



**US Army Corps  
of Engineers®**

# **Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE)**

## **Change Management Process**

**Version 1.0**

**9 June, 2011**

Office of the Deputy Under Secretary of Defense (Installations & Environment), Business  
Enterprise Integration Directorate

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## Document Revision History

<b>Release</b>	<b>Date</b>	<b>Revision Description</b>	<b>File Name</b>
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## 1 Overview and Scope

This document specifies the Change Management Process (CMP) for the Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE) version 3.0 Gold and beyond. SDFSIE is not just a schema or data model; it is comprised of the core model (“Gold”) as well as a number of items that support implementation of the model. The SDFSIE items specifically covered by this CMP include the Logical Data Model (LDM) or specification, the tools supporting implementation of the SDFSIE, and the SDFSIE Web site organization and content.

The process specified in this document establishes the roles, responsibilities, event sequencing, and general evaluation guidelines for controlling changes to the SDFSIE items. The process ensures that all levels of responsibility collaborate to improve SDFSIE content and implementation of DoD installation, environment, and civil works geospatial data. The process takes effect upon approval of the Defense Installation Spatial Data Infrastructure Group (DISDIG), who also controls versioning.

The SDFSIE is a community standard for geospatial features and attributes. It is specifically applicable to the Defense Installation Spatial Data Infrastructure Community of Interest (DISDI COI) as listed in the United States Department of Defense (DoD) Metadata Registry, and having a corresponding DISDI namespace. The SDFSIE supports common implementation and maximizes interoperability for the Real Property and Installation Lifecycle Management (RPILM) core business mission area, and the US Army Corps of Engineers Civil Works mission within the DoD.

The SDFSIE 3.0 Gold specification (or LDM), was established via consensus input, drawing from subject matter experts in the DoD core business mission areas such as real property, civil works, and environmental domains. This final product was released as the SDFSIE 3.0 Gold in November 2010.

The SDFSIE Web site ([www.sdsfie.org](http://www.sdsfie.org)) contains information, training, and tools for producing an implementation of the SDFSIE. The web site content includes news, SDFSIE release information, tool access, and access to the help desk for a registered user.

The current tools supporting SDFSIE implementation are: a tool for browsing the SDFSIE; a tool for validating an implementation schema; a tool for generating an implementation schema; a tool for adapting the SDFSIE to meet the needs of an implementing level organization; and a tool for migrating existing SDFSIE 2.x implementation schemas to a compliant SDFSIE 3.0 implementation schema.

## 2 References

The informative (non-normative) documents listed in Table 1 are useful to understanding and using this document.

**Table 1 – Informative References**

SDSFIE 3.0 Specification Document, Office of the Deputy Under Secretary of Defense (Installations & Environment), Business Enterprise Integration Directorate, 8 Nov 2010.
Guidance for the Adaptation of SDFSIE 3.0, Office of the Deputy Under Secretary of Defense (Installations & Environment), Business Enterprise Integration Directorate, 11 May 2011.
Model Driven Architecture (MDA) Guide Version 1.0.1, Object Management Group, Document Number OMG/2003-06-01, 12 June 2003.

### 3 Terms, Definitions and Acronyms

#### 3.1 Terms and Definitions

The following terms and definitions are specific to this document.

**Table 2 – Definitions applicable to change management**

<b>Term</b>	<b>Definition</b>
Adaptation	A formalized (approved) alteration of the SDSFIE Platform Independent Model (PIM) resulting in another PIM which is tailored to the particular business requirements of an implementing organization. An Adaptation consists of a specific Profile and / or all the Extensions that are required to meet specific user requirements.
Analyze	Examine a CR critically, providing additional information and / or making a recommendation to decision authorities.
Change Request (CR)	A documented request to modify some aspect of the SDSFIE.
Component	A Military Department, Defense Agency, DoD Field Activity, or organization within the Office of the Secretary of Defense. Examples include Department of the Army, US Army Corps of Engineers, US Marine Corps, and Department of the Navy.
Element	Any individual item of the SDSFIE LDM including Feature Types, Feature Geometries, Attributes, Enumeration or Domain Values, and Associations or Relationships.
Evaluate	Make a decision to either accept or reject a change request based on the result of an analysis of a change request and a recommendation.
Extension	The addition of a new element (e.g., Feature Type or attributes) to an adaptation provided the new element does not conflict with the definitions of elements already defined by higher authority.
IGI&S Programs	The DoD Component headquarters level activities responsible for oversight, policy, and guidance pertaining to installation geospatial information and services.
Logical Data Model (LDM)	A structured representation of business data requirements that has been validated and approved by business representatives and which contains both entities and relationships of importance within an organized framework, and business textual definitions and examples. It is the basis of physical database design.
Physical Data Model (PDM or Physical Implementation)	The representation of a data design that conforms to the concepts in a logical data model and takes into account the structure and constraints of a given database management system or geographic information system; includes all the database artifacts required to create relationships between tables or achieve performance goals, such as indexes, constraint definitions, linking tables, partitioned tables or clusters. Physical Data Models (PDM) are generated from approved Adaptations stored in the SDSFIE Registry.

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Term	Definition
Platform Independent Model (PIM)	An intermediate data representation derived from an LDM that has removed data abstractions and inheritance properties but does not contain restrictions specific to a particular implementation environment. The SDSFIE Registry contains physical representations of the SDSFIE Gold and all Adaptations, in the PIM form, that are used by the SDSFIE tools. NOTE: This concept is similar to and, in fact, derived from the Object Management Group specified concept of the same name, but it is not identical to that concept in that we are referring to the stored representation of the PIM.
Profile	The removal of an element (e.g., Feature Type or attributes) from an adaptation subject to any higher authority mandatory restrictions on the element.
SDSFIE 3.0 Gold; Specification	SDSFIE 3.0 Gold is a concept stored as an LDM and is the product of the SDSFIE modeling effort. It is registered in the DISR and stored as a PIM in the SDSFIE Registry. SDSFIE 3.0 Gold can be generated from the SDSFIE Registry in XMI document, GML document, implementation scripts, and spread sheet forms.
SDSFIE Registry	The SDSFIE Registry is a relational database management system that stores all PIMs relevant to SDSFIE (including SDSFIE Gold and all Adaptations). The SDSFIE Registry is central to the operation of all tools in the SDSFIE Toolset.

