THE SOFTWARE RESOURCES DATA REPORT (SRDR)

IMPLEMENTATION GUIDANCE

OFFICE OF THE SECRETARY OF DEFENSE

COST ASSESSMENT AND PROGRAM EVALUATION

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Contents

Introduction

The Software Resources Data Report (SRDR) is mechanism used by the Office of the Secretary of Defense (OSD) Cost Assessment and Program Evaluation (CAPE) to collect technical and cost data on software development, software maintenance, and Enterprise Resource Planning (ERP) development efforts. The 2017 SRDR Data Item Description (DID), DI-MGMT-82035A, replaced the 2016 version of the DID which superseded the 2011 Initial and Final SRDR DIDs. The DID provides the instructions for the data to be included in the three reporting formats: DD Form 3026-1, Software Development Report; DD Form 3026-2, Software Maintenance Report; and DD Form 3026-3, ERP Software Development Report. The updates to the DID and its respective forms are based on feedback and recommendations from a cross-service working group, the SRDR Working Group. The goals of the updates are to improve SRDR data quality, ensure consistency, and improve the usability of the data collected.

The Defense Cost and Resource Center (DCARC) is the office responsible for the management of the Cost and Software Data Report (CSDR) process which includes planning and report validation. DCARC ensures that CSDR policies and regulations are followed. For guidance on roles and responsibilities regarding CSDR requirements, please refer to the DoD Manual 5000.04-M-1, "Cost and Software Data Reporting Manual."

This implementation guidance is intended to be used by members of the Cost Working Integrated Product Teams (CWIPT) to aid in the collection of software data.

CSDR Planning

a. Reporting Thresholds

All major contracts and subcontracts, regardless of contract type, for contractors developing or producing software elements within ACAT I and IA programs and pre-MDAP and pre-MAIS programs subsequent to Milestone A approval for any software development element with a projected software effort greater than $20 million, then-year dollars, qualify for SRDR reporting.[1] For the purposes of SRDR reporting, the terms "any software development element" are intended to capture the total software development effort for the contract. The threshold should be applied to the WBS element at the highest (i.e. parent level) and not at the individual Release or Computer Software Configuration Item (CSCI) level.

For ERP programs, or Defense Business Systems, the reporting threshold remains consistent at $20 million, then-year dollars.

If a program either has previously qualified for SRDR development reporting or currently qualifies for Contractor Cost Data Report (CCDR) sustainment reporting (i.e., total contract exceeding $50 million, then-year dollars), and the total current

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[1] DoD Manual 5000.04-M-1, "Cost and Software Data Reporting Manual"

annual software maintenance effort exceeds $1million per year, then-year dollars, then maintenance SRDRs are required.

The SRDR requirement on high-risk or high-technical-interest contracts priced below $20 million is left to the discretion of the DoD Program Manager and/or the Deputy Director Cost Analysis (DDCA).

The prime contractor shall be required to flow-down CSDR requirements to all subcontractors that meet reporting thresholds. Depending upon the specific contractual relationship, prime contracts and subcontracts may have similar requirements regarding report type, frequency, and method of transmission. The prime contractor shall be required to work with the CWIPT and all appropriate subcontractors to prepare separate subcontract CSDR plans for submission to the DCARC for DDCA approval using the CSDR Submit-Review System. [2] The threshold for direct-reporting contractors is the same at $20 million, then-year dollars.

The following scenarios demonstrate when reporting requirements flow down to subcontractors:

- Example Scenario #1
    - Total Software Development Effort = $45M
        - Prime SW Dev Effort = $25M
        - Subcontractor SW Dev Effort = $20M
    - BOTH prime and subcontractor provide an SRDR
- Example Scenario #2
    - Total Software Development Effort = $45M
        - Prime SW Dev Effort = $35M
        - Subcontractor SW Dev Effort = $10M
    - The prime contractor provides an SRDR and reports the subcontractor SLOC and effort (dollars or hours)
- Example Scenario #3
    - Total Software Development Effort = $45M
        - Prime SW Dev Effort = $15M
        - Subcontractor #1 SW Dev Effort = $10M
        - Subcontractor #2 SW Dev Effort = $10M

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[2] DoD Manual 5000.04-M-1, "Cost and Software Data Reporting Manual"

- Subcontractor #3 SW Dev Effort = $10M
  - The prime contractor provides an SRDR and reports the subcontractor SLOC and effort (dollars or hours)

The SRDR DID requests that the reporting contractor provide the SLOC for all subcontractors and the subcontracted effort in labor hours or dollars, whichever is available.

