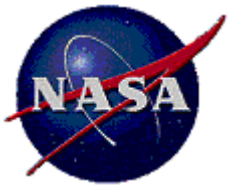

NASA Integrated Program Management Report (IPMR) Data Requirements Description (DRD) Guide

November 2021

Revisions:

April 2015	Initial issue
September 11, 2015	Fix links
December 12, 2017	Fix links; minor edits
November 1, 2019	Fix links; revised EVM application requirements to include Space Mission Directorate (SMD) Mission Risk Class D EVM deviation; minor edits
November 3, 2021	Update NASA EVM Program Executive to J. Fleming; update DI-MGMT-81861 (latest Rev) to be Rev. A Specific; update DoD EVM Website Reference.

FOREWORD

The Integrated Program Management Report (IPMR) is a consolidation of the Contract Performance Report (CPR) and the Integrated Master Schedule (IMS). The reports were combined in the hopes of achieving better integration of analysis between Earned Value Management (EVM) data and schedule data. Some other major differences between the CPR and IPMR include:

- CPR Formats 1 to 5 are now the IPMR Formats 1 to 5. There are a few content changes for Formats 1 to 5 which are mostly confined to Format 3. The Baseline Changes (Block 6.b.) row columns have been opened up for change detail content.

- The IMS becomes IPMR Format 6. There are additional schedule data elements that are required including specific data coding details.

- A new Format 7 has been added for time phased cost data (historical and future time periods). Format 7 is a monthly submission.

- The electronic data delivery format is changing from the ANSI X12 standard to the UN/CEFACT XML standard.

NASA's goal for implementing the IPMR is to enhance contractor integration of cost and schedule data, and to assist in bringing consistency across the government community for contractor reporting of EVM and schedule data.

The Integrated Program Management Report (IPMR) Data Item Description (DID) DI-MGMT-81861 (Rev A) provides instructions to contractors and other suppliers on how to prepare the IPMR. The IPMR DID was created by the Department of Defense (DoD) and is used across other federal agencies including NASA. It contains data for measuring contractors' cost and schedule performance on acquisitions. It may also be tailored for use on intra-government work agreements. It is structured around seven formats that contain the content and relationships required for electronic submissions.

This guide covers the applications of the IPMR, describes how to tailor it for use in NASA's Data Requirements Description (DRD) acquisition process, and provides clarification on the intent of the IPMR. This guide is applicable to all NASA contracts with a requirement for the IPMR.

Proposed changes to this document may be submitted to the NASA EVM Program Executive, Jon Fleming, at jon.f.fleming@nasa.gov. This document may be changed with NASA EVM Program Executive approval at any time.

NOTES:

All references to days are calendar days unless otherwise specified.

NASA does not use MIL-STD-881 for work breakdown structure (WBS) development. Where MIL-STD-881 is referenced, use the NASA WBS DRD as the basis for WBS. The NASA WBS DRD can be found in Appendix D of the NASA WBS Handbook (latest version) located at the NASA EVM website, https://www.nasa.gov/evm.

The IPMR DID can be found on the DoD EVM website at Policy and Guidance. For additional clarification on the intent of the IPMR DID, see section 4.0 of the DoD IPMR Implementation Guide, also located at that link.

The terms task and activity are used interchangeably throughout the document.

Tailoring is defined as customizing the areas that are optional or that need specific guidance. It is not to be misconstrued as deleting mandatory requirements.

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1.0 APPLICATION OF THE IPMR

1.1 Introduction

The IPMR is the primary means of communicating cost and schedule information between the contractor and NASA. The IPMR should always be carefully tailored to meet the needs of each individual project and should reflect how the contractor is implementing the seven formats as a project management tool to manage the contract's performance.

The primary challenge for NASA is to tailor the format reporting to actionable information for making management decisions. Careful attention is required during the solicitation/proposal and contract definitization stages to prepare the IPMR DRD.

The purpose of this guide is to support the DRD preparer in developing an IPMR DRD that supports NASA project management. It provides insight into the IPMR, identifies options for tailoring and defines instructions that must be specified for the supplier.

1.2 Factors for Consideration

The complexity of the project should be considered when determining the degree of tailoring that is appropriate for the IPMR data item for a given contract. The risk inherent to the project should be the prime consideration for tailoring the IPMR. Other factors to consider are the size of the contract, complexity of integration with other contract efforts, reliance on Government Furnished Equipment/Government Furnished Property (GFE/GFP), technology maturity, scope of work, and type of contract. NASA EVM Focal Points should be consulted when tailoring the IPMR to ensure program specific complexities and risks are accounted for. Contact information for NASA's EVM Focal Points is located at https://www.nasa.gov/evm/evmwg.

1.3 Applying the IPMR Formats

The application of the IPMR formats is based on the size/type of contract and the work scope. Requirements come from the NASA FAR Supplement (1834.201) and NPR 7120.5, 7120.7 and 7120.8. Format descriptions include the following:

- Format 1 defines cost and schedule performance data by product oriented Work Breakdown Structure.
- Format 2 defines cost and schedule performance data by the contractor's organizational structure (e.g., Functional or Integrated Product Team (IPT)).
- Format 3 defines changes to the Performance Measurement Baseline (PMB).
- Format 4 defines staffing forecasts.

- Format 5 is a narrative report used to provide variance analysis and the required analysis of data contained in Formats 1-4 and 6.
- Format 6 defines and contains the contractor's IMS.
- Format 7 defines the time-phased historical & forecast cost submission.

See the Department of Defense (DoD) IPMR Data Item Description (DID) for templates for IPMR Formats 1-4 at Policy and Guidance. Note that there are no standard templates for Formats 5, 6, and 7. In these cases, contractor formats are acceptable as long as the information specified in the DID and DRD is included.

