Incremental Logistics Demonstration Strategy

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Introduction

- A Logistics Demonstration (Log Demo) is conducted by the Program Manager during the acquisition process to evaluate the readiness the System Support Package (SSP)
  - Includes both remove/replace and diagnostics/prognostics elements of field level maintenance, both operator and maintainer
  - Conducted as a standalone (status quo) or incremental
- Incremental Log Demos:

  (1) Influence both supportability and design

  (2) Reduce risk for operational testing

  (3) Provide the Program Manager, evaluator, and other stakeholders additional data to support milestone decisions
  - Concept: Increments of Log Demo during acquisition
  - Data Collection and tracking tools available

Purpose of the Logistics Demonstration

- The Log Demo provides data to evaluate:
  - Supportability
  - Adequacy of maintenance planning
  - Technical publications
  - Logistics data
  - Training and training devices.
  - Manpower and Personnel Integration (MANPRINT)
  - Test, measurement, and diagnostic equipment
  - Common and unique tools
  - Spares and/or repair parts

The Log Demo is required on all acquisition programs using representative soldiers (MOS) and is a primary data source for the ATEC evaluation

Components of the Log Demo

Physical Teardown

- Soldier Operator Tasks per TM including PMCS
- Soldier Maintainer Tasks per TM (predominately Field level)
- All Tools, equipment, facilities, TMDE, TMs (electronic/hardcopy), packages/kits and itemized lists needed to perform tasks

