

In Pursuit of the One True Software Resources Data Reporting (SRDR) Database

ICEAA Conference, IT Track

Friday, June 13th, 2014, 10:30 a.m. MDT

Zach McGregor-Dorsey, Kristen Wingrove,
Remmie Arnold, Peter Braxton, Technomics
James Doswell, Michael Duarte, ODASA-CE

Abstract

For many years, Software Resources Data Reports, collected by the Defense Cost and Resource Center (DCARC) on Major Defense Acquisition Programs (MDAPs), have been widely acknowledged as an important source of software sizing, effort, cost, and schedule data to support estimating. However, using SRDRs presents a number of data collection, normalization, and analysis challenges, which would in large part be obviated by a single robust relational database. The authors set out to build just such a database, and this paper describes their journey, pitfalls encountered along the way, and success in bringing to fruition a living artifact that can be of tremendous utility to the defense software estimating community.

SRDRs contain a wealth of data and metadata, and various attempts have been made by such luminaries in the field as Dr. Wilson Rosa and Mr. Mike Popp to excerpt and summarize the “good” data from SRDRs and make them available to the community. Such summaries typically involve subjective interpretations of the raw data, and by their nature are snapshots in time and may not distinguish between final data and those for which updates are expected.

The primary goal of this project was to develop an Access database, which would both store the raw source data in its original form at an atomic level, exactly as submitted by WBS element and reporting event, and allow evaluations, interpretations, and annotations of the data, including appropriate pairing of Initial and Final reports; mapping of SLOC to standard categories for the purposes of determining ESLOC; normalization of software activities to a standard set of activities; and storage of previous assessments, such as those of the aforementioned experts. The database design not only provides flexible queries for quick, reliable access to the desired data to support analysis, it also incorporates the DCARC record of submitted and expected SRDRs in order to track missing past data and anticipate future data.

The database is structured by Service, Program, Contract, Organization, CSDR Plan, and Reporting Event, and is flexible enough to include non-SRDR data. Perhaps its most innovative feature is the implementation of “movable” entities, wherein quantities such as Requirements, Effort, and SLOC, and qualities such as Language, Application Type, and Development Process can be reported at multiple levels and “rolled up” appropriately using a sophisticated set of queries. These movable entities enable the database to easily accommodate future changes made to the suggested format or reporting requirement found in the SRDR Data Item Description (DID).

This work was sponsored by the Office of the Deputy Assistant Secretary of the Army for Cost and Economics, and represents a continuation of the effort that produced the ICEAA 2013 Best Paper in the IT track, “ODASA-CE Software Growth Research.” A key motivation of the database is to be able to provide real-time updates to both that Software Growth Model and ODASA-CE’s Software Estimating Workbook. We are also collaborating with the SRDR Working Group on continual improvements to the database and how best to make it available to the broader community.