EIA-748 Requirements	IPMR Requirements
Validation Required	All Formats Required Tailoring outside of the DID and the guide should be coordinated with the organizational EVM Focal Point
Compliance with guidelines; Validation not required	EVM and Formats 1, 3, 5, and 6 (IMS) and 7 Required Formats 2 and 4 Optional
Not required (optional at the discretion of the PM)	Format 5 Required (section 3.6.7 of IPMR DI-MGMT-81861A IMS Discussion and Analyis) Format 6 (IMS) Required EVM at the discretion of the Program/Project Manager Refer to Reporting for Contracts with No Earned Value Management Requirements

Table 1-1 Applying the IPMR Based on EIA-748 Requirements

2.0 APPLICATION OF THE IPMR BY CONTRACT

2.1 IPMR Application on Cost or Incentive Contracts Valued at Greater Than or Equal to $20M*

Overall, the IPMR DID is intended to be applied completely and not tailored unless as specified in this document or Table 1-1 for format applicability. Additional tailoring, if any, should be coordinated with the Organizational EVM Focal Point. See the NASA EVM Contracts Requirements Checklist at https://www.nasa.gov/evm/regulations for additional information regarding EVM application and IPMR requirements. **Note: Contracts supporting Science Mission Directorate (SMD) Mission Risk Class D space flight projects value at $150M or less (not*

including launch costs) are exempt from the EVM requirement. See the NASA EVM website for specific regulations to these requirements at https://www.nasa.gov/evm/regulations.

2.2 IPMR Application on Contracts Valued at Less than $20M

If an EVM reporting requirement is applied on cost or incentive contracts valued at less than $20M tailoring may be more flexible than for contracts required to comply with EIA-748.

2.3 IPMR Application Guidance on Contracts without EVM

Format 5, section 3.6.7 of IPMR DI-MGMT-81861A IMS Discussion and Analyis, and Format 6, the IMS, may be applied separately when EVM is not applicable to a contract. Format 6 is required for most contracts at NASA to manage schedule risk.

3.0 TAILORING THE IPMR DRD

The IPMR DID provides basic information for preparing the various IPMR formats. The DRD is used to tailor each IPMR to the specific needs of a NASA program or project. This section discusses various options for tailoring and defines the instructions that must be specified in the DRD.

While DRD forms are unique to each NASA Center, the basic information that must be included in the IPMR DRD is common. Centers may elect to establish standard requirements in a DRD while others may allow projects to select their own approach. This guide is designed to support both scenarios.

Appendix A includes a sample DRD for a contract requiring all seven formats of the IPMR. Appendix B includes a sample DRD for a contract requiring only format 6 (IMS) of the IPMR.

3.1 Description/Use

A DRD template may require input for a description of the IPMR and its intended use. The content of this paragraph can be unique to each Center, however the paragraph below provides suggested wording that can be used or modified.

"To provide information for managing the performance of a project or contract by: (1) integrating cost and schedule performance data with technical performance measures, (2) assessing the magnitude and impact of actual and potential problem areas causing significant cost and schedule variances, and (3) communicating project status from the contractor/supplier to the customer/sponsor and to higher management"

3.2 Distribution

Each DRD must inform the supplier where to send the IPMR. In this section, indicate the distribution requirements for the delivered document. Individual organization codes or a separate distribution matrix may be referenced here. If "Per Contracting Officer's letter" is indicated, the Contracting Officer will provide specific distribution requirements to the contractor via a separate letter. This method is preferable because it does not necessitate a contract modification to change distribution requirements.

3.3 Initial Submission

Each DRD must also tell the supplier when the first submission of the IPMR is due. Normally, the first submission can reasonably be expected to be received between 60 and 90 calendar days after authority to proceed, however, it may be shorter or longer depending on the size, length, complexity, and other factors governing the effort.

The DRD preparer should consider when the contractor/supplier is expected to establish a performance measurement baseline and record performance measurement data. Allow for a full accounting period of reporting after baseline establishment and add to this the number of days it takes the contractor/supplier after the end of the full accounting period to process the data and submit the report. Contractors/suppliers typically follow an accounting calendar when establishing the IPMR month end cut off dates to record technical accomplishment and actual cost of work performed. The end of an accounting cycle does not necessarily coincide with the end of the month. Thus, the verbiage ensures that the customer/sponsor receives timely data within a specified time after the accounting period's close, since some accounting months may conclude several days or even a week prior to or after the end of the calendar month.

In NASA, oftentimes contract definitization can take a long time, and it is important that IPMR data is required during this timeframe to provide insight into work being accomplished. If baseline establishment is expected to take longer than 60 calendar days then require the contractor/supplier to perform interim planning and require the first submission NLT than 90 days following authority to proceed.

3.4 Subsequent Submissions

The DRD must also specify to the supplier IPMR reporting frequency as well as the date of delivery.

3.4.1 Reporting Frequencies: The normal reporting frequency for all formats is monthly. Some projects/contractors may elect to use weekly EVM data and offer to provide it to the customer, and this can be negotiated and specified in this section.

3.4.2 Date of Delivery: Specify the number of days that is expected of the contractor/supplier, after the end of the accounting period, to process the data and submit the report. This requirement should be tailored through contract negotiations to allow submission as early as practicable. Normally, this can be as early as 10 working days or as late as 17 working days following the end of the accounting period, provided that the supplier/contractor and sponsor/customer agree that the complexity of the effort and/or integration of externally derived/subcontractor performance data warrant additional time and would yield more accurate performance data. Note that lagging subcontractor cost and schedule data is not preferred. It is recommended that all subcontractor costs be reported within the same fiscal month, if practical.

3.4.3 Flash Data (Quick Look Report): Indicate whether subsequent submissions shall include an advanced "quick look" report and specify applicable formats and the days required following the end of the accounting period. A flash report is an optional quick-look of advanced assessment of schedule and cost information before the final delivery. It omits Format 5 and, if desired by NASA and agreed to by the contractor, the DRD may specify that Format 1 (and optionally Formats 2, 3, 4, 6, and 7) be delivered as flash data within 7 working days with the remaining formats delivered as specified. Flash reports may be used to determine the reportable variances under the NASA selection process. The term "Flash" indicates preliminary information that does not need to match the final submission values. Therefore, if quick look reports are used, then it is also necessary to require the same formats for the final monthly submission as well.

3.5 Interrelationship

The IPMR is interrelated with numerous other deliverables on a contract, and the DRD must make the supplier aware of each of those. Enter in this section the applicable Statement of Work/Performance Work Statement (SOW/PWS) paragraph numbers, other portions of the contract, or other DRD's that reference or interrelate with this requirement. While this requirement is unique to each contract, some suggested wording is below.

