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| <br><b>Independent<br/>Verification &amp;<br/>Validation Program</b> | <b>Lessons Learned</b> | <b>IVV 23</b><br><b>Revision: C</b><br><b>Effective Date:</b><br><b>October 14, 2011</b> |
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Verify that this is the correct version before use.

| APPROVAL SIGNATURES                       |                    | DATE       |
|---|--------------------|------------|
| Ken Vorndran (original signature on file) | IMS Representative | 10/14/2011 |
|   |                    |            |

| REVISION HISTORY |   |                    |                |
|------------------|---|--------------------|----------------|
| Revision         | Description of Change                                       | Author             | Effective Date |
| Basic            | Initial Release   | Stephanie Ferguson | 06/23/2010     |
| A                | Updated Section 6.0, <i>Records</i>                         | Stephanie White    | 09/28/2010     |
| B                | Added definition 3.3, <i>Lesson Learned Recommendation.</i> | Stephanie White    | 10/25/2010     |
| C                | Removed Quarterly Report, clarified roles                   | Richard Grigg      | 10/14/2011     |
|                  |   |                    |                |

| REFERENCE DOCUMENTS |                                  |
|---------------------|----------------------------------|
| Document            | Title                            |
| IVV QM              | NASA IV&V Quality Manual         |
| IVV 16              | Control of Records               |
| NPR 1441.1          | NASA Records Retention Schedules |
| NPR 7120.6          | Lessons Learned Process          |
|                     |                                  |

**If any process in this document conflicts with any document in NODIS, this document shall be superseded by the NODIS document. Any reference document external to NODIS shall be monitored by the Process Owner for current versioning.**

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## 1.0 Purpose

The purpose of this system level procedure (SLP) is to establish a consistent and documented method of capturing Lessons Learned within the NASA IV&V Program. The goals of Lessons Learned are to:

- Identify knowledge gained from past experience to benefit current and future projects and tasks
- Support the continuous improvement of the NASA IV&V Program and its organizational effectiveness by avoiding recurring/unwanted events and by propagating best practices
- Communicate information collected within the NASA IV&V Lessons Learned Database and the NASA Lessons Learned Engineering Network

Lessons Learned are a means to leverage knowledge sharing and expertise to increase the overall success of the NASA IV&V Program.

## 2.0 Scope

This SLP applies to all civil service and contract employees performing work within the NASA IV&V Program.

## 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 Driving Event

A Driving Event is an action that causes a project/task to deviate from its original plans, objectives, or approaches, or that impacts the technical quality of projects and/or impact to work tasks. A Driving Event can also be an action that causes desired results that may be applicable to more than one project/task.

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### **3.2 Lesson Learned**

A Lesson Learned represents knowledge that is gained from either a positive or negative outcome experienced during the course of performing work for the NASA IV&V Program. A Lesson Learned is written to share the importance of learning from past mistakes or successes. A Lesson Learned may also be drafted as the result of a Driving Event that causes desired results and warrants identification as an appropriate response to the Driving Event in which something occurred.

### **3.3 Lesson Learned Recommendation**

Suggestions on how the Lesson Learned should be used by applicable projects/tasks. Include any preventable actions that are being taken to improve the recurrence of the Lesson Learned.

### **3.4 Lesson Learned Approval**

Lesson Learned Approval is the decision that validates a draft Lesson Learned. Lesson Learned Approval can be performed by the Strategic Communications Office Lead or a designee.

### **3.5 Lesson Learned Originator**

The Lesson Learned Originator is any NASA IV&V civil service or contract employee who submits a Lesson Learned for the Lessons Learned Database.

### **3.6 Lessons Learned Annual Review**

The Lessons Learned Annual Review is a review performed each year to evaluate the process and the effectiveness of collecting Lessons Learned.

### **3.7 Lessons Learned Database**

The Lessons Learned Database is a Knowledge Management System (KMS) data repository that manages Lessons Learned for the NASA IV&V Program. It is located at <http://lessons.ivv.nasa.gov/lessons/home.asp>.

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### **3.8 NASA Engineering Network and Lessons Learned**

The NASA Engineering Network is the electronic database where content is maintained by NASA Headquarters (HQ). The database captures Lessons Learned responses from local areas and provides Lessons Learned response status. This process is communicated in NASA Procedural Requirement (NPR) 7120.6, *Lessons Learned Process*.

