

TACTICAL TRAINING SIMULATORS

MODERNIZING

TO KEEP PACE WITH CHANGING STANDARDS

Total or partial simulator retrofit performed by Sogitec allows theoretical and practical pilot training to take account of aircraft upgrades and changes in combat tactics and benefit from the most advanced technologies while reducing the operating costs. →





From Limited Tasks To Complete Overhaul

In addition to the retrofit of the CEC (Combat Training Center) at Mont-de-Marsan (see page 19), Sogitec has upgraded many existing simulators in France and abroad, which shows the extensive range of possible retrofit operations.



Increased Technical Requirements and Operational Performance

Decreasing the armament budgets entails extending the lifetime of the aircraft that will be operated longer with, in addition, a drop in the training flight time. To meet operational requirements, the planes must still be upgraded regularly, in particular as regards their weapons delivery and navigation systems.

These new development may be sometimes significant for navigation and weapons systems. They must also be applied to support means in order to meet the new tactical requirements. In particular, simulation means must provide pilots with quality training whatever the changes in the aircraft.

Modernization also meets the requirements of clients who want to reduce the maintenance costs of their support resources over time. Moreover, generalizing use of PC technology solves the obsolescence problems of the original computers.

Finally, the brand image of the simulators must be able to benefit from technological advances, e.g. image generation and coupling of simulators to each other. Concerning simulator coupling, in recent years the benefits gained from collective training sessions led operational entities to include this requirement in the functionality of new products. In this respect, Sogitec fully masters simulator coupling technology, whether through the implementation of DIS or HLA standards (see box "HLA, A Networked Dialogue Standard", p. 18) over local or remote networks.

Overhauls Independent of Simulator Manufacturers

The aforementioned reasons logically led users to upgrade their simulators, which is the less expensive approach to maintain the value of their investments. Retrofit allows the user to directly benefit from the experience acquired on existing equipment.

Most simulators in service are targeted: heavy FMS (Full Mission Simulators), but also lighter systems of the "trainer" type.

The first considered market is made of simulators produced by Sogitec in the last twenty-five years and represents 25 units in France and a little bit more than 50 abroad.

The second market consists of simulators produced by other companies. This segment, that involves deliberate sales approach, entails defining innovative technological solutions, in particular for the development of the interfaces necessary between the new equipment and the original platforms and for the replacement of the old computing systems. Sogitec has undertaken numerous self-funded studies to that end, specifically to be able to meet the requirements of clients as quickly as possible.

A New Operational Lease

With know-how and experience in every concerned technologies, Sogitec is capable of upgrading simulators that are 30 years old while preserving a maximum number of the original equipment items, each retrofit meeting the specific needs of the client (customization). Sogitec also provides support for the enhanced system start-up. This guarantees a new "operational lease" that will support retrofitted simulators for at least 15 years.



MIRAGE 2000-D TRAINERS, NANCY FRENCH AIR FORCE BASE

Change from the R1 standard to the R2 aircraft standard applied to the trainers. Change from a SiliconGraphics architecture to a PC/Windows architecture.



DIJON FRENCH AIR FORCE BASE

In this contract awarded in January 2006, Sogitec is bringing the two Mirage 2000-5F trainers up to the SF1-IR standard and will make several ergonomic improvements to each of the instructor operating stations, as well as tactical environment improvements. Additional functions were also added to enhance failure training.



SEMSA, INDIA (Weapon System Simulator, Mirage 2000)

Sogitec supplied technical support to a local company for the retrofit of this Mirage 2000 weapon system maintenance simulator, thus showing its capacity to build international cooperations.



SECPIL (CERPAIR), FRANCE

For this system used for the SElection of Candidate PILOTS (a cockpit with a degree of freedom of 2° to conduct the psychomotor tests), Sogitec changed the computer center.



SEMA, ABU DHABI (Maintenance Training Simulator)