" *To ensure an integrated approach to risk management, the information within the data provided by this IPMR DRD shall be integrated with the Contract Work Breakdown Structure (CWBS), the Integrated Master Plan (IMP) if applicable, Integrated Master Schedule (IMS), Risk Management Processes, Plans and Reports (where required), Probabilistic Risk Assessment*

Processes and Reports (where required), the Cost Analysis Data Requirement (CADRe) and the Monthly/Quarterly Contractor Financial Management Reports (533M/Q). The Financial Management Reports shall include a reconciliation between the Monthly Contractor Financial Management Report/Quarterly Contractor Financial Management Report (533M/533Q) and the IPMR, which shall be submitted as an attachment to the 533M/533Q reports. The IPMR reporting levels shall be in accordance with the Contract WBS as specified in the contents section of the DRD."

3.6 Applicable Documents

A supplier must be aware of other documents applicable to the preparation of the IPMR requested by the DRD. Applicable documents should provide content or format requirements for the deliverable document. It is critical that the DRD preparer list the IPMR DID in this section. Example wording to include additional suggestions are below.

- DI-MGMT-81861 (Rev A) Data Item Description for Integrated Program Management Report, available at the following web site: Policy and Guidance
- EIA-748, current version at time of award (see https://www.acq.osd.mil/asda/ae/ada/ipm/policy-guidance.html#evms-guidelines for additional information)

3.7 Contents

This section is used to tailor the requirements in the IPMR, including *specifying which formats are required*. Tailoring is necessary to ensure reporting requirements are going to provide the proper level of cost/schedule visibility. Each project/contract has its own unique challenges and reporting requirements should be customized to ensure the right amount of performance visibility is obtained for mitigating risk while minimizing the amount of data required. Provided below is a description of each format and tailoring options.

3.7.1 General Format Tailoring

3.7.1.1 Security Requirements: If a contract has specific security requirements related to delivery and marking of the IPMR, those must be specified in the DRD.

3.7.1.2 Scope Contained in the IPMR: In most cases the data reported in the IPMR submission is the complete contractual scope, and if not specified in the DRD, is the default. However, there may be cases where limited technical scope can also be reported if applicable, e.g. applicable Task Orders on an ID/IQ type contract. In this case, the DRD must specify which limited scope is required in the IPMR submission.

3.7.1.3 Dollars and Hours Reporting: The default IPMR reporting (non-Format 4) is in dollars. Optionally, a separate Format 1-4, 5, and 7 may be required in hours. If the program or project wants to see data reported in hours as well as dollars, then that must be specified in the DRD. Note that if a separate hours based Format 1 is required, the DRD will specify the basis for variance analysis in Format 5 (hours or dollars).

3.7.1.4 Human Readable Format: If the program or project wants to see human-readable (non-XML) IPMR submissions for Formats 1-4, that must be specified in the DRD.

3.7.1.5 Subcontractor IPMR Submissions: The DRD must specify whether the NASA program/project wants to receive subcontractor IPMR submissions directly from the subcontractor or through the prime contractor. This requirement may be specific to one format (e.g. IMS Format 6) or any combination of IPMR formats.

3.7.2 Format 1 Tailoring: There are two areas that must be tailored in the Format 1 – WBS reporting level and G&A/COM levels. The tailoring must be specified in the DRD.

3.7.2.1 Format 1 Reporting Levels: The reporting level specified is normally WBS level 3, except for high cost or high risk items. Alternatively, the DRD may specify that the reporting is below the WBS reporting level and may be as low as the contractor defined control account level. Normally lower level control account reporting option, if selected, should be supplemented by a WBS dictionary at the same level to understand the control account title and scope. Note that the control account and work package levels, when applicable, is obtained at no additional cost to NASA. Lower level reporting, if applicable, is to support additional NASA analysis and does not require variance analysis at this level of reporting. WBS elements being reported should be evaluated periodically and changed, as necessary, to ensure that the IPMR continues to satisfy the PM's needs. It is not necessary for reporting levels in different legs of the WBS to be the same. Management needs for performance visibility will determine the appropriate level.

3.7.2.2 Format 1 General and Administrative (G&A) and Cost of Money (COM) Levels: The default requirement is the contractor may choose to report G&A and COM as add or non-add (i.e. WBS costs may include G&A and/or COM). NASA may specify G&A and/or COM to be reported as add or non-add.

3.7.3 Format 3 Tailoring: There are two areas that must be tailored in the Format 3 – the definition of significant changes and the designation of time periods for reporting. Both of these must be defined in the DRD.

3.7.3.1 Definition of "Significant": The NASA project must determine a value for significant baseline changes that require formal explanation in a Format 5, and that value must be defined in the DRD. Usually a value of +/-5% is common, however a project may set a higher or lower threshold based on management needs. As an example, NASA may require that significant differences (absolute values exceeding +/- 5%) between the PMB at the beginning and end of each specified period shall be explained in Format 5. If NASA does not specify in the DRD, the contractor will define the meaning of "significant" for reporting Format 3 changes.

3.7.3.2 Designation of Time Periods for IPMR Formats 3 & 4: In the IPMR Formats 3 and 4, data is broken out by specified periods for reporting purposes. The NASA project must determine how those time periods should be defined in the DRD to best support management needs. Typically, the DRD specifies that the next six months are separately identified, followed by either quarterly, six month or annual increments to complete. If desired, specify that the Formats 3 and 4 projections be broken out by month until the end of the contract in the electronic format. The following paragraph provides an example of how the reporting periods might be specified in the DRD.

"Formats 3 and 4 shall contain projections by month for columns 4-9, then by three-month periods for columns 10-11, and then by 12-month periods for the next two subsequent periods (columns 12 and 13), and the remainder of the contract for the last period (column 14)."

3.7.4 Format 4 Tailoring: There are three areas in Format 4 tailoring that must be defined for the supplier – the designation of significant changes, reporting units, and reporting structure.

3.7.4.1 Designation of "Significant": The NASA project must determine a value for significant staffing profile changes that require formal explanation in a Format 5, and that value must be defined in the DRD. Usually a value of +/-5% is common; however, a project may set a higher or lower threshold based on management needs. As an example, NASA may require that significant differences (absolute values exceeding +/- 5%) shall be explained in Format 5. If NASA does not specify in the DRD, the contractor will define the meaning of "significant" for reporting Format 4 changes.

3.7.4.2 Format 4 Reporting Units: NASA may specify in the reporting units in the DRD to be in hours, equivalent people, or total headcount. If not specified, equivalent people are the default unit.

3.7.4.3 Format 4 Structure: The default for Format 4 reporting structure is the same as that defined in Format 2. NASA may optionally define an alternate structure for Format 4.

