

Appendix U

Integrated Logistics Support Plan Template

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1. Overview

The Integrated Logistics Support Plan (ILSP) establishes the essential information required to initiate and maintain a through-life integrated logistics support (ILS) program for Florida Department of Transportation (FDOT) intelligent transportation system (ITS) projects. The ILSP will serve as a working document for those activities responsible for the planning, management, and execution of the ILS program. The ILSP supports ITS development; system integration and testing (SIT); and production phases, with related planning to support a seamless transition to the operational support phase. The ILSP addresses and documents the FDOT ITS team management plans for data gathering and analyses; task management, control, and execution; and integration and interface of the ILS program tasks with systems engineering and engineering specialty organizations.

1.1 Scope

The ILSP contains a brief description of the system characteristics and management plans for an ITS ILS project to demonstrate that the new system, when installed and operated, will satisfy all supportability requirements and criteria. This ILSP will be used by the customer to evaluate, monitor, and approve the planning and performance of the ILS program tasks as specified by the contract.

1.2 Updating Procedures

The ILSP is developed to support all planned project phases, including concept development and production. Future changes will be submitted as the project progresses and changes in the design dictate. The schedule for delivery of updates should be discussed at an ILS guidance conference and finalized after customer approval. At a minimum, the ILSP will be updated:

- Before design reviews
- When new project directions are received
- When the system configuration changes
- When changes occur that warrant realigning logistics support planning
- Prior to convening a material/system release board

1.3 Applicable Documents

This section provides a list of documents that should be used as guidance during the performance of the ILS tasks. This list may be tailored, as appropriate, through future revisions of this plan.

2. General Information

2.1 System / Equipment Description

This section provides a description of the ITS project system and equipment.

2.2 Integrated Logistics Support Program Management, Organization, and Execution

This section describes the overall process, involving both the customer and the FDOT ITS team, that will be used in managing and executing the contractual ILS program.

2.2.1 General Management

The FDOT ITS project team should accomplish the ILS tasks for the project in accordance with the contract. This management plan relates to the development, SIT, and production phases. Operational phases are addressed in *Section 3.8* of this appendix.

The ILS functional organization will implement the ILS program and associated tasks. To achieve the fully integrated logistics program, the ILS manager will interface directly with the other members of the ITS project team in defining system architecture, software architecture, hardware architecture, visual systems, and testing.

2.2.2 Integrated Logistics Support Management Team

This section describes the ILS management team and highlights their areas of specialties in the logistics and management arenas.

2.3 Subcontractor and Vendor Interface Management

The ITS project manager has overall responsibility for all vendor and subcontract management processes. For the development and production phase, the project manager delegates matters of a contractual nature to the subcontract manager to manage and those of a technical nature to the responsible area manager to manage. Formal contractual documentation, including a contract, a statement of work (SOW), and a subcontractor data requirements list (SDRL) is imposed on team members and subcontractors.

2.3.1 Vendor Selection for Supportability

Design influence during the source selection process is a key and strategic ILS task required for performance in all project phases. Candidate hardware and software will be subjected to evaluation of supportability attributes as a basis for selection. Supportability criteria includes product cost; reliability and maintainability (R&M), or testability and diagnosability; reparability, vendor maturity/stability; repair and service life support capabilities.

2.4 Status and Control Procedures

Status and control procedures for the ILS processes and products should be defined. The ILS manager allocates ILS and logistics analysis support tasks to the appropriate technical staff. At the project management level, ILS program status and controls are maintained through internal project working groups and informal customer working groups.

2.5 Formal and Informal Reviews

The FDOT will selectively and systematically review all ILS related tasks and data for adequacy, consistency, and compatibility with the requirements of the ITS project. These internal audits and edits will ensure accurate ILS data. They will be conducted by the ILS manager and related engineering personnel. A list, description, and frequency of the occurrence of reviews should be provided in this section. Who is responsible for agendas and meeting minutes should also be included.

3. Integrated Logistics Support Program

3.1 Integrated Logistics Support Program Objectives

The ILS program is directed toward providing an integrated quality support system and resources for the customer. Objectives tailored to the project should be included in this section.

3.2 Integrated Logistics Support Development Process

The integrated product team (IPT) organizational approach chosen by the FDOT should include all engineering and support disciplines directly in the design/development process. A description of the disciplines should be provided.

