System Development and Life-Cycle Management (SDLCM) Methodology

Subject	Type	Standard
Tactical Integration Plan	Identifier	S–5051
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Approval _____

CISSCO
Program Director

A. PURPOSE

This standard specifies the content and format requirements for a Tactical Integration Plan.

B. APPLICABILITY

This standard applies to all NRC Project/Tasks, subject to the SDLCM Methodology, that plan to develop and deploy a new, upgraded, or migrated data processing system or software application. This standard does not apply to projects developing embedded processors and associated software intended for hardware control or systems fulfilling a limited and specifically technical purpose for data gathering, storage, or analysis.

This standard is used by those persons who create, update, review, and approve the TIP.

C. REFERENCE PUBLICATIONS

The following publications contain related information:

- *Information Technology Management Reform Act (ITMRA) of 1996*
- *IRM Capital Planning and Investment Control (CPIC) Requirements*
- *SDLCM Methodology Handbook*
- *Enterprise Integration/Migration Strategy*
- SDLCM Methodology Procedure P–2141, Operational Readiness Review
- SDLCM Methodology Standard S–1054, Conversion Plan
- SDLCM Methodology Procedure P–5202, Conducting Site Surveys
- SDLCM Methodology Standard S–7073, User Training and Orientation Plan
- SDLCM Methodology Standard S–1056, Security Controls

- SDLCM Methodology Procedure P–5141, Site Acceptance and Operations Testing
- SDLCM Methodology Standard S–5151, Test Plan
- *NRC Model Tactical Integration Plan*, January 3, 1997.

The *NRC Model Tactical Integration Plan* contains additional procedural instructions that support this standard. This standard supersedes all standards information contained in the model.

D. STANDARD

The Tactical Integration Plan (TIP) serves as notification of the intended deployment of a system or application and provides the time frame for scheduled operation. The TIP provides NRC management with the information necessary to:

- Ensure that the level of planning is sufficient to proceed with the system deployment described
- Assess the impact on other components of the NRC Enterprise Model
- Confirm the adequacy of the schedule and budget to complete the deployment and initial operation

The TIP reflects the full extent of planning at the time of its creation and represents the risks attendant in the deployment process.

Early development of the TIP will facilitate the planning for all other interfacing processes and permit them to make timely arrangements and adjustments to any affected physical and data interfaces. The TIP is created as an activity of Component 1 of the SDLCM Methodology and is updated at least quarterly with successive levels of detail to keep it current as an overall planning document. The Technical Project Manager is responsible for ensuring that the plan is updated as scheduled.

Tailor this standard as needed to be consistent with the size, scope, and complexity of the system. Add sections and subsections for special topics. Sections and subsections that are not applicable should *not* be deleted; they should indicate “not applicable.” When appropriate, reference other documents and plans rather than repeating material unnecessarily. Summarize important material, as needed, to clarify or emphasize special aspects of the plan.

The following paragraphs describe the content of the Tactical Integration Plan document.

1 . DEPLOYMENT OVERVIEW

1.1 Description of the Deployment

Provide an overview of the deployment effort of the system addressed by the Tactical Integration Plan (TIP). Identify and characterize the system, its software and architectural complexity, its geographic deployment, the number of operators required (if any), and the expected number of users. Provide the anticipated initial operability date.

State whether the system is a new, enhanced, or integrated or migrated version of an existing system. Indicate how any existing databases will be affected by the introduction of the system or application.

1.2 Reference Documents

Provide a list of reference documents for use by personnel involved in the preparation and accomplishment of the deployment of the system, including applicable standards and previously developed system documentation, such as:

- Project Charter
- Project Action Plan
- Definition and Analysis Document

All systems documentation must be available and considered in the development of the final TIP.

1.3 Responsibilities

Provide a table indicating the activities required for deployment of the system and the project personnel (NRC and contractor) having responsibility for completion.

Use the following examples of deployment activities as a starting point for activities to include in the system's activity-role table:

- Describe the approach to be followed for installation in the support environment identifying risks or uncertainties and plans for dealing with them.
- Develop and record plans for performing software installation at the support site(s).
- Verify that the plan is consistent with other project plans and presents a sound approach to the installation.

- Install and check out the deliverable software on its target computer(s) at the support site(s).
- Prepare the executable software for each support site, including any batch files, command files, data files, or other software files needed to install and operate the software on its target computer(s).
- Prepare the source files to transition to the support site, including any batch files, command files, data files, or other files needed to regenerate the executable software.
- Identify and record the exact version of software prepared for the support site.
- Define and record the methods to be used to verify copies of the software.
- Identify and record information needed to program and reprogram any firmware devices in which the software will be installed.
- Install and check out the deliverable software in the support environment.
- Conduct joint software supportability technical and management reviews.

