

INDRA POINTS THE WAY TO THE NEW REVOLUTION IN SMART DEFENSE SUPPORT: AIRCRAFT THAT DIAGNOSE THEIR OWN 'HEALTH' AND GET READY FOR THEIR NEXT MISSION

- **The fourth industrial revolution has reached armed forces worldwide, which are rapidly transforming their logistical processes to embrace Support 4.0**
- **The cost of maintaining platforms and systems is much higher than the acquisition cost, and this is therefore an area where an army can gain greater efficiency and cut costs**
- **New technologies will enable systems and platforms to behave more like humans: they'll be able to feel, understand, act and learn**

Madrid, May 18, 2018. Indra is engaged in the digital transformation of armed forces and is pioneering the introduction of the Industry 4.0 concept to improve the logistical management of system and platform life cycles, a revolution that will enable latest-generation aircraft to diagnose their 'state of health' in real time, without human intervention, and to launch all the necessary maintenance operations in preparation for their next mission.

Speaking at the Aerospace & Defense Meetings-ADM Seville 2018, Indra's director of defense and air vehicles logistics, José Manuel Sánchez Serrano, explained that "the revolution in logistical processes is rapidly and inexorably leading to Support 4.0 through the application of the Industry 4.0 concept, or the fourth industrial revolution in the field of defense".

This new reality will not only enable aircraft to monitor their own state of health. In addition, they will be able to gather information about the mission environment in which they are going to operate and take it into account so they are ready to take off at the scheduled time.

Maintenance will be more predictive: artificial intelligence systems will process huge volumes of information to determine the remaining life of each of their components. This will enable armies to avoid excessive maintenance and the high costs which that entails, to launch maintenance actions before failures occur, and to prevent the malfunctions that reduce their availability and operability.

Supply processes will also be smart, using proactive organization to anticipate needs. All the actors involved will be integrated and the system will offer end-to-end traceability and logistics intelligence throughout the whole supply chain.

Achieving all of these capabilities will demand enormous research and coordination efforts as well as the use of the most innovative technologies such as big data and data analytics, machine learning, cyber-physical systems, smart logistics, integration and new communications. Indra is also implementing a new operating concept in which systems behave practically like humans, capable of feeling, understanding, acting and learning.

Platforms will be able to collect information autonomously and issue basic recommendations on maintenance; exploit and cross data with other sensors, equipment and the actual environment; share information with the rest of the fleet, manufacturers and suppliers; and execute actions and observe the reactions to learn and feed the lessons learned back into the system.

Supporting an army's systems and platforms is a key factor for ensuring the success of any mission. However, the costs implied are much higher than the actual platform acquisition costs, which means that this is the area where armies have the greatest margin for gaining efficiency.

Support is a particularly difficult task because fighter aircraft are technologically advanced systems with very high operational requirements. They are also subjected to enormous stress while in service. Besides, many military operations are conducted in remote areas with very complex logistics.

In addition to the aeronautical field, Indra has already implemented the Industry 4.0 concept in some of the systems it has delivered or is currently developing for Spain's Defense Ministry. The battlefield management system (BMS) implemented in Spanish army vehicles and tanks incorporate the first capabilities of this type to notify and launch all the repair logistics in real time and autonomously. The future mission system which the company is developing for the VCR 8x8 wheeled armored vehicles will also have built-in self-diagnosis systems and complete connectivity with other equipment and vehicles.

About Indra

Indra is one of the world's top technology and consulting companies and a technology partner for the key operations of its clients' businesses worldwide. It is a leading worldwide provider of proprietary solutions in niche areas in the Transport and Defense Markets and the absolute leader in IT in Spain and Latin America. It offers a comprehensive range of proprietary solutions and cutting edge services with a high added value in technology based on a unique culture of reliability, flexibility and adaptability to the needs of its customers. Indra is a world leader in the development of end-to-end technology solutions in fields such as Defense and Security, Transport and Traffic, Energy and Industry, Telecommunications and Media, Financial Services, Electoral Processes, and Public Administrations and Healthcare. Minsait is Indra's digital transformation business unit. In 2017 Indra posted a revenue of €3,011m, employed 40,000 professionals, and had a local presence in 46 countries plus sales operations in more than 140 countries.