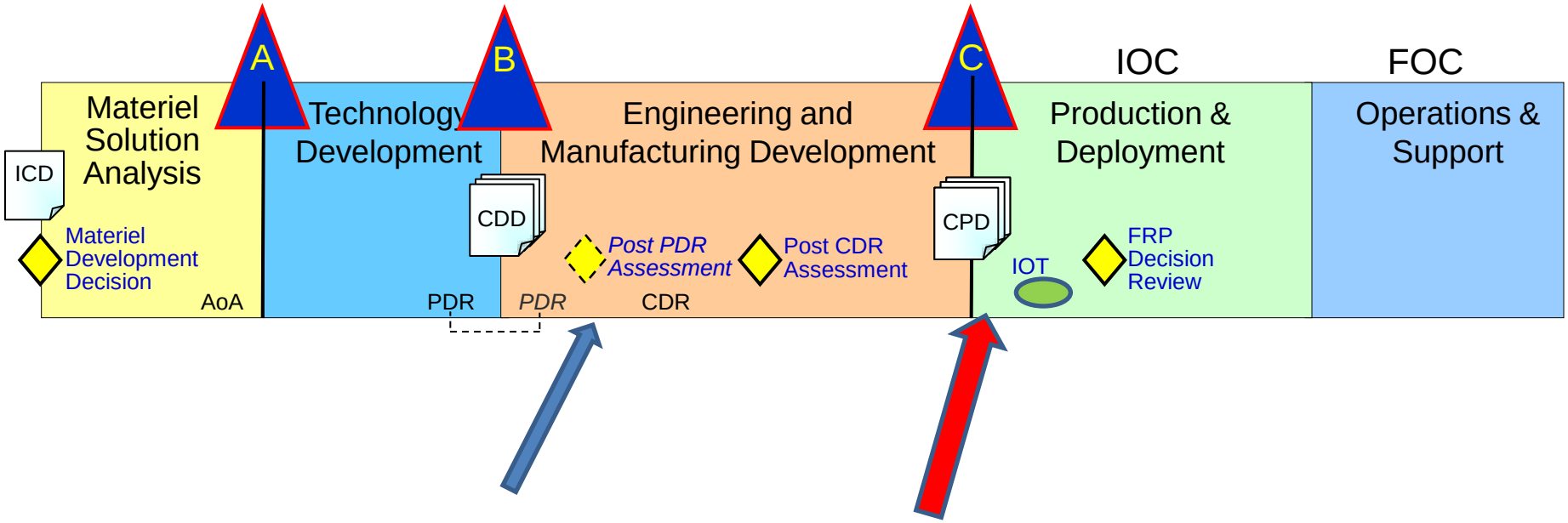
Events may be combined or separate

Maintainability Demo

- Fault Insertion List, and appropriate Diagnostic/ Troubleshooting procedures and equipment
- Address 100% of all known critical faults, introduced into the equipment individually according to the failure modes, effects, criticality analysis (FMECA).
- Critical faults are those that result in critical or catastrophic failures that may cause severe injury, major system damage, or weapon system loss as defined in MIL-STD-1629 and MIL-STD-882.
- Additional faults will be selected through a random process weighted to represent predicted failure rates. MIL-HDBK-470 may be used as a reference to determine fault insertion sample size and methodology.
- Faults must be introduced in a safe manner as to not cause damage to the test system.
- Conducted as an integrated system, or system of systems, to the extent it is necessary to fault isolate, perform maintenance, and verify that faults are corrected.

Log Demo in Acquisition

Generally LD is conducted during EMD or PD phase and prior to the Initial Operational Test



Incremental LDs are conducted during the EMD phase and on into PD Phase

Final LD is typically conducted before IOT using LRIP assets.

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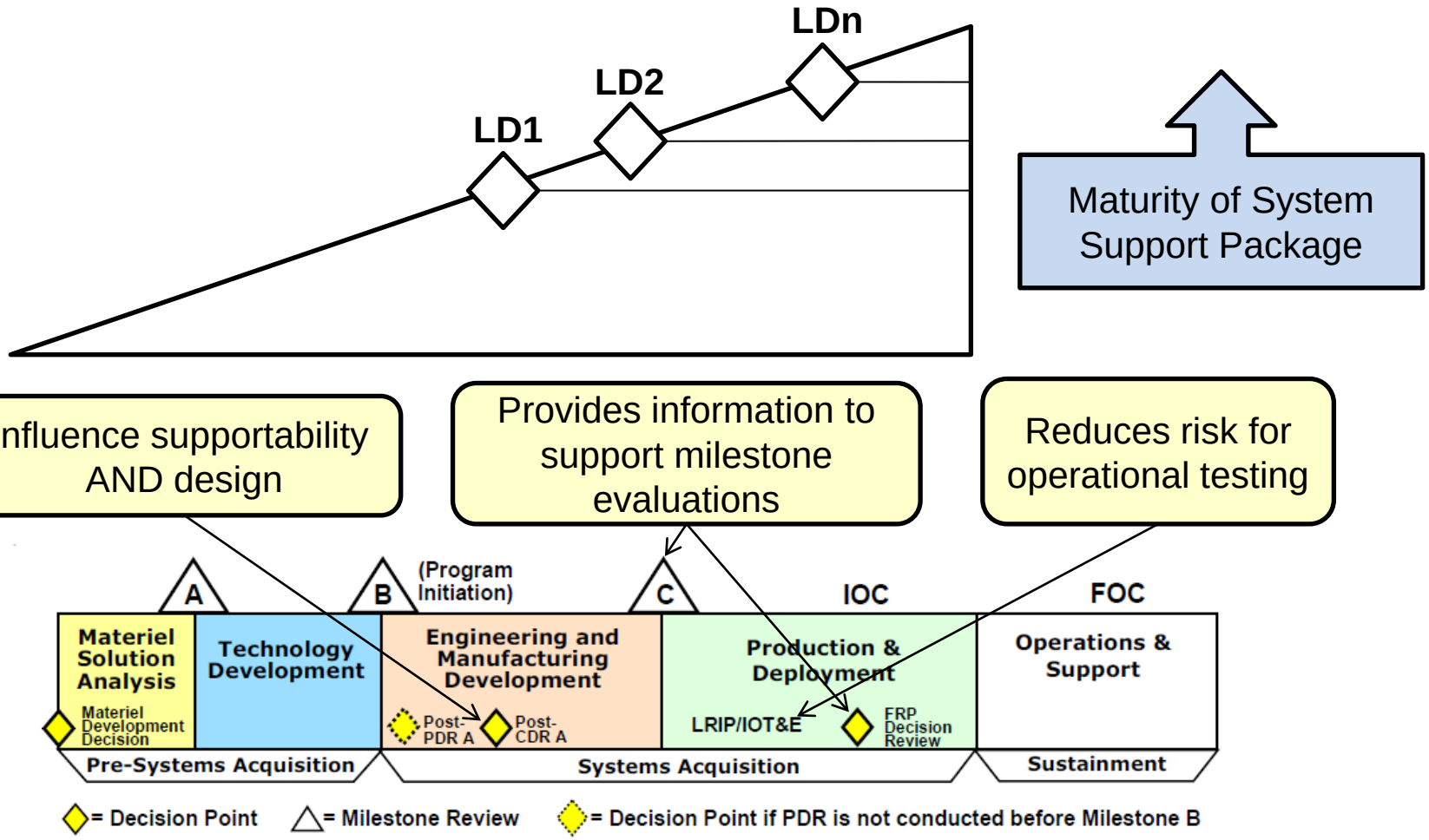
Value of the Incremental Log Demo