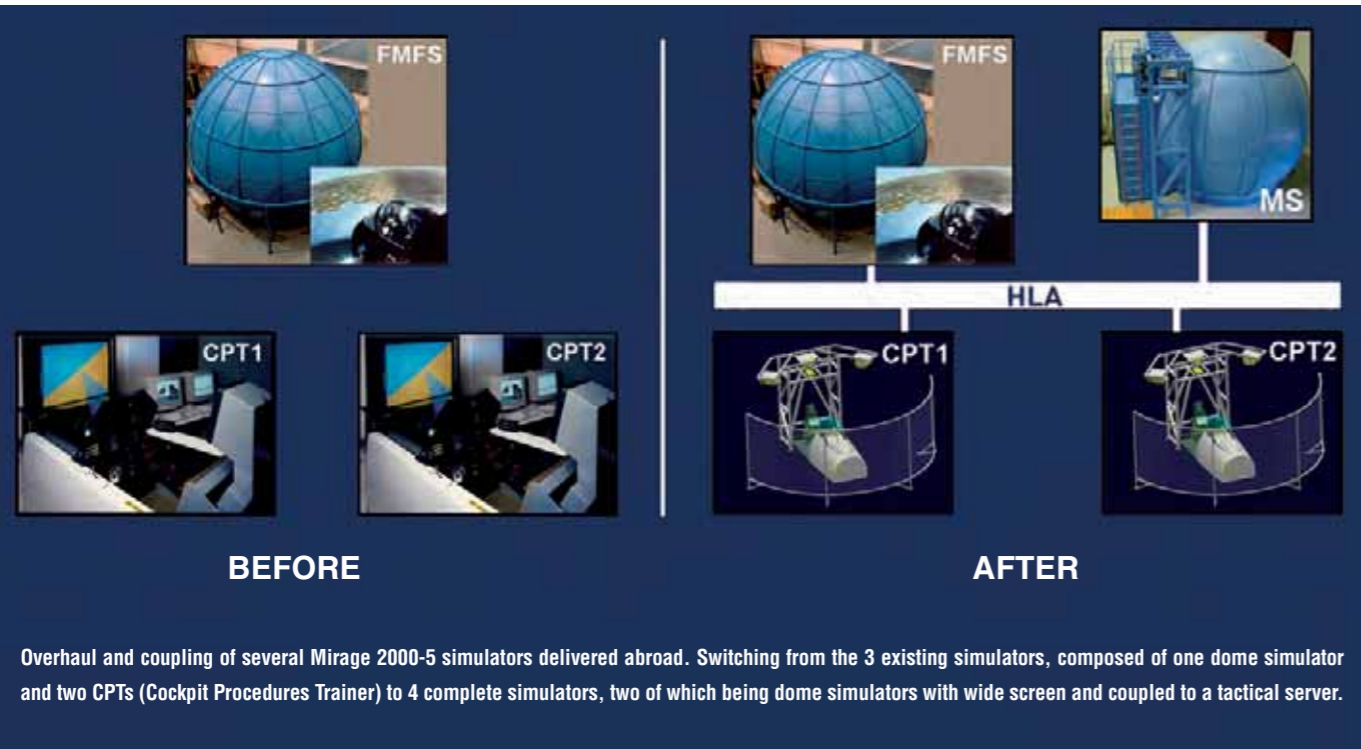
Following the upgrade of the "classic" Mirage 2000 transformed into a Mirage 2000-9, Sogitec performed the "heavy" overhaul of the simulator.



> Technology

→ Future projects

- Alpha Jet simulators delivered in 1985 by Sogitec abroad. Replacement of the obsolete computers for control and mission simulation with a network coupling capability.
- Networking of existing simulation centers (below).



Overhaul and coupling of several Mirage 2000-5 simulators delivered abroad. Switching from the 3 existing simulators, composed of one dome simulator and two CPTs (Cockpit Procedures Trainer) to 4 complete simulators, two of which being dome simulators with wide screen and coupled to a tactical server.



HLA, A NETWORKED DIALOGUE STANDARD

Succeeding the DIS (Distributive Interactive Simulation) standard, the HLA (High Level Architecture) standard is a standard approved by the IEEE, which defines the interfaces between heterogeneous simulation applications in existing networks. This standard is the new standard selected by the USA to couple simulation applications instead of the DIS standard. This standard enables flexible coupling of applications featuring different interfaces, which is often the case when simulators of different origins are coupled across re-mote networks.

The HLA standard applies to any type of simulator (aerial, ground) and Sogitec, entirely familiar with these different protocols, can network all types of interacting simulators. To-day, Sogitec is responsible for the HLA coupling for the Rafale simulation centers.



CEC AT MONT-DE-MARSAN “HEAVY” RETROFIT AND RECONFIGURABLE TACTICAL ENVIRONMENT

As a landmark achievement of Sogitec’s expertise in upgrades, the CEC is the standard example of the turnkey “heavy retrofit” of simulation facilities delivered by another company. Sogitec retrieved the domes and certain

cockpit elements and entirely reorganized the existing configuration to install a totally revised architecture that meets the need for collective tactical training. In the end, the CEC has changed from an initial configuration of 3 dome simulators (2 types of planes simulated) managed by an old technology instructor console to a much more complete system capable of reproducing richer and more realistic tactical configurations on request (more than 30 planes and 40 missiles implemented in the theater of operations). It is composed of 10 simulators (the 3 former domes, 3 additional domes and 4 simplified pilot stations) representing 5 Air Force combat planes (Mirage 2000-5, C, D, N and Mirage F1) controlled by 3 advanced technology instructor consoles. A unique tactical server provides the operational environment to the Center. The domes are equipped with Sogitec Apogée™ image generators and accommodate cockpits conforming to one type of plane as well as simplified cockpits that can be reconfigured for all the types of aircraft simulated.