Outline

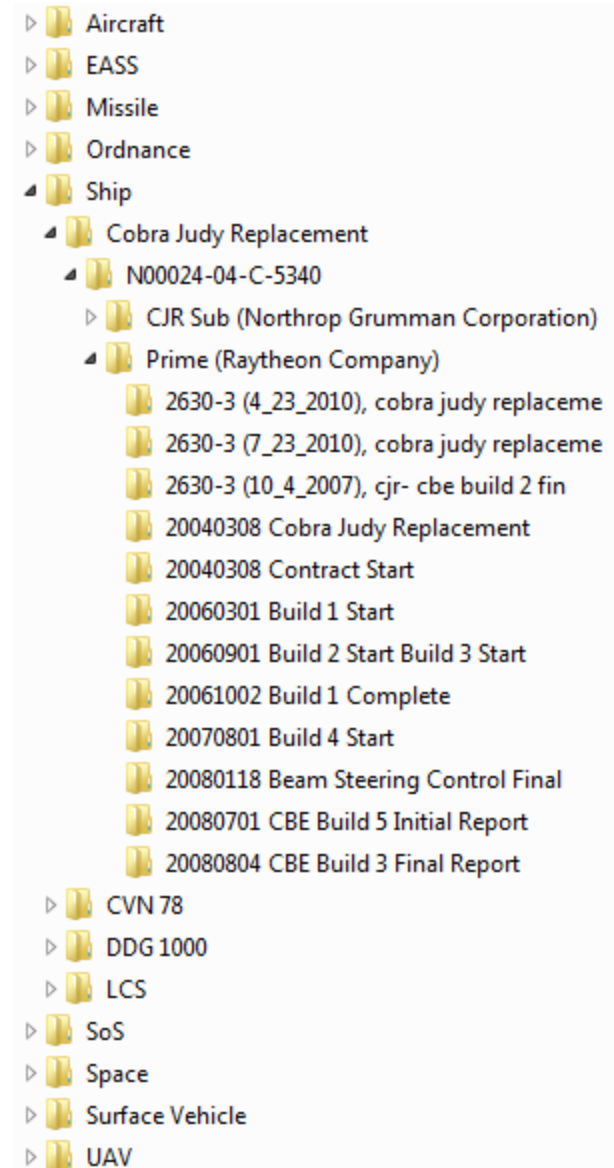
- Where we are: Multiple data sources, each with their own limitations
 - Defense Cost and Resource Center (DCARC) SRDRs
 - Popp/Rosa data and evaluations
 - Difficulty in mapping between DCARC data and Popp/Rosa data and evaluations
- Where we are going: Single Relational Database
- How we are getting there:
 - Database overview
 - Challenges
 - Future goals
- How far we have gotten: Stats on database population

Where we are...

- DCARC: Defense Automated Cost Information Management System (DACIMS) provides a central *repository*, but is not a *database*
 - Authoritative source
 - Non-normalized (not “analysis ready”)
 - Inconsistent content and format of reports
 - Abandonment of DD 2630
 - Evolving Data Item Description (DID)
 - Not easily searchable/retrievable
- Popp/Rosa Database:
 - Mike Popp (NAVAIR/Omnitec) has done a yeoman’s job of compiling SRDR data as a shareable Flat File (spreadsheet)
 - Further annotated by Dr. Wilson Rosa (then-AFCAA)
 - Non-authoritative source
 - Normalized (analysis ready, maybe?)
- Difficulty in mapping between sources

