



Aftermarket. Logistics and Maintenance

Indra offers a complete framework of aftermarket services and solutions to meet the needs of any system or platform throughout its life cycle.

Services and solutions to support the life cycle of systems and the digital transformation of maintenance.

Logistical Support

- Technical assistance/Tiger Teams.
- Support for the various maintenance levels: Organizational, Intermediate, Depot.
- Calibrations.
- Spare parts and supplies.
- Test and maintenance benches.
- Logistic information systems.

Maintenance Engineering

- Systems Engineering (ILS).
- RMS Analysis.
- Technical document management.
- Obsolescence management.
- Service newsletters.
- Upgrades and modifications.

Sustainability 4.0

- Artificial intelligence applied to the maintenance (predictive and prescriptive).
- Digital Twins.
- Virtual, augmented and mixed reality.
- Remote assistance with wearable devices.
- Smart configuration management.

Training

- Training in operation.
- Maintenance training.
- CBMs / Serious Games.

Logistical Support

- **Maintenance of third party systems:** Indra offers all types of solutions for the maintenance of non-proprietary systems.
- **Technical assistance/Tiger Teams (24/7).**
- **Logistical support** in customer facilities.
- **Spare parts and supplies.**
- **Test and maintenance benches:** test equipment and multi-platform test benches to automate system verification and validation tasks.
- **Logistic information systems:**
 - Implementation of logistics management software (proprietary product and ERPs SAP, IBM).
 - Solutions for downloading, processing and analysing aircraft flight data (AMPS, NH90, Tigre, Chinook).
- **Helpdesk Services/On-Call assistance.**

Support for the various maintenance levels

Level 1 ("O" - Operational)

Preventive

- In-situ system inspection.
- BITE (equipment status).

Corrective

- BIT (fault location).
- Replacement of LRUs.

Level 2 ("I" - Intermediate)

Corrective

- Specific BITE (fault location) and test equipment to isolate faults.
- Troubleshooting at SRUs level (cards, replaceable sub-assemblies).

Levels 3 and 4 ("D" - Depot)

Preventive

- Regular checks.
- Overhauls.

Corrective

- Repair and testing of analogue/digital components.
- Electronics, RF, Optronics and Avionics.
- Hydraulic and pneumatic.

Maintenance Engineering

- **Logistic Support Analysis (LSA):** analysis of the logistical support actions undertaken.
 - RMS analysis (Reliability, Maintainability, Sustainability): MTB calculation and definition, MTTR, reliability analysis (RCM), fault modes/effects and criticality (FMECA).
 - PIDAS Initial Provisioning Proposals.
- **FRACAS Analysis** (failure reporting, analysis, and corrective action system): documentation of faults and problems, analysis and planning of the engineering changes necessary to solve them.

- **Management of obsolescence, modernization and upgrades:** We use techniques to prolong the useful life of systems and equipment with obsolescence and/or alternative sources of components.
- **Service newsletters:** Indra ensures the technological operability and adaptation (updating) of the systems throughout their life cycle.
- **Technical document management:** initial generation of the system's operation and maintenance documentation, as well as the integration test documentation.

Sustainability 4.0

We apply the latest disruptive technologies in the Maintenance of Defence Systems and Logistics.

- **Artificial Intelligence applied to the maintenance:** Condition Based Maintenance (CBM) or predictive/prescriptive.
 - Initial study and identification of fault modes and studies (FMECA).
 - Definition of IoT architecture of sensors and communications and/or parameters of the BITE to be monitored.
 - Mathematical-computational modeling and applying data analysis techniques and applications engineering algorithms (machine learning/deep learning).
 - Support for the life cycle of the algorithms.
- **Smart configuration control:** Automatic identification of equipment (RFID, BT, OCR), contextual information with augmented/mixed reality.
- **Remote assistance, virtual assistants for maintenance/training** with the use of RA/RV and digital twins.



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