### 3.2 Acronyms

The following acronyms are used in this document:

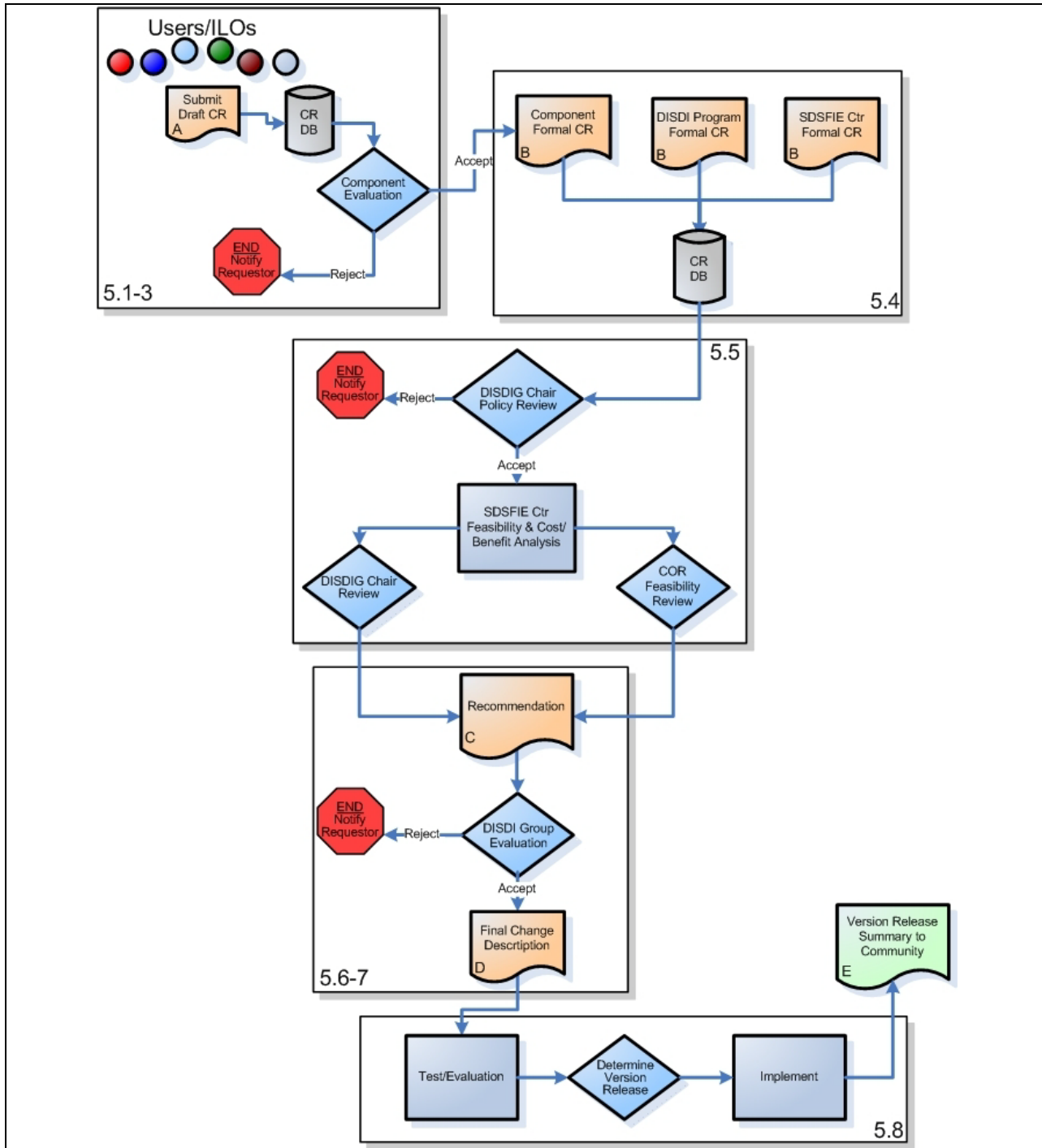
- BEI - Business Enterprise Integration
- COR – Contracting Officer’s Representative
- CMP – Change Management Process
- CR – Change Request
- DISDI - Defense Installation Spatial Data Infrastructure
- DISDIG - Defense Installation Spatial Data Infrastructure Group
- DISDI COI - Defense Installation Spatial Data Infrastructure Community of Interest
- DISR – DoD IT Standards Registry
- DoD - Department of Defense
- DUSD(I&E) - Deputy Under Secretary of Defense for Installations and Environment
- GML - Geographic Markup Language
- HQ - Headquarters
- I&E - Installations and Environment
- IGI&S - Installation Geospatial Information and Services
- IRB – Real Property and Installation Lifecycle Management (RPILM) Investment Review Board
- LDM - Logical Data Model
- OMG - Object Management Group
- PDM - Physical Data Model
- PIM - Platform Independent Model
- PM – Program Manager
- RPILM - Real Property and Installation Lifecycle Management
- SDSFIE - Spatial Data Standards for Facilities, Infrastructure, and Environment

- XMI - XML Model Interchange
- XML - eXtensible Markup Language

#### 4 Overall CMP Model

As stated above, this CMP applies to a) the SDSFIE Gold LDM, b) the SDSFIE current and future Tools, and c) the SDSFIE Web-site. The overall process model used to manage changes for all three of these SDSFIE items is illustrated in Figure 1.