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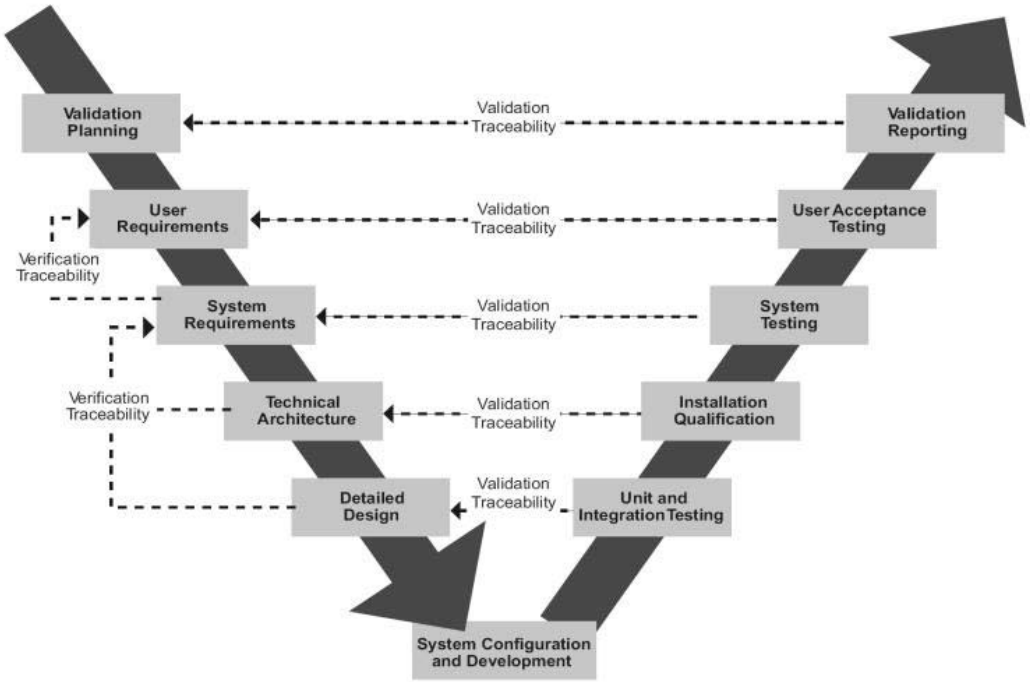
Influence of Supportability and Design



- Log Demo supports the Systems Engineering Process
- Subsystem, system, and User testing
- Validation of user requirements
  - Two level maintenance
  - Tools/test equipment
  - Manpower/personnel
- Validation of System Requirements
  - Startup & operating procedures
  - Mean time to repair
  - Built in test

Incremental Log Demo provides the feedback mechanism to evaluate and influence design

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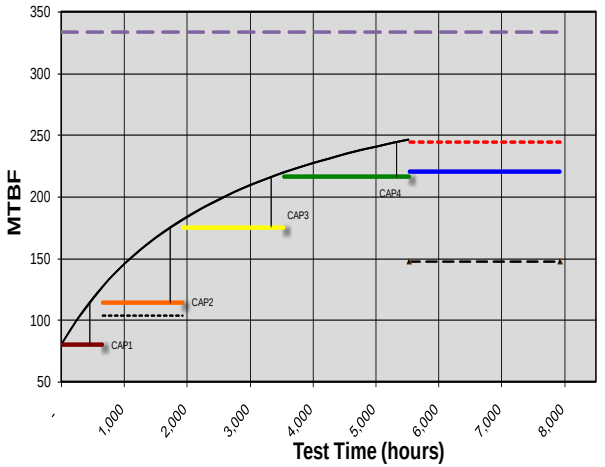
Design for Reliability & Maintainability

