Measurement of Software Throughout the Lifecycle Using SRDRs

DASA-CE

Presented to

PSM

September 2018

Agenda

- Current Policy and Process
- Previous SRDR and Reporting Challenges
- Overview of SRDR Forms
  - DD Form 3026-1 Development
  - DD Form 3026-2 Maintenance
  - DD Form 3026-3 Enterprise Resource Planning (ERP)
- Data Collection Improvements
- Conclusion

Current Policy & Process

Reporting Policy

- *DODI 5000.02* outlines cost and software reporting requirements for ACAT I programs in the form of CCDRs* and SRDRs* (Jan. 2015)
  - Required for contracts >$50M (CCDRs), software development efforts >$20M (SRDRs), and software maintenance efforts >$1M (SRDRs)
  - Requires cost reports that utilize a commodity specific work breakdown structure (*MIL-STD 881D*)
  - Cost reporting on any organization performing the work regardless if its contractor or government
- *Section 842* of the NDAA for 2017
  - Requires OSD CAPE to develop policy and procedures for data collection for programs with acquisition lifecycle costs >$100M (all ACAT)
  - To evaluate impact and utility, OSD CAPE is leading a pilot effort across the services to collect and store non-ACAT I CCDRs and SRDRs (Feb. 2018)

*Contract Cost Data Report/Software Resource Data Report

Submission Process

- A CSDR Plan must be created in order for an organization to be able to submit to CADE
  - A CSDR Plan defines the reporting WBS, submission dates, and sets the infrastructure to properly track and manage submissions
  - SRDR's should be submitted at contract award as an Initial (estimate) and each final submission will follow the agreed upon delivery/submission schedule
- Every submission is reviewed by the services SRDR Unified Review Function (SURF) team, who perform Verification and Validation (V&V) prior to acceptance
  - SURF V&V spans all services and aims to improve quality and consistency of submissions

Previous SRDR Challenges

- Not well suited for Enterprise Resource Planning (ERP) or Agile Development reporting
- Overall threshold for reporting didn't capture programs that were predominately software
- No reporting requirement for programs during O&S phase
  - Requiring reporting on contracts with software development over $20M creates data gaps between large development efforts
- Lack of name standardization made it difficult to track a single program through multiple releases

Case 1

A single SRDR submission for the program in development

Case 2

Multiple SRDR submissions with no linkage between releases

Changes to policy and the addition of SRDR forms enables capturing of software measures from development to the end of O&S

Software Data Collection

DATABASE

OSD CAPE is responsible for managing the Cost Assessment Data Enterprise (CADE) where the SRDR's are directly submitted from the vendor (Government or Contractor).

DID

NEW

DI-MGMT-82035A is the Data Item Description (DID) for the new SRDR forms. The DID provides guidance on submission timelines, definitions of all fields in the form, as well as standard tools for measurement.

DEVELOPMENT

SRDR-DEV (Form 3026-1)

UPDATED

Provides the reporting format for software development efforts. Accommodates initial reports with estimated values, interim reports with a combination of estimated and actual values, and final reports with actual values

SRDR-ERP (Form 3026-3)

NEW

Provides the reporting format for ERP programs. Similar to the main SRDR but accounts for differences

MAINTENANCE

SRDR-M (Form 3026-2)

NEW

Provides the reporting format for software maintenance efforts. Form collects metrics and activities found to be relevant to predicting and maintaining software

DASA-CE Data Collection

Due to the absence of historical Software Maintenance data, DASA-CE lead an effort to collect data from Army programs using a custom data collection questionnaire

SRDR Forms Overview

Form Overview

Each SRDR form share the same general reporting structure.

Common Heading	Release/Project	Sizing	Effort
Information	**Information**	**Information**	**Information**
Collects information about the submitter, contract, and information necessary for CADE to aggregate, track and store the submission.	Collects information about the release including schedule, activities, and top level system context data.	Sizing data for various measures including SLOC, Function Points, Story Points, RICEFW, and Defects.	Effort that matches the software development by activity by release for prime and subcontractors.
Submission	**Submission**	**Submission**	**Submission**
Submitted with every report, tracks to contract PoP	Submitted with every release	Submitted by CSCI or release/project	SRDR-DEV and SRDR-ERP submission is monthly, SRDR-M submitted annually.

Detailed Overview of the SRDR Forms

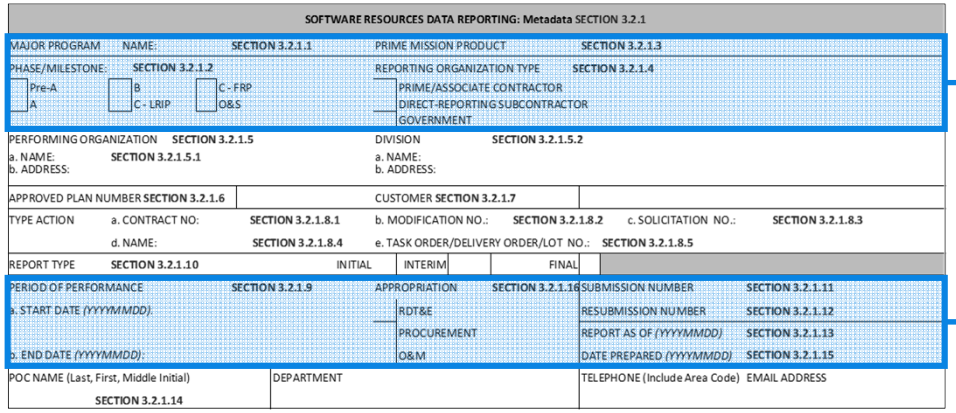
Note: Some sections of the forms have been truncated in this presentation

DD Form 3026-1 SRDR for Development

DD 3026-1	Development
DD 3026-2	ERP
DD 3026-3	Maintenance

Development Collection Form

Common Heading & Release Level



SOFTWARE RESOURCES DATA REPORTING: Metadata SECTION 3.2.1

MAJOR PROGRAM NAME: SECTION 3.2.1.1 | PRIME MISSION PRODUCT SECTION 3.2.1.3

PHASE/MILESTONE: SECTION 3.2.1.2 | REPORTING ORGANIZATION TYPE SECTION 3.2.1.4

☐ Pre-A ☐ B ☐ C - FRP
☐ A ☐ C - LRIP ☐ O&S

☐ PRIME/ASSOCIATE CONTRACTOR
☐ DIRECT-REPORTING SUBCONTRACTOR
☐ GOVERNMENT

PERFORMING ORGANIZATION SECTION 3.2.1.5 | DIVISION SECTION 3.2.1.5.2

a. NAME: SECTION 3.2.1.5.1 | a. NAME:
b. ADDRESS: | b. ADDRESS:

APPROVED PLAN NUMBER SECTION 3.2.1.6 | CUSTOMER SECTION 3.2.1.7

TYPE ACTION | a. CONTRACT NO: SECTION 3.2.1.8.1 | b. MODIFICATION NO.: SECTION 3.2.1.8.2 | c. SOLICITATION NO.: SECTION 3.2.1.8.3

