



Update on the Process for Evaluating Logistics Readiness Levels (LRLs)

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Agenda

- ▶ Background of Logistics Readiness Level (LRL) concept
- ▶ LRL Defined
- ▶ LRL Tool
- ▶ Prototype Example
- ▶ Benefits
- ▶ Questions

Background

- ▶ LRL concept evolved from the DOD 5000.2 mandated Technology Readiness Levels (TRL) assessment process
 - TRLs provide:
 - Evaluation of critical technology **maturity**
 - Maturation plan (as needed)
 - Best practices/guidelines for each Milestone
 - MS B target is TRL = 6
 - MS C target is TRL = 7
 - MS C preferred is TRL = 8
- ▶ Logistics benchmark system for technology insertion was desirable
 - Aid in understanding what sustainment is required at different time phases
 - Technology can be mature with immature logistics support

LRL is a new concept intended to consider sustainment issues for tech insertion projects

LRL Definition

▶ LRL intent:

- Provide a methodology and benchmarks for assessing Logistic Element Readiness for technology
- Provide a management tool to forecast logistics workload, manpower requirements, identify gaps, etc.
- LRL's evaluated for 6 project phases:
 - Lab Test/R&D
 - Project Definition (Fleet Need/metrics/BCA/Decision to proceed)
 - Project Development /Implementation (Finalized analysis, change recommended, ECP development, Class II change development, RAMEC, LECP, other)
 - Engineering Validation
 - Fleet Verification
 - Fleet Use

**Engineers and Logisticians need clear definition
of what is required for sustainment at each
phase of a project**

LRL Definition

- ▶ Evaluation criteria established for each phase
 - Determined the benchmark of required tasks appropriate for each logistics element at each time phase
 - Not all elements require same level or effort in the same time phase
- ▶ Answers question of “What tasks must be complete at each project phase for each logistics element?”
 - Training example:

Phase	Lab Test/ R&D phase	Project Definition	Project Development/ Implementation	Engineering Validation	Fleet Verification	Fleet Use
Training		Existing training procedures/ curricula and training plan identified and reviewed.	Impacts to Training identified	Training curricula changes drafted. As required changes to Naval Training Systems Plan (NTSP) drafted.	Training curricula changes updated post validation/verification with changes as necessary. NTSP changes finalized. Changes submitted for approval.	Training curricula updated. NTSP updated.

LRL Tool

- ▶ LRL tool created in Microsoft Excel (compatible with Microsoft Office 2003) includes instructions worksheet
 - Buttons allow a point and click use of color for evaluation
 - Grey indicates the project is not yet in that project phase therefore benchmarks are not applicable
 - Blue indicates the benchmark is not applicable due to the details of the project
 - Red indicates the benchmark task is not complete
 - Green indicates the benchmark task is complete
 - Detailed evaluation requires familiarity with the project and tasks completed to date
- ▶ Numeric LRL score evaluated for each project phase
 - **LRL = 0 Unsupported** (zero% required tasks completed)
 - **LRL = 1 Poorly Supported** (1-50% of required tasks completed)
 - **LRL = 2 Moderately Supported** (51-70% or required tasks completed)
 - **LRL = 3 Nearly Supported** (71-99% of required tasks completed)
 - **LRL = 4 Fully Supported** (100% of required tasks completed)
- ▶ Numeric LRL scale provides a reference framework for project comparison