Figure 1: The SDSFIE CMP





## SDSFIE Change Management Process, Version 1.0

The CMP is described in detail in Section 5 (below) for each of the three SDSFIE items. In general, all processes for managing change to the SDSFIE begin with a request. A request can originate from any user or entity having an interest in the SDSFIE. Requests originating from within a DoD Component will be evaluated by the Component Headquarters to determine whether they should become a formal request, to be forwarded to the DISDIG. Requests received by the DISDIG will be analyzed by the DISDIG for functionality and by the SDSFIE Support Contractor for technical feasibility. The DISDI Program Manager (PM) will compile results of these analyses. The DISDIG will evaluate the request and the analyses to determine whether to accept or reject the request. Accepted requests will be forwarded to appropriate authorities for implementation.

### **4.1 Change Management Roles**

The roles identified in the CMP are listed in Table 3.

**Table 3 – SDSFIE Change Management Roles**

<b>Role</b>	<b>Description</b>
Requestor	A Requestor has an interest in the content of the SDSFIE Gold LDM, the SDSFIE Toolset, or the SDSFIE Web-site and desires a change in one of these items. A Requestor is any interested individual or organization. Some specific Requestors are defined below.
Component (HQ) Requestor	A Requestor whose organizational element is the headquarters level in a DoD Component that has membership in the DISDIG.
Component DISDIG Representative	The individual who represents a DoD Component in the DISDIG.
DISDI (or DISDI Program)	Staff supporting the DISDI Program Manager
DISDI (or DISDI Program) Requestor	A Requestor whose organization element is the DISDI Program.
DISDI Group (DISDIG)	A working group under the Real Property and Installation Lifecycle Management Investment Review Board that is the officially designated governance body for SDSFIE. The DISDIG members are the DISDI Program, U.S. Air Force, U.S. Army, U.S. Army Corps of Engineers, U.S. Marine Corps, U.S. Navy, and Washington Headquarters Services.
DISDIG Chair	The individual who chairs the DISDIG.
SDSFIE Contracting Officer's Representative (COR)	Contracting officer's representative is an individual designated in accordance with subsection 201.602-2 of the Defense Federal Acquisition Regulation Supplement and authorized in writing by the contracting officer to perform specific technical or administrative functions.
SDSFIE Support Contractor	The contractor holding the SDSFIE Support Services Contract.
SDSFIE Support Contractor Requestor	A Requestor whose organization element is the SDSFIE Support Contractor.

#### 4.2 Change Management Responsibilities

The responsibilities related to the roles in the CMP are included in Table 4.

**Table 4 – Responsibilities in the SDSFIE CMP**

Process Step	Role	Responsibility
1	Requestor	Identify a potential change
1	Component Requestor	Identify a potential change
1	DISDI Requestor	Identify a potential change
1	SDSFIE Support Contractor	Identify a potential change
2	Requestor	Develop a Draft CR
3	Component DISDIG Representative	Evaluate a Draft CR
4	Component Requestor	Develop a Formal CR
4	DISDI Requestor	Develop a Formal CR
4	SDSFIE Support Contractor	Develop a Formal CR
5	SDSFIE Support Contractor	Analyze Formal CR
6	SDSFIE Support Contractor	Develop Recommendation
7	DISDIG	Evaluate Recommendations
8	SDSFIE COR	Task SDSFIE Support Contractor to Implement approved Changes
8	SDSFIE Support Contractor	Implement and Review Change

#### 4.3 Severity Criteria

CRs for all three processes require a severity level. Table 5 defines the severity levels and the criteria for assigning such a level to any particular CR.

**Table 5 – Severity Levels and related criteria**

Severity Level	Criteria
1 - Mission Critical	A mission critical situation, in which the model is critically flawed or a tool or the web-site is inoperable, produces incorrect results which will have a material impact on operations, or otherwise results in serious failure to a production system for which you cannot continue to work. A severity level 1 case has an imminent deadline and no reasonable workaround exists.
2 – Critical	A critical problem with the model or a major function of the tools or web-site is not operating or is seriously impaired, but either a temporary workaround exists or operations can continue in a restricted fashion. Severity 2 cases may have a considerable impact on business operations.
3 - Elevated	Toolset or web-site is operational, but does not provide a function in the most convenient or expeditious manner, or results in cosmetic or isolated errors. Severity level 3 cases have a moderate impact with minimal loss of service. These cases may require a heightened level of attention for a variety of reasons.
4 - General	A low or no business impact issue where there is no apparent time constraint or no loss of service. A situation in which the operation is affected in some way, which is reasonably correctable by manual intervention, workaround, and/or by a future LDM, Toolset, or web-site update. This is also the severity level for general and operational questions.

#### **4.4 SDSFIE Versioning**

Releasing a new version of SDSFIE Gold establishes a new set of geospatial elements in the standard. A methodology is necessary to address major, minor, and corrigendum (bug-fix) revisions as described below. Each version will have a unique identifier, or label, to provide a shorthand reference to the specification version and to enhance communication about the SDSFIE. The SDSFIE Gold will employ a three-level version pattern where major, minor, and corrigendum versions are specified using integers, separated by periods. In general, only major and minor revisions will be considered as triggers for changing the specification's status in the DoD IT Standards Registry (DISR). All current versions shall be posted to the DISDI Namespace in the DoD Metadata Registry.

A **major revision** re-structures geospatial elements in such a way that would materially change the organization on implementation schemas. A major revision need not be backward compatible with previous major versions. The initial version of a major revision has minor and corrigendum version set to zero.

A **minor revision** is one that does not re-structure geospatial elements but augments existing elements. In essence, a minor revision is one that would change the organization of implementation schemas but not the definitions of geospatial elements. A minor revision is backward compatible with previous versions with the same major version designation.