d. NAME: SECTION 3.2.1.8.4 | e. TASK ORDER/DELIVERY ORDER/LOT NO.: SECTION 3.2.1.8.5

REPORT TYPE SECTION 3.2.1.10 | INITIAL | INTERIM | FINAL

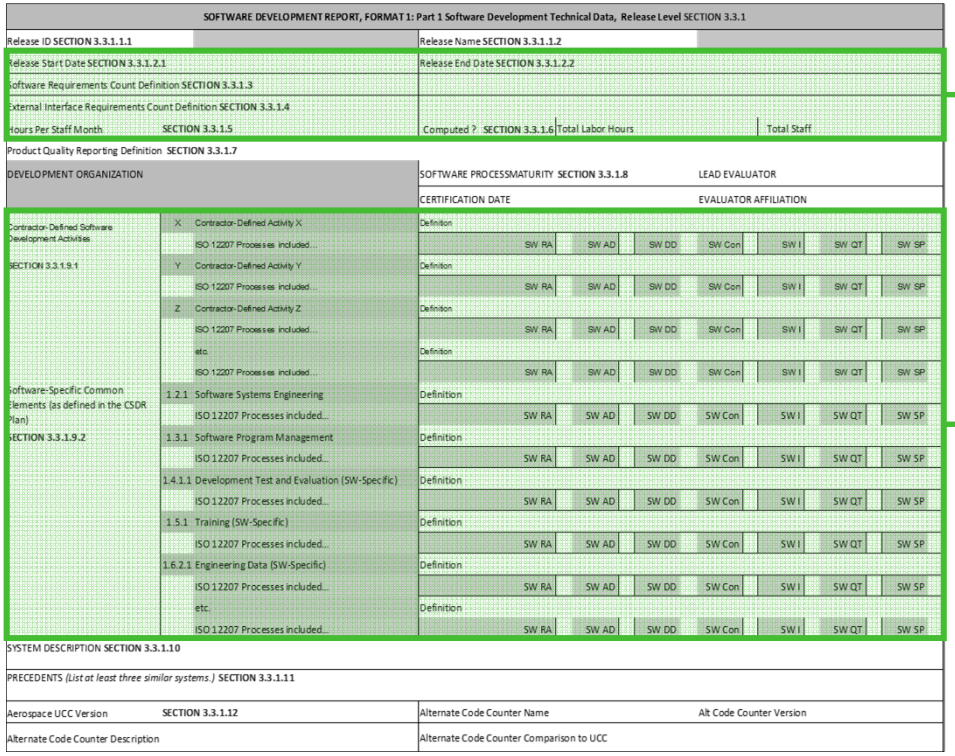
PERIOD OF PERFORMANCE SECTION 3.2.1.9 | APPROPRIATION SECTION 3.2.1.16 | SUBMISSION NUMBER SECTION 3.2.1.11

a. START DATE (YYYYMMDD) | ☐ RDT&E | RESUBMISSION NUMBER SECTION 3.2.1.12

☐ PROCUREMENT | REPORT AS OF (YYYYMMDD) SECTION 3.2.1.13

b. END DATE (YYYYMMDD): | ☐ O&M | DATE PREPARED (YYYYMMDD) SECTION 3.2.1.15

POC NAME (Last, First, Middle Initial) SECTION 3.2.1.14 | DEPARTMENT | TELEPHONE (Include Area Code) | EMAIL ADDRESS



SOFTWARE DEVELOPMENT REPORT, FORMAT 1: Part 1 Software Development Technical Data, Release Level SECTION 3.3.1

Release ID SECTION 3.3.1.1.1 | Release Name SECTION 3.3.1.1.2

Release Start Date SECTION 3.3.1.2.1 | Release End Date SECTION 3.3.1.2.2

Software Requirements Count Definition SECTION 3.3.1.3

External Interface Requirements Count Definition SECTION 3.3.1.4

Hours Per Staff Month SECTION 3.3.1.5 | Computed ? SECTION 3.3.1.6 | Total Labor Hours | Total Staff

Product Quality Reporting Definition SECTION 3.3.1.7

DEVELOPMENT ORGANIZATION | SOFTWARE PROCESSMATURITY SECTION 3.3.1.8 | LEAD EVALUATOR

CERTIFICATION DATE | EVALUATOR AFFILIATION

Contractor-Defined Software Development Activities	X	Contractor-Defined Activity X	Definition						
		ISO 12207 Processes included...	SW RA	SW AD	SW DD	SW Con	SW I	SW QT	SW SP
SECTION 3.3.1.9.1	Y	Contractor-Defined Activity Y	Definition						
		ISO 12207 Processes included...	SW RA	SW AD	SW DD	SW Con	SW I	SW QT	SW SP
	Z	Contractor-Defined Activity Z	Definition						
		ISO 12207 Processes included...	SW RA	SW AD	SW DD	SW Con	SW I	SW QT	SW SP
		etc.	Definition						
		ISO 12207 Processes included...	SW RA	SW AD	SW DD	SW Con	SW I	SW QT	SW SP
Software-Specific Common Elements (as defined in the CSDR Plan)	1.2.1	Software Systems Engineering	Definition						
		ISO 12207 Processes included...	SW RA	SW AD	SW DD	SW Con	SW I	SW QT	SW SP
SECTION 3.3.1.9.2	1.3.1	Software Program Management	Definition						
		ISO 12207 Processes included...	SW RA	SW AD	SW DD	SW Con	SW I	SW QT	SW SP
	1.4.1.1	Development Test and Evaluation (SW-Specific)	Definition						
		ISO 12207 Processes included...	SW RA	SW AD	SW DD	SW Con	SW I	SW QT	SW SP
	1.5.1	Training (SW-Specific)	Definition						
		ISO 12207 Processes included...	SW RA	SW AD	SW DD	SW Con	SW I	SW QT	SW SP
	1.6.2.1	Engineering Data (SW-Specific)	Definition						
		ISO 12207 Processes included...	SW RA	SW AD	SW DD	SW Con	SW I	SW QT	SW SP
		etc.	Definition						
		ISO 12207 Processes included...	SW RA	SW AD	SW DD	SW Con	SW I	SW QT	SW SP

SYSTEM DESCRIPTION SECTION 3.3.1.10

PRECEDENTS (List at least three similar systems.) SECTION 3.3.1.11

Aerospace UCC Version SECTION 3.3.1.12 | Alternate Code Counter Name | Alt Code Counter Version

Alternate Code Counter Description | Alternate Code Counter Comparison to UCC

Reported by Submission Event

Program Information

- Program Name / PMP
- Phase/Milestone
- Reporting Organization

Contract Information

- Period of Performance
- Appropriations used

Reported by Release

Release Schedule

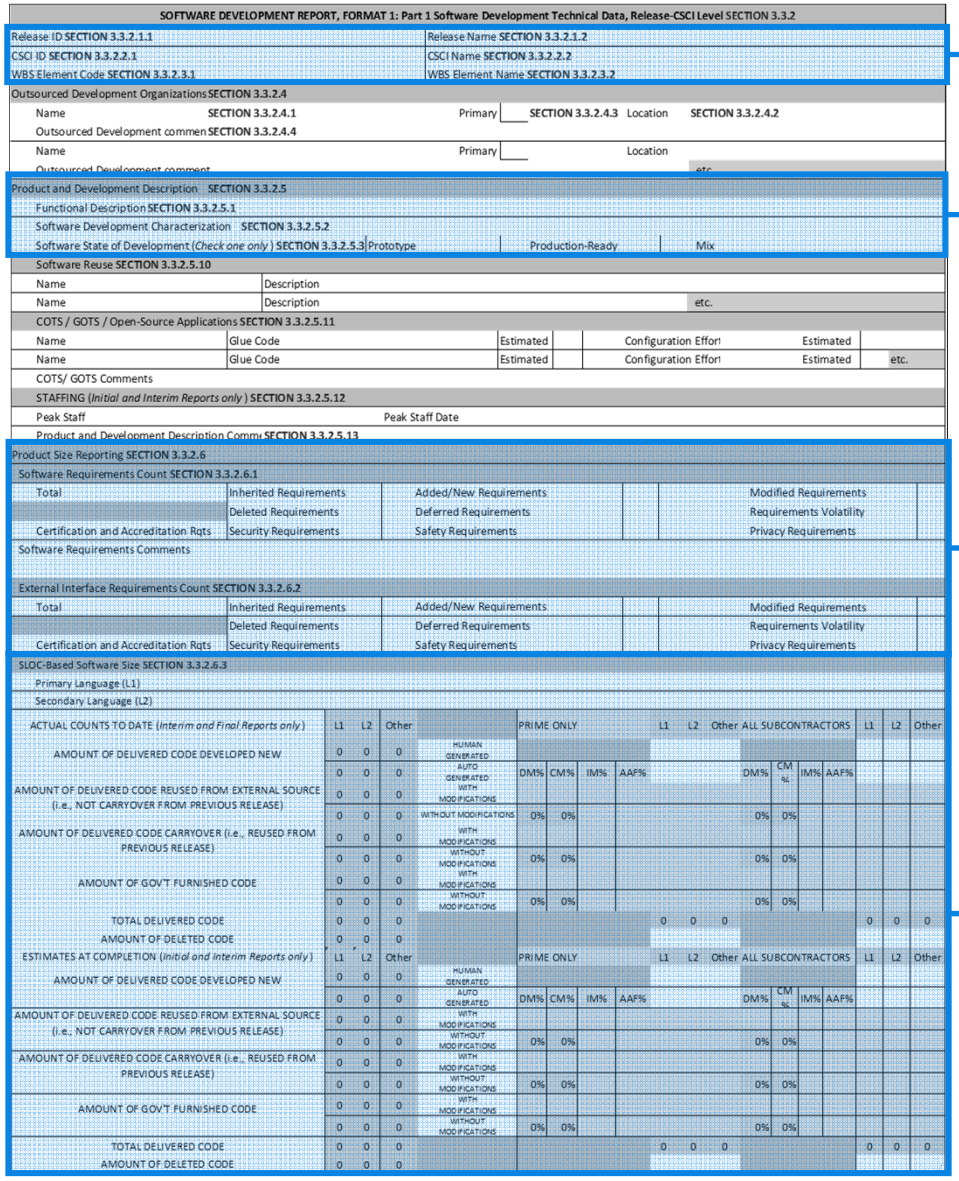
- Start / End Date
- Total Labor hours of the Release
- Total Staff

