Press release

INDRA RESEARCHES THE USE OF NEURAL NETWORKS TO ENHANCE THE EFFECTIVENESS OF THE SPANISH NAVY

- **It emulates the reasoning and decision-making skills of biological organisms and combines them with the computational potential of computers in order to detect patterns unnoticed by humans**
- **This technology will take fleet maintenance to the next level, enabling the detection of possible breakdowns of engines and electronic devices before they occur, saving costs**
- **The Soprene project introduces the concept of Industry 4.0 to the Armed Forces and will be a key element in the development of the Future Integrated Navy Maintenance System 4.0**

Madrid, January 29, 2019.- Indra is conducting research into the application of artificial intelligence techniques, which emulate the workings of neural networks in the human brain, for the maintenance of Spanish Navy ships and enhancing and guaranteeing the maximum availability and optimal state of the fleet and its capability to carry out each mission in the best conditions.

The two-year RDI project, known as Soprene and awarded to the company by the Ministry of Defense through the Armament and Materiel General Directorate (DGAM), represents the most important step towards introducing the Industry 4.0 concept in the Armed Forces to date.

The developments derived from this research will be a key part of the Future Integrated Navy Maintenance System 4.0, the solution that will supervise the maintenance of an increasingly digitalized and technologically advanced fleet.

Indra will apply and study the advantages of applying these techniques on the enormous amount of data collected from ships while at sea, thanks to the thousands of sensors integrated into their equipment and systems.

This is information stored in the Center for Supervising and Analyzing Monitored Data of the Navy (CESADAR), located in Cartagena.

These techniques will imitate the ability and strategies used by the brains of biological organisms for reasoning and decision-making. But with the advantage of the added massive computing power provided by the most advanced computers. In this way, patterns that would go completely unnoticed by human beings can be detected.

It will be possible to reinforce the predictive maintenance of ships, avoiding unforeseen breakdowns, increasing their availability and saving costs. This results in greater effectiveness for the entire fleet.

The ship diagnoses will be carried out automatically, reducing dependence on humans for classifying and detecting anomalies. The results will progressively improve, as the system acquires intelligence.

Operators will monitor this entire process through custom dashboards or control panels. Depending on the level of criticality, the system will decide whether to send alerts for engineers and technicians to intervene and to anticipate possible failures, lack of maintenance or the need to renew components.

This technology will avoid failures that could jeopardize a mission or the safety of the crew. The workload of the team responsible for these tasks will be reduced and the Spanish Navy will gain in terms of days at sea of greater quality.

With this award, Indra consolidates its commitment to innovation in the field of Sustainability 4.0, improving its Integral Logistic Support services and placing more than 800 specialized consultants, data scientists and Big Data infrastructure architects at the service of Defense.

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It is also a strategic technology for the civil field. The entire industrial sector is currently immersed in the challenge of turning its production centers into 4.0 plants. Only those that apply this type of artificial intelligence, connectivity and digitalization techniques can survive.

About Indra

Indra (www.indracompany.com) is one of the leading global technology and consulting companies and the technological partner for core business operations of its customers world-wide. It is a world-leader in providing proprietary solutions in specific segments in Transport and Defense markets, and a leading firm in Digital Transformation Consultancy and Information Technologies in Spain and Latin America through its affiliate Minsait Its business model is based on a comprehensive range of proprietary products, with a high-value focus and with a high innovation component. In the 2017 financial year, Indra achieved revenue of €3.011 billion, with 40,000 employees, a local presence in 46 countries and business operations in over 140 countries.

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