### **3.9 Screening Lead**

The Screening Lead is the Strategic Communications Office Lead or a designee who assesses the originality and completeness of a submission to the Lesson Learned Database.

### **3.10 Screening Team**

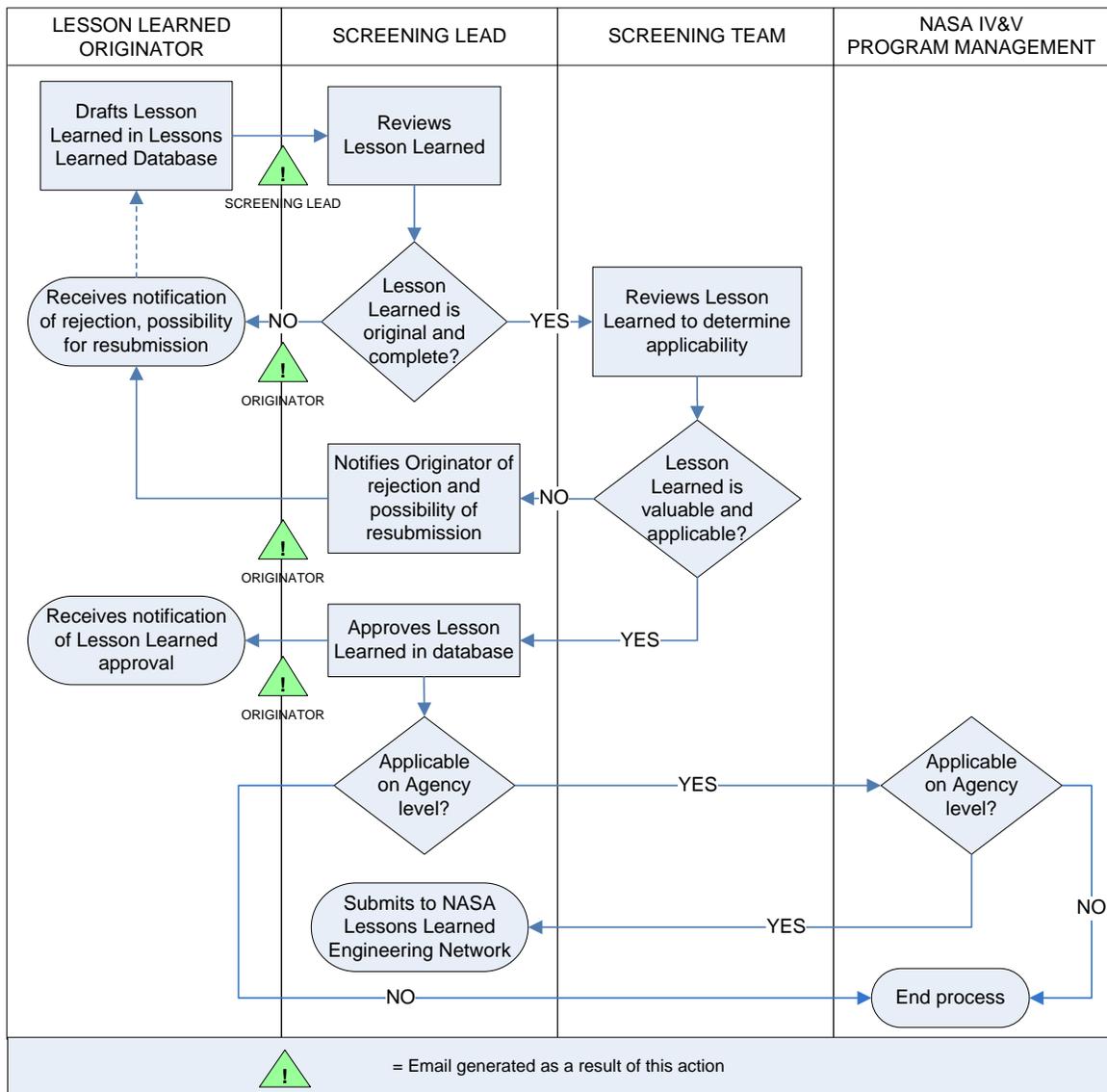
The Screening Team comprises representatives from the Strategic Communications team and applicable subject matter experts from the associated functional area(s) to verify the accuracy and completeness of a Lesson Learned submitted to the database.