Development Activities

- Activities included in reported labor
- Follows ISO standard definitions for software development
- Allows for contractor defined activities

Development Collection Form

Release CSCI (1 of 2)



SOFTWARE DEVELOPMENT REPORT, FORMAT 1: Part 1 Software Development Technical Data, Release-CSCI Level SECTION 3.3.2

Release ID SECTION 3.3.2.1.1 | Release Name SECTION 3.3.2.1.2
CSCI ID SECTION 3.3.2.2.1 | CSCI Name SECTION 3.3.2.2.2
WBS Element Code SECTION 3.3.2.3.1 | WBS Element Name SECTION 3.3.2.3.2

Outsourced Development Organizations SECTION 3.3.2.4
Name SECTION 3.3.2.4.1 | Primary | SECTION 3.3.2.4.3 | Location SECTION 3.3.2.4.2
Outsourced Development commen SECTION 3.3.2.4.4
Name | Primary | Location
Outsourced Development comment | etc.

Product and Development Description SECTION 3.3.2.5
Functional Description SECTION 3.3.2.5.1
Software Development Characterization SECTION 3.3.2.5.2
Software State of Development (*Check one only*) SECTION 3.3.2.5.3 | Prototype | Production-Ready | Mix
Software Reuse SECTION 3.3.2.5.10
Name | Description
Name | Description | etc.
COTS / GOTS / Open-Source Applications SECTION 3.3.2.5.11
Name | Glue Code | Estimated | Configuration Effort | Estimated
Name | Glue Code | Estimated | Configuration Effort | Estimated | etc.
COTS/ GOTS Comments
STAFFING (*Initial and Interim Reports only*) SECTION 3.3.2.5.12
Peak Staff | Peak Staff Date
Product and Development Description Comm SECTION 3.3.2.5.13

Product Size Reporting SECTION 3.3.2.6
Software Requirements Count SECTION 3.3.2.6.1
Total | Inherited Requirements | Added/New Requirements | Modified Requirements
Deleted Requirements | Deferred Requirements | Requirements Volatility
Certification and Accreditation Rqts | Security Requirements | Safety Requirements | Privacy Requirements
Software Requirements Comments

External Interface Requirements Count SECTION 3.3.2.6.2
Total | Inherited Requirements | Added/New Requirements | Modified Requirements
Deleted Requirements | Deferred Requirements | Requirements Volatility
Certification and Accreditation Rqts | Security Requirements | Safety Requirements | Privacy Requirements

SLOC-Based Software Size SECTION 3.3.2.6.3
Primary Language (L1)
Secondary Language (L2)

ACTUAL COUNTS TO DATE (*Interim and Final Reports only*)	L1	L2	Other		PRIME ONLY				L1	L2	Other	ALL SUBCONTRACTORS				L1	L2	Other
AMOUNT OF DELIVERED CODE DEVELOPED NEW	0	0	0	HUMAN GENERATED														
	0	0	0	AUTO GENERATED WITH MODIFICATIONS	DM%	CM%	IM%	AAF%				DM%	CM %	IM%	AAF%			
AMOUNT OF DELIVERED CODE REUSED FROM EXTERNAL SOURCE (i.e., NOT CARRYOVER FROM PREVIOUS RELEASE)	0	0	0	WITHOUT MODIFICATIONS	0%	0%						0%	0%					
AMOUNT OF DELIVERED CODE CARRYOVER (i.e., REUSED FROM PREVIOUS RELEASE)	0	0	0	WITH MODIFICATIONS														
	0	0	0	WITHOUT MODIFICATIONS	0%	0%						0%	0%					
AMOUNT OF GOV'T FURNISHED CODE	0	0	0	WITH MODIFICATIONS														
	0	0	0	WITHOUT MODIFICATIONS	0%	0%						0%	0%					
TOTAL DELIVERED CODE	0	0	0						0	0	0					0	0	0
AMOUNT OF DELETED CODE	0	0	0															
ESTIMATES AT COMPLETION (*Initial and Interim Reports only*)	L1	L2	Other		PRIME ONLY				L1	L2	Other	ALL SUBCONTRACTORS				L1	L2	Other
AMOUNT OF DELIVERED CODE DEVELOPED NEW	0	0	0	HUMAN GENERATED														
	0	0	0	AUTO GENERATED	DM%	CM%	IM%	AAF%				DM%	CM %	IM%	AAF%			
AMOUNT OF DELIVERED CODE REUSED FROM EXTERNAL SOURCE (i.e., NOT CARRYOVER FROM PREVIOUS RELEASE)	0	0	0	WITH MODIFICATIONS														
	0	0	0	WITHOUT MODIFICATIONS	0%	0%						0%	0%					
AMOUNT OF DELIVERED CODE CARRYOVER (i.e., REUSED FROM PREVIOUS RELEASE)	0	0	0	WITH MODIFICATIONS														
	0	0	0	WITHOUT MODIFICATIONS	0%	0%						0%	0%					
AMOUNT OF GOV'T FURNISHED CODE	0	0	0	WITH MODIFICATIONS														
	0	0	0	WITHOUT MODIFICATIONS	0%	0%						0%	0%					
TOTAL DELIVERED CODE	0	0	0						0	0	0					0	0	0
AMOUNT OF DELETED CODE	0	0	0															

Reported by CSCI by Release

CSCI reported tracked to Release & WBS

Functional Description

Requirements / Interfaces

- Number of requirements / interfaces
- Certification and Accreditation requirements by Security, Safety, and Privacy

SLOC Based Sizing

- Languages used
- SLOC reported by type (New, Reused, Carryover, Generated) as well as amount Modified
- SLOC must be counted utilizing the Universal Code Counter (UCC)

Development Collection Form

Release CSCI (2 of 2) & Effort

Other Measures Name	Other Measures Count	Counting Standards or Guidelines	
Other Measure 1	Other Measure 1 Count	Other Measure 1 Counting Standards or Guidelines	
Other Measure 2	Other Measure 2 Count	Other Measure 2 Counting Standards or Guidelines	etc.

Product Size Reporting Comments **SECTION 3.3.2.6.5**

Product Quality Reporting **SECTION 3.3.2.7**

Defects Discovered **SECTION 3.3.2.7.1**		Defects Removed **SECTION 3.3.2.7.2**		Defects Deferred **SECTION 3.3.2.7.3**	
Priority 1		Priority 1		Priority 1	
Priority 2		Priority 2		Priority 2	

Product Quality Reporting Commer **SECTION 3.3.2.7.4**

Schedule Reporting **SECTION 3.3.2.7.5**

CSCI SCHEDULE	Start Date (YYYYMMDD)	End Date (YYYYMMDD)
CSCI ACTIVITIES		
X Contractor-Defined Activit		
Y Contractor-Defined Activit		
Z Contractor-Defined Activit		
etc.		

Schedule Comments **SECTION 3.3.2.7.6**

Reported by CSCI by Release

Alternative size metrics

- RICEF/W
- Function Points
- Contractor defined size metrics

Quality

- Defects by priority
- Defects Discovered/Removed/Deferred

SOFTWARE DEVELOPMENT REPORT, FORMAT 1: Part 2 Software Development Effort Data SECTION 3.4

Prime Contractor SECTION 3.4.1.1 Hours				M0	M1	M2	M3	M4	M5	M6	etc.		
				YYYYMMDD	YYYYMMDD	YYYYMMDD	YYYYMMDD	YYYYMMDD	YYYYMMDD	YYYYMMDD		ATD	EAC/Total
WBS Element Code	WBS Element Name	Activity ID	Activity Name										
1.1.2.2.2	Software Release 1												
1.1.2.2.2.1	Software Release 1 CSCI 1												
1.1.2.2.2.2	Software Release 1 CSCI 1	X	Contractor-Defined Activity										
1.1.2.2.2.3	Software Release 1 CSCI 1	Y	Contractor-Defined Activity										
1.1.2.2.2.4	Software Release 1 CSCI 1	Z	Contractor-Defined Activity										
1.1.2.2.2.2	Software Release 1 CSCI 2												
1.1.2.2.2.2	Software Release 1 CSCI 2	X	Contractor-Defined Activity										
1.1.2.2.2.2	Software Release 1 CSCI 2	Y	Contractor-Defined Activity										
1.1.2.2.2.2	Software Release 1 CSCI 2	Z	Contractor-Defined Activity										
1.1.2.2.2.3	Software Release 1 CSCI n												
1.1.2.2.2.3	Software Release 1 CSCI n	X	Contractor-Defined Activity										
1.1.2.2.2.3	Software Release 1 CSCI n	Y	Contractor-Defined Activity										
1.1.2.2.2.3	Software Release 1 CSCI n	Z	Contractor-Defined Activity										
1.2.1	Software Systems Engineering												
1.3.1	Software Program Management												
1.4.1.1	Development Test and Evaluation (SW-Specific)												
1.5.1	Training (SW-Specific)												
1.6.2.1	Engineering Data (SW-Specific)												

