	Document Control	IVV 05 Version: AK Effective Date: August 02, 2017
Independent Verification & Validation Program		

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AUTHORITY		DATE
Jeffrey Northey (original signature on file)	IMS Manager	08/02/2017
Richard Grigg (original signature on file)	Document Owner	08/02/2017

REFERENCES	
Document ID/Link	Title
Form 1000	Document Change Request
IMS Master List	NASA IV&V Management System Documentation Master List
IMS Version History	IMS Version History Overflow Document
ISO 9001	International Organization for Standardization: Quality management systems - Requirements
IVV QM	NASA IV&V Quality Manual
IVV 10	Software and Hardware Configuration Management
IVV 16	Control of Records
NPR 1441.1	NASA Records Management Program Requirements

If any process in this document conflicts with any document in the NASA Online Directives Information System (NODIS), this document shall be superseded by the NODIS document. Any external reference shall be monitored by the Process Owner for current versioning.

1.0   Purpose

The purpose of this system level procedure (SLP) is to establish a consistent method for preparation, approval, issuance, revision, cancellation, tracking, and maintenance of NASA IV&V Management System (IMS)-controlled documentation.

2.0   Scope

This SLP is applicable to all documentation that pertains to the IMS. This includes all documents specifically designated as IMS Documents, which include all SLPs, Work Instructions (WIs), templates, supporting documents, and forms.

3.0   Definitions and Acronyms

Official NASA IV&V roles and terms are defined in the Quality Manual. Specialized definitions identified in this SLP are defined below.

3.1   Document Change Request (DCR) Log

The DCR Log is a spreadsheet used by the Document Control Custodian (DCC) to track DCRs. The DCR Log captures information including the assigned DCR number, DCR number assignment date, IMS Document number and name, approval date, and Document Owner (DO). The DCR Log helps to ensure that there is only one DCR open per IMS Document at a time.

3.2   Document Change Request Originator (DCR Originator)

A DCR Originator is any NASA IV&V civil service or contract employee who requests an addition, revision, or cancellation of an IMS Document.

3.3   Document Package

Used in the prior versions of this procedure (June 2017 and earlier), the Document Package consisted of the DCR (documented on form 1000) and copies of the Review Drafts that contain reviewer comments.

3.4 Document User

A document user is any NASA IV&V employee who uses the IMS.

3.5 IMS Documents

IMS Documents are all IMS Processes, SLPs, WIs, templates, supporting documents, and forms.

3.6 Review Draft

A Review Draft is a copy of a revised IMS Document that is evaluated in accordance with this SLP.

3.7 Reviewer

A Reviewer is anyone who reviews a revised or new IMS Document or a cancellation request. Types of Reviewers may include: Peer Reviewer, Technical Reviewer, and Records Reviewer. The Document Owner (DO) and the Approving Official also serve as Reviewers providing input and approval during the document change procedure.

3.8 Acronyms

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CAR	Corrective Action Request
DCC	Document Control Custodian
DCR	Document Change Request
DO	Document Owner
ECM	Enterprise Content Management
GPR	Goddard Procedural Requirements
IMS	NASA IV&V Management System
ISO	International Organization for Standardization
NODIS	NASA Online Directives Information Service
NPD	NASA Policy Directive
NPR	NASA Procedural Requirements
PAR	Preventive Action Request
QM	Quality Manual
SLP	System Level Procedure
URL	Uniform Resource Locator
WI	Work Instruction

4.0   Procedure Flow Diagrams

The following diagram depicts procedures and steps described in this document, and the responsibilities and actions that shall be performed by process participants or their designees.

Any supplemental information will appear after the diagram.