Appendix A includes a flow chart to describe when an SRDR development report is required and how SRDR requirements flow-down to subcontractors.

Appendix B includes a flow chart to describe when and SRDR maintenance report is required and how SRDR requirements flow-down to subcontractors.

b. Contract Data Requirements List (CDRL)

The CDRL should include all of the information that the offeror needs to know and have access to prior to starting work on the contract. To support the SRDR requirements, the following example CDRL language is provided and is also available on the Cost Analysis Data Enterprise (CADE) public website, https://cade.osd.mil/policy/cdrl.

Prepare the Software Resources Data Report (SRDR) in accordance with DI-MGMT-82035A (or the most recently approved version) and the OSD Deputy Director, Cost Assessment (DDCA)-approved contract CSDR Plan. The DID, DI-MGMT-82035A, is available from the CADE public website. The CSDR Plan is included as a contract attachment.

Contractors shall be required to submit SRDRs at frequencies specified in the OSD DDCA-approved CSDR plan and in the contract. The contract CSDR plan uses the event field as the driver for the submission of the reports, not the "as of date." If the event slips, the contractor must notify the Government Program Office that a date change is needed. It is the responsibility of the Government Program Office to submit a request for change in the event-driven date for reporting through the CSDR Submit-Review system for DCARC approval before the date reflected in the OSD DDCA-approved CSDR Plan.

All SRDRs shall be submitted electronically using the CSDR Submit-Review System. The required file format for the SRDR is specified in its Data Item Description (DID). Each SRDR format contains a Part 1 and a Part 2. Part 1 is required to be submitted in eXtensible Markup Language (XML) format when cPet functionality is available to generate an XML file from the completed templates. Part 2 must be submitted in Excel format only. Until the cPet functionality is available to generate the XML format, both Part 1 and Part 2 must be submitted in Excel format. Data submitters must register through the DCARC website and possess a DoD-approved ECA digital certificate or DoD-issued CAC to obtain a CADE account and be authorized to upload CSDR content. Users can obtain access by submitting user information about

themselves and their organizations to the CADE and requesting a CSDR submitter user role. After the registration information has been verified, the DCARC shall authorize the user account and requested roles. All CADE accounts need to be renewed at least annually.

Subcontractor Reporting: Prime contractors are responsible for flowing down CSDR requirements contained in their prime contracts to all subcontractors who meet the reporting thresholds specified in the DoDI 5000.02, or as required by the CWIPT. This includes requiring subcontractors to electronically report directly to the DCARC using the CSDR Submit-Review System.

The prime contractor shall be required to work with the CWIPT and all appropriate subcontractors to prepare separate subcontract CSDR plans for submission to the DCARC for DDCA approval.

The prime contractor and reporting subcontractors shall allocate resources for Verification and Validation (V&V) support of SRDRs as required by the government to ensure accurate and consistent software data reporting. The reviews will be conducted in accordance with each SRDR submission.

The prime contractor and reporting subcontractors shall utilize the Government approved version of the University of Southern California (USC) Center for Systems and Software Engineering (CSSE) Unified Code Counter (UCC) known as the UCC-G to obtain a set of standardized code counts that reflect logical size, as opposed to physical, non-commented, etc. The government reserves the right to ask the prime contractor and reporting subcontractors to provide the UCC and Diff Tool output files for software by Source Lines of Code (SLOC) by Computer Software Configuration Item (CSCI) for the entire program. Instructions on how to obtain and download the UCC-G can be found on the CADE public website, https://cade.osd.mil/tools/unifiedcodecounter

