

**Tool Name:** Logistics Composite Model Analysis Toolkit (LCOM ATK)

## **Detailed Information:**

### **Overview**

The Logistics Composite Model Analysis Toolkit (LCOM ATK) is a software simulation tool used to investigate reliability, availability, maintainability and supportability (RAMS) capabilities and modernization issues of weapon systems. It is a discrete-event simulation tool employing resource queuing, stochastic processes and Monte Carlo methods. This tool was formerly known as Aeronautical Systems Center LCOM (ASC LCOM), but was re-named due to organizational changes.

LCOM ATK has a long legacy of use supporting capability assessments and trade-off studies for a variety of weapon systems. It is maintained by the AFLCMC Engineering Division at Wright-Patterson AFB and is currently in use by acquisition planning and program offices throughout the Department of Defense and by international partners.

### **Description**

Use of LCOM ATK requires an input dataset describing the operational unit, weapon system, maintenance concept, and mission schedule. This includes specifying the number of aircraft and operating locations, the components which comprise the weapon system, the pre-sortie and post-sortie processes and activities required for operation and maintenance, level of repair and associated support equipment and facilities, corresponding personnel and spares levels, and the flying schedule.

The weapon system is specified in terms of a hierarchical breakdown usually in terms of Work Unit Code (WUC) or a similar structure and includes corresponding failure rates and spares levels. Pre-sortie and post-sortie processes and activities are specified in terms of a network of tasks and include time and resources (personnel, parts/spares, support equipment, facilities) required for task completion.

LCOM ATK offers great flexibility in defining the level of detail for the simulation. A single operational unit or squadron can be modeled, or the analyst may specify units at multiple locations including multiple aircraft types. LCOM ATK does not require that the weapon system be defined to any particular level of detail. Components may be modeled or not to accommodate analysis objectives as can the depth to which components can be individually defined. For example one component can be modeled to the 5-digit level, while others can be modeled to the 3-digit level or not modeled at all.

Task networks are typically defined to include processes for pre-sortie launch, post-sortie recover, and scheduled and unscheduled maintenance. Additional flexibility exists to accommodate modeling of weapon system configurations, deferred maintenance, cannibalization, task priority and preemption, and resource substitution.

Flexibility exists to model usual levels of repair for flight-line, shop, depot, or any unique situation to accommodate analysis objectives. Task network structure offers typical programming constructs to support highly detailed networks involving variables, branching, looping, subroutines, etc.

LCOM ATK provides over 200 output statistics which detail and summarize simulation results. A collection of several pre and post processors are available to assist analysts in review, analysis, and documentation of simulation results. They include tools for graphical display of task networks, debugging and profiling of model data, and plotting and charting of output statistics.

LCOM ATK has been continually updated and modernized and offers regular releases for bug repair and feature enhancements. A multi-volume set of documentation is maintained. LCOM ATK has

been enhanced to offer support for multiple CPU cores and parallel processing. A completely revised user interface was recently introduced which offers a modern software suite of integrated support tools, enhanced simulation control, and features for study configuration management. Other enhancements include the ability to explicitly track and report availability metrics such as operational and material availability, as well to track various levels of reliability and maintainability.

**Current Release:**

LCOM ATK 5.0.

**Upgrade Planned for:**

LCOM ATK 5.1 planned for 1st quarter 2018.

**DOD Functional Classifications Supported:**

Logistics  
Test and Evaluation  
Reliability, Availability, Maintainability, Supportability (RAMS)  
Research and Development  
Systems Engineering

**Tool Type:**

Analysis  
Decision Support  
Engineering  
Modeling and Simulation  
Requirements

**Service/Command Unique Features:**

LCOM ATK is applicable to all services and commands, across the enterprise, and throughout the lifecycle.

**Assessment of Tool:**

**PROS:** LCOM ATK is an extremely flexible simulation tool with numerous features and reporting options. It has a long legacy of use, and is accepted and well known throughout the defense community. It is actively maintained and has been updated with a modern user interface and many other enhancements. Backward compatibility has been maintained with previous versions of LCOM. Support tools are available to assist analysts with data preparation and results visualization. Multi-volume user documentation is actively maintained. Training materials and technical support are available.

**CONS:** Detailed data preparation is required. Data format is complex. Generally not considered a tool for novices.

**Expertise and Training:**

LCOM ATK is a complex modeling and simulation (M&S) tool and not suited for novices. Analysts with prior M&S experience can expect to become proficient within a few months with dedicated fulltime study. Analysts should expect to require occasional assistance and technical support.

**Hardware and Software Requirements:**

LCOM ATK requires a modern workstation running Microsoft Windows XP or later.

Microsoft Excel 2007 or later is required for postprocessors.

Multiple CPU cores while not required are recommended, since LCOM ATK supports parallel processing.

**Development Environment:**

Simscrip  
Visual Basic

Visual Basic for Applications

**Databases Supported:**

Database software and formatting is not used by LCOM ATK. Input file format is ASCII text. Output file format is ASCII text, macro-enabled MS Excel workbooks, and xml.

**Tool runs in the following modes:**

Single-User (Stand-Alone)

**Development Status:**

Fully Operational  
Actively maintained and upgraded

**Cost/License**

LCOM ATK is government owned and maintained by AFLCMC/EZJS, Wright-Patterson AFB, Ohio. It is available at no cost to government offices and their contractors in support of official programs or projects. Contractors must identify a sponsoring government office.

**Distribution:**

To obtain the latest LCOM ATK release contact [lcomatk@us.af.mil](mailto:lcomatk@us.af.mil), 937-255-8060, or AFLCMC/EZJS, 1970 Monahan Way, Wright-Patterson AFB, OH 45433. LCOM can also be obtained from the LCOM ATK Sharepoint site at [https://intelshare.intelink.gov/sites/lcom/\\_layouts/15/start.aspx#/SitePages/Home.aspx](https://intelshare.intelink.gov/sites/lcom/_layouts/15/start.aspx#/SitePages/Home.aspx)  
Be sure to use your email CAC certificate when logging in. Once an access request has been sent contact the LCOM group at the above email address to confirm your request has been received.

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