4.1   Addition, Revision, or Cancellation of an IMS Document

This section applies to the addition, revision, or cancellation of IMS Documents, which includes: SLPs, WIs, templates, supporting documents, and forms.
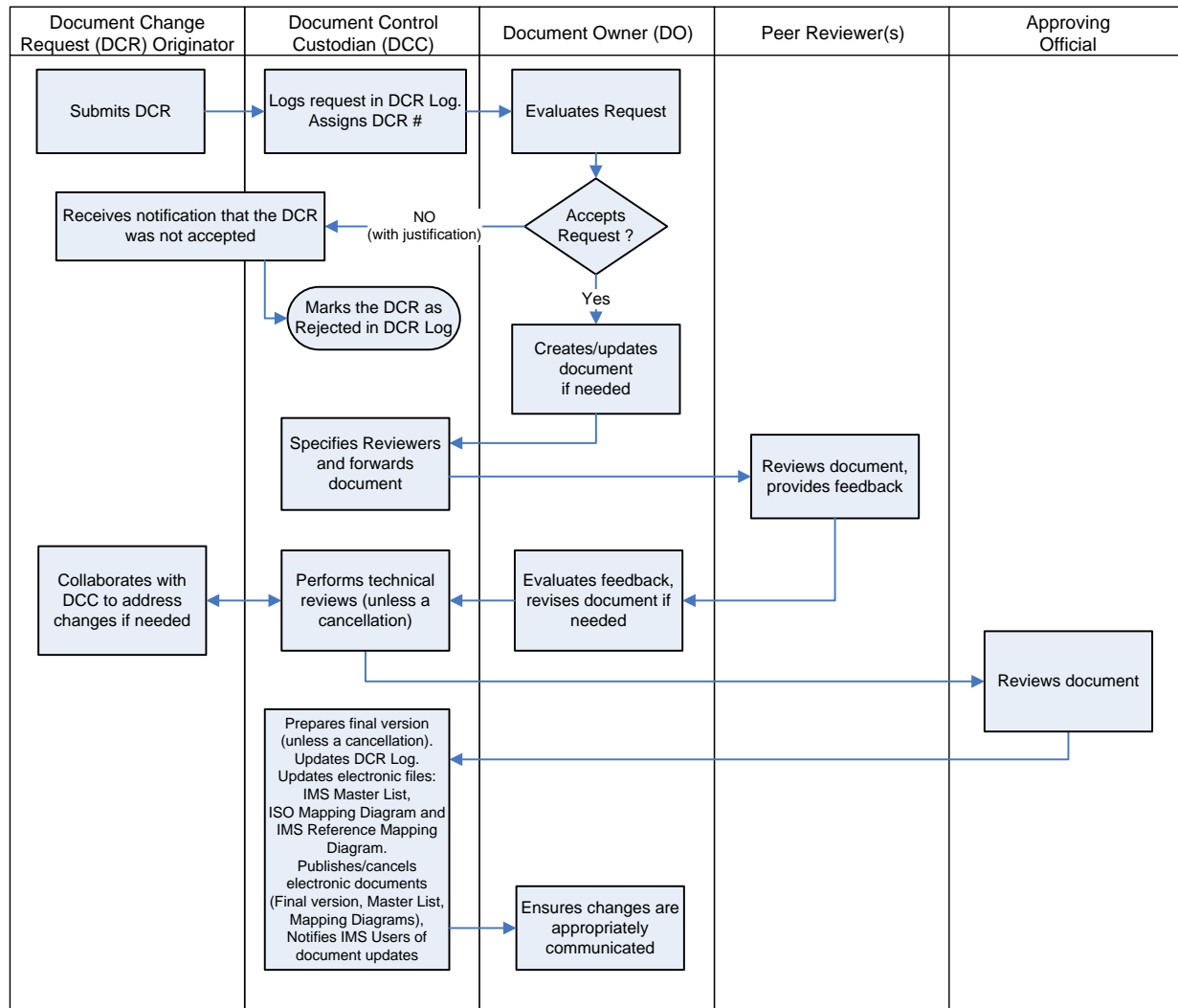
The IMS Manager shall assign a DO for any new IMS Document. If necessary, the IMS Manager shall reassign DOs for existing documents.

4.1.1 Initiating

The Document Change Request (DCR) Originator shall propose the addition, revision, or cancellation, of an IMS Document by notifying the Document Control Custodian (DCC). Notification methods include: email, SCO-JIRA action item, or completing Form 1000, *Document Change Request*. The Originator shall include the

following information: document number and title, comments clearly identifying any modifications to be made, and the rationale for why these changes are being proposed.