3.3 Integrated Logistics Support Functional Elements

This ILSP contains the planning necessary to provide effective and economical logistics support for an ITS project. This plan identifies the management responsibilities and tasks required to integrate the following ILS elements into a single, cohesive effort, including:

- Maintenance planning
- Manpower and personnel
- Supply support
- Support and test equipment
- Training and training equipment
- Technical data
- Computer resource support
- Packaging handling, storage, and transportation requirements
- Facilities
- Standardization and interoperability
- Hardware/Software integration (HSI)
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3.4 Integrated Logistics Support Organization

The ILS manager provides the ILS project management interface for the ILS working organization. The lead engineer coordinates individual ILS technical tasks, and ensures that engineering specialty tasks are properly considered and integrated into each logistics product development cycle. The duties and responsibilities of the functional organizations and the manner in which they interface and interact with each other should be described in the following paragraphs.

3.4.1 Maintenance Planning

The maintenance planning effort is an integral part of the logistics support analysis (LSA) effort. The maintenance plan will be a working document and issued as an incremental report based on available data from the LSA database. This data will be reviewed during logistics reviews. The planning effort should be highlighted here and should include discussion of the:

- Development of maintenance procedures
- Use of R&M predictions, and failure mode, effect, and criticality analysis (FMECA)
- Definition of corrective maintenance and the required manpower, tools, and test equipment to support maintenance
- Logistics engineering, maintainability, and spares provisioning functions
- Coordination of all related inputs, outputs, and dependencies among the ILS elements
- Obtaining cost data from procurement for the logistics analysis for cost studies and maintenance planning activities

3.4.2 Manpower and Personnel

The results of the maintenance planning task analysis dictate the skill levels and personnel requirements for operational support for the fielded system. Hardware/Software integration, human factors engineering (HFE), and safety requirements are an integral part in determining the manpower and personnel requirements. Personnel required for installation, checkout, operation, handling, and sustaining maintenance of the system and its associated test and support equipment should be identified, trained, and available prior to any field testing.

3.4.3 Supply Support

This element includes all spares, repair parts, consumables, special supplies, and related inventories needed to support prime mission-oriented equipment; software; testing and support equipment; transportation and handling equipment; training equipment; and facilities.

Provide forecasts of initial provisioning and replenishment spare requirements to support the product life cycle. Consumable and repair spare lists should also be included.

3.4.4 Support Tools and Test Equipment

The system should be designed to minimize or eliminate the need for special tools and test equipment (STTE). Any STTE requirements should be identified and/or any analysis planned should be highlighted. The requirements and approach for calibration of support and test equipment (STE) should be identified.

3.4.5 Training and Training Equipment

This section should discuss the development of a training package to include training equipment requirements during the development phase of the project, and provide descriptions of the necessary courses and equipment to conduct the training to support the operation and maintenance. Course schedules should be included and should coincide with the installation and activation of the system.

3.4.6 Technical Data

Technical data will be developed to support prime equipment; STE; transportation and handling equipment; training equipment; and facilities. The technical data package should be discussed and should include:

- System installation and checkout procedures
- Operating and maintenance instructions
- Inspection and calibration procedures
- Modification instructions
- Facilities information
- Drawings, and specifications

The plans for the development, validation, production, and assembly of operations and maintenance technical manuals should also be included.

3.4.7 Computer Resource Support

Provide a list of nonoperational computer resources required for logistics planning and implementation.

3.4.8 Packaging, Handling, Storage, and Transportation

Include packaging and handling of spare and repair parts sufficient to accommodate shelf life requirements, and vendor repair and restock. The determination of packaging requirements by the provisioning process should be discussed. This section should include discussions of:

- Packaging requirements
- Transportation requirements
- Storage requirements

3.4.9 Facilities and Installation

Facilities' planning is integrated as part of the ILS planning effort. It should include:

- All facility design and activation activities that will occur during the development and production phases
- Detailed facility requirements
- Flow chart/schedule outlining for ensuring the facility meets specifications
- Installation planning data should be provided to the logistics engineers for the assessment of life-cycle cost impacts related to support facilities.
- Power requirements, cabling diagrams, physical layouts, and accessibility for maintenance will be essential inputs to the project database and maintainability task analyses.

3.4.10 Standardization and Interoperability

Standardization is the process by which the project uses common doctrine, procedures, systems, equipment, and supplies to sustain their resources. Interoperability is the ability of several systems to work together and to provide and accept common supplies and services. How the project will handle these two topics should be discussed in this section.

