



An efficient cooperation scheme



Europe's UCAV demonstrator

Europe's UCA



The **nEUROn** program has just reached a very important milestone, the final design review with the Customer which closes the phase B of the program.

The major activity of this phase has been the definition and agreement among the **nEUROn** partners of the several hundreds interface control documents that define in detail all the structural, installation, wiring and logical interfaces of the aircraft.

While from one side this datum gives us a perspective on the product complexity, from the other it symbolizes the joint work that the teams of Dassault, Alenia, Saab, EADS, HAI and Ruag have been carrying out together in phase B, harmonizing day by day the definition of the subsystems under their responsibility so that coherent interfaces could be satisfactorily identified.

Dassault as a Prime conducted phase B with the full consciousness of the critical importance of interfaces establishment. We jointly monitored the progress in weekly technical management meetings tackling together all the issues which normally arise during a new aeronautical product definition, and even more, considering the technological content of the program. We solved most of them as a team, and moved forward to detail design.

As Alenia Aeronautica we are now focusing in particular on CDRs with suppliers in order to prepare the critical reviews at program level.



Måns Mångård is a Systems Engineer at Saab who has been working on the **nEUROn** programme since 2005.

"It is very stimulating to work with colleagues from across Europe and to learn that there are different ways of addressing and solving technical challenges," he says.

Måns Mångård has been working with the avionics components within the **nEUROn** programme, spending three years in Paris, though he has also worked in Linköping in Sweden. Måns's work has mainly consisted of coordinating the work between Paris and Linköping.

"The distance and working remotely has placed greater demands on our communication. We have documented everything clearly so that everyone, even those who are not on-site, shall have the same information and thereby avoid any misunderstandings," he says.

Måns also thinks it is important to be aware of the cultural differences that exist between companies and countries. "My experience is that you have to be especially clear about what you mean, because sometimes you miss the small nuances of the language or in the way others express themselves," he says.

Måns thinks his years on the **nEUROn** project have been very stimulating and have provided many valuable contacts with European colleagues.



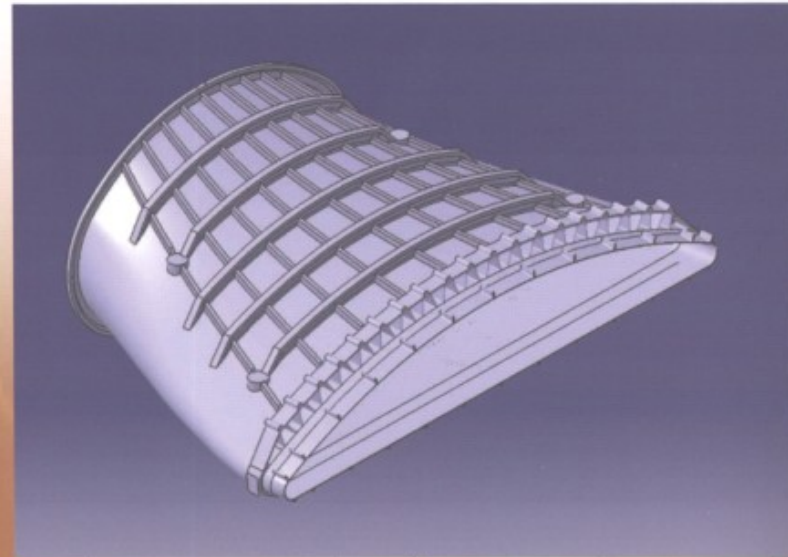
V d e m o n s t r a t



Hellenic Aerospace Industry (HAI) the largest aerospace company in Greece takes part in the consortium led by Dassault Aviation, to design and build the most advanced European human-less combat aircraft called **nEUROn** at a technology demonstrator level.

Known for its wide knowledge and experience in aircraft related technologies, being one of the few companies worldwide incorporating under one single roof Development, Manufacturing, as well as MRO, for Airframe, Engine and aircraft related Electronics, HAI was selected as part of the UCAV-**nEUROn** family.

Under HAI's responsibility lies the development of the exhaust pipe, a demanding fully instrumented assembly incorporating the latest design and manufacturing technologies required to achieve the aircraft mission's primary targets of extremely low radar and infra-red signatures in conjunction with optimum engine performance.



Working at the **nEUROn** Plateau with this international and miscellaneous team is a very enriching experience at all imaginable levels. Indeed, problems involving an interaction between several partners may pop-up at any time and their solution strongly depends on the tight spirit of collaboration that reigns among all teams.

