

2015 European Interparliamentary Space Conference

Madrid
Monday 23 March 2015

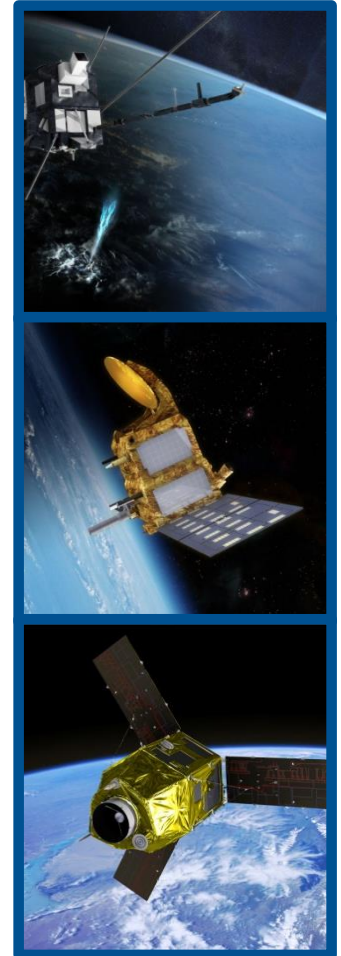


- **Space: A key ambition for France**
- **CNES: France's national space agency**
 - ◆ An undisputed standard-setter
 - ◆ Four centres of excellence
 - ◆ Five key areas of focus
 - ◆ World's second-largest space budget
 - ◆ International collaboration
 - ◆ CNES and employment
 - ◆ Ambition 2020
- **CNES and Europe**
 - ◆ Europe's success in space
 - ◆ European Space Agency
 - ◆ European Union
 - ◆ New challenges ahead



Space: A key ambition for France

- **1965: Diamant orbits Astérix satellite – France becomes world's third space power**
- **1979: First Ariane launch – its commercial success enables creation of French and European space industry**
- **1986: SPOT 1 orbited – France now has space-based observation capability for strategic and commercial applications**
- **Ariane 5, Pleiades and Rosetta – three examples of commercial, scientific and strategic successes led by France**



CNES: France's national space agency

An undisputed standard-setter

- Founded in 1961, CNES (*Centre National d'Études Spatiales*) proposes and implements France's space policy
- CNES represents France at ESA Council of 22 member states
- CNES represents France on international bodies and supports the French space industry exports
- CNES is the majority shareholder in various commercial companies, including Arianespace



CNES: France's national space agency

Four centres of excellence

- **CNES employs 2,444 people at four centres of excellence:**
 - ♦ **The Toulouse Space Centre (Centre Spatial de Toulouse / CST) which designs orbital systems (1,758 employees)**
 - ♦ **The Launch Vehicles Directorate (Direction des Lanceurs / DLA) which develops launch systems (227 employees)**
 - ♦ **The Guiana Space Centre (Centre Spatial Guyanais, CSG) which operates European launchers (267 employees)**
 - ♦ **Head Office, which defines space policy (192 employees)**



CNES: France's national space agency

Five key areas of focus

- **Ariane:** to ensure independent access to space and competitiveness of launchers
- **Sciences:** fundamental physics, astrophysics, astronomy, solar system, International Space Station utilization, etc.
- **Observation:** study of the Earth, atmosphere, meteorology, oceanography, altimetry, etc.
- **Telecommunications:** navigation, data collection, search and rescue, etc.
- **Defence:** observation, electronic intelligence, space surveillance, etc.



CNES: France's national space agency

World's second-largest space budget

- Annual per-capita budget allocated to civil space:
 - ◆ United States: €46
 - ◆ France: €30
 - ◆ Germany: €16
 - ◆ UK: €6
- For 2015, maintaining the very high priority for space
- CNES budget: €2,126m
 - ◆ Contribution to ESA: €827m
 - ◆ National programme: €734m
 - ◆ Programme for Investment in the Future: €202m
 - ◆ Other resources: €363m



CNES: France's national space agency

International collaboration

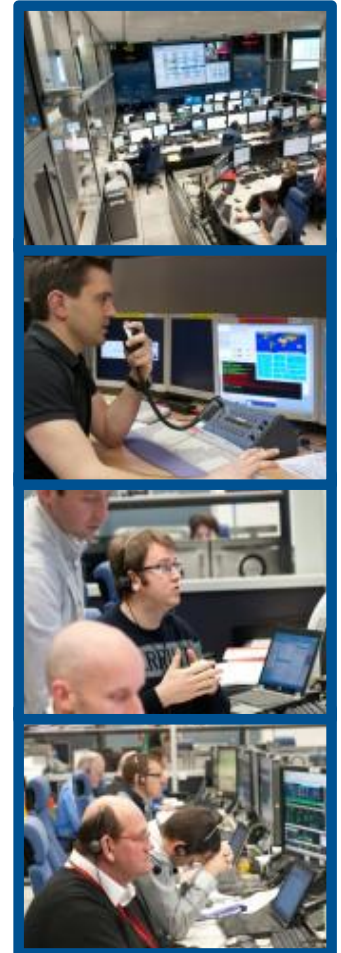
- Many collaborative programmes with all world space powers
- United States: Mars exploration (Curiosity, InSight, Mars 2020), oceanography (Jason, SWOT), S&R (Cospas-Sarsat)
- China: oceanography (CFOSat), astrophysics (Svom), space medicine (Cardiospace)
- India: atmosphere research (Megha-Tropiques), altimetry (SARAL-AltiKa)
- Russia: launch systems (Soyuz in Guiana), R&T
- Japan: R&T, preparing the future