3.7.5 Format 5 Tailoring: There are multiple ways to establish variance analysis parameters to ensure that the NASA project management team has the necessary insight into variance drivers on a project. These options are discussed below and the method selected by the project must be defined in the DRD. NASA must specify any one of several ways to identify variance analysis reporting requirements.

3.7.5.1 Fixed Number of Variances: Specify the number of variances to be analyzed, e.g., top five, seven, ten, etc. The significance of these variances can be based either on current month, cumulative to date, or at-completion dollar or percentage values, or a combination of both, but assessments of potential risk areas as identified through the customer/supplier or management review process should also be taken into account. Any number of significant variances may be selected, but the customer should be careful to select only the number that it feels are necessary. Rankings should be periodically reviewed (e.g., every 6 months), and changed based on performance to date according to management's needs.

Example 1. "Format 5 – The supplier shall provide narrative explanations of the top 5 current, cumulative, and at completion variances ranked in descending order of criticality (i.e., the most critical elements will be at the top of the list and the least critical will be at the bottom)."

Example 2. "Format 5 shall contain rankings of cost and schedule drivers:

1. Reporting elements that equate to 50 percent of the list of the schedule drivers (i.e., if 20 schedule drivers are listed, the 10 most critical schedule driver variances over $100k will be addressed). If there are 10 or less schedule driver variances, all variances over $100k shall be addressed.

2. Reporting elements that comprise the top 50 percent of the cost drivers (i.e., if 20 cost drivers are listed, the top 10 most critical cost driver variances over $100k). If there are 10 or less cost driver variances, all cost variances over $100k shall be addressed.

3. Impact to the contract Estimate-at-Complete (EAC) for all cost and schedule driver variances addressed.

4. Explanation for all variances at completion over $500k."

Example 3. "Format 5 – Problem analyses and narrative explanations shall be required for Format 1 elements when cost/schedule variances fall within the following categories:

- Three largest current cost variances exceeding +/- $50K and +/- 5%

- Three largest current schedule variances exceeding +/- $50K and +/- 5%
- Three largest cumulative cost variances exceeding +/- $100K and +/- 10%
- Three largest cumulative schedule variances exceeding +/- $100K and +/- 10%
- Three largest variances at completion exceeding +/- $250K and other cost and schedule variances or technical performance issues that are causing or are likely to cause significant schedule delays or cost overruns."

3.7.5.2 Percentage or dollar variance thresholds: Select current, cumulative, and at-completion variances based on percentage or dollar thresholds. For example, all current month, cumulative or at-completion variances greater than +/-10% may be selected for analysis. A variation of this method is to select variances based on both percentage and dollar thresholds. For example, all current, cumulative or at-completion variances greater than +/-10% and +/-$500K may be selected for analysis. Different combinations of this approach can be identified in a table as depicted below.

Example: Thresholds for variance analysis will be applied at the reporting level for schedule variance (current period and cumulative to date) and cost variance (current period, cumulative to date, and at completion). Those thresholds are as follows:

	Current Period	Cum-to-date	At Completion
Schedule Variance	A% and $B	E% and $F	N/A
Cost Variance	C% and $D	G% and $H	I% and $J

Table 1-2 Cost and Schedule Variance Thresholds

3.7.5.3 Post delivery of flash data selection of specific variances: Select variances for analysis only after reviewing "quick look" Format 1 and/or 2. Under this method, the flash data is delivered promptly after the supplier's accounting period ends. Once the project has reviewed this performance data, it selects specific variances for analysis. This method may be the most efficient since NASA can pinpoint areas to be analyzed. It is also the most flexible because there may be some months when a review of the performance data yields few or no variance analysis candidates. This method should only be used if NASA is certain it has sufficient resources to review each monthly IPMR promptly to select and, in a timely manner, notify the supplier of the variances for which explanations are needed.

Note that if this method is selected, the DRD must specify the due date for the quick look (normally 5-7 working days after the close of the contractor's accounting month), the formats required (Format 1 and/or 2), and when the selection of variances will be provided by NASA (normally 10 working days prior to contractor delivery date).

3.7.5.4 Other tailoring considerations: In addition to the standard recommendations for tailoring selection of the variance analysis, the following includes other methods for consideration.

1. Consider the nature of the contract work. If concerned more about schedule performance than cost performance, the customer should limit variance analysis of cost and variance at completion variances, and should focus the analysis on schedule variances.

2. To emphasize critical scheduling information, include the following instruction: "Schedule variance narratives shall identify significant missed milestones, impact to major milestones, mitigation plans to be implemented, and expected recovery dates."

3. To avoid information repetition from month to month, include the following instruction: "If there are no changes to the reportable element problem analysis, expected impacts, or corrective action status then specify, 'no changes since the last reported analysis' and reference the IPMR date when the narrative was reported."

Formal or informal feedback to the supplier on a regular basis leads to continued improvement in the quality of the Format 5. The DRD should include a statement that cost and schedule variance analysis thresholds be reviewed periodically (normally semiannually) to determine if they continue to meet NASA's information needs. If they do not, the thresholds should be changed at no cost to NASA.

3.7.5.5 IMS Discussion and Analysis: The Format 5 must include a discussion and analysis of the IMS. The default is for the supplier to discuss critical/driving paths, baseline schedule variance, schedule margin, changes to task activity codes and data dictionary, schedule risk assessment results, and a health analysis. Additional instructions may be provided in the DRD depending on the needs of the NASA project.

3.7.5.5.1 Critical and/or Driving Paths within the Project IMS: The DRD may extend critical path analysis to include identification and analysis of all near (secondary, tertiary, etc.) critical and/or driving paths whose total slack (float) values are within a set number of work days (10 is nominal) or less of the primary critical path. Another viable method is for the

project to establish a fixed number of critical and/or driving paths (e.g. 1-5) to be analyzed and reported. The format of this analysis may also be specified in the DRD. For example, the project may request that the analysis be submitted in a waterfall format and organized in a manner such that the path with the least amount of slack is delineated first and followed by each successive path according to total slack values.