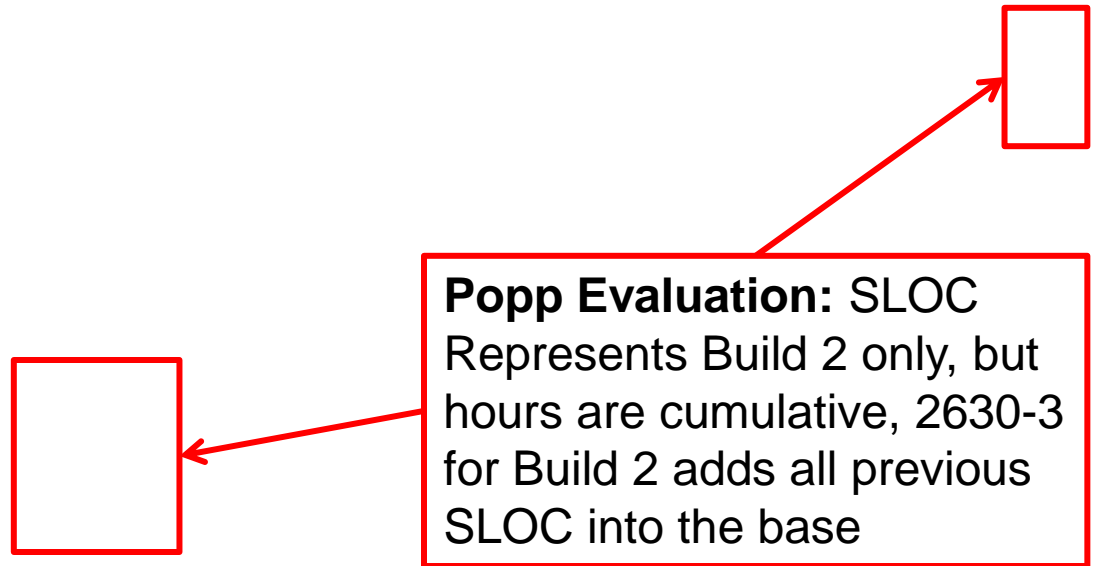
DACIMS is a Repository

- SRDRs are stored in a file structure tantamount to the one seen on the right
- Manually have to retrieve SRDRs one at a time
- No convenient way to search/filter SRDRs based on data needs



Popp/Rosa Database

- Popp and Rosa database provides much needed evaluation of SRDRs stored in DACIMS

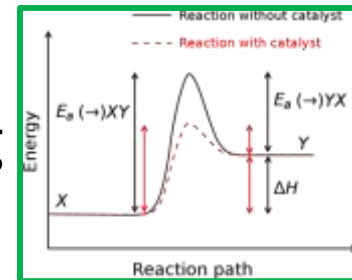


Popp/Rosa Database

- Mapping Difficulty
 - Popp/Rosa Database does not include CSDR Plan numbers
 - Contractor names often differ between sources
 - Contract names sometimes differ between sources
- Lack of Validation/Verification
 - Simple check to make sure data was correctly transferred from original source to database
 - Are normalization techniques those desired by the end user?

Where We Are Going...

- Motivation: One Software (SW) Database to support multiple...
 - Models (SW Estimating Workbook, Growth Model, etc.)
 - Analyses (estimates, studies, etc.)
 - Organizations (ODASA-CE, OSD CAPE, et al.)
- The time is ripe for a more sophisticated tool to support better coordination
 - ODASA-CE actively participating in SRDR Working Group led by Ms. Ranae Woods (AFCAA TD)
- It takes some “**activation energy**” to get over the hump
 - Address both Functionality and Content (and interactions)
 - Balance capability and complexity within limited resources



SRDRWG Vision

- “One OSD-hosted, central, user-friendly, authoritative, real-time software cost database and tool”

- Ms. Ranae Woods AFCAA, Chair
Aviation CIPT, May 2014

- OSD-hosted = integrated with CADE
- Central = configuration-controlled, mutually accessible annotations
- User-friendly = queries from relational database, producing “analysis-ready” results
- Authoritative = “community-approved” data traceable back to original submissions
- Real-time = up to date with latest submissions
- Consistent with OSD CAPE vision for CSDR overhaul

Having Our Cake...

- Unified Software Database is for:
 - The ODASA-CE Client, built with their data (Army) and models in mind, but the Community* can leverage both the functionality and content of the database (e.g., OSD CAPE for CADE)
 - The Community, built with a broad (and ever-broadening) perspective, and ODASA-CE can directly benefit from their involvement
- Unified Software Database is:
 - A database proper, to store, relate, and annotate primary source information
 - A data analysis tool, primarily via automated queries to extract and export data in the desired format
- Unified Software Database contains:
 - SRDR data, the official DoD software data source
 - Non-SRDR data, as collected by ODASA-CE/Technomics
- Unified Software Database is:
 - Backward-looking, capturing legacy data in various formats and annotations thereof
 - Forward-looking, enabling improved data collection in the future

Unified SW Database Vision

- A single *relational* Access database that contains:
 - Raw source data (fully traceable)
 - Data at the level at which it is reported (WBS element, “atomic level”)
 - Both “initial” and “final” instances of a reporting event
 - DCARC CSDR Plan information for reporting events that are still missing or expected in the future
 - Assumptions and context about the data that facilitate analysis (e.g., Pairing ID)
 - Evaluations of the quality of the data (e.g., knowing that counting rules are not provided in the data dictionary)
- New database provides the ability to:
 - Quickly query data at both the lowest level and summary-levels in order to track progress in obtaining missing data
 - Use the level of data most appropriate for the analysis (e.g., contract vs. plan vs. event)
 - Tag and store “Roll-ups” of data
 - Tag and store Initial/Final pairings of data points
 - Interface with and “feed” multiple workbooks that serve different analytic purposes (without touching or modifying the original data)
 - “Save” queries and dashboards that allow analyst to quickly access often-used sets of data

