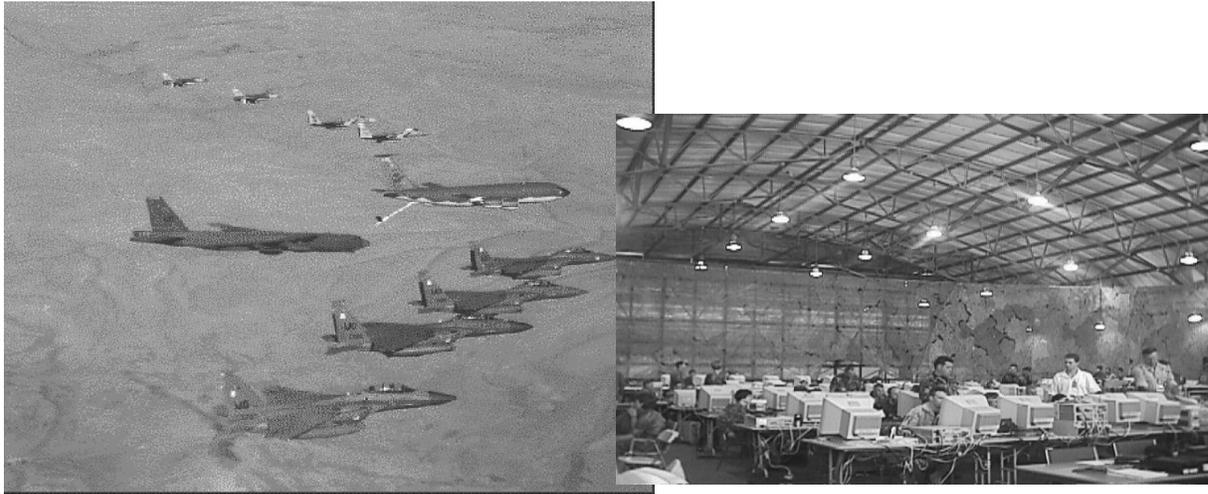


THEATER BATTLE MANAGEMENT CORE SYSTEM (TBMCS)



Joint ACAT I AC Program (Air Force Lead)

Total Number of Systems:	29
Total Program Cost (TY\$):	\$1.6B
Full-rate production:	4QFY00

Prime Contractor

Integration – Lockheed Martin

SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2020

The Theater Battle Management Core Systems (TBMCS) provides hardware, software, and communications interfaces to support the preparation, modification, and dissemination of the Force Level theater and Air Component Air Battle Plan (ABP). The ABP includes the Air Tasking Order and Airspace Coordination Order. The TBMCS unit level provides Air Force Wings and Bases the capability to receive the ABP, parse it, and manage wing operations to support execution of the ABP or modifications to it.

TBMCS supports the development and sharing of a *common relevant operational picture* of theater air and surface activity. TBMCS common applications and interfaces provide a robust network for **Joint and Multinational Force** data sharing. The TBMCS intelligence and targeting applications at the theater Joint Force Air Component Commander level and at the Air Support Operations Center and Direct Air Support Center levels support the coordination of Forward Edge of the Battle Area to deep or long-range *precision engagement* fires, safe passage zones, and near real-time warnings of impending air attack contributing to *full-dimensional protection*. The air and surface surveillance and weapons coordination engagement options provided by TBMCS implementation enables *synchronized operations* and employment of the *correct weapons* for each target to generate the desired results. All TBMCS network participants contributing to improved decision making by the Battle Commanders share engagement intentions and results assessments. The TBMCS system used by all the Services share common components, including software applications, providing a significantly improved level of *sustainment interoperability*.

The TBMCS includes workstations, servers, routers, communications links, and applications software. TBMCS Version 1.0.1 comprises five Key Legacy Functions (KLFs) viewed as the minimum

operational capability needed to replace the Contingency Theater Automated Planning System (CTAPS), Combat Intelligence System (CIS), and the Wing Command and Control System (WCCS). TBMCS Version 1.0.1 also includes a number of non-KLF functions and capabilities. The five KLFs are: (1) nominate and prioritize targets; (2) plan and disseminate the ABP; (3) receive and parse the ABP; (4) plan a detailed flying schedule within 4 hours of receiving the ABP; and (5) monitor and control execution of the ABP.

TBMCS versions beyond Version 1 will provide additional or improved hardware and software capabilities to improve real-time targeting, accuracy of targeting, data handling and dissemination, and interoperability with national intelligence data bases.

Planned TBMCS fielding includes every theater air component, all Navy aircraft carriers and command ships, all Marine Air Wings, and all Air Force flying wings and ASOC squadrons. Army Battlefield Coordination Detachments will also employ TBMCS.