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c. SRDR Form Selection

Any phase of a program may use any of the forms associated with SRDRs, the CWIPT should consider the software effort environment and the planned activities in order to determine which form best applies. Because software efforts can evolve over time, there may be instances when software development activities (e.g. development of new capabilities or capability enhancements) continue into the sustainment phase of the program, in these instances, the DD Form 3026-1 may be a more appropriate mechanism for data collection due to the activities being completed. Similarly, regardless of the program phase, if all of the software activities are associated with maintenance such as implementing patches or implementing changes based on Information Assurance and Vulnerability Assessments (IAVAs), the DD Form 3026-2 is the most appropriate form to collect data. The DD Form 3026-3, the ERP Software Development report can also be used to capture data during any phase of the

program. For consistency and ease of use, all of the forms include the same software sizing metrics (e.g. Agile) and can collect the same or similar sizing data.

d. DD FORM 2794 and Supplements

DD FORM 2794, CSDR Plan, provides common data elements that provide linkages across the CSDR family of reports. The work breakdown structure (WBS) provides the list of elements for which cost and technical data must be reported. The DD FORM 2794 describes which elements are required in which CSDR form. The common DD FORM 2794 data elements make cost data in the FlexFile or 1921-1/1921-5 relatable to the software data in the SRDR.

The reporting entity should ensure cross-functional consistency in the interpretation of common DD FORM 2794 work breakdown structure elements such that cost, quantity, software, and technical data can be accurately related.

Included in the DD FORM 2794 are the SRDR plan supplements to support the collection of SRDR Development data and costs at the Release and CSCI levels, as well as, the collection of SRDR Maintenance data at the Release level.

The SRDR plan supplement includes detailed information regarding number of releases, name of the releases, number of CSCIs, names of the CSCIs, a mapping of Releases to CSCIs, as well as, the end dates of the releases.

Due to the nature of software development, the number of Releases and/or CSCIs are not always known at contract award. The following information should be included in the remarks section of the CSDR Plan.

TYPE	REMARK TYPE	REMARK DESCRIPTION
SRDR Development Report	Number of CSCIs and Releases	#. Software Development Releases and Computer Software Configuration Items (CSCIs) are meant to capture the technical information and effort associated with each software Release and CSCI. If a Release or CSCI is defined on the contract and the CSDR plan has not been updated, it is the contractor's responsibility to submit the technical data, the dollars, and the hours in the SRDR by the appropriate Release(s) and CSCI(s). The CSDR plan will be revised accordingly to include any identified Releases/CSCIs.
SRDR Maintenance Report	Number of Releases	#. Software Releases are meant to capture the technical information and effort associated with each software release. If a release is identified/defined on the contract and the CSDR plan has not been updated, it is the contractor's responsibility to submit the technical data, the dollars, and the hours in the SRDR by the appropriate Release(s). The CSDR plan will be revised accordingly to include any identified Releases.
SRDR Development ERP Report	Number of Releases	#. Software Releases are meant to capture the technical information and effort associated with each software release. If a release is identified/defined on the contract and the CSDR plan has not been updated, it is the contractor's responsibility to submit the technical data, the dollars, and the hours in the SRDR by the appropriate Release(s). The CSDR plan will be revised accordingly to include any identified Releases.

DCARC review of the Plan Supplement for SRDR reports is included during the validation process. As part of the review and validation of any SRDR report, the DCARC analyst will confirm with the contractor the data and information included in the supplement. If the names or dates of any of the releases or CSCIs change, the DCARC analyst can update the supplement as an Administrative Plan Change. Similarly if Releases and/or CSCIs are added or removed and the appropriate remarks are included in the plan, the CSDR plan can be updated by the DCARC analyst as an Administrative Plan Change. If the appropriate remarks are not included in the Plan and the change in number of Releases, or the number of CSCIs impacts the WBS structure, the DCARC analyst must submit a plan change through the formal CSDR plan change process.

e. Work Breakdown Structures and Reporting Level

The SRDR DID requires that both cost and technical information is reported at the Release and the CSCI levels. The Standard Plan which is consistent with the MIL-STD-881 should be used as a starting point in the DD 2794 to describe the reporting WBS structure. In addition to the Release and CSCI elements, the reporting entity may also be required to report hours against specific contractor-defined activities. In order to ensure complete and accurate reporting, the CWIPT should discuss the inclusion of these elements during the planning process.

