of the five public authorities adopting the services within their regular operations spent even less than 1% of their annual budgets.
- Operating costs: to run the services cost less than EUR 10,000 and less than 1% of the annual budget for more than half of the organisations consulted.

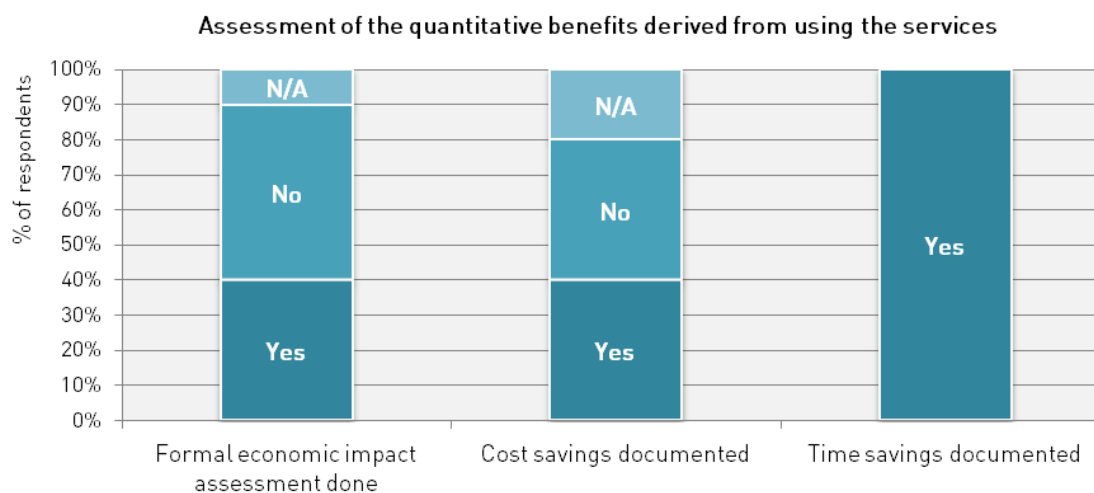
## USE OF THE SATELLITE-BASED SERVICES

Some initial training, although not essential, was an important condition to enable public managers to fully operate their satellite-based systems in the medium and long terms. Indeed, 70% of user organisations needed some training to start using their satellite-based services, but 90% of them were subsequently able to run them autonomously.



70% of the public authorities consulted rely on the satellite-based services for regular operational duties. Only in 30% of cases staff resisted the adoption of the satellite-based solutions and only in one case organisational changes were needed.

## BENEFITS OF USING SATELLITE-BASED SERVICES



Concerning the impacts of using satellite-based services, respondents indicate time-savings (100% of responses), cost-savings (40% of responses), and several qualitative benefits. The three main qualitative benefits pinpointed by public authorities include: the improved quality of information available for operational uses, the improved quality of the services provided by the public entities and positive environmental impacts. Only four out of ten organisations performed a formal economic assessment of their satellite-based services, which indicates that there is still a need to promote economic impact practices in this community.

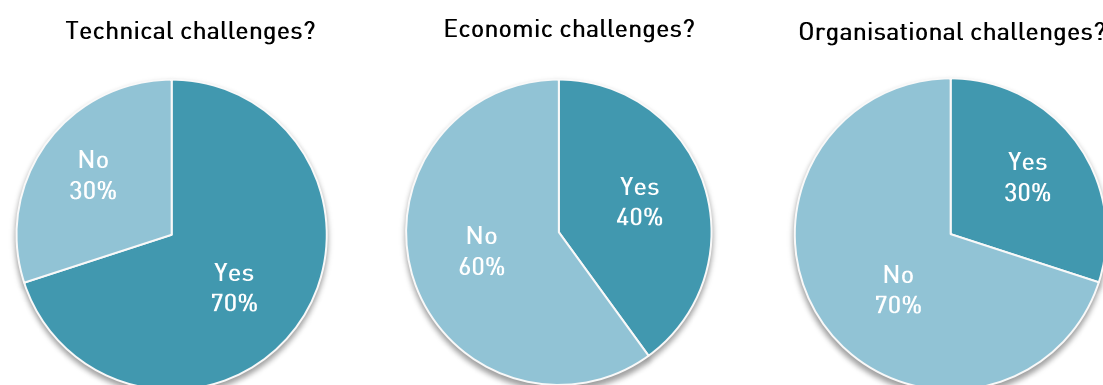
Further analyses should be carried out to quantify externalities. These could also include the use that other organisations make of the satellite-based data provided by the systems (80% of the organisations consulted share satellite-based data with other entities). Indeed, because of their reliability, neutrality and comparability in space and time, satellite-based data and services lend themselves to different uses.

## CHALLENGES TO ADOPT AND OPERATE THE SATELLITE-BASED SERVICES

70% of respondents faced technical challenges to first implement or adopt their satellite-based services. After the adoption or implementation phase, most public authorities do not face neither economic nor organisational challenges to operate their satellite-based systems, and are able to use them with no need for external assistance (nine out of ten) or for regular training (eight out of ten).

However, 60% of respondents declare that it could be a challenge to keep using the satellite-based solutions in the future.

### Challenges to implement the satellite-based solution



## LIST OF CASE-STUDIES INCLUDED IN THE ANALYSIS

NAME OF PUBLIC AUTHORITY	SECTOR OF APPLICATION	AREA (Main / Secondary)	COUNTRY
Guernsey and Alderney Airports: EGNOS to support landing in Alderney	Aviation	National / Local	Channel Islands
Arno River Basin Authority: EO for slope monitoring	Risk management	Regional	Italy
Central Command for Maritime Emergencies: EO for oil spill detection	Environmental protection / Law enforcement	Regional / Local	Germany
City of Diemen, Department of Infrastructure: EO to manage soil resilience	Urban planning	Local	The Netherlands
DREAL Alsace, Hamster Mission: EO to protect biodiversity	Environmental protection	Regional	France
Environment Agency, England: EO to manage floods	Risk management	National / Regional / Local	United Kingdom
Flemish Agency for Roads and Traffic, Traffic and Telematics Division: Satnav to regulate traffic lights	Infrastructure and works	Regional	Belgium
Natural Resources Wales (former Countryside Council for Wales): EO to map habitats	Biodiversity monitoring	National / Regional	United Kingdom
SPL Lyon-Confluence: EO to monitor PV systems	Energy / Urban planning	Local	France
University Hospitals Coventry and Warwickshire, Breast Screening Unit: Satcom for remote breast screening	Health	Regional	United Kingdom







## About Eurisy

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Eurisy is a non-profit association of space agencies and government offices dealing with space affairs in Europe.

It is mandated and financed by its members to increase the access of society to the benefits of satellite information and services.

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