Minor and editorial changes may be made by directly editing the IMS Document in Confluence. Draft versions of new documents may be added by following the instructions in Confluence here or at https://confluence.ivv.nasa.gov:8445/display/IMS/Creating+a+new+IMS+Document. Major changes should be made by using the "Export to Word" feature and then editing with Track Changes ON.

To facilitate notification, document owners will use the "Watch" feature of Confluence to monitor their documents and the DCC shall "Watch" all IMS documents.

4.1.2 Preparing

The DCC may save an electronic copy of the DCR notification and any working drafts in the IMS directory on the Enterprise Content Management (ECM) System. If the DCR is associated with a new IMS Document, the DCC will assign a document number and confer with the IMS Manager to assign a DO.

If the document is determined to be an INTERNAL USE ONLY document, the DCC shall ensure that suitable cover page, footers, etc. are created and used.

The DCC shall also specify Peer Reviewers. Only minor and editorial updates to a document are exempt from the Peer Review process. In all other instances of addition, revision or cancellation to the IMS, the DCC shall identify one or more peers to perform the Peer Review. If the Document Owner is not an Office Lead, then the relevant Office Lead will be assigned as one of the Peer reviewers. If the DCR is associated with a Corrective Action Request (CAR) or Preventive Action Request (PAR), the DCC will specify that the CAR/PAR Originator is included as a Peer Reviewer, if not already part of the review/approval process.

The DO shall evaluate the DCR to determine if the DCR is acceptable and applicable.

4.1.2.1   Acceptance

If the DO accepts the DCR, the DO will incorporate the modifications into the document, and return the modified document to the DCC. The DCC will notify peer reviewers. As part of preparation, the DCC will create a working subfolder in the IMS Documents folder on the ECM System as a place to store associated documents in electronic format.

4.1.2.2   Rejection

If the DO rejects the DCR, the DO shall provide rationale for the rejection to the DCR Originator and DCC. For tracking purposes the DCC will document the rejection in the DCR Log.

4.1.3 Peer Review

Peer Reviewers shall review and provide comments on the additions, revisions, or cancellation being proposed in the Review Draft. After commenting, they should notify the DO, Peer Reviewers and the DCC.

The DO shall evaluate the Peer Review comments and modify the document accordingly. If the DO decides not to address some or any of the Peer Review comments, he/she shall provide rationale to the Peer Reviewer(s) as to why the comments would not result in modifications to the document. After all modifications are completed, the DO shall notify the DCC. The Review Draft from the DO may be in physical or electronic format.

4.1.4 IMS Technical Edit Review

The DCC shall conduct a technical edit review of the draft IMS document. The technical edit review includes:

- Review the IMS Modifications Needed Spreadsheet for any changes that need to be incorporated.

- Inspection of the Review Draft for technical and grammatical deficiencies and make modifications where needed.

- Review of the Records Table in the *Records* section, to verify that all records pertinent to the documented process have been captured in the table, and that all records' retention periods and locations are correct and up to date.

- Move Version History information that has exceeded its retention period to the Version History Overflow Document.

If any modifications resulting from the technical edit review significantly alter the logic or process of the document, the DCC shall return the Review Draft to the DO for verification of correctness and approval. After addressing any such modifications, the DO shall notify the DCC.

Once the technical edit review is completed, the DCC shall notify the Approving Official.

4.1.5 Final Review

The Approving Official shall review the modifications proposed. If the Approving Official approves the changes (or approves with comments), he/she shall notify (with any comments) the DCC for further processing.

If the Approving Official does not approve, he/she shall notify the DCC for resolution.

If needed, the DCC shall modify the Review Draft, collaborating with the DO as needed to address the Approving Official's concerns. The modified document shall be returned to the Approving Official for further review.

4.1.6 Finishing

The DCC shall post electronic copies of final versions of new and updated documents to the IMS Confluence pages. If these are INTERNAL USE ONLY documents, they shall be excluded from public access. If a cancellation is approved the DCC shall remove the prior posted documents and show the document as canceled in the lists; after a reasonable period the document shall be removed completely from the lists.