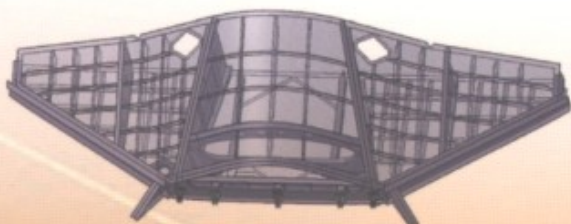
RUAG

Aerospace Defence Technology



Active and continuous participation in the "Physical Plateau" team that has been organized by Dassault Aviation in St Cloud for all **nEUROn** partners, in conjunction with the usage of state of the art development tools such as Catia V5 and Patran/Nastran, guided the team in the development of an exhaust assembly full scale demonstrator that was in turn successfully tested to the most extreme conditions required.

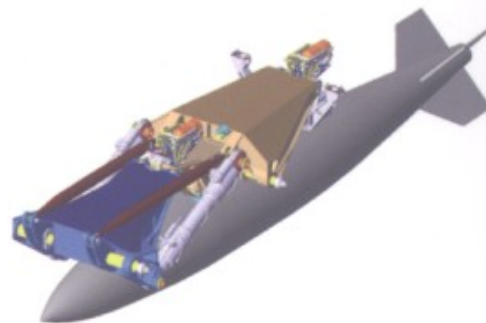
Furthermore HAI has the responsibility to design and build the exhaust pipe surrounding fuselage as well as the necessary vehicle monitoring system and avionics test rig required for full aircraft system control prior to dispatch for ground and flight testing.



The focuses of RUAG Aerospace's activities in the **nEUROn** program are in the development of the pantograph for the right weapon bay and in aerodynamics.

The Weapon-to-Bay Interface (WBI) work package encompasses the design and full scale development of the system dedicated to provide in-flight carriage and release, as well as on-ground payload mount and dismount functionality. This system called the pantograph will be able to carry and release either one MK82 500lbs general purpose or one GBU12 general purpose guided bomb.

Several wind tunnel campaigns were performed in RUAG's LWTE facility to validate the external shape and ultimately to generate the low-speed aerodynamic database for the aircraft. Tests, as well as simulations using computational fluid dynamics (CFD), were performed to obtain detailed information about the behaviour of **nEUROn** close to the ground (take-off and landing).



RUAG Aerospace is excited to have been able to contribute its experience and engineering skills to the **nEUROn** program. In return, the participation in this collaborative endeavour proves to be very fruitful for RUAG Aerospace. Its engineers have a unique opportunity to interface with their colleagues from Dassault Aviation and the other partner companies. The personal relations thus developed are of great value not only for the **nEUROn** program but also for other common projects. In addition, valuable know-how and insight in many fields pertaining to combat aircraft and unmanned air vehicle development can be gained. RUAG Aerospace is looking forward to continue its involvement and to help bring **nEUROn** to flying status.





The life on the "Plateau"

The **nEUROn** "Plateau" located in St Cloud near Paris is the place where the various skills issued from the European companies implied on the **nEUROn** Program are working together to converge toward the **nEUROn** system common definition.

The everyday life on the "Plateau" is mainly made of direct human relationship between the people, and the most often they are good and friendly. We can also observe the skills and competences "rubbing" the ones with the others, each one having its own practices, sometimes its own certainty, and also different approaches, processes and tools.

At the beginning, in addition to the aeronautical competences, we had in common:

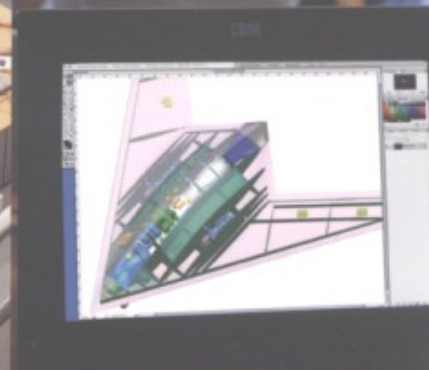
- our European cultural background,
- the aeronautical military industry domain,
- the practice of the Dassault Systèmes PLM tools for the design and the manufacturing.

For the rest, it has been necessary to learn to know each other and especially to have a good common understanding of the various subjects to define common applicable processes. The goal of these common processes is to get a common vision of the definition and especially on the interfaces between the system components.

So, among the many challenges of a Program, work in cooperation requires:

- to know to listen to the other, especially if there are disagreements,
- to know to try to consider the point of view of the other, that can be very useful,
- to know to avoid the misunderstandings by trying to be the most explicit as possible,
- to know "to take" and share the good ideas of the others.

Thus all these good practices were implemented on the "Plateau" and make possible the **nEUROn** to be defined and designed. Then it will be built through Europe, assembled and tested in Istres in the south of France where it will do its first flight, followed by operational evaluations flights in Sweden and in Italy.





Aerospace Defence Technology



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