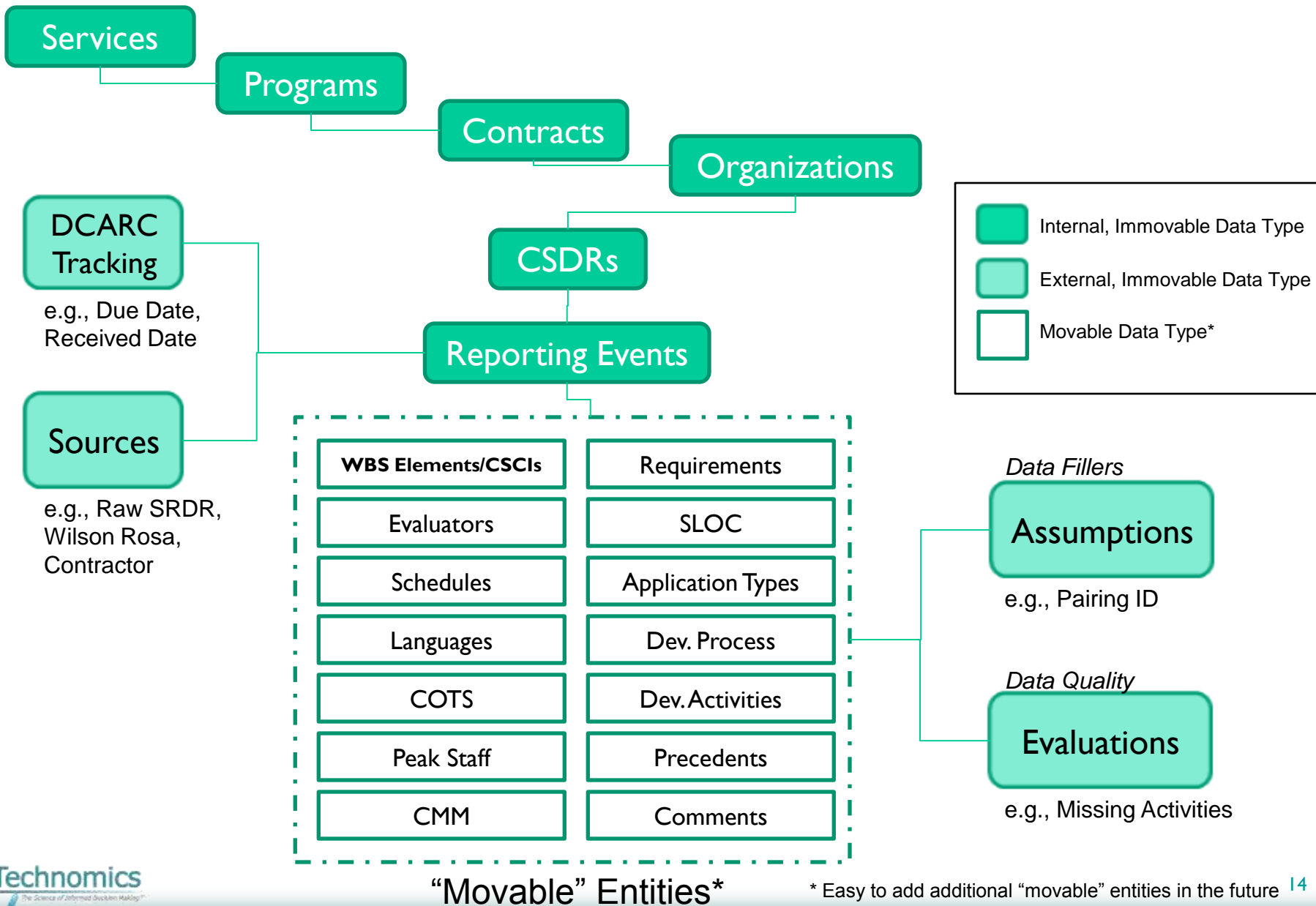
Unified SW Database Strengths

- Preserve atomic raw un-normalized SRDR data
- Relational database
 - Data integrity, flexible queries, etc.
- Enables “crowd-sourcing” community-best version of SRDR database (under aegis of CADE?)
 - Quality assessments, annotations, etc.
- More efficient data ingest
 - XML → DCARC → SWDB
 - Accommodates DID changes, known and unknown
- More rigorous access control and DB exports
 - Full-context versions where NDAs exist