A **corrigendum**, defined as a "bug-fix", is used to correct errors in previous versions with the same major.minor version designation. The version attribute shall use the complete Major.Minor.Corrigendum version number initially set at 0 and shall be incremented after each bug fix (ie. version="3.0.1" for the first bug fix of the 3.0 version).<sup>1</sup>

NOTE: There is no precise definition of "bug". It refers to an inadvertent error in the model, where it deviates from the intention expressed or is technically invalid for some reason, but may encompass other kinds of error. A judgement from the DISDIG Chair is required to determine if a proposed revision may be deemed a "bug-fix" or corrigendum. Bug-fix revisions may not be backward compatible, and in general will not be since there was judged to be an error in the previous version. However, a bug-fix revision should not be used as a "back door" to add new features.

Once a given change has been successfully implemented and tested, it will await release. When the decision to release is made, the status of the change is recorded in the CMP Tracking Log with the new version number annotated in the rationale. The CR originator shall be notified and the DISDI Community is notified through a version release summary.

#### **4.5 Change Management Process Tracking Log**

A CMP Tracking Log will serve to track each CR for all three processes. This CMP Tracking Log is described in the appendix. Every step in the CMP should either create an entry in the CMP Tracking Log or result in a change to the status of the CMP Tracking Log record associated with a CR (or multiple CRs).

### **5 SDSFIE CMP**

SDSFIE consists of three distinct categories of items (i.e. LDM, Tools, and Web Site) which are addressed by this CMP. While the fundamental process is common, subtle differences exist in the process for managing change of the LDM, Web Site and tools. The remainder of this section describes processes that are common across all three items and, where applicable,

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<sup>1</sup> This versioning scheme is widely used for GEOINT standards and is specified in "Policy Directives for Writing and Publishing OGC Standards, Section 13, Document 06-135r7, Open Geospatial Consortium, 15 June, 2009

provides specific directions for individual items. The different change management processes applicable to individual SDSFIE items are presented in indented italic text, clearly marked sections specific to the category, or tables.

***SDSFIE Gold LDM:*** Accepted changes to the LDM can affect compliance, tool operation, and implementations. Therefore, the DISDI Program and the DISDIG will determine when to update the SDSFIE Gold LDM with accepted LDM changes to include in the update. Each update will have a unique version number. Each update will require production of updated documentation and may also require modification to the Web site and tools.

***SDSFIE Tools:*** Tools covered by this process are the Web tools available on the SDSFIE Web Site ([www.sdsfie.org](http://www.sdsfie.org)) and listed in Table 6. Each tool enables the SDSFIE user to perform specific tasks. Problem corrections, enhanced capabilities, and recommendations for additional tools will follow this process.

***SDSFIE Web Site:*** The elements of the SDSFIE Web Site ([www.sdsfie.org](http://www.sdsfie.org)) are covered by this process. The SDSFIE Web site displays content and presents the SDSFIE Web tools to the user. The Web site displays content in several sections. The organization of the sections, or pages, is the structure of the site. Pages on the site display content including text, hyperlinks, and graphics. Hyperlinks enable the user to download files and “jump” to other content on the Web site or on other Web sites.

**Table 6: SDSFIE Tools**

<b>SDSFIE Tools</b>	<b>Description</b>
Browsing tool	Provides a means for investigating the organization and contents of the SDSFIE.
Validation tool	Checks SDSFIE compliance of a data schema.
Adaptation tool	Performs the necessary functionality to manage adaptations.
Generation tool	Produces a file for download that produces a SDSFIE compliant data structure in a variety of Geographic Information System (GIS) technologies.
Migration tool	Assists the user with changing their data set to comply with the currently released version of the SDSFIE, again, in a variety of GIS technologies.

### **5.1 Identify Potential Change (Step 1)**

The first step in the CMP is to identify a potential change. The various types of possible CRs for each of the SDSFIE items are listed in Table 7.

SDSFIE users within a Component will document their CR in a Draft CR, containing just enough information to support preliminary review as described in section 5.2 below. The Component IGI&S HQ will review the Draft CR for inclusion in a Component Formal CR. Component HQs, the DISDI Program, and the SDSFIE Support Contractor are authorized to prepare Formal CR’s which contain all the information required to analyze and develop a recommendation for DISDI Group consideration.

**Table 7: SDSFIE Items and CR Types**

<b>SDSFIE Items</b>	<b>Type of Change</b>	<b>Description</b>
<b>LDM</b>		
	New Functionality	The first type of change is one that requires new or enhanced functionality. By this we mean that new elements are required (e.g., a new feature type, new attribution on an existing feature type, or new domain value(s) in an existing enumeration). New functionality may be discovered during the SDSFIE Support Contractor review of existing adaptations or may come as input from users inside or outside of DoD.
	Element Defect	The second type of change is one where an existing element has a defect or needs clarification (e.g., an incorrect data type, a misspelling, an incorrect or unclear definition, or delete an element).
	Outdated Element	The third type of change is one where an existing element is no longer relevant.
<b>Tools</b>		
	Functional Change	A functional change is an enhancement to the tool operations or a required change to the current operation of the tool due to external forces like technology or policy changes.
	Tool Defect	A tool defect is any operation of the tool that produces results different from those expected or results different from those specified in the tool requirements or documentation. A tool defect may include changes to tool documentation without an actual change to the tool itself. These changes would correct errors or confusing statements as well as add examples that would assist users in fully understanding operation of the tool.
<b>Web Site</b>		
	Structural Change	A structural change requires reorganization of content on the web site into a different set of pages. This type of change often requires changes to menus and other means of navigation to the web site content.
	Content Change	A content change includes changing page text, a link, or a graphic. Content changes include deletions of content that is not used or not relevant.

## **5.2 Develop Draft CR (Step 2)**

Once a user or functional group of users (hereinafter called Requestor) identifies a potential change, it is necessary for them to develop a Draft CR (CMP Product A in Figure 1). The Draft CR will require specific types of information such as the Requestor's contact information, the type of the request, a complete description of the requested change, and a rationale for the change. A detailed listing of the information required for the Draft CR is provided in Appendix A.