Subcontractor SECTION 3.4.1.2 Hours SECTION 3.4.1.2.1			
WBS Element Code	WBS Element Name	Activity ID	Activity Name
1.1.2.2.2	Software Release 1		
1.1.2.2.2.1	Software Release 1 CSCI 1		
1.1.2.2.2.2	Software Release 1 CSCI 2		
1.1.2.2.2.3	Software Release 1 CSCI n		

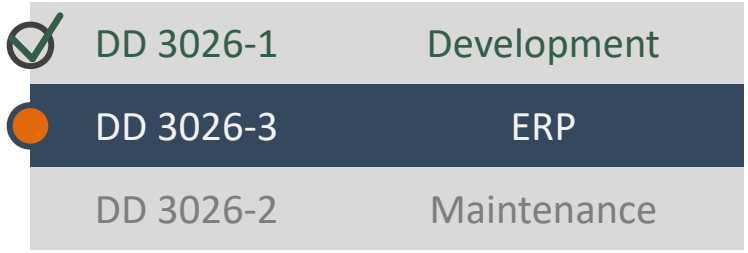
Reported by Monthly for All CSCI's

Contractor Hours by CSCI

- Hours per month by CSCI for each release
- Hours tied back to CSCI sizing metrics and WBS
- Also includes software specific hours outside direct development

Hours for direct subcontractors

DD Form 3026-3 SRDR for ERPs



ERP Collection Form

Project Level & Object Sizing (1 of 2)

A. Report Context 3.3.1			
1. Release Name: 3.3.1.1		Release ID: 3.3.1.2	
Description of Actual Development Organization			
2. Certified CMM Level (or equivalent): 3.3.1.3	3. Certification Date: 3.3.1.4	4. Lead Evaluator of CMM Certification: 3.3.1.5	
	5. Affiliation to Development Organization: 3.3.1.6		
6. Precedents (list up to ten similar systems completed by the same organization or team): 3.3.1.7			
7. Comments on Subsection A responses: 3.3.1.8			
B. Product and Team Description 3.3.2			

C. Project Requirements 3.3.3	Actual or EAC Quantity
12. Business Modules: 3.3.3.1	
13. ERP Modules: 3.3.3.2	
14. Business Processes: 3.3.3.3	
15. Business Sub-Processes: 3.3.3.4	
16. Functional Requirements: 3.3.3.5	
17. Non-Functional (Technical) Requirements: 3.3.3.6	
18. Legacy System Interfaces: 3.3.3.7	
19. Legacy System Phase-Out: 3.3.3.8	
20. Legacy System Migration: 3.3.3.9	

Reported by Release

Release Information

- Release Name
- CMMI, Super Domain/Application Domain

Project Requirements

- Business Modules
- ERP Modules
- Business Processes & Sub-Processes
- Functional & Technical Requirements
- Legacy System Interfaces, Phase-Out, and Migration

D.1 - Product Size Reporting 3.3.4	Provide Actual or EAC Quantity		
	Functionally Designed	Technically Designed/Built	Tested/ Implemented
22. Configurations (Out-of-the-Box Objects to Configure) 3.3.4.1			
Simple Complexity 3.3.4.1.1			
Medium Complexity 3.3.4.1.2			
High Complexity 3.3.4.1.3			
23. Reports: 3.3.4.2			
24. Interfaces (Inbound and Outbound) 3.3.4.3			
25. Conversions 3.3.4.4			
26. Extensions 3.3.4.5			
27. Security Patches 3.3.4.6			
28. Bolt-Ons 3.3.4.7			
29. Forms 3.3.4.8			
30. Workflows 3.3.4.9			
31. Other Program Defined Objects 3.3.4.10			

Object Name	Other Objects Count	Counting Standards or Guidelines
Other Objects 1	Other Objects 1 Count	Other Object 1 Counting Standards or Guidelines
Other Objects 2	Other Objects 2 Count	Other Object 2 Counting Standards or Guidelines

Reported by Release

Product Size by RICE-FW

- Sizing of objects by Type
  - Configurations, Reports, Interfaces, Conversions, Extensions, Security Patches, Bolt-Ons, Forms, Workflows
- Sizing by Complexity – Simple, Medium, High
- Object Count by Category
  - Functionally Designed, Technically Built, Tested/Implemented

ERP Collection Form

Object Sizing (2 of 2)

ENTERPRISE RESOURCE PLANNING SOFTWARE RESOURCES DATA REPORTING, FORMAT 3:
PART 1: Software Development Technical Data (Other Sizing) SECTION 3.3

D.2 - Alternative Product Size Reporting 3.3.5

33. Function Point Measure (IFPUG): 3.3.5.1

Count Type (check one only) 3.3.5.1.1

Enhancement Project FP Count	
Application FP Count	
Development Project FP Count	

Function Types (Count) 3.3.5.1.2		Low	Avg	High	Function Point (FP) Count
Data Functions	Internal Logical Files (ILF)				0
	External Logical Files (ELF)				0
Transactional Functions	External Inquiries (EI)				0
	External Inputs (EI)				0
	External Outputs (EO)				0
	Total Unadjusted FP 3.3.5.1.3				0
	Value Adjustment Factor (VAF) (Optional)				
	Adjusted FP Count (Unadjusted FP count * VAF)				0

35. Agile Measures: 3.3.5.3

Days per Release

Days per Sprint

Release Map SECTION 3.3.5.3.1

Epic/ Capability ID	Feature ID	Feature Description

Planned and Achieved Development SECTION 3.3.5.3.2

Feature ID	Planned Stories	Actual Stories	Planned Story Points	Actual Story Points	Planned Hours	Actual Hours

Summary Totals SECTION 3.3.5.3.3

Item	Planned	Actual
Total Features		
Total Epics/ Capabilities		
Total Stories		
Total Story Points		
Total Feature Hours		
Total Sprints		

36. Other Measures: 3.3.5.4

Other Measures Name	Other Measures Count	Counting Standards or Guidelines
Other Measure 1	Other Measure 1 Count	Other Measure 1 Counting Standards or Guidelines
Other Measure 2	Other Measure 2 Count	Other Measure 2 Counting Standards or Guidelines

37. Developmental Defects 3.3.5.5	Discovered 3.3.5.5.1	emoved/Corrected 3.3.5.5.	Deferred 3.3.5.5.3
Priority 1			
Priority 2			
Other			

Reported by Release

Product Size by Function Points

- Count Type
  - Enhancement
  - Application
  - Development
- Data Functions and Transactional Functions by Low, Medium, High

Agile Measures

- Agile Timing – Days per Release, Days per Sprint
- List of Epics/Features
- Maps Feature ID to Story Points and Hours

Development Defects

- Defect by Priority
  - Discovered
  - Removed/Corrected
  - Deferred
- Not Shown
  - Other Measures – User Defined
  - SLOC

ERP Collection Form

Implementation

ENTERPRISE RESOURCE PLANNING SOFTWARE RESOURCES DATA REPORTING, FORMAT 3: PART 1 Software Development Technical Data (Implementation) SECTION 3.3					
E. COTS Procurement Reporting 3 Provide Actual Quantities at Final Delivery Only					
The following four items contain actuals that account for all software and hardware products procured for the ERP system					
39. ERP Software Product Purchases (e.g., SAP, ORACLE 11i, PeopleSoft, AMS, etc.) 3.3.6.1			Product Name	Product ID	Procured Quantity
ERP Primary Product					
ERP Secondary Product					
Other ERP Product					
40. Other Software Products 3.3.6.2			Product Name	Release ID	Procured Quantity
Other COTS Application					
Other COTS Application					
Other COTS Application					
F. Project Implementation Reporting	Provide Actual Quantities at Final Delivery Only				
41. Implementation Sites 3.3.7.1	Development and Test 3.3.7.1.1	System Hosting/ Operations	System Back Up (COOP) 3.3.7.1.3	User Locations 3.3.7.1.4	Other 3.3.7.1.5
Quantity CONUS					
Quantity OCONUS					
42. Users (by Site Type) 3.3.7.2	Development and Test	System Hosting/ Operations	System Back Up (COOP)	User Locations	Other
Developer User: 3.3.7.2.1					
Quantity CONUS					
Quantity OCONUS					
Professional User: 3.3.7.2.2					
Quantity CONUS					
Quantity OCONUS					
Limited Professional User: 3.3.7.2.3					
Quantity CONUS					
Quantity OCONUS					
Employee User: 3.3.7.2.4					
Quantity CONUS					
Quantity OCONUS					
43. Initial Training Courses (by Site Type) 3.3.7.3 (List Courses by Type; Add Rows as Needed) Provide Course Details for Final Delivery Only					
Instructor Led Training (ILT): 3.3.7.3.1					
Course Description					
Add rows as needed for each course described.					
Computer Based Training (CBT): 3.3.7.3.2					
Course Description					
Add rows as needed for each course described.					