3.7.5.5.2 Results of Internal IMS Health Analysis: A NASA project may wish to specify the contents of an internal health analysis report in the DRD. Typical IMS health analysis might include; 1) the total number of tasks, milestones, and non-detail (e.g. summary, hammock, rollup, etc.) activities contained in the schedule, 2) the number of completed tasks and milestones, 3) the number of tasks and milestones to be completed, 4) the number of tasks and milestones that have no predecessor and/or no successor relationships, 5) the total number of tasks and milestones that have a total float (slack) value greater than 25% of the remaining duration of the total program/project schedule, 6) the total number of non-detail (e.g., summary, hammock, rollup, etc.) activities that have assigned predecessor or successor logical relationships, 7) the total number of tasks and milestones that have assigned constraint (forced or fixed) dates, and 8) in-process tasks and milestones behind the status date that require a new forecast.

3.7.5.6 Temporary additional variance analysis: There may be times when additional variance analysis is required to cover emerging trends in the project. In this case, NASA may define a time period restriction in the DRD for the supplier to be required to report additional variance analysis. The recommendation is that this be limited to six months or less.

3.7.6 Format 6 (IMS) Tailoring: There are five areas within the IMS that may require tailoring in the DRD – subcontractor statusing, Level of Effort (LOE) identification, current driving path, Schedule Risk Assessment, and IMS fields. There are also scheduling considerations that the DRD preparer should take due to NASA's unique environment.

3.7.6.1 Subcontractor Statusing: NASA may specifically define in this requirement that both the prime and subcontractor (if any) use the same status date (time-now date) in all monthly IMS submittals. It is recommended that the prime and subcontractor status consistently for a realistic critical path.

3.7.6.2 Driving Path: If the NASA project uses driving paths, the DRD must specify the contract or project milestones to be used. Milestones and other major project events that are typically considered for driving path analysis include major project life cycle reviews (SRR, PDR, CDR, etc.), start of flight hardware assembly, test and launch operations (ATLO), starts of various major project tests, subsystem deliveries, software validation complete, etc. (NOTE: If

driving paths are identified through the use of assigned task constraints (limited or fixed start/finish dates) within the IMS, then it should be understood by the contractor that those constraints should also be removed from the IMS network after identification of driving paths is complete). Constraints that are left within the IMS unnecessarily will hinder or prevent accurate project critical path identification and analysis.

3.7.6.3 Schedule Risk Assessment (SRA) Tailoring

3.7.6.3.1 SRA three-point estimates: An SRA requires a task/activity to have a three-point duration estimates (most likely, minimum, and maximum). The default is to conduct an SRA for tasks/activities identified as being part of the primary, secondary, and tertiary driving paths. The NASA DRD may modify this requirement by limiting the number of paths to be considered or by identifying additional paths or portions of the IMS that require three-point estimates based on associated risk considerations.

3.7.6.3.2 Frequency of SRA: The default is to require and SRA before conducting an Integrated Baseline Review (IBR), processing an Over Target Baseline/Over Target Schedule (OTB/OTS), or implementing a Single Point Adjustment (SPA), if any. A NASA project may require an SRA at different times, such as a major replanning event, prior to selected critical milestones like Preliminary Design Review (PDR), Critical Design Review (CDR), etc., or even on a regular recurring basis such as annual budget/schedule validation process. The frequency of the SRA aside from the default time periods must be defined in the DRD.

3.7.6.4 NASA Required IMS Fields: NASA can specify the supplier to use certain fields in the IMS for specific information, and the DRD must instruct the contractor which fields to use. The following fields are required per DI-MGMT-81861A: control account/work package, subcontractor tasks, justifications of lead, lag, and constraints, earned value technique, risk mitigation tasks, and critical and driving paths. NASA may elect to eliminate some standard requirements, such as fields to identify critical and driving paths due to the on-going dynamic nature of project work reflected within the schedule. Other fields, such as project phase, organizational department, and Planning Packages, etc. can also be required in the DRD.

3.7.6.5 Other Scheduling Considerations: Due to NASA's unique projects, there may be some other areas where a project should consider tailoring in the DRD as discussed below.

3.7.6.5.1 Schedule Margin: A project may want to define in the DRD, acceptable locations for placing schedule margin aside from the default as the last task/activity before the ending contract event or end item deliverable. Other acceptable locations for placing smaller amounts of schedule margin are prior to high level project milestones, such as; PDR, CDR, System I&T Complete, etc.

3.7.6.5.2 Detailed Schedules: Due to a wide variation of planning and scheduling practices across the contractor community, a project schedule may contain long duration work packages and planning packages. In this case, the DRD should require that vertical and horizontal integration be established and maintained at the task/milestone level of detail. This will provide better definition in task sequence and greater accuracy in critical path identification.

3.7.6.5.3 Summary Master Schedule Format: Since the standard IPMR content description for a project's Summary Master Schedule allows for a wide variation resulting products, it is recommended that the NASA DRD provide more specific content detail for this IMS product deliverable. Some sample wording: The IMS deliverable should provide a Top-level, Gantt chart summary that is arranged by WBS that reflects all contract and controlled milestones, major program/project phases (i.e.; design, fabrication, integration, assembly, test, etc.) and all end item deliveries. It shall reflect, either by manual creation or by automated summarization, a vertically integrated rollup of intermediate and detailed schedule data. It should be noted that if the contractor's monthly process is to manually generate the summary master schedule, then their update process should include the necessary steps to ensure that all schedule data included is consistent with the data contained within the automated detailed IMS database.

3.7.7 Format 7 Tailoring

3.7.7.1 Format 7 Reporting Level: Format 7 is required at the same level as Format 1 reporting. Optionally, the NASA DRD may define reporting at a lower level, e.g. the Control Account level unique to Format 7.

3.7.7.2 Subcontractor Information: Specify in the DRD if the prime contractor is required to submit Format 7 data from separate subcontractor(s).

3.8 Format

The DRD must tell the supplier the format of the data to be provided. The IPMR DID requires all formats to be submitted electronically in accordance with the DoD-approved XML schemas. It also requires Formats 5, 6 and 7 to be submitted in the contractor's native electronic file format. There are additional options for data format that must be specified in the DRD as described below.

3.8.1 Contractor Formats: If contractor formats can be substituted for IPMR formats that must be specified in the DRD. Be sure to also require that any contractor formats must

contain all the required data elements at the specified reporting levels in a form suitable for NASA management use.

3.8.2 Reporting Level for Cost XML: The reporting level is defined in the WBS DRD; however the NASA project may request additional detail in the Cost XML file. If this is the case, the DRD must specify that level, with the work package being the lowest level appropriate.

