



ONERA main space debris facts 2016

*Report to the IAA Space Debris Committee
Spring meeting 21/03/2017*

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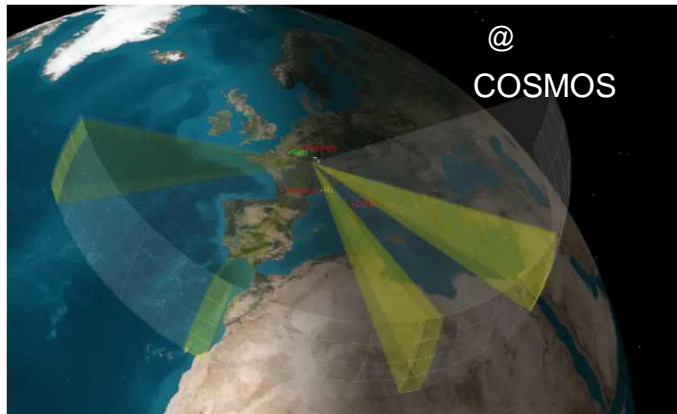


return on innovation

GRAVES: Grand Réseau Adapté à la Veille Spatiale (~ « Large array for space surveillance »)



- 1991-1992: experimental tests & studies
- 1993: start of test model
- 1999-2001: first measures, continuous experimentation
- 2002: contract for demonstrator extension
- Dec. 2005: switch to operational service
- 2011-2014: preparation of renovation activities



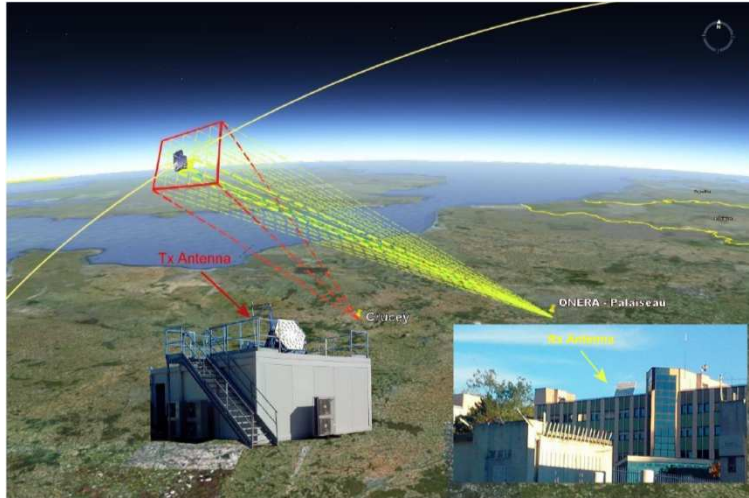
**Operational 24/7
since 2005**

**Automatic
Autonomous
Large field
Without designation**

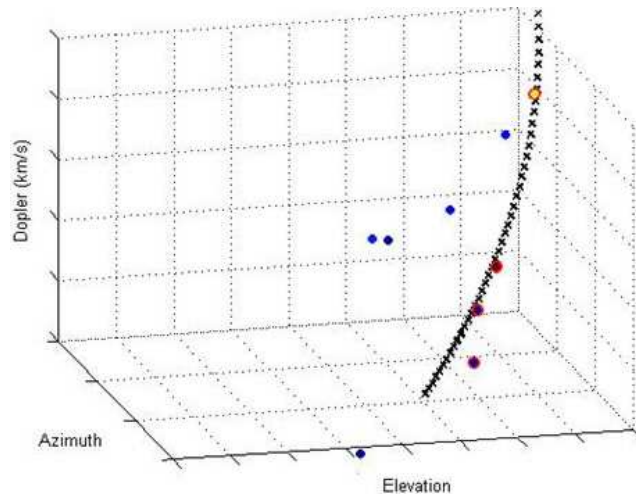
- **GRAVES system Mid-life renovation contract**
- Notified 10 November 2016 (DGA, French armament procurement agency)
- Contractors: ONERA, DEGREANE HORIZON
- Objectives:
 - **Extend lifetime up to 2030** (management of technical obsolescence)
 - Include **functional improvements** and **performance increase**
 - Upgrade : standard, data security ...

ABISS (Antenne Bistatique pour la Surveillance Spatiale) ESA LEO surveillance demonstrator

Bi-static, L-band (1,36 GHz)



Verification of expected performance



Detection & tracking of
Exomars during its spaceflight
over Europe on March 14, 2016