 - Anonymized version (only valuable if you trust the source)

How We Are Getting There...

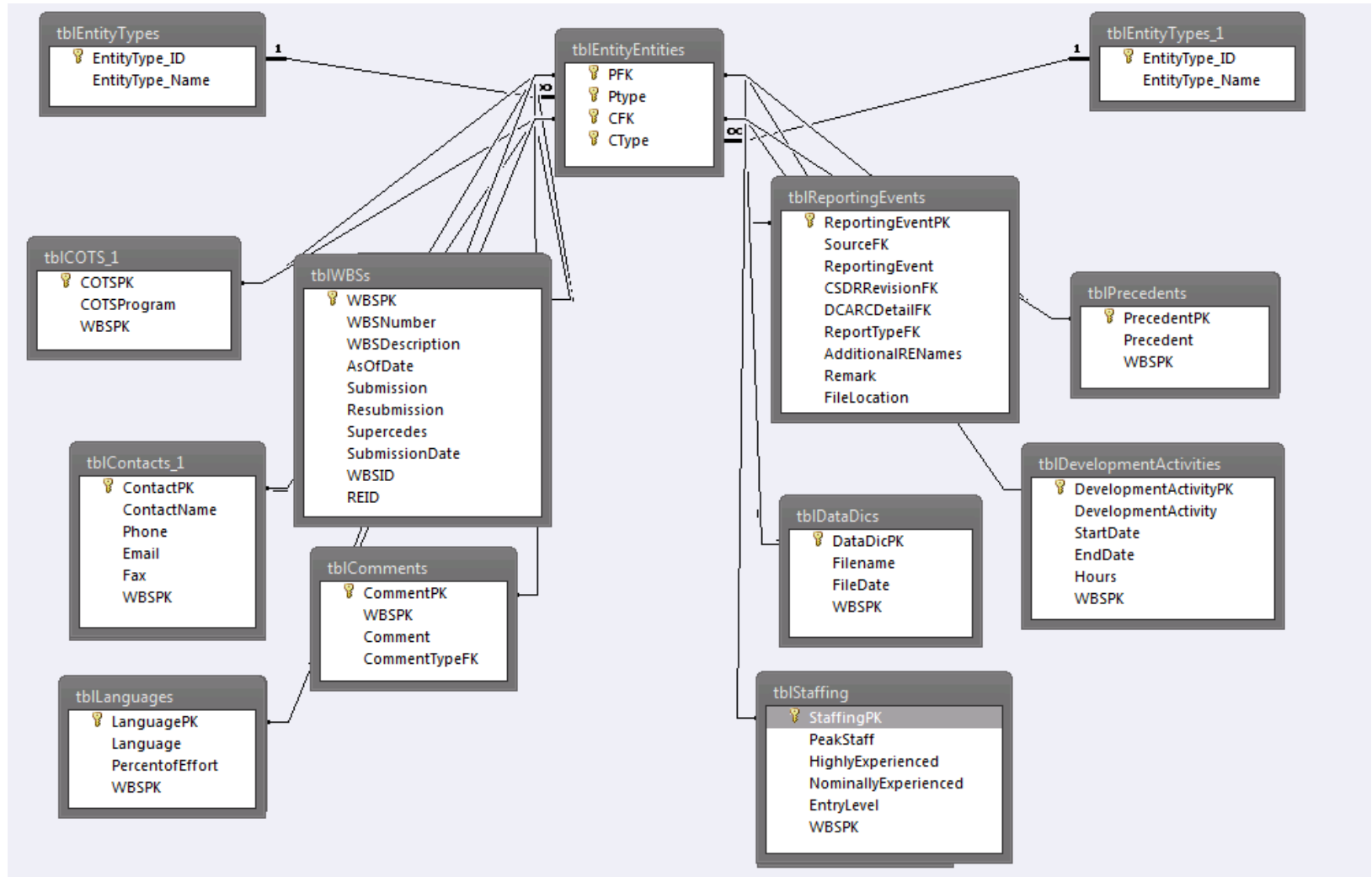
- Maintain trace to original data
 - Raw = exactly as submitted (unadulterated)
 - Atomic = at the lowest level submitted
 - Un-normalized = neither mapped, nor rolled up, nor summarized (e.g., ESLOC)
- Provide direct link to source files
- Use “moveable entities” to accommodate reporting at various levels and in non-standard categories