3.8.3 Basis for Variance Analysis: The DRD must also specify the basis for variance analysis, either hours or dollars.

3.8.4 Human Readable: NASA may also ask for Formats 1-4 in a human readable format (non-XML). If this is the case those instructions must be included in the DRD.

3.8.4 Major Subcontract(s): If there is a major subcontract(s) on the contract, the DRD must also specify that IPMRs required from subcontractors shall also be provided electronically using the same electronic formats stated above.

Appendix A: Sample IPMR DRD – All Formats

DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO**: **ISSUE:**
2. **DRD NO: STD/MA-IPMR**
3. **DATA TYPE:** 3
4. **DATE REVISED:**
5. **PAGE:** 1 of 4
6. **TITLE:** Integrated Program Management Report (IPMR)
7. **DESCRIPTION/USE:** To communicate program cost and schedule information between the prime contractor and the Government. It may also be tailored for use on intra-government work agreements. It consists of seven formats that provide program managers information to: (1) integrate cost and schedule performance data with technical performance measures, (2) identify the magnitude and impact of actual and potential problem areas causing significant cost and schedule variances, (3) forecast schedule completions, and (4) provide valid, timely program status information to higher management.
    - Format 1 defines cost and schedule performance data by product oriented Work Breakdown Structure (WBS).
    - Format 2 defines cost and schedule performance data by the contractor's organizational structure (e.g., Functional or Integrated Product Team (IPT)).
    - Format 3 defines changes to the Performance Measurement Baseline (PMB).
    - Format 4 defines staffing forecasts.
    - Format 5 is a narrative report used to provide the required analysis of data contained in Formats 1-4 and 6.
    - Format 6 defines and contains the contractor's Integrated Master Schedule (IMS).
    - Format 7 defines the time-phased historical & forecast cost submission.
8. **OPR:** MSFC/CS10
9. **DM**:
10. **DISTRIBUTION**: Per Contracting Officer's letter
11. **INITIAL SUBMISSION**: Preliminary IMS, Format 6, is due with proposal. The first submission (Formats 1-6) is due between 60 and 90 calendar days after the authority to proceed (ATP); pending government approval.
12. **SUBMISSION FREQUENCY**: Monthly by the 12th working day after the close of the contractor's accounting month.
13. **REMARKS**: The IMS (Format 6) will be baselined after ATP as agreed to by both parties and not to exceed 90 days after ATP. Reference is made to NPR 7120.5 (Current Revision), *NASA Space Flight Program and Project Management Requirements,* NPR 7120.7 (Current Revision)*, NASA Information Technology Program and Project Management Requirements,* NPR 7120.8*,* (Current Revision), *NASA*

Research and Technology Program and Project Management Requirements, NASA Schedule Management Handbook (current revision) and *NASA IPMR Data Requirements Description (DRD) Implementation Guide* available at https://www.nasa.gov/evm . These documents shall be used as guides in preparation of the IPMR.

14. **INTERRELATIONSHIP**: To ensure an integrated approach to risk management, the information within the data provided by this IPMR DRD shall be integrated with the following DRDs when required: DRDs STD/MA-WBS, *Work Breakdown Structure (WBS) and Dictionary*, STD/MA-PRP, *Project Activity Plan*, STD/MA-RMP, *Risk Management Plan*, and STD/MA-FMR, *Financial Management Reports* (533M and 533Q). The *Financial Management Reports* (DRD STD/MA-FMR) shall include reconciliation between the (533M/533Q and the IPMR, which shall be submitted as an attachment to the 533M/533Q reports and shall also be included in Format 5 of the IPMR.

15. **DATA PREPARATION INFORMATION**:

15.1 **SCOPE**: The IPMR is the primary means of communicating cost and schedule performance and project health information between the contractor and National Aeronautics and Space Administration (NASA).

15.2 **APPLICABLE DOCUMENTS**: Data Item Description, Integrated Program Management Report, DI-MGMT-81861 (Rev A), available at the following web site: NASA EVM Reporting Guidance | NASA.

15.3 **CONTENTS**: All IPMR Formats (Formats 1-7) are required. The IPMR shall include all data pertaining to all authorized contract work, including both priced and unpriced effort that has been authorized at a not-to-exceed amount in accordance with the Contracting Officer's direction. The contractor shall provide monthly IPMRs per DI-MGMT-81861 (Rev A) except as modified in this section.

FORMAT 1 INSTRUCTIONS: Provide reporting at level 3, except for high cost or high risk items per the Contract WBS DRD, STD/MA-WBS, and Include General and Administrative (G&A) and Cost of Money (COM) as non-add.

FORMAT 2 INSTRUCTIONS: Use organizational categories, e.g. IPT or functional organization including each subcontractor with EVMS flowdown (NFS 1852.234-2) and each major vendor separately as a non-add item.

FORMAT 3 INSTRUCTIONS: Significant differences (absolute values exceeding +/-5%) between the PMB at the beginning and end of each specified period shall be explained in Format 5. Use quarterly periods for Block 6, columns (10) through (11), yearly periods for columns (12) through (13), and the remainder of the contract for column (14).

FORMAT 4 INSTRUCTIONS: Significant changes that require explanations in Format 5 are those that change the absolute value of the projected total staff-months at completion of any organizational or functional category by more than +/-5%. Use quarterly periods for Block 5, columns (10) through (11), yearly periods for columns (12) through (13), and the remainder of the contract for column (14).

FORMAT 5 INSTRUCTIONS: The reporting level identified in Format 1 is the level where variance reporting thresholds are applied. Variance analysis shall be required for:

1. Three largest current cost variances exceeding +/- $50K and +/- 5%

2. Three largest current schedule variances exceeding +/- $50K and +/- 5%
3. Three largest cumulative cost variances exceeding +/- $100K and +/- 10%
4. Three largest cumulative schedule variances exceeding +/- $100K and +/- 10%
5. Three largest variances at completion exceeding +/- $250K and other cost and schedule variances or technical performance issues that are causing or are likely to cause significant schedule delays or cost overruns.

The required narrative explanations and variance thresholds will be reviewed periodically, and may be adjusted by contract modification with no change in contract price. All reportable WBS variance narratives shall adequately address the root cause of the variance; adequately discuss any schedule variance in terms of float and impact to the program critical path, if any, and quantitatively explain the causes that account for at least 70% of the variance exceeding the threshold. If there are no changes to the reportable element problem analysis, expected impacts, or corrective action status, then specify "no changes since the last reported analysis" and reference the IPMR date when the narrative was initially reported.