The DCC shall update the IMS Master List, ISO Mapping Diagram, IMS Reference Mapping Diagram, and IMS Version History Overflow Document as needed. For public lists and diagrams, INTERNAL USE ONLY documents shall either be excluded completely or document Titles shall be excluded and replaced with "FOR INTERNAL IV&V PROGRAM USE ONLY".

The DCC shall publish the final draft, IMS Master List, ISO Mapping Diagram, and IMS Reference Mapping Diagram; and notify document users of all document updates via email.

Periodically, the public IMS website will be updated to the latest versions from the official documents on Confluence. INTERNAL USE ONLY documents shall not be posted to the public IMS website.

Upon publication, the Document Owner shall ensure that the changes are appropriately communicated. The DO should consider at least the following items:
- magnitude of the change(s)
- the target audience(s)
- communication mechanism(s)
- potential training sessions

4.2 Controlled Versions

Electronic versions of documents made available through the IMS Confluence pages are the official, controlled versions. Copies printed

from these versions are considered uncontrolled and must bear a notice analogous to: "Verify that this is the correct version before use."

The DCC shall verify that published documents match the current IMS Master List and shall resolve any discrepancy by auditing Master List revisions and the DCR Log. The DCC shall remove obsolete versions of all IMS Documents when posting revised documents to the public IMS website.

4.3   Controlling External Changes

All NASA and Center directives – e.g., NASA Policy Directives (NPDs), NASA Procedural Requirements (NPRs), Goddard Procedural Requirements (GPRs), etc. – are available electronically from the NASA Online Directives Information Service (NODIS) repository (http://nodis3.gsfc.nasa.gov). If any process in the IMS conflicts with any document in NODIS, the IMS Document shall be superseded by the NODIS document. Any external reference shall be monitored by the Document Owners for current versioning.

4.3.1   Document Owner Monitoring

This procedure applies to all DOs that use external documents or other references (e.g., websites…) in their IMS documents.

DOs shall ensure that their IMS documents reference any external sources used in the enactment of those procedures.

For a given external reference:
- If only the most current version is applicable, the DO shall include only the source for verifying that current version (e.g., the publisher or originator).
- If any version older than the most current version is applicable, the DO shall specify which version is being referenced.

The DO shall be responsible for monitoring all external references captured in his/her IMS Documents in order to ensure that his/her

IMS procedures maintain correct references and proper adherence to applicable standards.

4.4 IMS Annual Document Review

The IMS Annual Document Review is a control mechanism to ensure IMS documents are reviewed by their respective Document Owners on a regular basis to ensure accuracy of our documents and for areas of potential improvement. The DCC shall inform POs of any modifications that have been noted in the IMS Modifications Needed Spreadsheet, including both exclusive modifications and blanket modifications that apply to all or many documents.

During the IMS Annual Document Review, DOs shall review the IMS document(s) they own for at least the following:
- Any inaccuracies
- Any organizational changes affecting the document
- Any procedure changes
- Any metric changes
- Any new or now obsolete external references
- Any Reference Document changes including titles
- Any links, URLs, or email address changes
- Any changes to databases or other data repositories used
- Any potential areas of improvement

Refer to the IMS Master List to see details of who the DO is for each IMS document.

4.5 Contingency Plan

If the IMS electronic repository file is temporarily inaccessible, document users shall contact the DCC to determine the current versions of documents and forms.

5.0 Metrics

Any metrics associated with this SLP are established and tracked within the NASA IV&V Metrics Program.