### **3.11 Acronyms**

|     |                                 |
|-----|---------------------------------|
| HQ  | NASA Headquarters               |
| IMS | NASA IV&V Management System     |
| KMS | Knowledge Management System     |
| NPR | NASA Procedural Requirement     |
| QM  | Quality Manual                  |
| SCO | Strategic Communications Office |
| SLP | System Level Procedure          |
| WBS | Work Breakdown Structure        |

### 4.0 Process Flow Diagram

The following diagram depicts the process described in this document, and the responsibilities and actions that shall be performed by process participants or their designees. Any information supplemental to the depicted process will appear after the diagram.



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After the completion of a project/task or the occurrence of a Driving Event, the Lesson Learned Originator shall draft any Lessons Learned in the database for review by the assigned Screening Lead.

The following information shall be captured for any drafted Lesson Learned:

- Author – The name of the Lesson Learned Originator
- Email – The email address of the Lesson Learned Originator
- Office/Group – The functional organization associated with the Lesson Learned
- Topic – The subject of the Lesson Learned (e.g., programming tools, data libraries, risk management, safety investigations, project management techniques, etc.)
- Project (if applicable) – The IV&V Project that is associated with the Lesson Learned

In the paragraph field, the Lesson Learned Originator must compose a paragraph or set of paragraphs that addresses the Driving Event, the actual Lesson Learned, and any recommendations for current and/or future work that can be derived from the Lesson Learned.

To ensure that the Lesson Learned is effective and applicable for future use, the Lesson Learned Originator should aim to minimize the use of acronyms, ensure that pronouns and objects are clear, and write in a conversational language that uses active verbs to convey the meaning of the lesson as a story.

The Lesson Learned Originator shall address his/her suggestions on how the Lesson Learned should be used by applicable projects/tasks. Various examples may be used to communicate this information (e.g., use cases, project management, and/or incident investigations). The Lesson Learned Originator should include any preventable actions that are being taken to improve the recurrence of the Lesson Learned in this text field.

Once the Lesson Learned is drafted and entered into the Lessons Learned Database, the Screening Lead is notified that the Lesson Learned needs to be assessed. The Screening Lead shall:

- Ensure that all data is clear, concise, and complete
- Ensure that a similar Lesson Learned does not already exist in the database

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During the assessment phase, the Screening Lead should discuss any questions, comments, or concerns with the Lesson Learned Originator.

The Screening Lead shall reject any duplicate or nonconforming Lesson Learned submission. Upon rejection of the Lesson Learned, notification will be sent to the Lesson Learned Originator.

If the draft Lesson Learned is original and complete, the Screening Lead shall arrange to have it reviewed by the Screening Team. The Screening Team shall then review the Lesson Learned to verify whether it is relevant and applicable to the NASA IV&V Program, and approve or reject it accordingly. Once the Screening Team approves the Lesson Learned, the Screening Lead will complete its submission to the Lesson Learned Database, and the Lesson Learned Originator will be notified electronically of the completion.

All Lessons Learned approved for submission to the Lesson Learned Database will be assessed by the Screening Lead to determine which Lessons Learned may be applicable outside the NASA IV&V Program and if applicable forward to Senior Leadership for possible selection. For the selected Lessons Learned, the Screening Lead shall submit the Lesson Learned to NASA's Lessons Learned Engineering Network in accordance with NPR 7120.6, *Lessons Learned Process*.

Database searches may be run anytime by any user with access to the database.

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## 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 Retention Schedules*.

| Record Name                          | Original | Vital | Responsible Person | Retention Requirement   | Location                 |
|--------------------------------------|----------|-------|--------------------|---|--------------------------|
| Lesson Learned (not Project-related) | Y        | N     | Screening Lead     | Destroy when 7 years old (1/26.5)   | Lessons Learned Database |
| Lesson Learned (Project-related)     | Y        | N     | Screening Lead     | Destroy/delete between 5 and 30 years after program/project termination (8/103) | Lessons Learned Database |