Reported by Release

COTS Information

- ERP Primary COTS Product
  - Name, Version, and Quantity
- Other COTS Products Used

Implementation Sites

- Quantity of Development and Test, Hosting, System Backup (COOP), and User Locations

Users by Site Type

- Quantity of Users by Site
  - Developers
  - Professional User (Admin)
  - Limited Professional
  - Basic Users

ERP Collection Form

Effort

ENTERPRISE RESOURCE PLANNING SOFTWARE RESOURCES DATA REPORTING, FORMAT 3: PART 2 Software Development Effort Data (Resource and Schedule) SECTION 3.4						
		Provide Actual or EAC Hours (Prime Contractor; Sub-Contractor)				
ERP System Development Activity	WBS Element	M1 YYYYMMDD		Total Actuals to Date	Estimate at Complete (Total)	
		Prime Contractror	Sub-Contractor(s)			
Design, Code and Unit Test ERP Software						
45. Plan and Analyze 3.4.1	**1.1.x.1**					
Release Planning	1.1.x.1.1					
Blue Printing/Gap Analysis	1.1.x.1.2					
Other (specify)	1.1.x.1.n					
46. Design / Build 3.4.2	**1.1.x.2**					
Functional Integration	1.1.x.2.1					
Technical Integration	1.1.x.2.2					
Object Development	1.1.x.2.3					
Conversion Development	1.1.x.2.4					
Build Testing	1.1.x.2.5					
Enterprise Architecture	1.1.x.2.6					
Other (specify)	1.1.x.2.n					
47. Test 3.4.3	**1.1.x.3**					
Development Level Test and Evaluation (SW Specific)	1.1.x.3.1					
Other (specify)	1.1.x.3.n					
Deploy, Go-Live, Post Support						
48. Deployment 3.4.4	**1.10.n**					
Hardware and Software Installation	1.10.n.1					
User Documentation	1.10.n.2					
Site Activation	1.10.n.3					
User Training	1.10.n.4					
Data Migration	1.10.n.5					
Other (specify)	1.10.n.x					
49. System Support 3.4.5	**1.10.n.6**					
System Administration	1.10.n.6.1					
Help Desk	1.10.n.6.2					
Post Go-Live Support	1.10.n.6.3					
Other (specify)	1.10.n.6.n					
Other Program Support						
50. Other Direct Labor (specify) 3.4.6	**1.x**					
System Engineering (SW Specific)	1.2					
Program Management (SW Specific)	1.3					
Change Management	1.4					
System Level Test and Evaluation (Operational Test	1.5					
Develop and Manage Training	1.6					
Engineering Data (SW Specific)	1.7					
Other (specify)	1.x					

Reported by Release

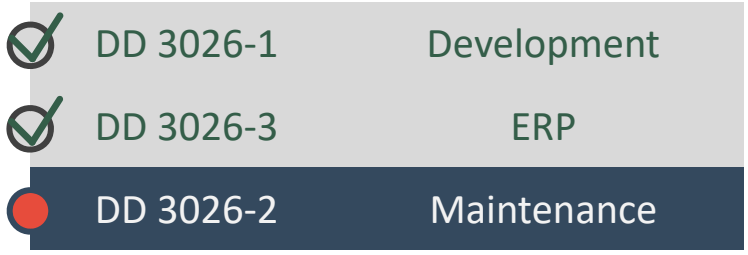
Effort

- Effort Reported by WBS that maps the CSDR WBS
- Effort for Prime Contractor and Sub-Contractors
- Effort Reported Monthly
- Includes an Estimate at Complete Column

Activities

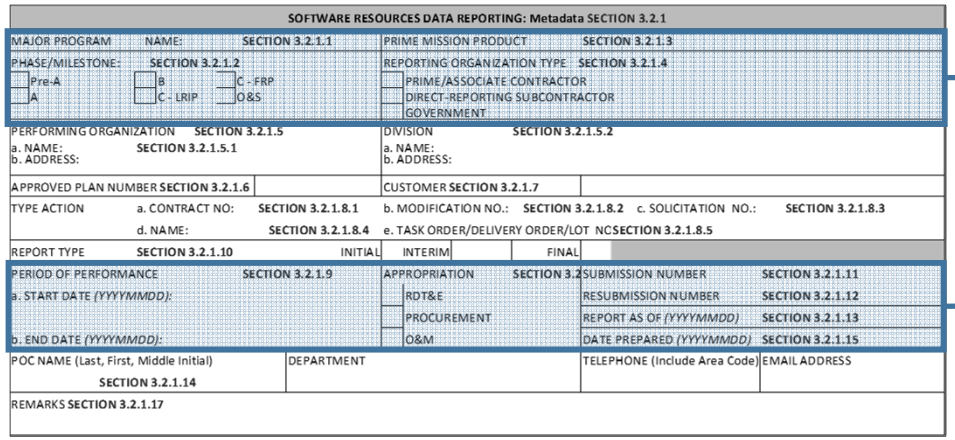
- WBS Breakouts into:
  - Design/Build/Test (Development)
  - Deployment
    - Site Activation, User Training, Data Migration
  - System Support
    - Help Desk, System Admin
  - Other
    - SE/PM, Change Management

