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The Work Breakdown Structure (WBS) that follows as Table 1 defines the work activities that need to be performed during the operations, maintenance and support phase of the defense life cycle by maintenance and support organizations. The WBS portrayed in the Table provides a shopping list of activities that either could or could not be within a project's scope. We do not expect any project to perform all of these activities. However, we do expect this WBS to provide managers in the maintenance and support community with a framework for estimating budgeting, scheduling and tracking project expenditures of time and effort as a program unfolds.

Suggestions for improvement are welcome. Please forward them and any questions that you might have relative to the contents of this document to:

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WBS	Title	Description
1.0	Operations, Maintenance & Support	This entry collects the total cost associated with maintaining a system after it has been accepted by the customer (DD-250).
1.1	Maintenance	This entry summarizes the costs for updating and repairing elements of system.
1.1.1	Release Requirements	This entry records the costs associated with release requirements formulation based on user request and problem analysis.
1.1.2	Release Planning	This entry records the costs associated with developing plans, budgets and schedules for block releases.
1.1.3	Architecture Analysis	This entry records the costs for architecture analysis and design actions conducted aimed at satisfying requirements.
1.1.4	Hardware Defect Repair	This entry records the costs for repairing hardware defects. Such costs include engineering and test ¹ .
1.1.5	Software Defect Repair	This entry records the costs for repairing software defects. Such costs include engineering and test.
1.1.6	Hardware Enhancements	This entry records the costs associated with developing hardware enhancements and making perfective changes. Such costs include both engineering and test ² .
1.1.7	Software Enhancements	This entry records the costs associated with developing software enhancements and making perfective changes. Such costs include both engineering and test.
1.1.8	Release Integration and Test	This entry records the costs for acceptance test of the release including the costs associated with integration and verification.
1.1.9	Release Qualification and Delivery	This entry records the costs for release qualification and delivery including the costs associated with product release and final documentation.
1.2	Sustaining Engineering	This entry summarizes the costs associated with sustaining operations in the field. It includes the costs of analysis and studies, emergency repairs and user handholding and support.
1.2.1	Analysis and Studies	This entry records the costs associated with the conduct of analysis and

		studies stemming from operational issues and problems.
1.2.2	Emergency Repairs	This entry records the costs associated with emergency repairs including those associated with development and delivery of patch releases to the field.
1.2.3	User Training	This entry records the costs associated with providing mentoring and training.
1.2.4	External Support	This entry records the costs associated with providing user, customer and other forms of external support that needed for operational or flight testing.
1.3	Independent Test & Verification	This entry summarizes the costs associated with independently verifying and validating the system as releases are prepared and released typically by third parties. Such verification activities can range from independent testing to detailed analysis of both designs and code on a separately maintained test-bench.
1.3.1	Test Planning	This entry records the costs associated with preparing test plans.
1.3.2	Test Preparation	This entry records the costs associated with developing test cases and scenarios and the related test tools needed to run them.
1.3.3	Test Conduct	This entry records the costs associated with conducting the tests, capturing results, verifying release requirements are satisfied and developing regression test baselines for use in revalidating the system when future changes are made.
1.3.4	Independent Analysis & Verification	This entry records the costs associated with performing the detailed analysis of designs and code needed to provide additional confirmation that requirements including those for security and safety have been satisfied.
1.4	Product Support	This entry summarizes the costs associated with maintaining the overall quality of the processes, products and supplier networks used by the system in operations, maintenance and support.
1.4.1	Configuration Management	This entry records the costs associated with configuration management including those associated with CCB operations and tracking configurations, spares, licenses and parts among various operational and support sites.
1.4.2	Quality Assurance	This entry records the Quality Assurance costs aimed at ensuring the quality and integrity of the processes used by the system for maintenance and support.
1.4.3	Peer Reviews	This entry records the costs associated with conduct of peer reviews on the project including disposition of issues found.
1.4.4	Supplier Management	This entry records the costs associated with maintaining liaison with suppliers including those that provide parts, spares and software licenses.
1.4.5	Security	This entry records the costs associated with security including those associated with security including planning, training and controls.
1.5	Information Assurance	This entry summarizes the costs associated with information assurance including those associated with product and computer network protection.
1.5.1	Protection Services	This entry records the costs associated with product protection including any associated with anti-tamper and maintaining any Secure Compartmented Information Facilities (SCIFs).
1.5.2	DIACAP	This entry records the costs associated with the periodic conduct of DIACAP accreditation and certification for those computer networks used to maintain and operate the system.
1.5.3	IAVA	This entry records the costs associated with IAVAs including those associated with patches and updates needed to address emerging requirements.
1.6	Acquisition Support	This entry summarizes the costs associated with providing oversight and support for acquisition management activities. Such costs often occur when managing third parties doing maintenance activities.
1.7	Operations Support	This entry summarizes the costs associated with supporting operations in the