High-Level Relational Database Structure



Access Database

Over 50 tables make up the complete relational database in Access. Below is a small sample.



Database Status

Software Report Database

Database Status Report

Services to include in status report

- Army
 Navy
 Air Force
 Department of Defense
 Missile Defense Agency

*These status reported in relation to
DACIMS Summary Report*

Total		Relevant records in database for DACIMS Accepted reports			Future reports expected by DACIMS
		All	Some	None	
<u>69</u>	Programs	<u>2</u>	<u>30</u>	<u>32</u>	<u>44</u>
<u>122</u>	Contracts	<u>12</u>	<u>42</u>	<u>59</u>	<u>53</u>
<u>218</u>	Plans	<u>30</u>	<u>78</u>	<u>100</u>	<u>69</u>
<u>863</u>	Events	<u>306</u>		<u>524</u>	<u>149</u>

Navigation

Browse/Query Data

Edit/Enter Data

Evaluate Data

View Software Estimating Workbook Data



A tool for estimating final effort hours and schedule months for a software development effort based on the contractor's initial estimates. To import data from the database into the workbook, simply open a new instance of the workbook, which is located TBD.

Searching for SRDRs

High-Level Search

Services

- Air Force
- Army
- Department of Defense
- Missile Defense Agency
- Navy

Selecting none is the same as selecting all.

Programs

3DELRR	Three-Dimensional Expeditionary Long-Range Radar
AEHF	Advanced Extremely High Frequency (AEHF) Satellite Program
AMF JTRS	Joint Tactical Radio System Airborne & Maritime/Fixed Station
AMPV	Armored Multi-Purpose Vehicle
AOC-WS	Air and Space Operations Center-Weapon System

Contracts

- FA8726-08-C-0008
- TBD
- TBD
- TBD

CSDR Plan Numbers

- D-08-A-C1(R1)
- D-08-A-C1-S3
- D-08-A-C1-S3(R)

Reporting Events

AMF JTRS	\EASS\AMF JTRS\FA8726-08-C-0008\JTRS AMF Sub (Northrop
AMF JTRS	\EASS\AMF JTRS\FA8726-08-C-0008\JTRS AMF Sub (Northrop
AMF JTRS	\EASS\AMF JTRS\FA8726-08-C-0008\JTRS AMF Sub (Northrop
AMF JTRS	\EASS\AMF JTRS\FA8726-08-C-0008\JTRS AMF Sub (Northrop
AMF JTRS	\EASS\AMF JTRS\FA8726-08-C-0008\JTRS AMF Sub (Northrop

Go to SRDR View

Go to Original

Viewing\Entering Data

SRDR View

ID

Find Record

Previous Record

Next Record

Unclassified

Fields in all capital letters exist on 2011 SRDR form. All others are available for legacy forms.