For maintenance, the SRDR DID includes specific categories and definitions for reporting effort by supporting activity. The CWIPT should ensure that these WBS elements are included in the CSDR Plan in order to collect the required labor hours and/or costs.

f. Reporting Frequency

Where possible, the SRDR reporting events should align/coincide with the cost reporting events. The current forms include two parts so that the effort associated with the software activities captured in the technical data may be collected via the SRDR or via the respective Contractor Cost Data Report (CCDR).

g. Post Award Conference

A post award conference is required to take place according to the FAR "242.503-2 post award conference procedure" to assure that "the contractor's standard cost and software data reporting (CSDR) process that satisfies the guidelines contained in the DoD 5000.04-M-1, CSDR Manual, and the requirements in the Government-approved CSDR plan for the contract, DD FORM 2794, and related Resource Distribution Table" are met.

At the post award conference, the reporting entity should review, update and complete to the SRDR CSDR Plan Supplement with all known information. If future Releases and CSCIs are anticipated, placeholders or to-be-determined (TBDs) should

be included in the plan. The plan will continue to be reviewed and updated as the program progresses over time.

Validation and Acceptance

a. SRDR Unified Review Function (SURF)

The purpose of the SURF team is to supplement the DCARC quality review for SRDR submissions in order to maintain and provide the cost community better quality data. The goals are to develop consistent, DoD-wide sets of quality questions for all cost community members to reference, to help facilitate and provide reviews from a common set of question templates. The SURF team published a Verification and Validation (V&V) Guide along with Question Templates to aid in the review of SRDR submissions. The latest version of the V&V Guide can be found on the CADE public website at https://cade.osd.mil/policy/srdr.

Other Considerations

a. The Cost of the SRDR

One of key questions that is asked when requesting that programs submit SRDRs is the cost of the report. Over the past several months, data has been collected on the cost of the SRDR through working group meetings, interviews, and cost reports. The effort is ongoing, but the preliminary results are included in the table below.

	Hours per Submission	Cost per Submission
Average	269	$ 75,934
Min	59	$ 16,582
Max	642	$ 181,044
Median	199	$ 56,200

The data represents ten different data points. Where information is known, it represents six different contractors, four different SRDR formats, and includes data across four different services. In some instances, the data is from anecdotal evidence and cannot be attributed to a specific program or contract. Using the average cost per submission, the following scenarios were derived to provide an approximate percentage that SRDR reporting represents of the total contract value.

Scenario	Contract Value	# Reporting Subcontractors	# Submission Events	Cost of SRDRs	SRDR Cost as a % of Contract Cost
1	$20M	0	2	$ 151,867	0.76%
2	$20M	0	4	$ 303,734	1.52%
3	$80M	2	30	$2,278,009	2.85%

Scenario 1 represents a $20 Million software development contract where only the prime contractor submits SRDR reports and there is only one software release. For this contract, there are two submission events that correspond with an initial and a final report.

Scenario 2 represents a $20 Million software development contract where only the prime contractor provides the SRDR reports, and there is only one software release. For this contract, there are for submission events that correspond with an initial report, an interim report at Preliminary Design Review (PDR), and an interim report at Critical Design Review (CDR), and a final report.

Scenario 3 represents and $80M software development contract where there is one prime contractor and two subcontractors. The development effort includes three software development releases and the government has requested five reports per release. For each release there is an initial report, an interim report at PDR, an interim report at CDR, an interim report at Test, and a final report. This is a total of thirty submission events.

The above scenarios are intended to represent a range from the best case (lowest cost) to worst case (highest cost) and at the highest, the SRDR reporting requirement is less than 3% of the total contract value.