CNES: France's national space agency

Employment

- **CNES drives innovation and job creation: 80% of budget invested in French industry**
- **16,000 jobs in France are in the space sector and the French space industry represents 40% of Europe's space industry**
- **The 1,700 jobs at the Guiana Space Centre generate five times more indirect jobs, or 15% of jobs in French Guiana**
- **In the commercial space sector, every €1 invested generates €20 in economic spin-off benefits**
- **Economic diplomacy: support for the industry's exports (launches, satellites, services)**



CNES: France's national space agency

Ambition 2020 (1/2)

- A programme consolidating CNES goals
- Ariane
 - ◆ Launches at the Guiana Space Centre
 - ◆ Ariane 5 exploitation
 - ◆ Ariane 6 development
- Sciences
 - ◆ Planck results (early Universe), ChemCam and SAM operations (Mars)
 - ◆ Rosetta (cometary exploration), ExoMars, Cosmic Vision
 - ◆ Microscope (general relativity), Euclid (dark energy), InSight (Mars seismometer), Mars 2020



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Ambition 2020 (2/2)

■ Observation

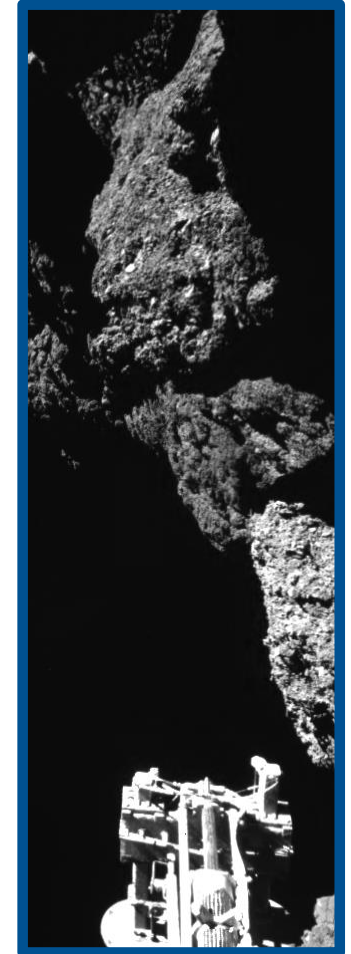
- ◆ SARAL-AltiKa (altimetry), MetOp-B (IASI, 72-hour weather forecasting)
- ◆ Swarm (magnetic field), IASI NG (MetOp SG)
- ◆ Merlin (methane), SWOT (freshwater)

■ Telecommunications

- ◆ Galileo (positioning), Argos 3
- ◆ Alphasat (platform)
- ◆ Neosat (electric propulsion), very high speed

■ Defence

- ◆ Pléiades (imaging),
- ◆ Athena-Fidus (telecommunications)
- ◆ CSO (observation), CERES (ELINT), Comsat NG



CNES and Europe

Europe's success in space

- **ESA / EU / member states all agree: make Europe stronger and work for European citizens**
- **Europe leads the world in number of space missions and kilograms orbited per euro invested**
- **Europe has smaller budget than main rivals but:**
 - ◆ **Leads in science missions, public service missions (Eumetsat, Copernicus) and launch services (Ariane)**
 - ◆ **Has developed technical centres of excellence serving industry**
 - ◆ **Has developed a solid and competitive space industry**
- **Europe's success in space helps strengthen European identity**



CNES and Europe

ESA - The major intergovernmental agency

- Intergovernmental agency with 22 member states
- 22,200 employees + six centres of excellence
- Mandatory and optional programmes: budget of €4.1bn in 2014
- Highly original industrial policy: geo-return
- CNES is largest contributor to ESA's budget (€4,400m)
- ESA is CNES's main partner in numerous programmes
- 20% of funds managed by ESA originate from EU budget



CNES and Europe

The European Union - a space political actor

- **Lisbon Treaty gives EU a space capability**
- **A new and growing role (€1.6bn / year in 2014-20):**
 - ◆ **Two flagship programmes: Galileo (positioning) and Copernicus (environment) to develop worldwide services**
 - ◆ **A space R&D programme: H2020 (€200m/year)**
- **EU is a political entity able to:**
 - ◆ **Initiate space programmes to benefit Europe's citizens**
 - ◆ **Legislate and provide an appropriate legal framework for space activities**
 - ◆ **promoting scientific and technical progress and industrial competitiveness**
- **CNES is a proactive force in EU programmes**



Key issues for Europe in the years ahead:

- Define tomorrow's space programmes in a context of:
 - ♦ New players open to cooperation
 - ♦ New rivals in the global space market
 - ♦ Need to deliver more benefits for citizens
- The European context is made of 3 institutional modes (national, intergovernmental within ESA, communitarian) which drives the success of Europe in Space. Need to :
 - ♦ Ensure greater coherence between the EU, ESA and the Member States for the European action in the space domain
 - ♦ Make the best possible use of existing skills (ESA and EU member states)