6.0   Records

The following records will be generated or updated and filed in accordance with this SLP and IVV 16, *Control of Records,* and in reference to NPR 1441.1, *NASA Records Management Program Requirements.*

Record Name	Original	Vital	Responsible Person	Retention Requirement	Location
DCR Log	Y	N	DCC	Destroy when 7 years old (1/26.5A)	ECM System
Document Package (created 2017 and prior)	Y	N	DCC	Destroy when 7 years old (1/26.5A)	Filing System
IMS Master List	Y	N	DCC	Destroy when 7 years old (1/26.5A)	Confluence, Public IMS Website, ECM System
IMS Reference Mapping Diagram	Y	N	DCC	Destroy when 7 years old (1/26.5A)	Confluence, Public IMS Website, ECM System
IMS Version History Overflow Document	Y	N	DCC	Destroy when 7 years old (1/26.5A)	Confluence, Public IMS Website, ECM System
ISO Mapping Diagram	Y	N	DCC	Destroy when 7 years old (1/26.5A)	Confluence, Public IMS Website, ECM System

VERSION HISTORY				
Version	Description of Change	Rationale for Change	Author	Effective Date
Basic	Initial Release		John Griggs IT/204	01/29/1998
A – AA	Revision information older than 7-year retention period relocated to Version History Overflow Document		Various	04/30/1998 – 07/14/2010
AB	Updated Section 4.3 to remove necessity of Master List hard copy; clarified the content of Section 4.6.1	Electronic copy is the official version. Electronic backup copies exist.	Sara Cain	09/15/2010
AC	Updated Section 4.2, 4.2.2, and 4.2.3 to reflect actual review process. Technical and Records Reviews may be performed in parallel.	Process changes for efficiency have been tried and found to be effective.	Richard Grigg	01/06/2011
AD	Updated Section 4.0 for clarity (flow). Added IMS Reviews in section 4.2.2 to encompass Technical, Records and Final reviews. Removed MLC. Removed CAR/PAR Originator.	Simplifying for easier user comprehension	Richard Grigg	03/14/2011

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Version	Description of Change	Rationale for Change	Author	Effective Date
AE	Renamed to "Document Control"; removed Data section. Updated Section 4.0 for clarity (flows). Added Annual Document Review PO responsibilities. Removed Technical Reviewer, Records Liaison/Custodian.	No actual data controlled by this SLP. Some POs had questions about ADR. Continued simplification.	Richard Grigg	10/24/2011
AF	Remove cancellation flow; incorporate Office Lead as one of the Peer Reviewers when the Process Owner is not the Office Lead. Add IMS Modifications Needed Spreadsheet references.	PAR: 2012-P-343. Cancellation handled the same as any other revision. Eliminated the possibility that changes would be made without Office Lead being aware.	Richard Grigg	04/20/2012
AG	Add capture of rationale. Clarify process of DCR rejection by PO.	PAR: 2012-P-375. Rationale for changes is frequently lost or documented in email or other hard to retrieve documents.	Richard Grigg	01/31/2013
AH	Add a requirement for process owners to provide training or familiarization to their users when a document is updated.	Updates may be made without users being aware; then processes may not be properly followed.	Richard Grigg	03/10/2014

VERSION HISTORY				
Version	Description of Change	Rationale for Change	Author	Effective Date
AI	Add blanket modifications to ADR process. Update external references to include websites and any other references. Update flow to add PO requirement to communicate changes. Add references to Version History Overflow Document.	PAR: 2014-P-415. Blanket modifications may be overlooked if not deliberately implemented at ADR. External references are not just documents anymore. Version history overflows are captured in an IMS document that is published.	Richard Grigg	10/16/2014
AJ	Add reference to IVV 16 in sections 4.1 flow and 4.1.6, *Final Processing*. Address INTERNAL USE ONLY documents. Remove ":2008" from ISO 9001 references.	Add clarity for filing DCR package. Raise awareness of new type of published documents and handle appropriately. Current ISO 9001 version has changed.	Richard Grigg	10/20/2016
AK	Remove references to the Document Package and signing the DCR form. Remove references to Templates (T2002, T2003, and T2004). Update handling of editorial changes. Change "Process Owner (PO)" to "Document Owner (DO)"; also "Process" to "procedure" or "method".	Older DCR method is replaced by a more streamlined, efficient, and effective method. Official versions of IMS documents are now on Confluence. Per ISO 9001:2015, "Process" now refers to a higher level grouping of procedures, WIs, and methods.	Richard Grigg	08/02/2017