In addition to providing the approximate number of hours per report, most interview respondents agreed that the first report was the most challenging, but that subsequent reports were easier to complete. Note that the above analysis assumes the same cost per report and does not take into consideration any learning. In addition, to aid in the time spent on iterations with DCARC and the SURF team, it was recommended that the team hold a phone conversation or meeting to understand the specific issues and validation errors.

b. Agile Metrics and the SRDR

Using Agile development methods to manage software development and maintenance efforts is becoming increasingly important across the Department of Defense (DoD). In 2017, the SRDR DID and its respective forms were updated to include tables to collect the associated metrics. It is important to recognize and understand that Agile terminology and size metrics are not consistent across software development organizations, even within the same company or business unit. Also, while Agile affects the software development and management process, it should not affect the vendor's ability to report SLOC for completed development and maintenance projects and RICE-FW metrics for completed ERP projects. It is important for the government cost organization to emphasize during the planning process the imperative need for collection of both non-SLOC metrics (e.g., story points) and primary size metrics (SLOC or RICE -W) in Agile programs to all stakeholders.

The Agile EVM guide [3] suggests capabilities and features as an acceptable hierarchy for Agile Software development within the WBS. The SRDR DID for development reporting requests that the data be decomposed into Releases and CSCIs. If capabilities (versus CSCIs) are included in the CSDR plan, the government will

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[3] Agile and Earned Value Management: A Program Manager's Desk Guide, McGregor, John, OUSD AT&L (PARCA), 16 April 2018

request a mapping to CSCIs for both size and effort. Alternatively, if the developer is already tracking capabilities, as well as mapping the capabilities to CSCIs, it may be beneficial for the CWIPT to request the lower level of detail in the CSDR plan (e.g., capabilities are children of the CSCI).
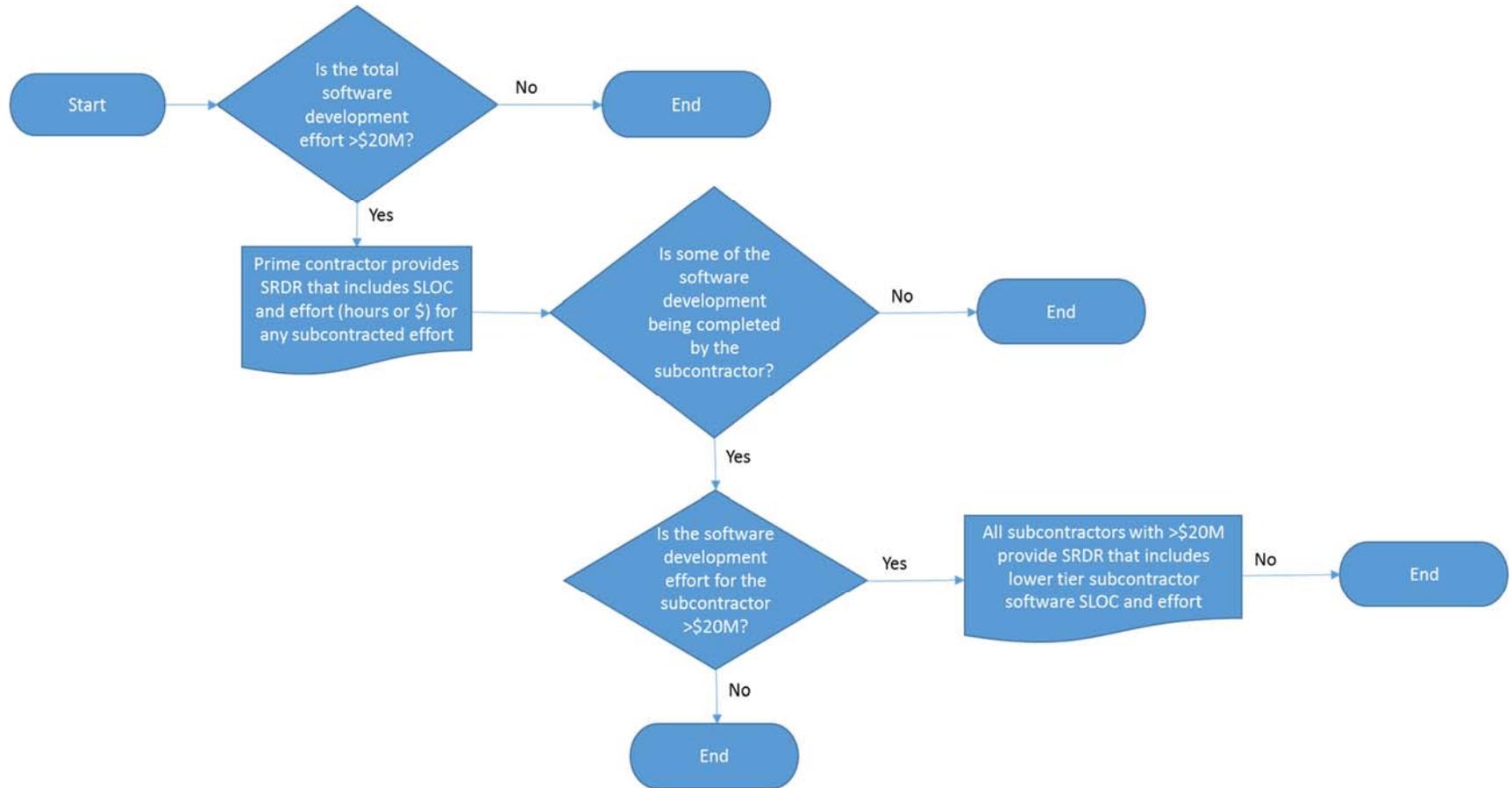
c. Frequently Asked Questions