- Data from Log Demo is used to assess task level mean time to repair (MTTR)
- Time estimate includes:
  - Identification of symptom (fault)
  - Troubleshooting
  - Removal and replacement
  - Validation that symptom is remedied
- Compare MTTR with weighted MTTR from developmental and operational testing (DT/OT)
- Validates supportability data and maintenance allocation chart estimates
- Reliability growth planning curve identifies hardware maturity for conduct of Log Demos
- DT/OT identifies failure modes to be addressed in maintainability demonstration



Example Reliability Growth Planning Curve

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Support to Milestone Decisions

- Test & Evaluation
  - The Army Test & Evaluation Command (ATEC) encompasses all phases of testing; experimentation, developmental, operational & evaluation
  - Coverage of everything from rifles to Missile Defense (except medical and uniforms)
  - Testing and Evaluating over 400 systems, with 1100 test events worked daily
  - ATEC Forward Operational Assessment Teams in Iraq & Afghanistan
- Logistics Demonstrations
  - Serve as a primary data source for the ATEC evaluation
  - Provide logistics data used to form ATEC position for suitability of system (i.e. how supportable, maintainable, and costly…)
  - Informs key decision makers of suitability risks to assess cost, schedule, and performance

Incremental Log Demo allows influence to each milestone decision

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Reduces risk for Operational Testing

- OT is conducted using to assess effectiveness, suitability, and survivability in an operational environment using representative Soldiers
- Systems must stay operational to meet test objectives
- If maintenance concept is immature or unproven going into OT
  - Excessive downtime may result
  - System may require contractor support
  - May result in longer test window or costly follow-on testing

Incremental Log Demos are a means to validate the maintenance concept prior to OT

Log Demo Assessment

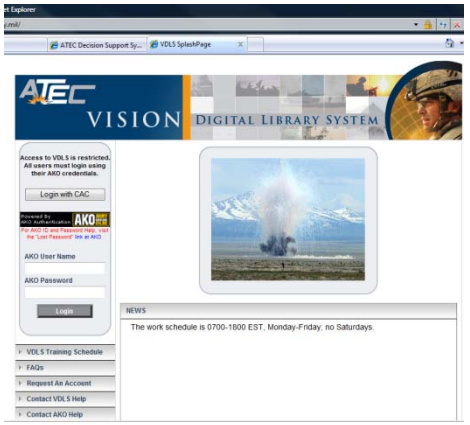
- Program Manager summarizes these results in the Log Demo report, and ATEC will provide in the evaluation report
- Tasks that are changed or unproven require demonstration in future events
- Trends will show reduction of issues with technical data, design, and execution over the Log Demo increments
- Reduced burden for testing late in acquisition process

Example

	Log Demo 1	Log Demo 2		Log Demo N
Tasks demonstrated	25%	40%		50%
Required TM update	15%	10%		5%
Required design change	10%	5%		0%
Required Execution change	5%	3%		0%