Upon receipt of this information, the CMP Tracking Log will provide a unique tracking number for the Draft CR. *Every recommended change to the LDM, each tool, or the Web site requires a separate Draft CR. Grouping requests will occur when the Component DISDIG Representative, SDSFIE Support Contractor, or the DISDI Staff analyzes incoming requests.*

If the Component decides to include the Draft CR in a Formal CR, the Requestor may be asked to provide an estimate of economic benefit, to supplement the Draft CR. For the purposes of SDSFIE CRs, the basis of economic benefit should include: the time and cost benefits (e.g., man-hours) that could be realized if the change is adopted; and an estimate of time and cost liabilities (e.g., man-hours, software) that would likely be incurred if the change is rejected. The

Requestor only needs to estimate the economic benefits/liabilities in terms of the impact to their own organization; higher organizations shall estimate the impacts on a broader basis.

The Change Management Tracking Log is updated with the status: "Registered" by creation of an entry for the Draft CR.

If the individual identifying the change is a Component HQ, DISDI Program, Non-DISDIG Requestor, or the SDSFIE Support Contractor, then the request is submitted to the DISDIG. Otherwise, the requestor will submit the Draft CR into the Component evaluation process described in their Component's SDSFIE change management policy.

- **Special Case - SDSFIE Tools:** *Tools defects that cause abnormal termination and defects that produce unusable or inaccurate results will bypass the formal CMP. The requestor would notify the SDSFIE Help Desk of this event. The SDSFIE Help Desk will initiate a Draft CR from the SDSFIE Support Contractor.*
- **Special Case - SDSFIE Web Site:** *Web site defects in spelling, grammar, accuracy, and interpretation will bypass the formal CMP. The requestor should notify the SDSFIE Help Desk of these defects. The SDSFIE Help Desk will initiate a Draft CR from the SDSFIE Support Contractor.*

### **5.3 Evaluate Draft CRs (Step 3)**

The Component DISDIG Representative will evaluate all Draft CR submitted from users in their DoD Component. Evaluation of Draft CRs should address the following issues, primarily because these issues must be addressed if the Draft CR becomes a Formal CR (see Section 5.4).

- Validation of rationale
- Validation of description
- Validation of cost estimates and expansion of estimates to include impacts across the entire DoD Component
- Recommendation of adoption of the request

The Component DISDIG Representative can call upon the SDSFIE Support Contractor to assist with their evaluation to ensure that the Draft CR contains sufficient information to complete the CMP. The Component DISDIG Representative will either recommend or reject the request and record the action in the Component change management tracking system.

The evaluators will perform the following actions.

- Ensure that the change rationale and description are correct as stated in the Draft CR.
- Verify the reliability of the cost estimates of the organization.
- Consider the impact of the change to their entire DoD Component and update the cost estimates for their DoD Component.

The evaluation will result in one of the following outcomes:

- 1) If the Draft CR is accepted, then the Component leadership will convert the Draft CR into a formal CR and submit it for further processing. The Component DISDIG Representative may decide to bundle the Draft CR with other Draft CRs depending on the severity and urgency of the request. The Component DISDIG Representative may wish to modify the Draft CR in some way before submission.
- 2) If the Draft CR is rejected, then the CMP Tracking Log will be updated with the status: "Rejected by Component" and the rationale of the action, which will be provided by the

Component DISDIG Representative. The Draft CR originator shall be notified of the rejection. The process ends for the Draft CR at this point.

#### **5.4 Develop Formal CRs (Step 4)**

This section details the creation of Formal CRs by Component HQ level users, DISDI (or Non-DISDIG) users, and by the SDSFIE Support Contractor. The distinction of the source of the request is important because only Formal CRs developed by Component HQ, DISDI Program, or Support Contractor will be analyzed and evaluated by the DISDIG.

##### **5.4.1 Component Formal CRs**

After evaluating and accepting one or more Draft CR(s), the Component will create a Component Formal CR.

If a Component Requestor identifies a potential change, then a Component Formal CR is initiated at the Component HQ level. Component Formal CRs differ from a Draft CR in that a) several Draft CRs can be bundled together to form a single Component CR and b) the source of the Formal CR is a Component HQ.

The Component will augment the Formal CR with information such as the following:

- Combine duplicate Draft CRs into a single Component Formal CR (if applicable)
- The date of endorsement
- The DoD Component point of contact for the Formal CR (this is the DoD Component sponsor for the change)
- A description of the functional / business lines that will benefit from the change, including affected current or planned automated systems
- Revised cost/benefit estimates from the component. These should be made from a Component-wide perspective, and include an assessment of the implementation costs. Where possible, assess the potential impact on known existing Adaptations.
- Description of the component rationale for endorsing the change

A detailed listing of the information required for the Formal CR is provided in Appendix A.

The DoD Component then transmits the Formal CR and endorsement to the DISDIG Chair for consideration. This transmission becomes the Component Formal CR (CMP Product B in Figure 1).

##### **5.4.2 DISDI Formal CRs**

If the DISDI Program identifies a potential change, then a DISDI Formal CR is initiated at the DISDI Program level. If a Non-DISDIG Requestor identifies a potential change, then the Non-DISDIG Requestor submits a request to DISDI Program, which initiates a DISDI Formal CR. The DISDI Formal CR will contain all information required for a Draft CR, plus the following information:

- The DISDI point of contact for the CR (i.e. the DISDI sponsor for the change).
- A description of the functional / business line that will benefit from the change, including affected current or planned automated systems.
- A cost/benefit estimate will be prepared based on an enterprise-wide perspective. Where possible, the estimate will include potential impacts on existing Adaptations to include an estimated implementation cost.

A detailed listing of the information required for the Formal CR is provided in Appendix A. When the Formal CR is ready, DISDI transmits it (CMP Product B in Figure 1) to the DISDIG Chair for consideration.