Schedule Analysis: IMS Discussion and Analysis) to include the results of the contractor's internal health analysis. This analysis shall include counts for the following schedule assessment indicators: 1) the total number of tasks, milestones and non-detail (e.g., summary, hammock, rollup, etc.) activities contained in the schedule, 2) the number of completed tasks and milestones, 3) the number of tasks and milestones to be completed, 4) the number of tasks and milestones that have no predecessor and/or no successor relationships and document why, 5) the total number of tasks and milestones that have a total float (slack) value greater than 25% of the remaining duration of the total program/project schedule, 6) the total number of non-detail (e.g., summary, hammock, rollup, etc.) activities that have assigned predecessor or successor logical relationships, 7) the total number of tasks and milestones that have constraint (forced or fixed) dates, and 8) provide explanations and corrective actions.

Schedule Risk Analysis (SRA): SRA shall be conducted prior to System Requirements Review (SRR), Preliminary Design Review (PDR) and Critical Design Review (CDR). Critical and driving path analysis should also include identification and analysis of the primary critical path and all near (secondary) critical paths whose total slack (float) values are within 10 working days or less of the primary critical path. The analysis shall be submitted in a waterfall format and organized in a manner such that the path with the least amount of slack is delineated first and followed by each successive path according to total slack values. When driving path analysis is desired, the specified project milestones and/or major project events are to be identified for contractor reporting. NOTE: If driving paths are identified through the use of assigned task constraints (limited or fixed start/finish dates) within the IMS, then it should be removed from the IMS after identification/explanation of driving path is complete. Constraints that are left within the IMS unnecessarily will hinder or prevent accurate project critical path identification and analysis.

Reconciliation between the Financial Management Report (533M/533Q), DRD STD/MA-FMR, and the IPMR (Formats 1-4) shall be included.

In some cases, additional variance analysis is required to cover emerging trends. In this case, the supplier will be required to report additional variances for a time period of 6 months or less.

FORMAT 6 INSTRUCTIONS:

The IMS shall include all discrete work at a minimum. Subcontractors with EVMS flowdown shall be included with sufficient detail to develop a realistic critical path.

Summary Master Schedule: The schedule shall include a top level Gantt chart summary arranged by WBS and that reflects all contract and controlled milestones, major program/project phases (i.e. design, fabrication, integration, assembly, test, etc.) and all end item deliveries. It shall reflect either by manual creation or by automated summarization, a vertically integrated rollup of intermediate and detailed schedule data.

Detailed Schedules: The detailed schedules shall contain vertical and horizontal integration at the task/milestone level of detail (vice the work package/planning package level) to provide better definition in task sequence and greater accuracy in critical identification.

IMS Fields: Additional IMS fields required in the schedule are WBS, responsible organization, and planning package identification. A field identifying critical path is not required. The WBS in the IMS shall be consistent with the EVMS WBS within the Format 1. If the IMS WBS field is not directly related, then a userdefined WBS field traceable to the EVMS WBS must be added (see DI-MGMT-81861A paragraph 3.7.1.3 IMS Content Elements).
Relationships/Dependencies: All discrete tasks/milestones except for the start and end of the contract *or for interim receipt and delivery events to/from external entities* shall have at least one predecessor and successor.

Schedule Margin: If schedule margin is included in the IMS, it must be as a defined task and clearly labeled as “Schedule Margin” or ”Schedule Reserve”. The number of schedule margin tasks should be minimal with most of the margin duration placed as the last task before the ending contract event or the end item delivery. Other acceptable locations for placing smaller amounts of schedule margin are prior to high level project milestones, such as Preliminary Design Review (PDR), Critical Design Review (CDR), System I&T Complete, etc.

Driving Path: Driving path analysis will be used for the following major project milestones: PDR, CDR, and ORR. Driving path constraints shall be removed from the IMS network after identification of driving paths is complete.

Schedule Risk Assessment (SRA): An SRA shall be conducted at System Requirements Review (SRR), PDR and CDR.

FORMAT 7 INSTRUCTIONS: Format 7 is required at the same level at Format 1 reporting. Time-phased future period Budgeted Cost for Work Scheduled (BCWS) and Estimate to Complete (ETC) by Element of Cost (EOC).

SUBCONTRACTOR REPORTS: All subcontractor IPMR formats must be included with the primes' IPMR or reported directly to NASA.

FORMAT: Contractor formats can be substituted for IPMR formats whenever they contain all the required data elements at the specified reporting levels in a form suitable for NASA management use. The IPMR shall be submitted electronically. IPMR formats shall be completed according to the instructions outlined in DI-MGMT-81861 (Rev A). The UN/CEFACT XML file must be reported at the control account level. Report Formats 1-4 and 7 by dollars, Format 4 by full-time equivalents. Formats 1-4 will also be submitted in human readable formats such as word processor, spreadsheet or PDF file. Format 5 shall be submitted in contractor native format. The basis for variance analysis is in dollars. Format 6 shall be submitted in the contractor's native schedule electronic file format and the UN/CEFACT XML. IPMRs required from subcontractors shall also be provided electronically using the same instructions and electronic formats stated above.

MAINTENANCE: Change shall be incorporated by complete reissue.

NOTE TO DRD PREPARER (*Not to be included in DRD*).

This report shall be required for contracts when EVM is required in accordance with NPR 7120.5 and NFS 1834.201.

This report is not required for grants, or contracts of less than 12 months duration, non- developmental level-ofeffort engineering support services, steady-state operations, basic and applied research, and routine services such as janitorial services or grounds maintenance services; however, application is at the discretion of the program/project manager per NPR 7120.5.

Special tailoring to this DRD shall be incorporated only as-needed to meet unusual and/or specific program/project data needs and shall be coordinated with the responsible OPR. See the NASA IPMR DRD Implementation Guide located on the NASA EVM website, https://www.nasa.gov/evm/guidance, for more instructions and tailoring options.