3.4.11 Human Factors Engineering

Human factors engineers are responsible for optimizing the MMI for the system. Input to the logistics analysis process is achieved by way of the various types of analyses performed by the HSI staff, and through interactions with training and development activities. This discipline acts on concerns of logistics engineers regarding operability or anthropometric issues that impact maintenance and other supportability elements, and should be included in this section.

3.4.12 Manpower

This section should address the use of techniques proven on similar projects to predict and track capabilities for meeting the required manpower constraints. Describe the use of the workload analysis results, data collection techniques that include interviews with user experts. Also describe the use of existing data as input to determine total operator; maintainer; command and control; and support personnel requirements.

3.4.13 Personnel

Identification of the personnel responsible for the operation and support of the system is paramount to successful development.

Describe how the personnel requirements analysis will be performed in conjunction with the logistics analysis, and focus on identifying the skills needed to operate, maintain, and support the system.

3.4.14 Training

The training needs analysis will be used to determine specific training requirements. This section should focus on three primary areas:

- Training for customer personnel
- Training fidelity
- Training for personnel responsible for operations and support of the system

3.5 Life-Cycle Costs

Emphasis on minimizing life-cycle costs has become, and will continue to be, a major factor in our process for designing new equipment; selection of commercially available equipment; support and maintenance concepts; training; and other pertinent aspects of the project.

The life-cycle costs activity is cross-coupled to system design and, particularly, the R&M predictions. The goals for the development phase for life-cycle costs that should be discussed in this section are:

- Determination of cost drivers in acquisition, operation, and support
- Identification of risk areas relative to life-cycle costs
- Early identification of system design problems
- Determination of the optimum logistics support program

3.6 Level-of-Repair Analysis

The level-of-repair analysis (LORA) model is a mathematical analysis model that determines whether it is more economical to repair an item when it fails or to scrap the item. The function is to determine the optimal maintenance concept for the system. This section should describe how the LORA will be accomplished.

3.7 Failure Reporting and Corrective Action System

The failure reporting and corrective action system (FRACAS) should be described in this section and should include the three basic phases of the FRACAS process:

- Collection of prediction data
- Combining test data with prediction data
- Use of field data

3.8 Contractor Logistics Support

If contractor logistic support is planned for the project, its implementation should be discussed in this section. Details of the approach for successful transition from acquisition to operations of the system should include:

- Overall support requirements
- Assigning full responsibility for ensuring the system infrastructure is maintained and available for use
- Operational availability requirements
- How to maintain and manage the baseline hardware and software configuration
- How to perform hardware and software modifications
- How to provide enhancements to the technical documentation
- Issue and receipt of equipment

3.9 Postproduction Support Plan

A postproduction support plan should be described that should include:

- Potential problems due to inadequate supply
- Analyze and process end-of-life issues
- Alternatives to satisfy potential support issues that may surface at the operational site
- Maintenance, including configuration management (CM)
- Supply support
- Facilities
- Training
- Safety, including control of substances hazardous to health (COSHH) considerations
- Technical publications
- Packaging
- Software support

3.9.1 Supply Support Program

The supply support objectives for the system, which should be discussed here, are:

- Supports operational availability
- Meets life-cycle cost goals
- Provides the most cost-effective logistics support
- Provides the most supportable design and effective support system, while giving balanced consideration to mission requirements

4. Integrated Logistics Support Program Tasks

The implementation of an effective and efficient in-service logistics support program will emanate from a logical progression of ILS task activities from the project development phase throughout the production phase. This section should describe the ILS tasks that will be performed for the ILS elements. This section briefly describes which ILS tasks are being performed to support the project, and the manner in which status and results will be communicated and validated by the ILS manager and appropriate members of the logistics working group.

4.1 Logistics Analysis Tasks

The logistics analysis tasks that have been selected to meet the objectives of the project's logistics analysis strategy should be described in this section. Development phase tasks will influence design, develop a supportability approach, and support requirements. These tasks, when completed, will provide a logical evolution for continuation into follow-on production phases and in-service tasks.

5. Related Plans

This section should include a short description of other project plans that are directly or indirectly related to ILS planning and implementation of goals and objectives.

5.1 Integrated Logistics Support Program Milestone Chart

An ILS master schedule for the project should be provided as an appendix.

6. Acronyms and Notes

This section contains any general information that aids in understanding this document. This section will contain an alphabetical listing of all acronyms and abbreviations, and their meanings as used in this document, along with a list of any terms and definitions needed to understand this document.

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