

“MAAP” Brings Affordable Success

by Carol Terrell, JSF Affordability Engineer

The F-35 Joint Strike Fighter is the Affordable Fighter. Because of the program’s intense focus on affordability, Lockheed Martin is pioneering new affordability paradigms and incorporating new business standards and procedures for guaranteeing “affordable success.” Program award fee is a key measure of success during the System Development and Demonstration (SDD) phase, and affordability comprises more than 50 percent of all F-35 JSF award fee criteria. Clearly, this can affect us greatly.

The JSF Affordability Team has purchased a powerful toolset for achieving affordable success: the Monterey Activity-Based Analytical Platform (MAAP) model by Systems Exchange, Inc. MAAP dispenses with old-style support structures to bring cost-saving new efficiencies to complex programs such as F-35

Total Ownership Cost (TOC) or Life-Cycle Cost (LCC) analysis has been around for decades. However, the F-35 program is demanding great magnitudes of data and a variety of different ways of representing that data. The challenge of “slicing and dicing” cost data for multiple variants, customers, focus (development, procurement, production, support), bookkeeping, planning, staffing, logistics and tremendous variations in support possibilities establishes

the F-35 as a high-visibility cost program with high demands. The JSF Affordability Team selected MAAP because of this.

MAAP engineers stepped away from the paradigm when they designed their model without locking the maintenance activities to fixed locations. The old support paradigm always required an arboreal (tree-like) support structure. Spares were held at the depot and funneled forward when demanded. Well, the worse place to store a spare is at the depot – the one place it will not be used. MAAP is not restrained by tree-like structures. It employs a non-arboreal support structure; items can be stored at forward locations, may travel in lateral support paths, etc. This type of approach enables flexibility in assessing the most cost-effective solutions for Lockheed Martin as a company, and our customers, foreign or domestic. When coupled effects of maintainability, reliability, supportability and cost interact with each other positively and negatively, MAAP provides the capability to assess all combinations comparatively.

Now is the time to populate our models with design details and assess their impact. Affordability will capitalize on the databases from Specialty Engineering and Business Management. This data will be gathered into one location to make the most of commonality design impacts that present opportunities to minimize costs. Tools like this lessen the unknowns. “What-if” scenarios can be evaluated without wasting major investments. The data from this phase can migrate into the next phase for support maturation. No need to reinvent the wheel or restructure/revalidate data. This

flexibility remains MAAP’s strength for migrating from the SDD phase into deployment. Support contracts can be defined before they are locked-in.

The MAAP model is unconstrained. It handles computational problems as small as component analyses and as large and complex as TOC analyses involving multisystem-type and multiplatform-type deployments. Hardware breakdown structures may be as detailed – or as simple – as your data, or the time you have to assemble it. In fact, MAAP can be used throughout the life cycle: front-end analysis, tender evaluation, logistics support analysis (LSA), logistic investment, rational budgeting, maintenance planning and disposal planning.

The inner workings of MAAP are simple and straightforward. The input data describe the hardware system at any level of detail in the breakdown structure. The

“future history” of the system(s) under study is communicated as “events.” An event, such as a scheduled maintenance event, is characterized as happening at a given frequency, taking a given amount of time and using specific resources. The resources are skilled labor, repair parts, tools, shops, technical data, software and energy. Each resource required to carry out the event is purchased, or its services consumed, at the times indicated by the frequency and resource lead time, and the place indicated by the deployment of the system in which the part resides.

Systems are created by nonrecurring events (such as manufacturing) and deployed to specific operating locations. They are used by operating events assigned to each deployed system. Their operation leads to the need for maintenance events (both scheduled and unscheduled) at specific

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All F-35 JSF Employees

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<http://jsf7.jsfvpc.lmtas.com/>

Nominations due by October 31

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support facilities, which, in turn, lead to the need for training and transportation events.

MAAP's operating phases are used to cue the model to turn a system's various subsystems on and off, or place them in standby mode, as appropriate. As the model processes all the operating events in a life cycle, each subsystem logs its own amount of operating time (or landings, catapults, shots, etc.). These subsystem (and subsidiary component) clocks then trip scheduled and unscheduled maintenance event clocks wherever that particular system happens to be operating.

As a result, MAAP knows both where and when each specific resource will be required to carry out these events. Since all the resources have delay times associated with them, the model also knows when it must initiate a procurement or training action to make sure the resource is available at the place and time required.

Unlike conventional Logistics Support Analysis approaches, MAAP also recognizes that to achieve a given level of system availability, more than the mathematical mean resource requirement must be purchased.

To figure how much, a special algorithm has been developed to perform multiresource optimization against availability targets. The end result is a simple-to-use logistic analysis tool, with flexible detail and very low data cost, that produces far more detailed and useful data than ever envisioned by any of the government standards.

F-35 JSF Affordability will be estimating all F-35 aircraft by tail number and by day.

MAAP is the cutting edge of logistic analysis methods. It will be used to study the implications of deployment and support complex systems in dynamic operating scenarios that pay particular attention to such things as:

- Maintenance planning
- The true cost and resource requirements of all forms of performance-based support or service contracting
- The true cost and forecast benefits of warranty agreements
- Spare parts inventory adjustments during phased acquisitions or resulting from significant changes in operating profiles
- Repair shop capacity problems
- Future commercial off-the-shelf replacements and associated support resources
- Time and location of resource disposal for declining fleets.

The supplier for MAAP is considered an F-35 team member. Personnel are on-site. The annual MAAP Forum '02 will be held Nov. 5-7 at the Renaissance Worthington Hotel in downtown Fort Worth – a demonstration of the supplier's support of the F-35 program. MAAP has continued to grow and develop according to multiprogram commitments. This forum will provide opportunities for sharing other DoD program advancements and breaking ground into new support contract arrangements between aerospace and government entities.

F-35 or JSF – Which Is It?

by John Kent

In June, the U.S. Air Force Chief of Program Integration approved F-35 as the official designation for the Joint Strike Fighter.

Here on the industry side, we are recommending that team members employ the following usage in documents and presentations as we transition from JSF to F-35:

- “F-35 Joint Strike Fighter” in first reference
- “F-35 JSF” in second reference
- “F-35” in all subsequent references.

However, the use of Joint Strike Fighter or JSF in formal titles and organization names will continue, until or unless we are notified of a change.

Service variants are designated as follows:

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| • U.S. Air Force | F-35A |
| • U.S. Marine Corps | F-35B |
| • U.S. Navy | F-35C |
| • U.K., international | To Be Determined |

Upcoming Events

September

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| Sept. 24–26 | Program Management Review, Fort Worth, Texas |
| TBD | Fighter Posse, El Segundo, California |
| Sept. 24 | Executive Women International, Fort Worth, Texas |
| Sept. 25 - Oct. 5 | Smart Solutions Conference, United Kingdom |

October

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| Oct. 1–3 | Aviation Week Aero Expo 2002, Los Angeles, California |
| Oct. 3–6 | SETP, Los Angeles, California |
| Oct. 7–10 | Maritime Aviation Requirements Summit, Patuxent River, Maryland |
| Oct. 17 | Drexel University Awards Ceremony, Philadelphia, Pennsylvania |
| Oct. 23 | JSF All-Hands Meeting |
| Oct. 25 | JSF Golf Tournament |
| Oct. 26 | SDD One-Year Milestone (activities TBA) |

November

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| Nov. 14 | JSF CEO Conference, Washington, D.C. |
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December

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| Dec. 10–11 | Leadership Summit |
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