Specify by role name (or sub-role name in the case of Development Team members), not the name of an actual person, the person(s) responsible for each activity. The *SDLCM Methodology Handbook* contains role names, descriptions, and responsibilities as they apply to the methodology.

1.4 Schedule for Development of Deployment Plan Components

The Work Breakdown Structure (WBS) and schedule for all of the project's activities will be included in the Project Action Plan (PAP), the primary management planning document for development of a system subject to the SDLCM Methodology.

Specify the activities and schedule related to tactical integration in the TIP. Identify for the system the tactical planning activities that must be performed before the actual deployment commences, as well as the tactical integration activities that are performed within Component 5, Deploy the Solution, of the SDLCM Methodology.

1.5 Deployment Budgetary Data

Provide budgets for the deployment and operation of the system. Identify those portions of the deployment budget related to deployment management, user hardware and software procurement, user training, facility modification and preparation, site testing, installation, documentation, and any other identified deployment expenditures. Additionally, include operations and maintenance (O&M) cost estimates related to application or system management and operational support, operator labor, help line, software and hardware maintenance, supplies, and allocated utility and facility expenses.

2. ROLLOUT PLAN

2.1 Rollout Elements and Sequence

Identify the key activities that will be performed in deploying the system or application. Describe the effort involved for each activity of the rollout, when each should be initiated, and any interdependencies within the project and with outside systems, applications, and data sources. If multiple sites with similar characteristics are to be deployed, develop a single Site Deployment Plan as a template. Include the details for site preparation, installation, and acceptance.

If the application system is to be deployed incrementally in multiple builds or releases, identify the number of software builds and releases. Specify the software functionality that will be implemented in each build or release.

2.2 Rollout Schedule

Provide a schedule, which should be updated to include progressively more detailed information as the application system is developed, for the site surveys, facility preparation, site installation, user readiness validation, training, business and organizational transition, and acceptance of the system. If multiple sites have identical rollout activities, provide a single model schedule to show the details of a generic installation and indicate the start and completion date of each site to be installed in the overall schedule.

If the application system is to be deployed incrementally in multiple builds or releases, provide a detailed schedule and staffing plan for rollout of each build or release. Refer to Section 2.2, Project Performance Plan, of the Project Action Plan, as applicable.

2.3 Operational Readiness Review

If the project includes complex systems involving multiple organizations, include the plans for an Operational Readiness Review (ORR).

Provide the framework for the ORR by identifying the NRC attendees and their responsibilities, establishing a time frame for the meeting, and presenting a preliminary checklist of activities that must be successfully completed for operations to commence. Stipulate that the ORR be conducted before any utilitarian operation of the system or application is attempted, even if parallel operations are to be performed. Identify the role of each review participant, including that each should be authorized to speak for the status of his or her business area and have actual or delegated authority to commit effort to complete any open items.

Refer to SDLCM Methodology Procedure P–2141, Operational Readiness Reviews, for a table that illustrates various areas of interest in the assessment of operational readiness that will be considered in the review. Document the applicable assessment interest areas in this section.

If deployment at multiple sites will occur at widely spaced time frames, include the plan for a two-phased ORR in this section. Identify when the first review will be conducted and the activities that will be covered. Specify when a subsequent review will be held for an individual site(s) and note that these reviews will address only those assessment interest areas related to the site in question.

2.4 Physical, Functional, and Documentation Audits

Describe how, when, and by whom audits related to deployment are to be performed. Specify that audits are certified by the program personnel responsible for quality assurance. Include (1) physical audits that involve checking that all physical components of the system or application are available and installed, (2) functional audits that validate that all functions called for in the system requirements documents are included and operative in the developed system or application, and (3) documentation audits that verify that the documents provided to the maintainers and users are faithful to the actual system or application.

2.5 Data Conversion

Provide a data conversion plan overview consistent with the target application data model.

Refer to the Conversion Plan or, if a separate Conversion Plan is not being produced, specify the data conversion considerations applicable to the project and describe how they will be met. Data conversion considerations are identified in SDLCM Methodology Standard S–1054, Conversion Plan.

Refer to the Conversion Plan or describe the system backup or reversion strategy in the event that the data conversion is impaired or not completed due to unforeseen circumstances.