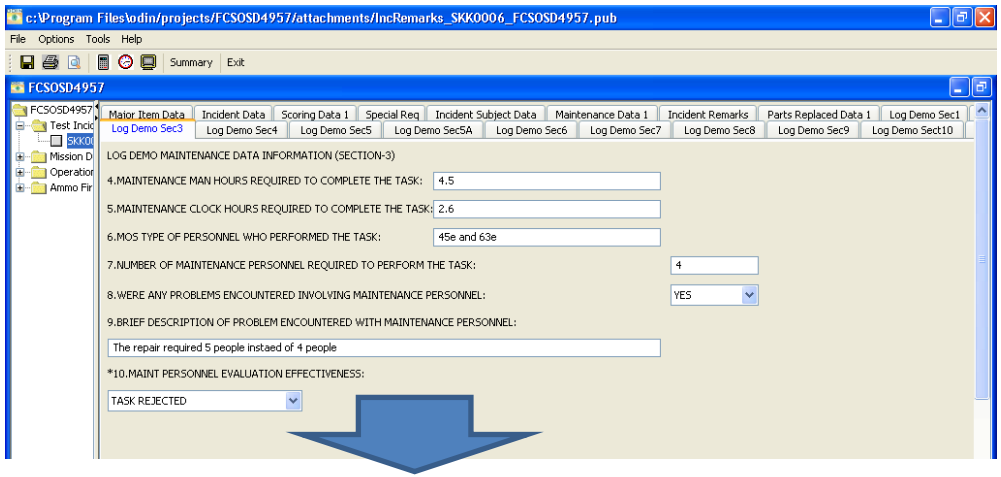
Data Collection Tools

- Test Incident Report (TIR)
  - Log Demo tasks are traditionally documented via the PMs own data collection system
  - ATEC (with PEO Integration) has developed a Log Demo Supplemental Data Form annex to the TIR
  - Stored in ATEC Vision Online Digital Library (VDLS)
  - Data query tools & centralized data storage
- Maintenance Task Tracking Tool
  - Tracks the completion status of an incremental LD
  - Extracts Log Demo data from VDLS, imports a data file into Powerlog-J, and runs a LD status report
  - Tracks configuration changes using LMI data (LCN, ALC, CAGEC, Reference Number) and Log Demo task completion using maintenance task analysis
  - Developed by LOGSA in support of PEO Integration, implemented as feature of Power-Log J, release 1.7.1, Nov 2009.



TIR Supplemental Form

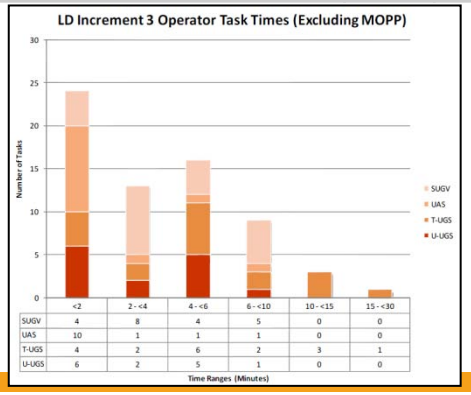
Step 1: Data collector inputs data into supplemental form within Observer Data Input Nexus (ODIN)



Supplemental Form Focus Areas:
-Manpower/Personnel
-BIT/BITE
-Technical Manuals
-Training
-Tools
-Supply/Spares
-Design

Step 2: Evaluation of data via query tools/excel

PROJ NUMBER	SYSTEM	DATE	TASK_TITLE	TIME	DESCRIPT_FAULT	BIT DETECT	MOS	TASK ACCPT
FCSS1E4670	T-UGS	6/7/10	MDAT FAIL MESSAGE	9M 50S	MDAT FAIL MESSAGE	YES	11 BRAVO	TASK ACCEPTED (WITH COMMENTS)
FCSS1E4670	UAS CLASS 1	6/8/10	E-FUELER NOT FLOWING FUEL	.119	INSUFFICIENT FUEL IN FUEL CONTAINER	NA	11B	TASK ACCEPTED
FCSS1E4670	SUGV	6/8/10	MAIN TRACK SLIPS, COMES OFF, OR POSSIBLE BURNING SMELL	0.105	MAIN TRACK STRETCHED OUT OF SHAPE	NO	11B10, 11B20	TASK ACCEPTED



Step 3: Reporting of results in reports and evaluation products

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MTTT Status Report

LCN Nomenclature	LCN	LCN Type	ALC	TM FGC	Reference Number	CAGE	Item Name	UOC
COMPUTER, DESKTOP	D	P	00	00	D-2400V1	3XAU1	COMPUTER, DESKTOP	D24

Task Code	Task Identification	Task LD Status	LD Passed Date	Diagnostics	Diagnostics LD Date	Removal	Removal LD Date	Installation	Installation LD Date	Operational Check	Operational Check LD Date	Others (clean, adjust, calibrate, PMCS)	Others LD Date
2GCAAAA	DEBUG SOFTWARE	Pass	02/20/2009 14:25:00	Completed	02/20/2009 10:00:00	Completed	02/20/2009 10:00:00	Completed	02/20/2009 12:30:00	Completed	02/20/2009 14:25:00	N/A	02/20/2009 14:25:00