An LRL of 4 is the goal for all phases

LRL Tool Screenshot – demo available

	A	B	C	D	E	F	G	
1								
2	Project Title:	Prototype 2 SBRFFT - Auster Bonding and Containment Kits	Red Background =	Not Complete	Color current cell red.			
3	Project Description:	Validate utility of bonding containment kit	Green Background =	Complete	Color current cell green.			
4	Project Implementation:	FST Update Technical Publications	Blue Background =	Not applicable due to project specifics	Color current cell blue.			
5	Project Phase:	Fleet Verification	Grey Background =	Not applicable due to project phase	Color current cell grey.			
6	Date Evaluated:	3/24/2006			Recalculate			
7		Logistic Readiness Level 0 - Unsupported, Level 1 - Poorly Supported, Level 2 - Moderately Supported, Level 3 - Nearly Supported, Level 4 - Fully Supported.						
8	Phase	Lab Test/R&D phase	Project Definition (Final Need/metric/BCA/Decision to proceed)	Project Development /Implementation (Finalized analysis, change recommended, ECP development)	Engineering Validation	Fleet Verification	Fleet Use	
9	Logistics Readiness Level	4	1	0	0	0	N/A	
10	Design Interface	Review and identify significant design interface impacts of project to existing system or platform (ex. available power, weight constraints, etc.) Create POAM to resolve any design interface issues.	Existing Reliability and Maintainability (RAM) metrics reviewed. Initial improvement predictions determined. Design interface issues resolution in work.	Formal design, Reliability Centered Maintenance (RCM) and Failure Modes and Effects Analysis (FMEA) completed to identify failure modes, failure frequency, effect on performance, and criticality. For modifications to existing design, RCM and	Results of RCM and FMEA used to develop or modify existing condition based and schedule based maintenance tasks. Results of RCM and FMEA also used to update the Critical Item list as applicable. Technical data up-dated, drafted and validated.	Technical up-dater (such as Maintenance Requirement Card change) verified.	Technical up-dater completed and available.	
11	Technical Data	Original Equipment Manufacturer higher level drawing, publication, specification available. Applicable Material Safety Data Sheet (MSDS) Available.	Product Drawing/Task Data Package elements reviewed and requirements identified including as applicable: Specific manual/engineering drawing Safety Requirements Preservation and packaging requirements Test requirements data Preventative	Product Drawing/Task Data Package elements draft development including as applicable: Specific manual/engineering drawing Safety Requirements Preservation and packaging requirements Test requirements data Preventative Maintenance/Maintenance	Product Drawing/Task Data Package elements draft development including as applicable: Specific manual/engineering drawing Safety Requirements Preservation and packaging requirements Test requirements data Preventative Maintenance/Maintenance	Product Drawing/Task Data Package elements updated including as applicable: Specific manual/engineering drawing Safety Requirements Preservation and packaging requirements Test requirements data Preventative Maintenance/Maintenance	Product Drawing/Task Data Package elements completed including as applicable: Specific manual/engineering drawing Safety Requirements Preservation and packaging requirements Test requirements data Preventative	
12			Technical Directive Methodology Identified	Technical Directive draft in process	Technical Directive draft complete and validated	Technical Directive draft verified and updated	Technical Directive released and available	
13				Technical Publication source data, Rapid Action Change (RACr), and Manual Change Request (MCRr) drafted per format	Technical Publication source data, Rapid Action Change (RACr) and Manual Change Request (MCRr) validated for content and format	Technical Publication Instructions verified for content	Technical Publication (as Pub Change via RACr or MCRr) finalized, approved and available for use	
14								
15			Existing Maintenance Plan identified and reviewed	Maintenance Plan update drafted or applicable	Maintenance Plan update completed or applicable	Maintenance Plan update completed or applicable	Maintenance Plan update completed or applicable	
16	Maintenance Planning		Maintenance Concept reviewed (consumable, inspect and repair or necessary overhaul)	Maintenance Concept update drafted or applicable	Maintenance Concept update completed or applicable	Maintenance Concept update completed or applicable	Maintenance Concept update completed or applicable	
17			Level of Maintenance/Repair Analytic completed	Level of Maintenance/Repair Analytic completed	Level of Maintenance/Repair Analytic completed	Level of Maintenance/Repair Analytic completed	Level of Maintenance/Repair Analytic completed	
18			Aircraft Battle Damage Repair Procedures reviewed	Aircraft Battle Damage Repair Procedures updated or applicable	Aircraft Battle Damage Repair Procedures validated or applicable	Aircraft Battle Damage Repair Procedures verified or	Aircraft Battle Damage Repair Procedures updated	
19								
20	Training		Existing training procedure/curricula and training plan identified and reviewed	Impacts to Training identified	Training curricula change drafted. As required change to Naval Training System Plan (NTSP) drafted.	Training curricula change updated part validation/verification with change as necessary. NTSP change finalized. Change submitted	Training curricula updated. NTSP updated.	
21								
	◀ ▶ ⏪ ⏩ LRL Instructions / Prototype 4 HFFT Rev 2 / Prototype 4 HFFT Rev 1 / Prototype 4 HFFT / Prototype 3 CO2FFT / Prototype 2 SBRFFT / Prototype 1 CFFT							

Prototype Example

- ▶ Project: Update and create a Joint General Series Hydraulic Publication (NA-01-1A)
- ▶ Project Implementation: New Manual Release
- ▶ Project Phase: Project Development

