

Test Instrumentation – Guidance

Summary

In the conduct of operational testing, instrumentation is vital to identify with clarity what happens during test events. However, instrumentation data alone is generally not sufficient to explain why events unfold as they do and thus requires other sources of information, including interviews with operators and commanders. In general, instrumentation data is helpful in characterizing the environment and assessing Measures of Performance, but makes up only a portion of the data needed to assess Measures of Effectiveness.

When preparing a TEMP, specify in detail what instrumentation will be used to collect data on the system under test, and precisely what the instrumentation data will be used for in the evaluation. Factors and levels that are crucial to the evaluation should be identified in the [Design of Experiments](#) methodology. When possible, both DT and OT events should use common instrumentation to facilitate interpretation of the instrumentation outputs. The instrumented data should be collected carefully during the event to ensure that harvesting does not interrupt the operational context.

In addition to specifying the system performance instrumentation, the TEMP should delineate the real-time casualty assessment (RTCA) instrumentation to be used in OT events. This should include the description of the RTCA systems to be used and their quantities in both the Red and Blue forces.

Best Practices

An example of instrumentation used in support of operational testing is the Instrumented Field Data Collector¹ (IFDC) used in the Force XXI Battle Command Brigade and Below (FBCB2) and Early Infantry Brigade Combat Team (E-IBCT) assessments. The instrumentation system was physically attached to the test vehicles to capture and record all of the electronic message traffic that passed through the FBCB2, and was crucial to understanding the volume of message traffic flow between combat units, and the degree of situational awareness subordinate units had as a result of the presence of the digitization equipment. However, the presence of the IFDC was not sufficient to disclose everything necessary about the FBCB2 during the OT. Other sources of information, such as interviews with unit leaders and system operators, were also needed to assess the impact of improved situational awareness during operations.

Time/position/velocity/acceleration sensors are commonly used in developmental and operational testing.

References

[Reporting of Operational Test and Evaluation \(OT&E\) Results, DOT&E January 6, 2010](#)

Examples

¹ IFDCs monitored digital message traffic and provided data on message completion rates.