- What is a Release and why does the SRDR require release-level reporting?
  - o In the SRDR, the term "release" refers to commonly used terms such as release, build, product build, drop and increment. It represents a deliverable to the government.
  - o Releases are a logical way to break-up the development effort into smaller pieces that provide a level of information that can be used in cost estimating.

- What is a Computer Software Configuration Item (CSCI) and why does the SRDR require CSCI-level reporting?
  - o The CSCI-level is the lowest level of software development at which configuration management is performed by the developer. It is usually indicated by a separate Software Development Folder (SDR) or Software Requirements Specification (SRS). It is the level at which software requirements are verified through testing. Other terms for CSCI include Software End Item and Software Item.
  - o CSCIs represent a level of granularity that can be used to develop better analogies (or category tagging for parametric) for cost estimating especially where different CSCIs are in different application domains or have different technical parameters. In the SRDR, CSCIs are children of releases and allow for specific technical information to be reported at that level.

- How are Estimates at Complete (EACs) different from Actuals in the SRDR?
  - Estimates at Complete are a prediction of the effort required to complete a specific task and the actuals represent the actual effort accomplished to-date for a task.
  - The SRDR requires that the contractor report EACs when the report has been submitted before 100% of the work is complete
- What below the line elements to put on SRDR?
  - Software Program Management, Software Systems Engineering, Systems, Test and Evaluation, etc.
  - Note: These elements may appear as children underneath any element where separate reporting of those elements by subsystem is applicable.

Appendix A – SRDR Development Reporting Threshold Flow Diagram

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Start ──▶ ◇ Is the total software development effort >$20M?
              │ No ──▶ End
              │ Yes
              ▼
         [Prime contractor provides SRDR that includes SLOC and effort (hours or $) for any subcontracted effort]
              │
              ▼
         ◇ Is some of the software development being completed by the subcontractor?
              │ No ──▶ End
              │ Yes
              ▼
         ◇ Is the software development effort for the subcontractor >$20M?
              │ Yes ──▶ [All subcontractors with >$20M provide SRDR that includes lower tier subcontractor software SLOC and effort] ── No ──▶ End
              │ No
              ▼
            End
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Appendix B – SRDR Maintenance Reporting Threshold Flow Diagram

Start → Did the program previously qualify for SRDR development reporting OR does it currently qualify for sustainment reporting

No → End

Yes → Is the annual software maintenance effort >$1M?

Yes → Prime contractor provides SRDR → Is any of the software maintenance effort completed by a subcontractor?

No (from maintenance effort) → End

No (from subcontractor) → End

Yes (from subcontractor) → All subcontractors with >$1M provide SRDR