Prototype Example- First Assessment LRL = 0

First Assessment 3/24/06, LRL = 0, Issues with Technical Data and Training

	A	B	C	D	E	F	G
1							
2	Project Title:	Proto.4 HFFT-Update -17 Manual and create Joint Publication	Red Background =	Not Complete	Color current cell red.		
3	Project Description:	Update GENERAL Series Technical Publication	Green Background =	Complete	Color current cell green.		
4	Project Implementat	New Manual Release	Blue Background =	Not applicable due to project specifics	Color current cell blue.		
5	Project Phase:	Project Development	Grey Background =	Not applicable due to project phase	Color current cell grey.		
6	Date Evaluated:	3/24/2006			Recalculate		
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9	Logistics Readiness Level	N/A	0	0	N/A	N/A	N/A
10	Design Interface	Review and identify significant design interface impact of project to existing system or platform (ex. available power, weight constraints, etc.) Create POAM to resolve any design interface issues.	Existing Reliability and Maintainability (RAM) metric reviewed. Initial improvement predictions determined. Design interface issue resolution in work.	For new design, Reliability Centered Maintenance (RCM) and Failure Modes and Effects Analysis (FMEA) completed to identify failure modes, failure frequency, effect on performance, and criticality. For modifications to existing design, RCM and	Results of RCM and FMEA used to develop or modify existing condition based and schedule based maintenance tasks. Results of RCM and FMEA also used to update the Critical Item list or applicable. Technical data updates drafted and validated.	Technical updates (such as Maintenance Requirement Card changes) verified.	Technical updates completed and available.
11	Technical Data	Original Equipment Manufacturer higher level drawing, publication, specification available. Applicable Material Safety Data Sheet (MSDS) Available.	Product Drawing/Tech Data Package elements reviewed and requirements identified including or applicable: Specific manual/engineering drawing Safety Requirements Preservation and packaging requirements Text requirements data Preventative Maintenance/Maintenance Requirements Cards	Product Drawing/Tech Data Package elements draft development including or applicable: Specific manual/engineering drawing Safety Requirements Preservation and packaging requirements Text requirements data Preventative Maintenance/Maintenance Requirements Cards	Product Drawing/Tech Data Package elements draft development including or applicable: Specific manual/engineering drawing Safety Requirements Preservation and packaging requirements Text requirements data Preventative Maintenance/Maintenance Requirements Cards	Product Drawing/Tech Data Package elements updated including or applicable: Specific manual/engineering drawing Safety Requirements Preservation and packaging requirements Text requirements data Preventative Maintenance/Maintenance Requirements Cards	Product Drawing/Tech Data Package elements completed including or applicable: Specific manual/engineering drawing Safety Requirements Preservation and packaging requirements Text requirements data Preventative Maintenance/Maintenance Requirements Cards
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22				Current Facilities reviewed and impact identified. When applicable, facilities	As needed with funding available.		

Prototype Example Second Assessment LRL = 1

Second Assessment 5/4/06, LRL = 1, Issues with Training

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5	Project Phase:	Project Development	Grey Background =	Not applicable due to project phase	Color current cell grey.		
6	Date Evaluated:	Rev 15/4/06			Recalculate		
7		Logistics Readiness Level 0 - Unsupported, Level 1 - Partially Supported, Level 2 - Moderately Supported, Level 3 - Nearly Supported, Level 4 - Fully Supported.					
8	Phase	Lab Test/R&D phase	Project Definition (Fleet Need/metric/FCA/Decision to proceed)	Project Development /Implementation (Finalized analysis, change recommended, ECP development,	Engineering Validation	Fleet Verification	Fleet Use
9	Logistics Readiness Level	N/A	0	1	N/A	N/A	N/A
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LRL Instructions
Prototype 4 HFFT Rev 2
Prototype 4 HFFT Rev 1
Prototype 4 HFFT
Prototype 3 CO2FFT
Prototype 2 SBRFFT
Prototype 1 CFFT

Prototype Example Third Assessment LRL = 4

Third Assessment 5/30/06, LRL = 4, all benchmarks achieved

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5	Project Phase:	Project Development	Grey Background =	Not applicable due to project phase	Color current cell grey.		
6	Date Evaluated:	Rev 2 5/30/06			Recalculate		
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⏪ ⏩ ⏴ ⏵ LRL Instructions **Prototype 4 HFFT Rev 2** / Prototype 4 HFFT Rev 1 / Prototype 4 HFFT / Prototype 3 CO2FFT / Prototype 2 SBRFFT / Prototype 1 CFFT

LRL Benefits

▶ Benefits of LRLs include:

- Template/benchmark to measure readiness by logistic element on a **project** level basis
 - Utilized to train/mentor new logisticians, engineering and program management personnel in sustainment requirements
 - Identifies logistic risk areas
- Aid in planning manpower/funding/schedule requirements for projects as they mature from project concept to implementation
- Dovetail with formalized logistics risk assessments for another perspective
- Numeric evaluation offers a way to compare projects from a logistics readiness perspective

Value of LRL is the establishing the time phase benchmarks

Questions?