2.6 Documentation Preparation and Turnover

State who is responsible for assembling the package of documentation for turnover to the O&M management, maintainers, operators (if any), help desk, system and data administrators, and users. Describe the procedure that will be used to assemble and deliver the documentation package. (Note: The documentation package should represent the full spectrum of data needed to operate the resulting application or system in the absence of the developing organization.)

Identify, by name and number, all documentation necessary to maintain the software and hardware (for example, requirements specifications, design specifications, listings, database schema, test plans and procedures), any in-force warranty or hardware maintenance agreements, COTS documentation, installation guides, training documentation, integration documentation, source and object code, and user guides.

In addition, provide an up-to-the-moment accounting of all in-process software problems and associated repairs and fixes. If responsibility for configuration management is to shift also, provide a detailed accounting of current and past versions.

Document the location and content of a library of all material formally developed for the system or application for use by O&M management for reference and for updating the data after upgrade, revision, or maintenance changes.

2.7 User Equipment and Software Validation

Identify, by class of user, the minimum anticipated hardware configuration and software and associated version numbers necessary to operate and use the resulting system or application. Document any requirements to be imposed on interfacing software that will be added to the design.

Describe the technique to be used for determining all expected users and for verifying that each user has the required minimum hardware and software configuration. If

existing hardware or software is inadequate, document the method for obtaining upgrades, either through project funding or normal capital upgrades within the NRC user's organization. If the current project is responsible, document the funding that is budgeted for the anticipated required upgrades.

2.8 Operational Security Plan

This paragraph is applicable only to systems or applications with security requirements.

Refer to the Security Plan, if applicable, or identify the primary personnel and physical security requirements, and the NRC and contractor organizations responsible for ensuring that they are met. Include the provisions for establishing or verifying the clearances of all operators, maintainers, and users, new and existing, before training them and allowing them access to the new system or application; having any facility modifications completed and inspected for security; and having existing communications paths revalidated. If the information to be used by the application has a specific number of billets associated with it, identify the organization controlling access and its role in determining those with need-to-know.

2.9 Facility Plan

The facility plan provides the ground rules to be followed in managing, determining, scheduling, initiating, and verifying the fulfillment of all physical construction or modifications necessary to field the system or application. In the initial version of the TIP, coverage of facility requirements will necessarily provide only a high level of detail, but subsequent quarterly updates should be used to complete any to-be-delivered (TBD) items, especially those requiring long lead times, such as any new construction or equipment ordering.

Identify and provide addresses and room numbers for all sites to be used by the system or application, unless security precautions preclude this. Describe the provisions for site surveys of all sites to be employed in the new system or application that will undergo modifications or the introduction of new equipment so that the proper services can be established.

Name the NRC and supporting contractor organizations responsible for site surveys, site planning, and accomplishing the construction. Provide the beneficial occupancy date for the completed work. Establish dates for provision of requirements and receipt of construction estimates and equipment quotes.

Describe the application, its associated hardware, and needed offices in physical terms and translate this into space and support services (electrical, plumbing) descriptions. When dealing with existing sites, indicate the source of detailed construction data and available services. Pay particular attention to making known special considerations, such as the specification of grounding, communications entrances, security mandated shielding. As design information becomes available, quantify power requirements, provide equipment layouts and floor cutouts, and water and environmental information.

Establish the contractor organization responsible for installing and connecting power and data cables and miscellaneous panels and switchboards in the completed spaces; provide schedules allowing for site inspections and corrections after installation.

If equipment, in addition to the development suite, will be used in the system or application, establish dates for finalizing and ordering the material.

Identify any requirements for the provisioning of spares and establish policies and procedures as necessary.

2.10 Training Plan

Establish responsibility for developing a pre-deployment User Training and Orientation Plan, naming the contractor developing organization and due dates for expected outputs. If training by a commercial training firm (as for COTS software) or equipment suppliers is anticipated, identify the source of the training and dates for commencing the procurement activity.

Provide an outline of the training courses desired, based on the desired training complement for each operator, user, help desk staff, and maintainer. Specify the level of detail required for each course and indicate the scope of knowledge to be included. Include a preliminary training schedule, based on the initial operability date. Identify the desired training locations. Specify the course evaluation mechanism that will be used to provide feedback.

2.11 User Guides

Establish responsibility for developing the User Guide(s). If software activity, other than rehosting, will take place, create a requirement for involvement of the future users in contributing to the functionality, sequencing, and visual aspects of the new software.