DD Form 3026-2 SRDR for Maintenance



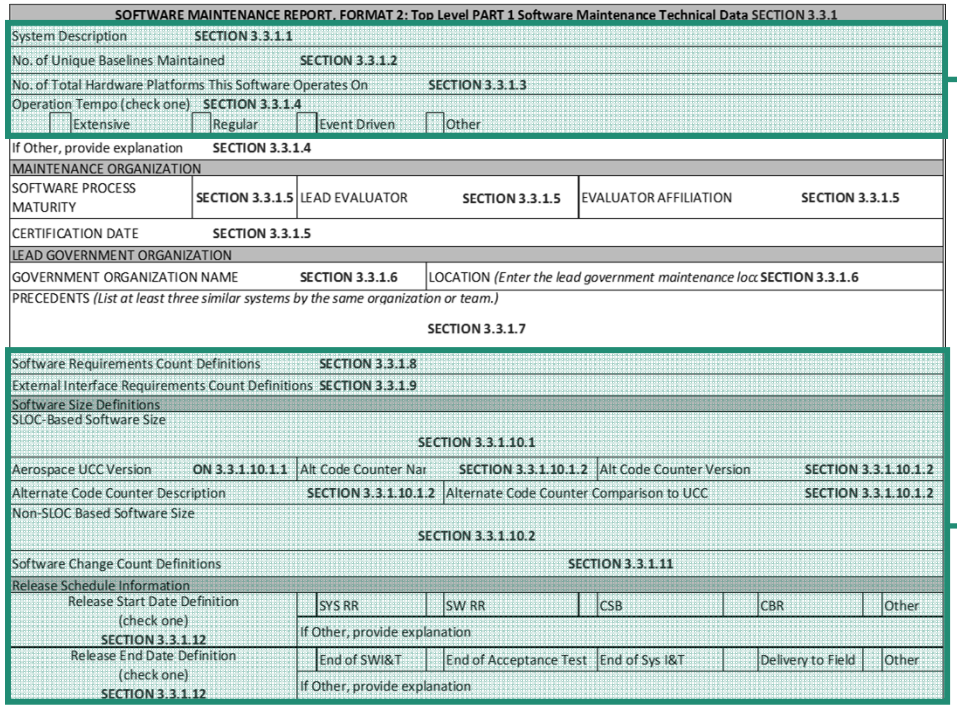
Maintenance Collection Form

Common Heading / Top Level



SOFTWARE RESOURCES DATA REPORTING: Metadata SECTION 3.2.1

MAJOR PROGRAM NAME: SECTION 3.2.1.1	PRIME MISSION PRODUCT SECTION 3.2.1.3
PHASE/MILESTONE: SECTION 3.2.1.2 ☐ Pre-A ☐ A ☐ B ☐ C - LRIP ☐ C - FRP ☐ O&S	REPORTING ORGANIZATION TYPE SECTION 3.2.1.4 ☐ PRIME/ASSOCIATE CONTRACTOR ☐ DIRECT-REPORTING SUBCONTRACTOR ☐ GOVERNMENT
PERFORMING ORGANIZATION SECTION 3.2.1.5 a. NAME: SECTION 3.2.1.5.1 b. ADDRESS:	DIVISION SECTION 3.2.1.5.2 a. NAME: b. ADDRESS:
APPROVED PLAN NUMBER SECTION 3.2.1.6	CUSTOMER SECTION 3.2.1.7
TYPE ACTION a. CONTRACT NO: SECTION 3.2.1.8.1 b. MODIFICATION NO.: SECTION 3.2.1.8.2 c. SOLICITATION NO.: SECTION 3.2.1.8.3 d. NAME: SECTION 3.2.1.8.4 e. TASK ORDER/DELIVERY ORDER/LOT NC SECTION 3.2.1.8.5	
REPORT TYPE SECTION 3.2.1.10 INITIAL ☐ INTERIM ☐ FINAL ☐	
PERIOD OF PERFORMANCE SECTION 3.2.1.9 a. START DATE (YYYYMMDD): b. END DATE (YYYYMMDD):	APPROPRIATION SECTION 3.2 ☐ RDT&E ☐ PROCUREMENT ☐ O&M
SUBMISSION NUMBER SECTION 3.2.1.11 RESUBMISSION NUMBER SECTION 3.2.1.12 REPORT AS OF (YYYYMMDD) SECTION 3.2.1.13 DATE PREPARED (YYYYMMDD) SECTION 3.2.1.15	
POC NAME (Last, First, Middle Initial) SECTION 3.2.1.14	DEPARTMENT
TELEPHONE (Include Area Code)	EMAIL ADDRESS
REMARKS SECTION 3.2.1.17	



SOFTWARE MAINTENANCE REPORT, FORMAT 2: Top Level PART 1 Software Maintenance Technical Data SECTION 3.3.1

System Description SECTION 3.3.1.1					
No. of Unique Baselines Maintained SECTION 3.3.1.2					
No. of Total Hardware Platforms This Software Operates On SECTION 3.3.1.3					
Operation Tempo (check one) SECTION 3.3.1.4 ☐ Extensive ☐ Regular ☐ Event Driven ☐ Other					
If Other, provide explanation SECTION 3.3.1.4					
MAINTENANCE ORGANIZATION					
SOFTWARE PROCESS MATURITY SECTION 3.3.1.5	LEAD EVALUATOR SECTION 3.3.1.5	EVALUATOR AFFILIATION SECTION 3.3.1.5			
CERTIFICATION DATE SECTION 3.3.1.5					
LEAD GOVERNMENT ORGANIZATION					
GOVERNMENT ORGANIZATION NAME SECTION 3.3.1.6	LOCATION (Enter the lead government maintenance loc SECTION 3.3.1.6				
PRECEDENTS (List at least three similar systems by the same organization or team.) SECTION 3.3.1.7					
Software Requirements Count Definitions SECTION 3.3.1.8					
External Interface Requirements Count Definitions SECTION 3.3.1.9					
Software Size Definitions					
SLOC-Based Software Size SECTION 3.3.1.10.1					
Aerospace UCC Version ON 3.3.1.10.1.1	Alt Code Counter Nar SECTION 3.3.1.10.1.2	Alt Code Counter Version SECTION 3.3.1.10.1.2			
Alternate Code Counter Description SECTION 3.3.1.10.1.2	Alternate Code Counter Comparison to UCC SECTION 3.3.1.10.1.2				
Non-SLOC Based Software Size SECTION 3.3.1.10.2					
Software Change Count Definitions SECTION 3.3.1.11					
Release Schedule Information					
Release Start Date Definition (check one) SECTION 3.3.1.12	☐ SYS RR	☐ SW RR	☐ CSB	☐ CBR	☐ Other
	If Other, provide explanation				
Release End Date Definition (check one) SECTION 3.3.1.12	☐ End of SWI&T	☐ End of Acceptance Test	☐ End of Sys I&T	☐ Delivery to Field	☐ Other
	If Other, provide explanation				

Reported by Submission / Annually

Program Information

- Program Name / PMP
- Phase/Milestone
- Reporting Organization

Contract Information

- Period of Performance
- Appropriations used

Reported Release

System Context

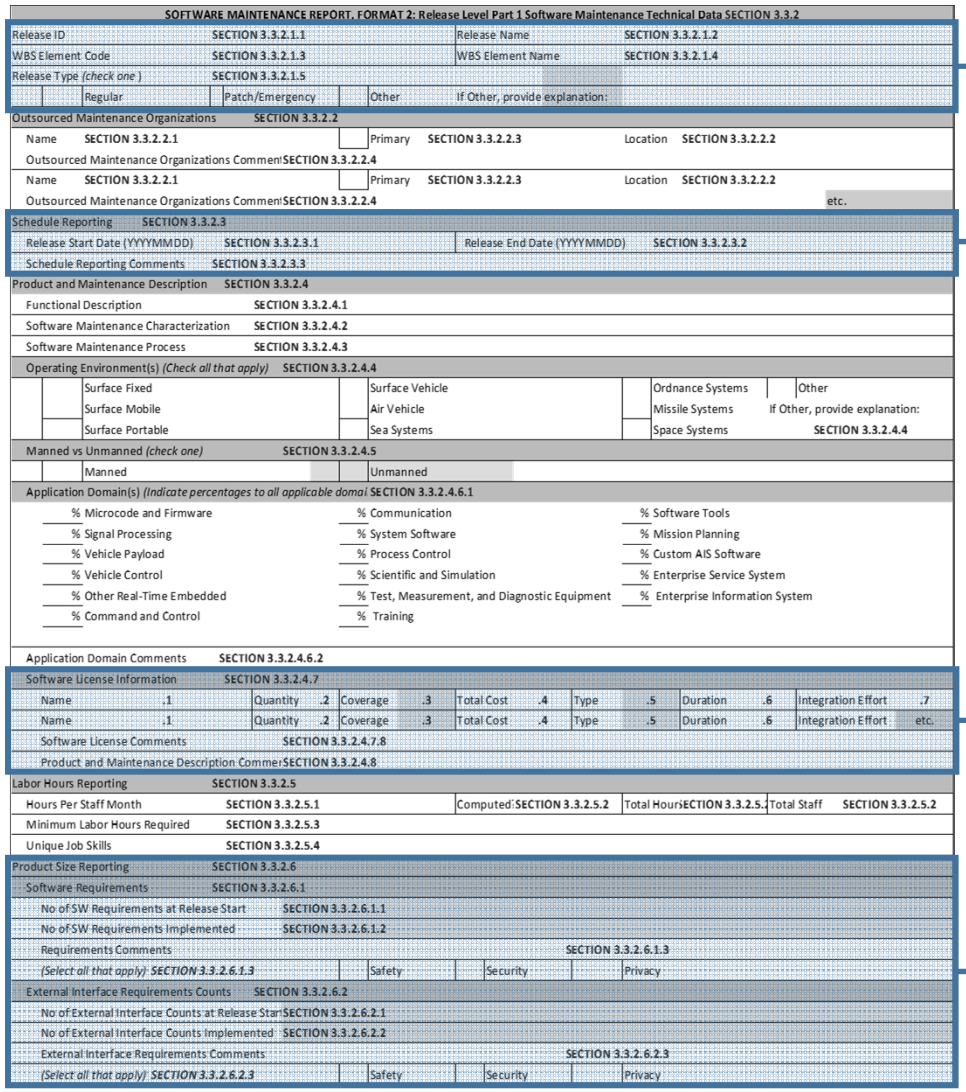
- Description of the system
- Number of baselines maintained
- Number of user's / platforms fielded

Data Definitions

- Contractor definitions for:
  - Requirements
  - Interfaces
  - Software Changes
  - Release Start Activity
  - Release End Activity

Maintenance Collection Form

Release Level (1 of 2)



SOFTWARE MAINTENANCE REPORT, FORMAT 2: Release Level Part 1 Software Maintenance Technical Data SECTION 3.3.2

Release ID	SECTION 3.3.2.1.1	Release Name	SECTION 3.3.2.1.2
WBS Element Code	SECTION 3.3.2.1.3	WBS Element Name	SECTION 3.3.2.1.4
Release Type *(check one)*	SECTION 3.3.2.1.5		
Regular	Patch/Emergency	Other	If Other, provide explanation:

Outsourced Maintenance Organizations	SECTION 3.3.2.2			
Name SECTION 3.3.2.2.1		Primary SECTION 3.3.2.2.3	Location SECTION 3.3.2.2.2	
Outsourced Maintenance Organizations Comment	SECTION 3.3.2.2.4			
Name SECTION 3.3.2.2.1		Primary SECTION 3.3.2.2.3	Location SECTION 3.3.2.2.2	
Outsourced Maintenance Organizations Comment	SECTION 3.3.2.2.4			etc.

