
Auxylium, from innovation to industrialization to military standards

The result of a collaborative process of innovation between the French Directorate General of Armaments (the DGA) and Atos, the industrialization of Auxylium has been achieved in record timescales to address the urgent requirements of Operation Sentinelle. Based around an Android smartphone, the solution combines the advantages of civilian technology with the performance levels required for military-standard equipment.



Atos

“This project with Atos was a wonderful human adventure: illustrating the extraordinary ability of French industry to innovate in order to meet today’s challenges.”

Captain Jean-Baptiste Colas,
DGA

The context

Towards a more agile, connected soldier

In operational situations where it is essential for soldiers to be able to move around easily, minimising the weight they have to carry is a major issue. Using new-generation mobile technologies to create much lighter field communications systems opens up operational possibilities that are attracting a lot of interest among the armed forces. This approach is part of the broader, intensive transition to digital systems currently sweeping the military.

The challenge

From open innovation to operational urgency

Based on a concept developed by the French national infantry training school, the DGA formed an innovation partnership with Atos, driven by an approach enhanced by new-generation civilian technologies. In order to take all requirements into account, a UX Design implementation approach was used to draw out and reflect how the system will actually be used in the field.

This collaborative process of innovation has given birth to a smartphone-based system – using an adapted version of Android – which not only has all the advantages of weight and ergonomics but also includes specific functionalities, such as a digital ‘wall’ where tactical orders and geolocated visualisations of events on maps or satellite photos are posted. Taking a ‘bottom up’ approach, a full-scale trial covering an entire airborne company was used to validate the concept and, as a result, critical improvements were added. On the technical front, for instance, there is now a

separate radio module that enables the use of hybrid networks. Usability improvements include adding voice synthesis, to minimize the need to look at the screen.

Recognized both in the Atos Innovation Awards (in 2013 and 2015) and in the French Defense Ministry’s Prix de l’Audace 2014, this exemplary open innovation project was to take on a new and sudden urgency in November 2015, in the operational emergency that followed the Paris attacks.

The solution

Industrialisation: up to the challenge

The goal was now to equip the forces involved in Operation Sentinelle ahead of the opening of Euro 2016. While in the early phases of the project Atos was agile enough to innovate like a start-up: now it once again took on the role of the industrialist, as befits the IT Supplier to the Olympic Games. While maintaining close proximity, trust and a collaborative attitude in working with the DGA, Atos also mobilised all its various business units in tight-knit teams, to ensure faster communication and decision-making cycles and the highest levels of support. The use of agile methodologies, the DevOps approach – delivering no less than 122 iterative versions of the solution – and Docker clearly illustrate the combination of rigour, pragmatism and innovation that was applied to ensure the successful industrialisation of this extraordinary project.

Beyond ensuring the essential reliability and security of the prototype, the operational requirements and the increased importance of task mean that numerous additions had to be made to Auxylium: command and administration consoles; minimising energy consumption through intelligent control of

software code; development of the Helium module driven by a defense-standard design case; documentation and training... As well as all this, the entire operational infrastructure had to be developed, including the network, data centre and embedded radio transmission ‘bubble’.

And last but not least, there was the challenge of procuring, assembling and delivering what eventually amounted to some 13 tonnes of equipment, including not only phones but also covers, cables, chargers... in total security.

The results

Ready for Day 1... now in daily use

A total of seven sites and up to 160 people (providing 12,000 person-days of effort) were mobilized from the start of the project, at the end of February, and its delivery in May for technical and operational evaluation by STAT. This proved to be one of the fastest turnarounds in the DGA’s history, with Auxylium gaining authorisation for operational use on 9 June 2016. Since then, Auxylium is being used by several hundred soldiers every day to combat terrorism. It is a lightweight and ergonomic tactical communications tool (weighing just a few hundred grams), that is not only secure, but also highly energy efficient and allows instantaneous switching between civilian and military networks, as well as the sharing and visualisation of information within defined groups. It also acts as an individual connectivity platform, which opens up numerous operational and functional possibilities both in the military area (connected objects, integration with command systems...) and in civilian contexts (critical infrastructure).

About the DGA

The Directorate General of Armaments (Direction Générale de l’Armement, DGA) is a department within the French Ministry of Defence whose main tasks include equipping the country’s armed forces – taking responsibility for the design, acquisition and evaluation of the systems intended for them by anticipating threats and risks, and preparing appropriate technological and industrial capabilities within a resolutely European framework – and promoting arms exports. As the biggest state investor and Europe’s leading defence research company, the DGA employs 9,800 people.

About STAT

The Army Technical Section (STAT) is responsible for managing all armaments programs for land forces – working closely with the DGA – and, having evaluated them, recommending their operational commissioning. To provide total coverage of a spectrum that goes from assault rifles to the Tigre helicopter, covering more than 350 armament operations, STAT draws on the expertise and operational experience of its 650 officers, non-commissioned officers, voluntary staff and civilian employees.

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