		field including those costs associated with database maintenance, configuration and system administration.
1.8	Facility Support	This entry summarizes the costs needed to ready and maintain those development and test facilities needed to maintain and sustain the system in the field.
1.8.1	Maintenance Facility Sustainment	This entry records the costs related to readying and maintaining a maintenance facility that can be used to develop and sustain the system once it is fielded.
1.8.2	SIL Sustainment	This entry records the costs associated with readying and maintaining a System Integration Lab (SIL) that is used to test and evaluate new releases destined for the field under realistic operating conditions (using tactical hardware in the loop).
1.8.3	Equipment Sustainment	This entry records costs associated with setting up and keeping tactical hardware used in the maintenance facility or SIL operational.
1.8.4	Specialized Test Equipment and Tools	This entry records the costs associated with keeping specialized test equipment and tools used in the maintenance facilities or SIL operational.
1.8.5	Network Operations & Administration	This entry records the costs associated with managing and maintaining the networks used for maintaining, operating and supporting the system.
1.9	Field Support	This entry summarizes the costs conducting field support including both labor and travel components.
1.10	Management	This entry summarizes the costs associated with managing release and sustaining engineering activities and conducting metrics analysis.
1.10.1	Release Management	This entry records the costs associated with managing the generation of releases.
1.10.2	Sustaining Engineering Management	This entry records the costs associated with managing the sustaining engineering efforts for the system including those associated with independent testing; independent verification; acquisition, product, field, operations facility support; and information assurance.
1.10.3	Risk Management	This entry records the costs associated with planning for and performing risk management activities on the project.
1.10.4	Measurement Analysis	This entry records the costs associated with the collection, analysis and reporting of measurement data.
1.11	Parts	This entry summarizes the costs of acquiring, packaging, transporting and storing replacement parts, components and subassemblies.
1.12	Spares	This entry summarizes the costs of acquiring, packaging, transporting and storing spares.
1.13	Licenses	This entry summarizes the costs for software licenses. Such costs include the costs for the license along with those needed to maintain market watch and vendor liaison functions.
1.14	Contractual Capability Set FY (XX/XX)	<p>This entry summarizes the costs for acquiring a software contractual capability set across a number of designated fiscal years. These costs include the following:</p> <ul style="list-style-type: none"> ▪ Troubleshoot/correct issues ▪ Cyclic release of new/revised versions ▪ Respond to new threats or requirements ▪ Maintain interoperability with other changing systems ▪ Accommodate new weapons, systems, or munitions ▪ Increase efficiency/effectiveness ▪ Support new doctrine/tactics ▪ Ensure compatibility with replacement COTS

		<ul style="list-style-type: none"> ▪ Satisfy policy mandates ▪ Address affordability concerns
1.15	Contractual System Mission Capability	<p>This entry summarizes the costs for acquiring a system mission capability set across a number of designated fiscal years. These costs include the following:</p> <ul style="list-style-type: none"> ▪ Troubleshoot/correct issues ▪ Cyclic release of new/revised versions ▪ Respond to new threats or requirements ▪ Maintain interoperability with other changing systems ▪ Accommodate new weapons, systems, or munitions ▪ Increase efficiency/effectiveness ▪ Support new doctrine/tactics ▪ Ensure compatibility with replacement COTS ▪ Satisfy policy mandates <p>Address affordability concerns</p>
1.16	Cost Item General	<p>This entry summarizes all other costs not tied to categories within this breakout. For example, process improvement support provided by the project would fit in this category as would the requirement to generate project summaries and lessons learned reports.</p>

Table 1 – Software Operations, Maintenance and Support Work Breakdown Structure

Notes

- 1 Many times the maintenance team must first determine whether the trouble report is a hardware or software problem. When it is hardware, the team often winds up fixing it.
- 2 Often, software must be optimized when new hardware is retrofit into the configuration. Such costs are normally not included as part of the hardware upgrade.

Acronyms

COTS	Commercial Off-The-Shelf
DIACAP	Defense Information Assurance Certification & Accreditation Process
FY	Fiscal Year
IAVA	Information Assurance Vulnerability Assessment/Alerts
SCIF	Secure Compartmented Information Facilities
SIL	System Integration Lab