Schedule Reporting	SECTION 3.3.2.3		
Release Start Date (YYYYMMDD)	SECTION 3.3.2.3.1	Release End Date (YYYYMMDD)	SECTION 3.3.2.3.2
Schedule Reporting Comments	SECTION 3.3.2.3.3		

Product and Maintenance Description	SECTION 3.3.2.4				
Functional Description	SECTION 3.3.2.4.1				
Software Maintenance Characterization	SECTION 3.3.2.4.2				
Software Maintenance Process	SECTION 3.3.2.4.3				
Operating Environment(s) *(Check all that apply)*	SECTION 3.3.2.4.4				
Surface Fixed	Surface Vehicle	Ordnance Systems	Other		
Surface Mobile	Air Vehicle	Missile Systems	If Other, provide explanation:		
Surface Portable	Sea Systems	Space Systems	SECTION 3.3.2.4.4		
Manned vs Unmanned *(check one)*	SECTION 3.3.2.4.5				
Manned	Unmanned				
Application Domain(s) *(Indicate percentages to all applicable domai*	SECTION 3.3.2.4.6.1				
% Microcode and Firmware	% Communication	% Software Tools			
% Signal Processing	% System Software	% Mission Planning			
% Vehicle Payload	% Process Control	% Custom AIS Software			
% Vehicle Control	% Scientific and Simulation	% Enterprise Service System			
% Other Real-Time Embedded	% Test, Measurement, and Diagnostic Equipment	% Enterprise Information System			
% Command and Control	% Training				
Application Domain Comments	SECTION 3.3.2.4.6.2				

Software License Information	SECTION 3.3.2.4.7										
Name .1	Quantity .2	Coverage .3	Total Cost .4	Type .5	Duration .6	Integration Effort .7					
Name .1	Quantity .2	Coverage .3	Total Cost .4	Type .5	Duration .6	Integration Effort etc.					
Software License Comments	SECTION 3.3.2.4.7.8										
Product and Maintenance Description Commer	SECTION 3.3.2.4.8										

Labor Hours Reporting	SECTION 3.3.2.5			
Hours Per Staff Month	SECTION 3.3.2.5.1	Computed	SECTION 3.3.2.5.2	Total Hours SECTION 3.3.2.5.1 Total Staff SECTION 3.3.2.5.2
Minimum Labor Hours Required	SECTION 3.3.2.5.3			
Unique Job Skills	SECTION 3.3.2.5.4			

Product Size Reporting	SECTION 3.3.2.6			
Software Requirements	SECTION 3.3.2.6.1			
No of SW Requirements at Release Start	SECTION 3.3.2.6.1.1			
No of SW Requirements Implemented	SECTION 3.3.2.6.1.2			
Requirements Comments	SECTION 3.3.2.6.1.3			
(Select all that apply): SECTION 3.3.2.6.1.3	Safety	Security	Privacy	
External Interface Requirements Counts	SECTION 3.3.2.6.2			
No of External Interface Counts at Release Star	SECTION 3.3.2.6.2.1			
No of External Interface Counts Implemented	SECTION 3.3.2.6.2.2			
External Interface Requirements Comments	SECTION 3.3.2.6.2.3			
(Select all that apply): SECTION 3.3.2.6.2.3	Safety	Security	Privacy	

Reported by Release

Release Context

- Release ID
- Release type (Regular, Patch, Other)

Release Schedule

License Information

- License name
- Quantity
- Coverage (Enterprise, 1 seat)
- Coverage duration
- Total Cost and effort associated with integrating COTS into baseline

Product Size

- Total requirements and interfaces
- Requirements and interfaces affected in reported release

Maintenance Collection Form

Release Level (2 of 2) / Effort Reporting

SLOC-Based Software Size	SECTION 3.3.2.6.3												
Primary Language (L1)	SECTION 3.3.2.6.3.1												
Secondary Language (L2)	SECTION 3.3.2.6.3.1												
ACTUALS	L1	L2	Other		PRIME ONLY	L1	L2	Other	ALL SUBCONTRACTORS	L1	L2	Other	
AMOUNT OF DELIVERED CODE DEVELOPED NEW SECTION 3.3.2.6.3.2 and SECTION 3.3.2.6.3.6	0	0	0	HUMAN GENERATED	AAF%				AAF%				
	0	0	0	AUTO GENERATED									
AMOUNT OF DELIVERED CODE REUSED FROM EXTERNAL SOURCE (i.e., NOT CARRYOVER FROM PREVIOUS RELEASE) SECTION 3.3.2.6.3.3 and SECTION 3.3.2.6.3.4	0	0	0	WITH MODIFICATIONS									
	0	0	0	WITHOUT MODIFICATIONS									
AMOUNT OF DELIVERED CODE CARRYOVER (i.e., REUSED FROM PREVIOUS RELEASE) SECTION 3.3.2.6.3.5	0	0	0	WITH MODIFICATIONS									
	0	0	0	WITHOUT MODIFICATIONS									
AMOUNT OF GOV'T FURNISHED CODE SECTION 3.3.2.6.3.7	0	0	0	WITH MODIFICATIONS									
	0	0	0	WITHOUT MODIFICATIONS									
TOTAL DELIVERED CODE	0	0	0			0	0	0		0	0	0	
AMOUNT OF DELETED CODE SECTION 3.3.2.6.3.8	0	0	0										

Non-SLOC-Based Software Size	SECTION 3.3.2.6.4				
RICE-FW Measure	SECTION 3.3.2.6.4.2				
Complexity	Low	Medium	High	Totals	Measure Standards
Reports				0	
Interfaces				0	
Conversions				0	
Extensions				0	
Forms				0	
Workflows				0	
Other Measures	SECTION 3.3.2.6.4.3				
Name		Count		Counting Standards or Guidelines	
Name		Count		Counting Standards or Guidelines	etc.
Product Size Reporting Comments	SECTION 3.3.2.6.4.4				

Software Change Counts	SECTION 3.3.2.6.5			
No. SW Changes Implemented	SECTION 3.3.2.6.5.	No. SW Changes Deferred	SECTION 3.3.2.6.5.2	Software Change Volatility	SECTION 3.3.2.6.5.3
Priority 1		Priority 1		Priority 1	
Priority 2		Priority 2		Priority 2	
Priority 3		Priority 3		Priority 3	
Priority 4		Priority 4		Priority 4	
Priority 5		Priority 5		Priority 5	

SOFTWARE MAINTENANCE REPORT, FORMAT 2: Part 2 Software Maintenance Effort Data SECTION 3.4

Resource Reporting (SECTION 3.4.1)

Organization 1

WBS Element Code	WBS Element Name	Actuals To Date (ATD)	
1.5.2.1.1 (SECTION 3.4.1.1)	Software Change Release 1 (SECTION 3.4.1.2)	SECTION 3.4.1.3	
1.5.2.1.n (SECTION 3.4.1.1)	Software Change Release n (SECTION 3.4.1.2)	SECTION 3.4.1.3	
1.4.4	Project Management	SECTION 3.4.1.4.1	*Only include Software Specific Effort*
1.4.3	Sustaining Engineering	SECTION 3.4.1.4.2	*Only include Software Specific Effort*
1.4.3.9	Certification and Accreditation	SECTION 3.4.1.4.3	*Only include Software Specific Effort*
1.5.2.2	Software License Management	SECTION 3.4.1.4.4	
1.5.2.3	System Facilities	SECTION 3.4.1.4.5	
1.5.2.4	Field Software Engineering	SECTION 3.4.1.4.6	
1.5.2.5	Operational Management	SECTION 3.4.1.4.7	