### **5.4.3 Contractor Formal CRs**

If the SDSFIE Support Contractor identifies a potential change, then a Contractor Formal CR is initiated. The SDSFIE Support Contractor Formal CR will contain the same information requirements for all Formal CRs, but since they do not have direct access to the types of DoD business information that would be required to make an economic estimate of benefit or liability to DoD, the Contractor Formal CR will not include economic estimates. A detailed listing of the information required for the Formal CR is provided in Appendix A.

When the Formal CR is ready, SDSFIE Support Contractor transmits it to the DISDIG Chair for consideration. This transmission becomes the Contractor Formal CR (CMP Product B in Figure 1).

### **5.4.4 CMP Tracking Log Updates**

The CMP Tracking Log is updated by creation of an entry for the Component, DISDI, or Contractor Formal CR.

If a Draft CR is included in a Component CR, then the CMP Tracking Log record for the Draft CR is updated with the status "Accepted, Forwarded By Component". Finally, the Change Identifier for the Component Formal CR is inserted into the CMP Tracking Log record for the Draft CR with the status "Registered".

## **5.5 Analyze Formal CR (Step 5)**

The DISDI Program, with support from the SDSFIE Support Contractor, will analyze all incoming Formal CRs. Initially, the DISDI Program will crosscheck incoming Formal CRs against existing CRs and review with respect to SDSFIE and DoD-level policy and guidance. When the policy review begins, the CMP Tracking Log is updated with the status "Under Review". This assessment will compare the requested change to SDSFIE and DoD policy. If the request conflicts with policy, the DISDIG Chair can determine whether to reject the request or review the policy. If the Formal CR is rejected, the CMP Tracking Log is updated with the status "Rejected" in the status and a rationale for the rejection. If the Formal CR conforms to policy, the DISDIG Chair sends the Formal CR to the SDSFIE Support Contractor for a technical feasibility assessment.

### **5.5.1 SDSFIE Gold LDM Change Feasibility**

The SDSFIE Support Contractor will assess the technical feasibility of a change with respect to the current SDSFIE Gold LDM to include an analysis of what elements already exist within the SDSFIE Gold, whether the proposed changes align with the scope and intent of the SDSFIE, and whether the change makes technical sense to complete. The SDSFIE Support Contractor may develop alternative approaches that meet the requirements presented within a Formal CR. The SDSFIE Support Contractor will report findings back to the DISDIG Chair. The report will include a recommended approach to implement the change in the LDM, alternative approaches (if any), and expected impacts to the SDSFIE Web site, SDSFIE Repository, SDSFIE Tools, SDSFIE Training, and SDSFIE Documentation.

Results of the DISDIG Chair feasibility analysis and the SDSFIE Support Contractor feasibility analysis are compiled by the DISDIG Chair. If the Formal CR is feasible, the DISDIG Chair will update the status in the CMP Tracking Log to "Passed Feasibility Analysis".



In consultation with the SDSFIE COR, the DISDIG Chair will next determine when to request the SDSFIE Support Contractor to continue work toward acceptance of the Formal CR. At their discretion, the DISDIG Chair may decide to package a group of related Formal CRs for the SDSFIE Support Contractor to analyze.

#### 5.5.1.1 Analyze Change Impact

The SDSFIE Support Contractor will analyze the impact of implementing the change to the SDSFIE item. The SDSFIE now has a static LDM, a set of Web tools, SDSFIE Repository, and Training modules. The SDSFIE Support Contractor feasibility analysis included potential impacts to SDSFIE Web site, SDSFIE Repository, SDSFIE Tools, SDSFIE Training, and SDSFIE Documentation. In this stage, the SDSFIE Support Contractor conducts a thorough analysis into the impacts of the Formal CR to these Items of the SDSIFE. Results of this analysis influence the analysis in Section 5.5.4. This effort does not produce a cost estimate but informs the DISDIG Chair and the DISDIG of the magnitude of impact the Formal CR on the SDSFIE.

#### 5.5.1.2 Functional SME Inputs

The SDSFIE Support Contractor will analyze whether the proposed changes align with subject matter expert intention by collaborating with individual IGI&S organizations who may find it necessary to contact the SME group for their assessment. If an SME group or functional experts are consulted in the development of a Formal CR, this portion of the analysis will gauge whether that input was sufficient and resolve deficiencies.

#### 5.5.1.3 Analysis Reporting and Wrap-up

All of the above analyses will be gathered into a written Formal CR Analysis and bundled with the Formal CR. All of this will then be forwarded back to the DISDIG Chair for further processing. The CMP Tracking Log will then be updated to indicate that the analysis has been completed.

### 5.5.2 SDSFIE Tool Change Feasibility

The DISDI Program reviews Formal CRs with respect to tool functionality. This analysis will focus on the purpose of the tool, the expected input to the tool, and the expected products of the tool.

The Formal CRs that conform to all the following pass functional analysis.

- The Formal CR is an enhancement (added functionality) to the tool and the DISDI Program determines that the enhancement benefits other DoD Components and the enhancement does not cause adverse effects on current or planned automated systems.
- The Formal CR maintains functional integrity of the tool. This means that the change does not duplicate another function in the tool and does not cause another function to fail or become obsolete.

If the Formal CR does not maintain functional integrity of the tool, the DISDI Program rejects the CR.

The DISDI Program will produce a brief report on their functional analysis for the decision authority.

Results of the DISDIG Chair feasibility analysis and the SDSFIE Support Contractor feasibility analysis is compiled by the DISDIG Chair. If the CR is feasible, the DISDIG Chair will update the status in the CMP Tracking Log to "Passed Functional Analysis". If the change is deemed

unfeasible, the DISDIG Chair will update the status in the CMP Tracking Log to “Rejected” and enter a rationale for the rejection.

#### 5.5.2.1 Technical Analysis

The SDSFIE Support Contractor will review the change with respect to technology. The analysis will compare the CR with the state of practice in the DoD.

The SDSFIE Support Contractor will prepare a short report of their findings and transmit it to the DISDI Program.

