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CNES and space team France forever at the forefront of space

Friday 8 July, CNES President Jean-Yves Le Gall met the press at the agency's Head Office in Paris Les Halles for a half-year status report. With so much at stake for the space sector this year, he took this opportunity to recall the successes already achieved and above all to look ahead to the challenges that remain for CNES and space team France to stay ahead in the world space arena.

The message that Jean-Yves Le Gall delivered to the press today is a simple one: more than ever before, CNES must innovate, keep reinventing itself and dare to dream if it is to remain a prime player in space in the years ahead. A message underlined by the new trends that have been gaining traction in recent years and are now being confirmed in 2016. NewSpace is today a reality, driven by a new world order in which the main spacepowers' budgets are continuing to increase, the rise of emerging nations and the arrival of new players who are innovating to nurture new applications.

These are the challenges facing CNES and all of its partners. In response, they will need to exploit all of their capabilities, be it in **NewSpace**, by nurturing more applications leveraging space technologies and continuing to innovate, in particular through disruptive approaches; be it in current areas of concern like **climate**, a global and far-reaching challenge for which CNES, with its long heritage of international cooperation, is working tirelessly, the New Delhi Declaration being the most tangible example; or be it in **exploration**, by encouraging miniaturization and embedded smart systems, and setting our sights on the Mars, which is fast becoming THE new space frontier.

CNES is taking on these challenges in all of its five domains of excellence:

- **Launchers:** with Ariane 6, its new ELA4 launch complex and Vega-C, building on the remarkable performance of the Guiana Space Centre while at the same time developing Prometheus, the future generation of space engines
- **Science:** in Europe, with innovative missions like JUICE, Euclid and Athena, and through extended cooperation with key international space players and emerging nations (Mars 2020, SVOM, etc.)
- **Observation:** focusing on studying and safeguarding Earth's climate, through missions such as MicroCarb, MERLIN, Jason and SWOT, as well as laying the groundwork for the successors to Pleiades
- **Telecommunications:** with new hardware and services (electric propulsion, Galileo, satellite constellations, fast broadband)
- **Defence:** pursuing programmes already underway and paving the way for highly innovative programmes like Comsat-NG and THR-NG

To move with these changes over the long term, CNES's President is concentrating his attention on three areas. The first of these is **innovation**. Jean-Yves Le Gall explained that CNES must remain nimble and focused on the future, notably through development of Prometheus, the study of Mars, more and more disruptive approaches and increasingly novel patents, and by making sure that CNES continues to work upstream of industry so that new programmes like Ariane 6 and electric propulsion are rapidly on the rails. The second is **applications**, which must also play a key role serving the agency's strategy and space user communities. Good examples are the recent partnership agreement signed with French rail operator SNCF, contacts forged in agriculture, fisheries and land planning, and efforts to combat pollution. In particular, they must help to nurture the creation of new businesses like Geoflex.

And third and last, CNES is also banking on **inspiration** to fuel future endeavours, be it through the exploration of Mars or through leveraging space assets to protect Earth's climate.

Jean-Yves Le Gall concluded his review by underlining the two major decisions taken by CNES's Board of Directors at its meeting yesterday at the agency's Head Office in Paris Les Halles. The first gave the go-ahead for the SWOT programme (Surface Water and Ocean Topography) being developed with NASA's Jet Propulsion Laboratory (JPL). Set to launch in 2023, SWOT will closely survey the globe's oceans and continental surface waters to better quantify the water cycle and climate change. With its innovative K_a-band Radar Interferometer (KaRIn), SWOT marks a break with today's satellite altimetry technologies. Thanks to its two radar antennas perched at either end of a 10-metre boom, KaRIn will afford continuous, high-resolution coverage of a 120-kilometre swath to acquire measurements of surface water height in oceans, lakes, rivers and other water bodies, giving scientists new insight into global water dynamics and interactions with coasts and estuaries. SWOT is being pursued with CNES's longstanding partner NASA, with contributions from the Canadian Space Agency (CSA) and the UK Space Agency (UKSA). The French contribution to the programme is being funded through the government's PIA future investment plan.

The Board's second decision was to award to Eclair6, the consortium led by Eiffage, formed by Eiffage Civil Engineering (lead contractor), Eiffage Roads, Clemessy (a subsidiary of the Eiffage Group's Energy branch), SEH (a German subsidiary of Eiffage Metal), Axima (a subsidiary of Engie) and Italian specialist foundation engineering firm ICOP, the contract for the infrastructures of the Ariane 6 launch complex. After the press conference, journalists were invited to attend the signature of the contract by CNES and Eiffage, under which construction is scheduled for completion in October 2018.

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