

## Fully dual technologies: the all-in-one solution

At this year's Paris Air Show, Thales's Aerospace experience demonstrates how we leverage dual technologies in our solutions to address commercial/private and military/missionized operations. We achieve this through our brand new generation of fully connected cockpit avionics, as well as our new solutions that are a natural complement to avionics systems on new or existing aircraft, such as the TopMax and TopEagle head-worn displays, and new digital and flight optimization solutions connected to avionics.

Historically the move has been for military technologies to be scaled down to commercial applications, and Thales has a long history in this type of "trickle down" technology. In the past years, this trend has been reversing in many areas and we have been very successful in providing our military customers with a whole range of products which were initially designed for the commercial markets. Today, the trend is the development of fully dual technologies.

For example, in the field of human-machine interface and ergonomics, we are in the process of developing solutions that are mission and crew centric minded, designed to be adaptable to any type of civil or military mission by taking inspiration from both our military and civil expertise. The new generation connected cockpit revealed at Paris Air Show provides pilots with mission critical information in a more intuitive way, whether for a commercial airline pilot or a civilian helicopter or a military pilot.

### Maximizing operational efficiency

Today, the lines are blurring between engineering/systems integration for military aircraft and for commercial aircraft. Most defence budgets are under constant pressure, as are those of commercial airframers. This challenges us to find innovative solutions able to satisfy multiple sets of needs.

The military market looks for more efficient use of resources in order to face up to budgetary constraints, while the commercial market is interested in weight reduction, fuel consumption and maximization of operational efficiency. Both are keen to upgrade their existing platforms to keep them relevant for future challenges.

The first demonstration of the connected mission aircraft at the 2017 Paris Air Show is a prime illustration of duality between our solutions as it features – among others – our new generation connected avionics customized for military applications alongside the one presented in its civil configuration. It also comprises our TopEagle head-worn display, derived from TopMax, as well as our unique EFB FlytOptim solution which enables the crew to optimize the entire mission based on avionics assets and open-world data merging.

All these dual solutions widely contribute to mission success and flight optimization.

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Examples of Thales's solutions serving both military and commercial aircraft:

- New generation connected avionics
- TopMax and TopEagle head-worn solutions
- Electronic Flight Bag solutions
- A400M Flight Management System featuring our new FMS NG for commercial applications
- A400M avionics benefiting from A380 developments
- Head-up displays: from Rafale to Airbus family

- GPS: dual use
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