#### 5.5.2.2 Determine Technical Feasibility

The change will be reviewed to ensure it is consistent with DoD practice regarding hardware, software, communications, and system development. To be feasible the change request must also be possible to execute within the current resources and scope of the SDSFIE support contract. The change is feasible if it is within the following.

- Hardware, software, and communications restrictions of the DoD.
- Commercially available hardware, software, and communications.
- Within the realm of production systems (outside the realm of research).

### 5.5.3 Web Site Change Feasibility

The DISDI Program determines the impact of the CR on the functional integrity of the Web site by analyzing the recommended changes to the overall purpose of the Web site and compliance to DoD-level policy. The DISDI Program determines the impact of the CR on the functional operation of the Web site by analyzing the applicability of the recommended change to other DoD Components and ensuring that the recommended change does not cause adverse effects on current or planned automated systems. If the DISDI Program analysis determines that the recommended change does not adversely affect Web site functional integrity and functional operation, then the request passes functional analysis.

If the request maintains functional integrity of the Web site then the request passes the functional analysis. The DISDI Program will produce a brief report on the functional analysis.

Results of the DISDI feasibility analysis and the SDSFIE Support Contractor feasibility analysis is compiled by the DISDIG Chair. If the CR is feasible, the DISDIG Chair will update the status in the CMP Tracking Log to “Passed Functional Analysis”. If the change is deemed unfeasible, the DISDIG Chair will update the status in the CMP Tracking Log to “Rejected” and enter a rationale for the rejection.

#### 5.5.3.1 Technical Analysis

The SDSFIE Support Contractor will review the change with respect to technology. The analysis will compare the CR with the state of practice in the DoD.

The SDSFIE Support Contractor will prepare a short report of their findings and transmit it to the DISDI Program.

#### 5.5.3.2 Determine Feasibility

For a CR to be considered feasible, it must be consistent with the current state of the practice in the DoD regarding hardware, software, communications, and IT system development. If feasible, it must also be possible to execute within the current resources and scope of the SDSFIE support contract. The change is feasible if it is within the following.

- Hardware, software, and communications restrictions of the DoD

- Commercially available hardware, software, and communications
- Within the realm of production systems (outside the realm of research)

#### **5.5.4 Determine Costs and Benefits**

If the SDSFIE Support Contractor considers the change feasible, then a cost and schedule proposal for the change will be prepared and reported to the COR. This proposal will include costs for changes to all SDSFIE items necessitated by the recommended CR for a specific item. To produce the cost and schedule proposal, the SDSFIE Support Contractor will perform an impact analysis to determine the impact of the change on the SDSFIE items. Estimated implementation costs will include estimates for changing the item identified in the CR and the change's impact on other items:

- **SDSFIE Gold LDM:** *the LDM, producing LDM products such as a revised model file, a revised Web viewable mode, a revised XML, and other LDM products required by the government.*
- **SDSFIE Tools:** *the change on tools, user data, database schema, infrastructure software, documentation, user interface design, and training modules.*
- **SDSFIE Web Site:** *the change on infrastructure software, documentation, user interface design, and training modules.*

The level of effort required to estimate cost for a complex change to the SDSFIE items may require that the change be determined to be reasonable to the DISDI Program before triggering SDSFIE Support Contractor work to develop cost estimates.

#### **5.6 Develop Change Recommendation (Step 6)**

The DISDIG Chair, in conjunction with the SDSFIE Support Contractor, will develop a recommendation on the response to Formal CRs. The recommendation will include an overview of the proposed change, a summary of the analysis of the change, and a recommendation to Accept, Accept with Modification, or Reject the CR. In the case of a recommendation to Accept with Modification, the modifications to the CR will be included in the Recommendation. In the case of a recommendation to Reject, the rationale for the rejection will be included in the Recommendation (CMP Product C in Figure 1).

#### **5.7 Evaluate CR Recommendations (Step 7)**

The DISDIG Chair will determine when to initiate DISDIG evaluation of CR Recommendations. The DISDIG will evaluate all required documentation, including the CR, Analysis, and Recommendation forwarded by the DISDIG Chair for an informal vote. The purpose of this step is to achieve a consensus among the members of the DISDIG.

If the DISDIG Chair determines that the Group consensus supports the CR Recommendation, then the change will be implemented in the remaining steps of the process and the CMP Tracking Log updated to reflect the status "Approved, Pending Implementation". The CR Recommendation originator shall be notified of the approval.

If the DISDIG Chair determines that the Group consensus rejects the CR Recommendation, then, the CMP Tracking Log will be updated to reflect the status "Rejected". The DISDIG Chair shall provide a summary written rationale of the rejection action. The CR originator shall be notified of the rejection. If any DISDIG member believes consensus has not been achieved by the DISDIG, then the issue may be forwarded to the Chair of the RPLIM IRB for adjudication.

Accepted CR Recommendations will be delivered to the SDSFIE COR for the next process step. It is possible that updates will be made to the CR Recommendation during DISDIG deliberations. Therefore, any changes made during this step should be made before transmission of the CR Recommendation. All of this documentation will be considered the Final Change Description (CMP Product D in Figure 1).

### **5.8 Implement and Review Change (Step 8)**

The DISDI Program will notify the SDSFIE COR of approved changes. The SDSFIE COR notifies the SDSFIE Support Contractor of the DISDIG approved changes, provides the CR documentation of the changes to implement, and ensures the SDSFIE Support Contractor is scoped to effect the changes (Document Product D in CMP Figure 1). The SDSFIE Support Contractor implements changes to SDSFIE items as follows:

**LDM Changes:** Make changes in a non-production environment for designated representatives of the DISDIG to review. Once the change is implemented in the non-production configuration LDM, the status will change to “Approved, In Testing”.

**Tool Changes:** Make changes in a development environment. After the changes are made, the updated tool is moved to a testing environment for designated representatives of the DISDIG to review. Once the change is implemented in the non-production environment the status will change to “Approved, Implemented”.