Provide initial data on the desired contents of the User Guide(s) and for whom they will be written (for example, operators, maintainers, and users). Discuss how all accessible

functions will be divided among the User Guides to ensure that each function is covered by at least one of the guides. State the need for a description of the operational and functional environments, for specific details on software initialization, backup, and shutdown, and for operational sequence diagrams for functions involving complex interactions between operators or users and multiple processor functions or screens. Require that all error and external (to the developed application) interactions be documented, that error messages be defined, and that all data be carefully defined.

2.12 Cutover

State the specific strategy and associated steps for going operational with the system or application. Include discussion of any planned and separately deployed builds or other incremental releases that may further complicate the actual cutover by requiring the cutover and acceptance process to be repeated.

Section 3.12 of the *Model TIP* identifies a number of factors that may influence the choice of cutover technique and timing. Identify any of these factors that are applicable to the current project.

Address any required changes in the affected business processes.

Describe the mechanism for shutting down the original business process that is being replaced or altered. Include the mechanism for capturing lessons learned from the cutover experience.

2.13 On-Site Acceptance Testing

Describe the extent and formality of testing to be performed at the user workstations, including rerun of those elements of the system-level acceptance testing that relate to user-level or user-initiated system-level functions. Address how help desk and operations personnel will be involved in the site-level acceptance testing. Describe other items, which are unique to each site (such as external communications), that will be tested thoroughly in each location.

Indicate the process for ensuring the completion of open items existing at the site at the time of acceptance and identify who has responsibility for their completion. Establish the criteria by which cutover and acceptance will be declared complete.

2.14 Coordination with Other Interfacing and Impacted Systems

Describe any necessary coordination with the owners of other systems, applications, or databases with which this application interfaces. Include situations such as those in which the data interchange has been modified in some fashion, where a new piece of support software has been substituted or upgraded, or where a supporting platform has been upgraded or replaced. Identify the testing to be performed with the other systems, including the use of live data and operational software, to verify proper operation prior to cutover.

2.15 Performance and Customer Satisfaction Measurement and Validation

Discuss the measurement data to be collected to substantiate the system or application performance. Identify how the selected measures will be compared with previous implementations of the similar functions, if any.

Describe the process that will be used to determine customer satisfaction.

2.16 Updating NRC Infrastructure Documentation

Provide a schedule for updating infrastructure documentation, including any modifications to the Systems Inventory, the Government Information Locator System, and any local policies and procedures. Identify provisions for the updating of any site plans and practices to reflect the as-built situation.

3. OPERATIONS AND MAINTENANCE (O&M) PLAN

3.1 O&M Overview

Discuss the overall management of the operations and maintenance of the system or application (Component 6, Service the Solution). Include a chart of the NRC and contractor organizations that will have configuration, software, and hardware maintenance responsibility for the system or application. If the maintenance organization is not unified (that is, not all under the same direct management), indicate how the interfaces between the disparate organizations will be accommodated.

3.2 Software Maintenance Structure and Responsibilities

3.2.1 PRE-DEPLOYMENT LEAD

Identify who will perform the software maintenance, both for problems identified, but unfixed, prior to deployment and for problems identified after deployment.

3.2.2 POST DEPLOYMENT REPORTING PROCEDURES

Identify how pre-deployment, but unrepaired, software problems will be tracked and fixed. Also identify the procedures for reporting, tracking, and correcting post-deployment problems.

3.2.3 RESPONSIBLE ORGANIZATION

Identify the organization that will determine the priority and necessity for software problem resolution. Indicate the NRC owner of the system, who will act as the decision point for changes to the system or application.

If appropriate, suggest a plan for the involvement of the contractor's Laboratory. Document the resources that would be required, including the equipment necessary for the Laboratory to effectively maintain the current software, develop upgrades, and mirror the NRC operating units for trouble shooting purposes.

3.3 Hardware Maintenance Structure and Responsibilities

3.3.1 HARDWARE MAINTENANCE RESPONSIBILITY

Indicate who will perform the hardware maintenance for system-level units and workstations related to the system or application. Identify who is responsible for preventive maintenance actions.

3.3.2 HARDWARE MAINTENANCE PROCEDURES

Describe the mechanism for responding to a maintenance problem (for example, a staffed help desk). Describe how support to users of the application system differs from that of the core system. Indicate who has responsibility for compiling the preventive maintenance schedule and overseeing its carry through.

If the application requires maintenance agreements, consider enterprise-wide agreements before entering into tenant agreements.

3.4 Post Deployment Training Plan

Provide a brief post-deployment policy statement and plan for determining the need for, and providing, first time and refresher training to new and existing operators and users, as necessary.