TIR Number	Revision Number	Log Demo Date	Diagnostics	Removal	Installation	Operational Check	Others (clean, adjust, calibrate, PMCS)
B0001		02/20/2009 10:00:00	Completed	Completed			
B0002		02/20/2009 12:30:00			Completed		
B0003		02/20/2009 14:25:00				Completed	N/A

Task Code	Task Identification	Task LD Status	LD Passed Date	Diagnostics	Diagnostics LD Date	Removal	Removal LD Date	Installation	Installation LD Date	Operational Check	Operational Check LD Date	Others (clean, adjust, calibrate, PMCS)	Others LD Date
BGCAAAA	TEST USING SYSTEM DIAGNOSTICS												

TIR Number	Revision Number	Log Demo Date	Diagnostics	Removal	Installation	Operational Check	Others (clean, adjust, calibrate, PMCS)

Task Code	Task Identification	Task LD Status	LD Passed Date	Diagnostics	Diagnostics LD Date	Removal	Removal LD Date	Installation	Installation LD Date	Operational Check	Operational Check LD Date	Others (clean, adjust, calibrate, PMCS)	Others LD Date
DGCAAAA	SET-UP OR ADJUST SYSTEM CONFIG	Pass	02/23/2009 08:25:00	N/A	02/23/2009 08:25:00	N/A	02/23/2009 08:25:00	N/A	02/23/2009 08:25:00	N/A	02/23/2009 08:25:00	Completed	02/23/2009 08:25:00

TIR Number	Revision Number	Log Demo Date	Diagnostics	Removal	Installation	Operational Check	Others (clean, adjust, calibrate, PMCS)
B0004		02/23/2009 08:25:00	N/A	N/A	N/A	N/A	Completed

Task Code	Task Identification	Task LD Status	LD Passed Date	Diagnostics	Diagnostics LD Date	Removal	Removal LD Date	Installation	Installation LD Date	Operational Check	Operational Check LD Date	Others (clean, adjust, calibrate, PMCS)	Others LD Date
NGCAAAA	FAULT LOCATE LOCKUPS AND												

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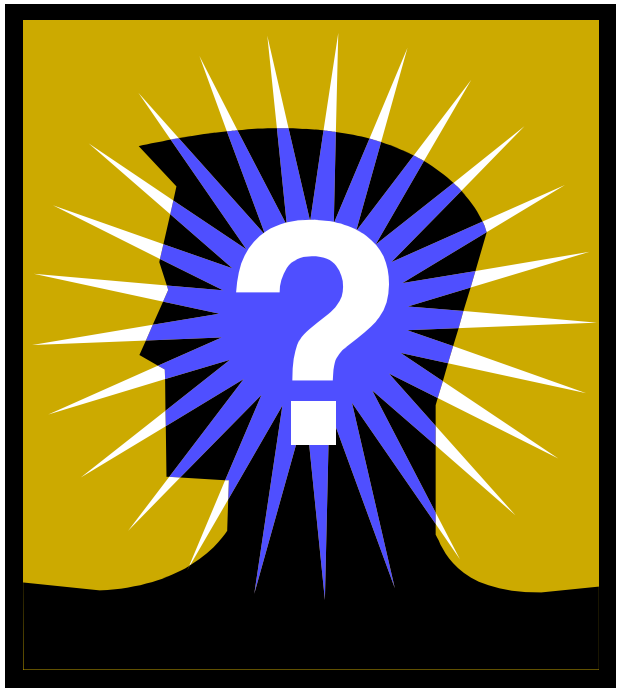
Challenges to the Incremental LD Process

- Managing LDs around major design updates
- Training for data collectors and use of after action reviews
- Availability of Soldiers and training requirements
- Cost and benefit for:
  - Commercial and non-developmental items
  - Systems requiring little maintenance
- Log Demo entrance criteria and acceptance
  - Validated Technical Manuals
  - “Go with changes” vs. “No-Go” tasks
- Task tracking of system configuration and task completion

Questions????



Thank You!

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