Reported by Release

SLOC Based Sizing

- Languages used
- SLOC reported by type (New, Reused, Carryover, Generated) as well as amount Modified
- SLOC must be counted utilizing the Universal Code Counter (UCC)

Software Changes / Defects

- Changes by priority
- Implemented/Deferred/Volatility

Reported Annually Aligned to Each Release

Resource Reporting

- Reported for each Organization performing work
- Effort reported tied to release
- Effort is also reported for non-release activities
  - Not related to a release but required for system/organization functionality

Major Improvements to Data Reporting

Previous SRDR	SRDR Improvements
Application Domain was an open input text field	SRDR-WG defined a set list of 17 Application Domains that can be selected
Lack of insight into cybersecurity requirements	Requirements and Interfaces are now broken out by: Security, Safety, and Privacy
Defect reporting was optional and often not reported	Defects are required to be reported and categorized according to ISO TR 24748-1
No standardization of software development activities	Software Development Activities are now reported according to ISO 12207
SLOC counts reported using in-house and various tools	Vendors are required to count SLOC using the UCC Tool
Lack of flexibility for Agile reporting	Agile measures are now built into the SRDR
Vendors submitted their own data dictionary for each submission	Standardized DID that all reports adhere to
Effort reporting at the end of releases and difficulty mapping to overall PMP WBS	Effort hours are tracked monthly and tied directly to the WBS in the CSDR Plan
Program and Lifecycle gaps	DEV, ERP and Maintenance forms captures relevant data for all program types and stages of the lifecycle

Changes to the SRDR data collection form *increase* standardization in an attempt to *reduce* measurement variance

Analysis Enablers

- Data Across the Lifecycle
  - SRDR-Maintenance now allows the DoD to capture software lifecycle cost, effort, and technical data
  - Ability to inform design decisions based on a set of complete lifecycle data
  - Informs portfolio management for capability, cost, and release schedules
- Agile Analysis
  - Agile data collected alongside traditional measures (RICE-FW, SLOC, etc.) enable the ability to compare benefits and potential savings of Agile development
- ERP Comparison
  - Standardized ERP form enables the cost community to more easily utilize all services ERP data in their analysis
- Proper bucketing (Application Domain)
  - Can now easily segregate data by Super Domain and Application Domain allowing for benchmarks, measures, and targeted analysis
- UCC
  - Reduces variance in analysis that utilize SLOC
- Comparison of maintenance
  - All systems now utilize the SRDR-Maintenance enabling deeper understanding of the cost impact of maintenance and ability to compare maintenance by system type

Challenges

- Unclear when SRDR for Development or the SRDR for Maintenance should be used
  - Depending upon release content if there is still a lot of development/enhancement being performed it is more favorable to report data at the CSCI level
  - The clear delineation of forms do not work well for the current movement towards a DevOps environment
- Requiring simultaneous reporting of development and maintenance releases may be seen as a reporting burden on the vendor
  - Policy defining proper report requirements is necessary to ensure consistency across services
- Current policy for the SRDR for Maintenance only applies to new systems that start after the policy date
  - The timeline until there is a significant amount of Maintenance data is several years out
- If the services enforce reporting on all programs over $100M the amount of effort it takes to facilitate reporting may be unmanageable with the current infrastructure and processes

Concluding Remarks

- Major improvements to software data collection across the DoD standardizes reporting for Government and Contractor vendors
- Addition of SRDR-M along with changes in policy enables the DoD the first opportunity to collect software data across the lifecycle in a standard format
- SRDR-ERP enables the flexibility to gather data on complex business and enterprise systems
- SRDR DID alleviates the burden of data normalization between vendor submissions increasing confidence of a homogenous dataset

Road Ahead:

- Capture data on non ACAT-I programs as well as formulate a plan to capture Non-Program of Record efforts
- Determine optimal reporting guidance for the transition of Development to Maintenance
- Continue to enhance V&V tools and efforts to increase data credibility

BACKUP

RICE-FW Category Definitions

- Functionally Designed: objects that have been designed and are ready to be developed.
- Technically Built: objects that have been, or are being coded, but have not been tested or implemented.
- Tested/Implemented: completed code or objects.

RICE-FW Definitions
(1 of 2)

- **Report Objects** - Includes counts by complexity as defined below, to include Within Reports and Business Warehouse Reports:
  - Simple Complexity: Less than 5 standard application tables. As many as 1 external file. Straight forward data retrieval. Logic: Basic, single-level report. Little aggregation or sorting. No use of external subroutines. One version suits all requirements.
  - Medium Complexity: 5 to 8 standard application tables. As many as 3 external files. Some cross-checking. Logic: Multiple-level drill down capability. Moderate calculation, sorting. Some customization (ex: company-wide). Field translations required.
  - High Complexity: 9 or more standard application tables. 3 or more external files. Data from multiple functional areas. Logic: Use of sub-screens, pop-ups, etc. Significant authorization checking. Complicated data retrieval. Some customization (ex: plant-wide). Field translations required.
- **Interfaces (Inbound and Outbound)** - Includes counts by complexity as defined below:
  - Simple Complexity
    - Inbound: 1 external file, with fewer than 3 different record types. Logic: Up to 2 transactions in upload. No retry logic (errors to report to log). No reconciliation. Batch.
    - Outbound: 1 external file, Fewer than 3 different record types. Logic: No translations of codes. Batch. Data read from less than 5 tables.
  - Medium Complexity
    - Inbound: 2 to 4 external files, 3 to 5 more different record types. Logic: 2 to 5 transactions in upload. Moderate coding (some validation). Some retry logic and error processing. Minimal reconciliation.
    - Outbound: 2 to 4 external files, 3 to 5 difficult record types. Logic: Batch. Moderate translations of codes. Data read from 5 to 9 tables.
  - High Complexity
    - Inbound: 5 or more external files, 6 or more different record types. Logic: More than 6 transactions in upload. Complex coding (complex validation). Significant retry logic and error handling. Heavy reconciliation.
    - Outbound: 5 or more external files, 6 or more different record types. Logic: heavy translations. Near real-time/Real-time. Triggering via user exits. Data read from 9 or more tables.
- **Conversions** - Includes counts by complexity as defined below:
  - Simple Complexity: Data is pre-extracted & formatted. Up to 2 input files/record types. Logic: Use of standard application load programs. Loading basic master data. Single load program. Assume zero, until identified.
  - Medium Complexity: Some reformatting of data is required. 3 or 4 input files/record types. Logic: Baseline coding (some validation) Single load program.
  - High Complexity: Significant reformatting is required. 5 or more input files/record types. Logic: Moderate coding (moderate validation). Loading lowest level master data. Single load program.

RICE-FW Definitions
(2 of 2)

- **Extensions** - Includes counts by complexity as defined below:
  - Simple Complexity: Manipulation of 1 standard table. Logic: Does not require user exits. Initial & detail screen. Menu extensions. No database updates. One version suits all requirements.
  - Medium Complexity: Manipulation of 2 standard tables. Logic: User exits to capture data only. Initial & detail screen. Function exit. Update database. Some customization (ex. company-wide).
  - High Complexity: Manipulation of 2 or more standard tables. Logic: User exits with substitution logic. Step-loop to maintain header & detail. Initial screen with sub-screens. Dynapro extension. Some customization (ex. plant-wide).
- **Forms** - Includes counts by complexity as defined below:
  - Simple Complexity: Standard forms (i.e. invoice, quotation, etc). No custom database access is required. Logic: Minor modifications to the SAP/Oracle/PeopleSoft standard forms. Printing of forms is configured into SAP/Oracle/PeopleSoft, no custom programming required.
  - Medium Complexity: Non-standard forms (i.e. new invoice form). Accesses one or more logical databases. Logic: Creating a form from scratch, and printing it on plain printed paper. No need to create cosmetics such as grids or boxes. Printing of forms may require custom work.
  - High Complexity: Non-standard forms (i.e. new invoice form). Accesses one or more logical databases. Logic: Creating a form from scratch, but printing it on plain paper. Will need to create cosmetics such as grids or boxes. Printing forms may require custom work.
- **Workflows** - Includes counts by complexity as defined below:
  - Simple Complexity: Standard Workflow. No customization is required. May have minor modification to standard workflow.
  - Medium Complexity: Non-standard workflow (i.e. new workflow). Standard custom work, moderate modification to standard workflows.
  - High Complexity: Non-standard workflow. Creating workflow from scratch. Will need significant customization.