

LION

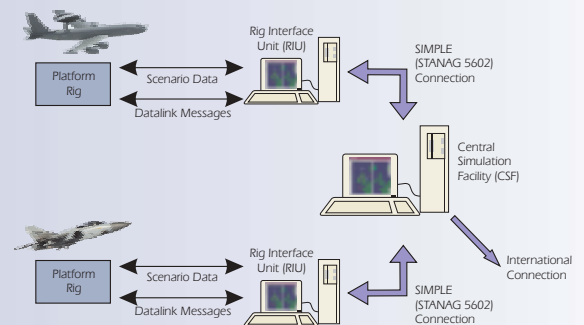
LION is the Link Inter Operability Network testing service being provided by Aerosystems International, in conjunction with the UK Ministry of Defence. **LION** enables interoperability tests to be conducted between geographically separated tactical data link equipped integration rigs, through ISDN telephone lines. This avoids the restrictions imposed by the use of live radio transmissions. The system uses the NATO agreed Standard Interface for Multiple Platform Link Evaluation (SIMPLE) for communication between **LION** nodes.

LION provides the cost-effective means of testing actual hardware, without the expense of operational trials. Use of **LION** as part of the IO acceptance process for new TDL equipped platforms is mandated in JSP 602. This publication outlines the acceptance planning process to be followed by all platform IPTs to achieve certification and clearance for operational use. **LION** within this IO assurance process provides a proven test environment that acts as the bridge between the platform specification document set and actual platform trials.

The service is available and can be purchased by projects that need to address TDL IO testing. Platform IPTs must plan for this as part of their TDL IO acceptance strategy and reach agreement on this with the TDL IPT.

Features:

- Link 11 and link 16 capability, with expansion capability for Link 22 and JRE.
- International connection provided to allow tests with other SIMPLE compliant networks.
- Extensive on-line and post test analysis.



Architecture

LION utilises a Central Simulation Facility (CSF) that provides scenario data over ISDN lines to individual Rig Interface Units (RIU) at each platform data link rig. The CSF ensures that each platform is operating with the same scenario data and performs the function of a central message router for all data link messages. The RIU provide a SIMPLE interface to the network and tailored interfaces to each platform rig, and contains cryptographic equipment to ensure the security of the information transmitted over the ISDN telephone lines. It has the capability of operating as either terminal or host simulator to ensure platforms can participate in the network.

For efficiency, the **LION** network utilises a star topology with the CSF at the centre. Additional ports in the CSF are provided for the international connection and to also allow for the introduction of additional platforms. A new platform can be introduced by the addition of an RIU together with extra bearer and cryptographic equipment at the CSF.

A significant advantage of the RIU's is that they will contain the full scenario generation, execution and analysis facilities provided at the CSF. Thus local testing at a single rig will be possible without the necessity of a SIMPLE connection.

LION - The Testing Service

The architecture has been designed to allow third parties to use it for all aspects of interoperability testing. By providing a rig interface unit and ISDN line at the required site, the **LION** team provides an extensive and cost effective testing facility. The **LION** team has in-depth experience of analysing interoperability problems, to identify the cause of the issues under test. The testing can be tailored to suit individual customer needs and can include project risk reduction, data link integration testing and preparation for system acceptance.

The Benefits

- Use of LION brings benefits to both individual platform IPTs and to the UK- and NATO-wide TDL community as a whole:
- Provision of focused tactical data link interoperability testing.
- Identification of deviations from standards and system specifications.
- Identification of capability gaps early in the integration programme.
- Provision of detailed understanding of communications architecture and implementation of Communication Information Systems.
- Provision of tactical data link test and reference centres.
- Demonstration of successful integration with 'System of Systems' architecture.
- Verification of correct implementation of international tactical data link interoperability standards, tools, processes and procedures.
- Provision of programme plan for tactical data link interoperability testing based on risk assessment.
- Provision of cost savings over traditional live flight trials and data analysis.

Platforms

Examples of Platforms currently participating in the LION programme and Platforms that are planned to participate in the future are shown below:

Current platforms

- E3D
- Tornado F3
- Sea King AEW Mk7
- T42/CVS

Future platforms - Other platforms can be contracted as required

- ASTOR
- Eurofighter Typhoon
- Nimrod
- ASTUTE
- T45

Interoperability Tests

In general, the network will provide 3 levels of test to confirm interoperability:

- System Wide Checks - to detect system wide issues concerning data link operation and implementation. These will involve multiple platform rigs, augmented by simulation.
- Focussed Testing - used to investigate and focus in on specific interoperability issues that have occurred, either in service or identified through paper research.
- International Tests - used to examine the Interoperability between the UK and other nations data link equipped platforms

Additional tests can be added to meet individual customer requirements.

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