3.4.1 STAFF TRAINING INITIATOR

Identify, by name and role, who will be responsible for initiating post-deployment training.

3.4.2 TRAINING BUDGET

Specify how training will be budgeted.

3.4.3 TRAINERS

Identify, by name and role, who will perform the training.

3.4.4 TRAINING REQUIREMENTS

Briefly describe the post-deployment training requirements.

3.4.5 COURSES

Identify the courses that are planned and how they will be updated to coincide with custom software and COTS or GOTS updates.

3.4.6 TRAINING PLAN AUTHOR

Indicate who will write the Post-Deployment Training Plan and a schedule for its delivery.

3.4.7 TRAINING CERTIFICATION REQUIREMENTS

If operator certification is required, indicate under what circumstances, recertification will be necessary.

3.5 O&M Procedure Development and Validation

Name and briefly describe the scope of each O&M procedure to be developed for the system or application. The set of O&M procedures should encompass the complete management control of the post-deployment phase, including maintenance management, operator training, logistics, operator staffing and assignment, backup and recovery procedures, configuration management, and an annual review by the cognizant Overall Project Manager with the Office of the Chief Information Officer (OCIO) Development and Maintenance Executive of the system status, operational problems, recommended potential improvements and the necessity for continuance of the system or application. At the OCIO Development and Maintenance Executive's option, this may be a written report.

If the principal functions performed by the system or application have a known life span, include provisions for review at the end of the life span and decommissioning, if warranted.

3.6 Logistics

Compile a list of the necessary hardware maintenance agreements and software licenses that are expected to be required. Update this list after the system or application design has become sufficiently detailed. Include the results and the recommendations resulting from investigating the potential for combining the project's logistics expenses with those of other projects.

3.6.1 HARDWARE MAINTENANCE AGREEMENTS

Use a table to provide the following information for each hardware maintenance agreement required:

- Hardware Maintenance Agreement Identification
- Contact Phone Number
- Required Response Time

3.6.2 SOFTWARE LICENSES

Use a table to provide the following information for each software license required:

- Software License Identifier
- Platform(s) where software resides

- Contact Phone Number

3.6.3 OPERATING SUPPLIES

Estimate the kind and cost of operating supplies required by the system or application. Identify who will be responsible for maintaining them after operation begins.

3.7 Backup, Recovery, and Disaster Procedures

Describe the project's approaches to backup, recovery, and disaster response to be used to ensure that current and historical data are maintained. Identify the procedures that address periodic test cases of data protection and restoration activities. Address certification requirements for validation of the backup and recovery aspects of the system or application as part of the acceptance testing. Identify the assessed priority of data for off-site storage and the assignment of a coordinating organization, if required.

3.7.1 BACKUP FREQUENCY

Include a table that identifies each type of system data and the frequency requirements for both full and partial backups.

3.7.2 OFF-SITE STORAGE

Include a table that identifies each type of system data and the location and contact phone number for off-site storage, the coordinating organization, the coordination lead, and his or her phone number.

3.8 Operations Management

Identify the NRC organization or designee and position of the person(s) responsible for operations management and key members of the supporting staff. List all operator requirements, if any, and how they will be fulfilled. Similarly, list any data and network administrator duties to be performed. List any non-automatic data collection and reports generation that must be accomplished on a recurring basis. If operators are required, identify the number and the coverage that they are to provide (for example, 24 hours a day, seven days a week). Address the planned approach to assigning the operators for full coverage of the required times.

This information may be provided in a table.

3.9 Measurement Reporting

Describe the definition, collection, and reporting of post-deployment performance and usage measurements. Discuss the measurements to be collected to substantiate the system or application performance.

Address measurements from the perspective of operator, as well as machine performance. Describe the capture and analysis of information about the quality of the process outputs, the response of the customers, and the impact on the morale of the users. In addition, describe data to be captured and analyzed to allow comparison of the performance of the business process both before and after implementation of the new system or application.

State how customer satisfaction with the new system or application will be ascertained.

Discuss any deviations from the standard measurement reports and any special measurement reporting requirements.

3.10 Post-Deployment Configuration Management of Hardware and Software

Specify if standard configuration management procedures for operational systems will be followed during post-deployment. If not, discuss any deviations. Identify any additional configuration management procedures that will be required and the plan for their development.

Identify the composition, schedule, and decision-making policy of the project's post-deployment configuration control board. Indicate the name, organization, and chairperson, and identify any support to be provided by the contractor.

ACRONYMS

List and define all acronyms used in the Tactical Integration Plan.

REFERENCES

List all cited references.