Appendix B: Sample IPMR DRD – IMS Only

DATA REQUIREMENTS DESCRIPTION (DRD)

1. **DPD NO**: **ISSUE:**
2. **DRD NO: STD/MA-IPMR**
3. **DATA TYPE:** 3
4. **DATE REVISED:**
5. **PAGE:** 1 of 3
6. **TITLE:** Integrated Program Management Report (IPMR) – IMS Only
7. **DESCRIPTION/USE:** To communicate program cost and schedule information between the prime contractor and the Government. Format 6 defines and contains the contractor's Integrated Master Schedule (IMS).
8. **OPR:** MSFC/CS10
9. **DM**:
10. **DISTRIBUTION**: Per Contracting Officer's letter
11. **INITIAL SUBMISSION**: Preliminary IMS, Format 6, is due with proposal. The first submission is due between 60 and 90 calendar days after the Authority to Proceed (ATP); pending government approval
12. **SUBMISSION FREQUENCY**: Monthly by the 12th working day after the close of the contractor's accounting month.
13. **REMARKS**: The IMS (Format 6) will be baselined after ATP as agreed to by both parties and not to exceed 90 days after ATP. The IMS reporting levels and frequency shall be in accordance with the Contract WBS (DRD STD/MA-WBS) and contract provisions. Reference is made to NPR 7120.5 (Current Revision), *NASA Space Flight Program and Project Management Requirements,* NPR 7120.7 (Current Revision)*, NASA Information Technology Program and Project Management Requirements,* NPR 7120.8*,* (Current Revision), *NASA Research and Technology Program and Project Management Requirements, NASA Schedule Management Handbook* (Current Revision) and *NASA IPMR DRD Implementation Guide* available at https://www.nasa.gov/evm . These documents shall be used as guides in preparation of the IPMR.
14. **INTERRELATIONSHIPS**: To ensure an integrated approach to risk management, the information within the data provided by this IPMR DRD shall be integrated with the following DRDs when required: DRDs STD/MA-WBS, *Work Breakdown Structure (WBS) and Dictionary*, STD/MA-PP, *Project Plan*, and STD/MA-RMP, *Risk Management Plan*.
15. **DATA PREPARATION INFORMATION:**

15.1 **SCOPE**: The IPMR is the primary means of communicating cost and schedule performance and project health information between the contractor and National Aeronautics and Space Administration (NASA).

15.2 **APPLICABLE DOCUMENTS:** Data Item Description, Integrated Program Management Report, DI-MGMT-81861 (Rev A), available at the following web site: https://www.acq.osd.mil/asda/ae/ada/ipm/policy-guidance.html#dids-cdrls-standards. Only the sections related to Format 6 are applicable, DID sections 3.6.7 and 3.7.

15.3 **CONTENTS**: Only IPMR Format 5 Section 3.6.7 and Format 6 are required. The IPMR shall include all data pertaining to all authorized contract work, including both priced and unpriced effort that has been authorized at a not-to-exceed amount in accordance with the Contracting Officer's direction. The contractor shall provide monthly IPMRs per DI-MGMT-81861 (Rev A), sections 3.6.7 and 3.7, except as modified in this section.

FORMAT 5 INSTRUCTIONS:

Critical and/or Driving Paths within the Project IMS: Conduct critical path analysis of all near (secondary, tertiary, etc.) critical and/or driving paths whose total slack (float) values within a 10 working days or less of the primary critical path.

Results of Internal IMS Health Analysis: Provide IMS health analysis to include: 1) the total number of tasks, milestones, and non-detail (e.g. summary, hammock, rollup, etc.) activities contained in the schedule, 2) the number of completed tasks and milestones, 3) the number of tasks and milestones to be completed, 4) the number of tasks and milestones that have no predecessor and/or no successor relationships, 5) the total number of tasks and milestones that have a total float (slack) value greater than 25% of the remaining duration of the total program/project schedule, 6) the total number of non-detail (e.g., summary, hammock, rollup, etc.) activities that have assigned predecessor or successor logical relationships, 7) the total number of tasks and milestones that have assigned constraint (forced or fixed) dates, and 8) in-process tasks and milestones behind the status date that require a new forecast.

FORMAT 6 INSTRUCTIONS:

Summary Master Schedule: The schedule shall include a top level Gantt chart summary arranged by WBS and that reflects all contract and controlled milestones, major program/project phases (i.e. design, fabrication, integration, assembly, test, etc.) and all end item deliveries. It shall reflect either by manual creation or by automated summarization, a vertically integrated rollup of intermediate and detailed schedule data.

Detailed Schedules: The detailed schedules shall contain vertical and horizontal integration at the task/milestone level of detail (vice the work package/planning package level) to provide better definition in task sequence and greater accuracy in critical identification.

IMS Fields: Additional IMS fields required in the schedule are LOE identification, responsible organization, and planning package identification. A field identifying critical path is not required.

Relationships/Dependencies: All discrete tasks/milestones except for the start and end of the contract or for interim receipt and delivery events to/from external entities shall have at least one predecessor and successor.

Level of Effort (LOE) in the Schedule: If LOE tasks are excluded from the schedule, the contractor must clearly document in an appropriate location how the LOE efforts are planned and measured.

Schedule Margin: If schedule margin is included in the IMS, it must be as a defined task and clearly labeled as "Schedule Margin" or "Schedule Reserve". The number of schedule margin tasks should be minimal with most of the margin duration placed as the last task before the ending contract event or the end item delivery. Other acceptable locations for placing smaller amounts of schedule margin are prior to high level project milestones, such as Preliminary Design Review (PDR), Critical Design Review (CDR), System I&T Complete, etc.

Driving Path: Driving path analysis will be used for the following major project milestones: PDR, CDR, and Operational Readiness Review (ORR). Driving path constraints shall be removed from the IMS network after identification of driving paths is complete.

Schedule Risk Assessment (SRA): An SRA shall be conducted prior to System Requirements Review (SRR), PDR and CDR.

SUBCONTRACTOR REPORTS: Subcontractor IPMR Format 6 IMS must be reported directly to NASA.

15.4 **FORMAT**: IPMR Format 6 shall be submitted in the contractor's native schedule electronic file format and the UN/CEFACT XML. IPMRs required from subcontractors shall also be provided electronically using the same instructions and electronic formats stated above.

15.5 **MAINTENANCE**: Changes shall be incorporated by complete reissue.

NOTE TO DRD PREPARER (*Not to be included in DRD*).

Special tailoring to this DRD shall be incorporated only as-needed to meet specific program/project data needs and shall be coordinated with the responsible OPR. See the NASA IPMR DRD Implementation Guide located on the NASA EVM website, https://www.nasa.gov/evm, for more instructions and tailoring options.