**Web Changes:** Make changes in a development environment. After the changes are made, the revised Web site is moved to a testing environment for designated representatives of the DISDIG to review. Once the change is implemented in the non-production environment the status will change to “Approved, Implemented”.

When changes are completed, the SDSFIE Support Contractor will develop a test plan to test the correct implementation of a particular CR Recommendation. The DISDIG will review the test plan and approve it, and designate a test team to oversee the execution of the test plan on the revised SDSFIE item to ensure proper change implementation. All approved changes will be tested to ensure they are correctly implemented with no negative impact on any other SDSFIE item.

If the representatives reject the implemented change, the process will return to the SDSFIE Support Contractor to incorporate the change correctly. If the SDSFIE Support Contractor implemented the change according to the approved CR but the representatives desire a different implementation, the DISDIG must approve the new requirement and notify the SDSFIE COR of the changed scope.

When the representatives complete their review and test to their satisfaction, the SDSFIE Support Contractor retains the LDM in a “Read Only” form. The DISDI PM authorizes recording the action by changing the status to “Accepted, Implemented, Tested.” Finally, a Version Release Summary (CMP Product E in Figure 1) will be prepared for release to the SDSFIE community explaining the nature of the change and its anticipated impact on current implementations.

**Finalizing SDSFIE Gold LDM Releases:** New releases of the SDSFIE LDM will be reflected in new version numbers per the instructions presented in Section 4.4 above.

## Appendix A: Change Management Documentation and Reports

This section describes the information requirements for the various CRs (i.e. Draft or Formal). The information from these CRs will be used to populate the CMP Tracking Log which is also described in this section.

### A-1 Change Requests

The CR initiates action in the CMP. A CR originating from users within a DoD Component implementation level organization (i.e. Draft CRs) should include the information listed in Table 8.

**Table 8: Information required on SDSFIE Draft CRs from implementation level organizations.**

Log data	Description
Requestor request number	Unique number of a Requestor request
Requestor request date	Date the Requestor recorded their request
Requestor Name	Name of the person making the request
Requestor DoD Component	DoD Component of the requestor
Requestor organization	Organization of the requestor
Change type	Defect or Enhancement
Requestor change description	Description of the requested change
Requestor change rationale	Rationale of the requested change
Requestor estimated benefit	Estimate of cost savings if request is adopted
Requestor estimated cost	Estimate of cost if the request is denied

A Formal CR (i.e. a CR that is being reviewed at the Department level for DISDI Group consideration) originates from a DoD Component HQ IGI&S Program member, the DISDI Program, or the SDSFIE Support Contractor. Formal CR should include all the information in Table 9.

**Table 9: Information required on SDSFIE Formal CRs from Component HQ, DISDI Program or SDSFIE Support Contractor.**

Log data	Description
Requestor DoD Component	DoD Component of the requestor
Change type	Defect or Enhancement
Requestor change description	Description of the requested change
Requestor change rationale	Rationale of the requested change
DoD Component request number	Unique number of a DoD Component request
Change sponsor	Name of the person in the DoD Component that favors the request
DoD Component action on Requestor request	Recommend or Reject
DoD Component action date	Date the DoD Component took action on the request
DoD Component action rationale	DoD Component rationale for their action on the request

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Log data	Description
DoD Component estimated benefit	Estimate of cost savings, cost avoidance, or benefit to the DoD Component if request is adopted
DoD Component estimated cost	Estimate of cost to the DoD Component if the request is denied

**A-2 Change Management Process Tracking Log**

The CMP Tracking Log is a record of all actions performed in the CMP. The log will contain the information in Table 10.

**Table 10: SDSFIE CMP Tracking Log information.**

Log data	Description
Requestor request number	Unique number of a Requestor request
Requestor request date	Date the Requestor recorded their request
Requestor Name	Name of the person making the request
Requestor Component	DoD Component of the requestor
Requestor organization	Organization of the requestor
Change type	Defect or Enhancement
Requestor change description	Description of the requested change
Requestor change rationale	Rationale of the requested change
Requestor estimated benefit	Estimate of cost savings if request is adopted
Requestor estimated cost	Estimate of cost if the request is denied
DoD Component request number	Unique number of a DoD Component request
Change sponsor	Name of the person in the DoD Component that favors the request
DoD Component action on Requestor request	Recommend or Reject
DoD Component action date	Date the DoD Component took action on the request
DoD Component action rationale	DoD Component rationale for their action on the request
DoD Component estimated benefit	Estimate of cost savings to the DoD Component if request is adopted
DoD Component estimated cost	Estimate of cost to the DoD Component if the request is denied
DISDI action number	Unique number for DISDI action
DISDI action on DoD Component request	Accept or Reject
DISDI action date	Date of DISDI action
DISDI rationale	Rationale for DISDI action
Contractor cost estimate	Cost of implementing the request
Contractor schedule estimate	Time needed to implement the request
Contractor implementation complete date	Date request implemented and ready for deployment
CR final action	Deployed or Rejected
CR final action date	Date of final action on request

The CMP Tracking Log will be available to all registered DoD users on the SDSFIE Web site.

**A-3 CR Status Tracking**

This CR Status Tracking report contains data from the CMP Tracking log indicating the status of active, current requests. This includes the change identifiers, descriptions, decisions, and decision dates. Registered users of the SDSFIE website may view CRs which are completed or under consideration as outlined in Table 11. These roles are subject to change in accordance with Components' implementation policy or guidance.

**Table11: Reports visible to registered SDSFIE user categories.**

<b>Registered User Category</b>	<b>Changes Visible</b>
All Registered users	All Closed changes All changes under consideration by DISDI
Registered Users in a DoD Component	Changes visible to All Registered Users Changes under consideration by the DoD Component Changed originated within the DoD Component
DISDI Program DISDIG SDSFIE Support Contractor	All Changes