



System Development and Life-Cycle Management (SDLCM) Methodology

Subject Alternatives Analysis Document	Type	Standard
	Identifier	S-3054
	Effective Date	June 2002
	Revision No.	

Approval

CISSCO Program Director

A. PURPOSE

This standard specifies the content and format requirements for the Alternatives Analysis Document.

B. APPLICABILITY

This standard applies to all Projects (large-scale maintenance and development) that fall under the SDLCM Methodology umbrella. It is used by those persons who are responsible for the evaluation of alternative approaches to addressing the options and associated costs and risks for delivering new or enhanced application systems or correcting problems with existing application systems.

C. REFERENCE PUBLICATIONS

The following publications contain related information:

- *SDLCM Methodology Handbook*
- SDLCM Methodology Standard S-3051, Systems Requirements Specification
- SDLCM Methodology Standard S-1052, Project Management Plan
- SDLCM Methodology Standard S-1057, Software Development Plan
- SDLCM Methodology Standard S-3053, Systems Operations Concept
- SDLCM Methodology Standard S-3052, Current System Assessment Document
- NRC Management Directive 2.2, Capital Planning and Investment Control, Exhibit 2 - Business Case Checklist

D. STANDARD

Use the Alternatives Analysis Document to document the approaches available for satisfying project requirements and the evaluation of these options. Section 1.1 is used for documenting the analysis process that will result in new application system(s) or significant enhancement to existing application system(s). Maintenance efforts that are not large-scale enhancements may document the analysis of alternatives and selected option in an entry to the Software Engineering Notebook (S-3091).

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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”.

The following paragraphs describe the content of each section of the Alternatives Analysis Document.

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1. INTRODUCTION

1.1 Background

Identify the project or problem that has led to the need to analyze alternatives for solution. Describe whether this is a large scale enhancement or development project or a maintenance or small enhancement project. Identify any external constraints that have been imposed, such as critical implementation dates, etc. Identify the business are to be served.

1.2 Objectives

Specify the objectives for the project and the critical requirements that must be satisfied, which can be obtained from the CSAD. Describe how it will be used in supporting the agency's business which can be pulled by the SRS and expanded upon as needed.

1.3 Scope

Identify and characterize the system, it's complexity, where it will be deployed, and the number of expected users or sites.

Define the level of analysis that is expected to be conducted (i.e., full CPIC Business Case, or Maintenance/Minor-Enhancement).

1.4 Assumptions

Discuss any assumptions that have been made about the analysis. Such items as: phase-out of platform on which the Status-Quo resides, restrictions on the introduction of new technology due to other infrastructure project schedules, etc. should be discussed here.

1.5 Applicable Documents

Specify any documentation used to support the creation of the Alternatives Analysis Document, to provide additional information related to the project or alternatives, including applicable standards, vendor, contract, and process documentation.

1.6 Overview

Provide a brief overview of the sections that follow.

2. APPROACH FOR DEFINITION OF ALTERNATIVES FOR NEW DEVELOPMENT AND SIGNIFICANT ENHANCEMENT

Identify the CPIC project name and the viable alternatives for satisfying this projects objectives. Using the CSAD, SRS, and SOC documents as a starting point and with

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references to them used to minimize repetition, describe the Alternatives being examined and provide an analysis of these options with regards to their ability to satisfy the requirements. Alternatives should always include the “Stay At Status-Quo” plus at least two other Alternatives. Document the results of your findings of alternative ways to achieve an approach that satisfies these requirements and operational concept.

2.1 Examine and Select at least two Alternatives other than Status-Quo

Possible solutions may include

- Complementing the current application system(s) by, for example, adding a Commercial Off-The-Shelf (COTS) product to provide identified functionality that was missing from the original system(s). For example, add Human Resources Management System product to complement the data kept in a Financial Management System
- Upgrading the hardware platform, for example, to provide faster processing. For example, replace a 200 MHz machine with a 500 MHz machine
- Upgrading the operating system to provide more efficient file management. For example, replacing Windows NT with Windows 2000
- Replacing the existing system because it no longer fulfills the mission and it is less expensive to replace than to repair or enhance
- Adapting an existing system rather than starting from scratch
- Using a COTS or GOTS product as provided by a vendor or other government agency rather than designing and developing a custom system
- Developing a new custom system because there are no current systems that can support the processes or meet the data requirements and there is no COTS or GOTS product available that meets these

2.2 Examine and Define Methods for Satisfying FIP and GSA Requirements for Procurement of Goods and Services

Consideration of General Services Administration (GSA) Programs and Federal Information Processing (FIP) Resources

Describe which of the following considerations apply to this project (if any). This information is critical to defining the project schedule and activities for the SDP and PMP and provides input to SLDCMM Component 1, Activity 1.9.

- GSAs mandatory-for-use programs
- GSAs mandatory for consideration programs
- FIP resources available for reuse within the agency and from other agencies
- Existing FIP resources on a shared basis

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- Acquiring FIP resources by contracting
- Any other that may apply to your unique situation

2.3 Evaluate Feasibility of Status-Quo Alternative and Feasible Define Advantages and Disadvantages for Feasible Alternatives

Using the assumptions defined above evaluate the Status-Quo alternative to see if it is a feasible alternative. Document whether this alternative is represented in your cost/benefit/risk analysis and, if not, why.

Describe the advantages and disadvantages of each feasible alternative by considering such things as:

- Cost in money
- Cost in Effort (Person Hours, including NRC staff costs, and the Skill Levels Required)
- Time in Calendar Time
- Speed of Performance
- Accuracy
- Risk to Accuracy, Reliability and Schedule due to Technical Complexity, Cultural Change, Buy-In, etc.
- Increased productivity
- Addition of needed functionality

Costs and FTE should be broken into the categories of Recurring and Non-Recurring in accordance with Exhibit 2 of Management Directive 2.2, Capital Planning and Investment Control for a period of 5 years for development/operation. Evaluation of Risks and Benefits should also be conducted using the guidance found in Exhibit 2 of the Management Directive 2.2.

2.4 Perform Cost/Risk/Benefit Analysis and Make Selection of the Most Advantageous Alternative

Identify the most advantageous solution, emphasizing your rationale with respect to priority of function and attributes of the project. For example, if accuracy and reliability are more important than cost and timeliness, state so. Follow the guidance defined in Management Directive 2.2 to produce the required Risk and Benefit tables and summarize your analysis in the form of recommendation of alternative, providing a summary of reasons why it was selected.

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ACRONYMS

List and define all acronyms used in the Alternatives Analysis.

APPENDIXES

List and describe appendixes to this document.