BACKGROUND INFORMATION

The TBMCS has been in development since 1994. In October 1999, TBMCS was placed on the OSD T&E Oversight List and AFOTEC became the lead test organization.

The Air Force does not have an approved Mission Need Statement or an Operational Requirements Document (ORD) for TBMCS. Instead TBMCS development is driven by a Statement of Need and ORDs for the legacy systems, and a draft Systems Version Requirements Document further scoped by a Customized User Agreement. Requirements have been drawn from these documents to identify TBMCS Version 1 “legacy” test requirements. OSD is coordinating the establishment of an OSD Overarching Integrated Process Team to support future TBMCS development and acquisition in accordance with DOD 5000.2.

TEST & EVALUATION ACTIVITY

The first TBMCS Multi-Service Operational Test and Evaluation (MOT&E) (MOT&E I), conducted in January 2000, was halted early due to data base contention and integrity problems. The developer addressed the software problems and along with the Air Force user, developed a Concept of Employment that provides guidance on how to minimize resource contention with the data base. Following several Government In-plant Tests and a Field Developmental Test, a second MOT&E (MOT&E II) was conducted from July 24-31, 2000, to determine the effectiveness and suitability of the baseline TBMCS software in satisfying legacy KLFs. Both MOT&Es included the distributed participation of five Air Force TBMCS main nodes, two Marine nodes, two Navy nodes (including one ship), and the Army participating from both the USAF and Navy nodes. MOT&E I included an Information Assurance vulnerability evaluation using external and internal penetration techniques.

The AFOTEC MOT&E Test Plan, which supported the TBMCS MOT&E I, was conditionally approved by DOT&E in January 2000, with follow-on test requirements cited. DOT&E approved an update to that plan for MOT&E II in July 2000. The TBMCS TEMP was also approved in July 2000, but the approval memorandum noted that programmatic deficiencies need to be satisfied and a TEMP update submitted to cover future TBMCS development.

TEST & EVALUATION ASSESSMENT

The TBMCS MOT&E conducted in January 2000 demonstrated that TBMCS was unable to support sustained development and management of the ABP in a simulated operational environment. While more than 500 deficiency reports were submitted during this MOT&E, the primary problems were timely dissemination of the ABP to other TBMCS nodes, data base contention access, and data integrity. When a number of operators operated TBMCS applications that accessed the intelligence and targeting data bases, the automated features of TBMCS slowed and sometimes stopped requiring lengthy restart procedures. Also, when Air Tasking Orders were exchanged between TBMCS servers, missions and mission data would be missing at the receiving location.

Preliminary analyses from the July 2000 MOT&E II indicate that TBMCS 1.0.1 can be effective in providing Key Legacy Functionality when employed by highly trained operators equipped with adequate computer hardware, but significant shortfalls exist in operational suitability. In several non-KLF areas, TBMCS 1.0.1 does not appear to be operationally effective or suitable. During MOT&E II, Air Battle Plan production and execution at all Force and Unit levels were adequately accomplished. Transmission of the Air Battle Plan was accomplished within stated time requirements in four out of seven opportunities, with communications problems being a significant factor in two of the late transmittals. Performance of the IRIS message handling system at the Navy node was much slower than the IRIS system at the Air Force node (a 100 Mhz vice a 600 Mhz computer server), and when communications outages were experienced, performance deteriorated further and led to lost or delayed messages containing airlift information and Army Air Support Requests. Operationally, at best this would require additional action to discover the missing Air Support Requests in order to re-enter them; in the worst case, since TBMCS does not alert the sender that messages have not been received, ground forces may not receive needed air support. The TBMCS system, along with interfacing systems, should be sufficiently robust and persistent to give the user confidence of message delivery and notification when a message has not been received within reasonable time.

Employment of TBMCS 1.0.1 requires many workarounds and a high degree of training, but offers a number of improvements in the planning and execution of theater air operations over the currently fielded CTAPS, WCCS, and CIS. Interviews with users familiar with the legacy systems generally indicate a strong preference for TBMCS. However, based on MOT&E II results, TBMCS does not yet provide core functionality, that minimum set of capabilities that permit the user to effectively accomplish his mission in the operational environment, including sufficient levels of interoperability, supportability, and training adequacy, such that the user would be satisfied if no additional capability were ever delivered.

Once corrective actions to identified shortfalls have been implemented and verified in a follow-on test of appropriate scope, the operational effectiveness and suitability of TBMCS should be re-assessed. DOT&E will remain involved with the TBMCS Program as the path ahead is developed and associated T&E plans are made.