SECURITY CLASSIFICATION

SOFTWARE RESOURCES DATA REPORTING: DEVELOPER REPORT

Due 60 days after contract award and 60 days after start of any release or build.

Reporting Event

Section 3.1

Section 3.1 REPORT CONTEXT AND DEVELOPMENT ORGANIZATION

MAJOR PROGRAM a. NAME: U.S. Army's Brigade Combat Team Modernization (BCTM) Group b. PHASE/MILESTONE A (Technology Development)

REPORTING ORGANIZATION TYPE <input type="checkbox"/> PRIME/ASSOCIATE CONTRACTOR <input checked="" type="checkbox"/> DIRECT-REPORTING SUBCONTRACTOR <input type="checkbox"/> GOVERNMENT	NAME/ADDRESS a. REPORTING ORGANIZATION: Northrop Grumman Information Systems, Defense Systems Division 201 Electronics Blvd., Huntsville, AL 35824 b. DIVISION: Same as Reporting Organization
---	---

APPROVED PLAN NUMBER CUSTOMER CONTRACT TYPE

WBS ELEMENT CODE WBS REPORTING ELEMENT

TYPE ACTION a. CONTRACT NO.: c. SOLICITATION NO. e. TASK ORDER / DELIVERY ORDER NO.
b. LATEST MODIFICATION: d. NAME:

PERIOD OF PERFORMANCE a. START DATE: <input type="text" value="20110528"/> b. END DATE: <input type="text" value="20131205"/>	APPROPRIATION <input checked="" type="checkbox"/> RDT&E <input type="checkbox"/> Procurement <input type="checkbox"/> O&M	SUBMISSION NUMBER <input type="text" value="4"/> RESUBMISSION NUMBER <input type="text" value="0"/> Supersedes Number <input type="text"/> REPORT AS OF <input type="text" value="20120127"/> DATE PREPARED <input type="text" value="20121031"/>
---	--	---

Revision Date

NAME (Last, First, Middle Initial) | DEPARTMENT | TELEPHONE Fax | EMAIL ADDRESS

Queries

Choose the records you would like to see:

- Army Navy Air Force
 Department of Defense Missile Defense Agency

Organizations
to include

Select All

Deselect All

Lockheed M ▲
AgustaWest █
BAE System:
Ball Aerospa
Bell Helicop
Boeing
CAE Inc
General Dyn
General Elec
Harris
Hill AFB
Honeywell
IBM
L-3 ▼

Total Effort Hours

Between: And:

Total Size (Total SLOC)

Between: And:

Schedule Months

Between: And:

MUST include complete data for:

- Effort Hours
 SLOC

Roll-up Level Reporting Event ▼

ONLY Include: All Reports ▼

Platform Type ▼

Commodity Type ▼

Run Query

Blank indicates no restriction

SW Data – Accommodating Different Structures

Language is usually a child of the WBS element and code count is reported separately

2. Product and Development Description	Percent of Product
1. Primary Application Type: Guidance & Control	2. 100 %
5. Secondary Application Type:	6. %
9. Third Application Type:	10. %
13. Fourth Application Type:	14. %
17. Primary Language Used: C	18. 100 %
19. Secondary Language Used:	20. %



Here code counts is a sub-element (child) of language

Language	Base	Generated (Total)	Deleted	Modified	New	Partial	Revised	Dev Total SLOC	Product Total SLOC
Jovial	100,000		2,500	3,000	8,000		6,000		117,000
Assembler	20,000				100	200			20,300

4. Amount of New Auto-Generated Code developed and delivered (Size in <u> </u> Snc <u> </u>)	205,306
5. Amount of New Hand Written Code developed and delivered (Size in <u> </u> Snc <u> </u>)	6,036

Effort is usually reported by Activity

4. Resource and Schedule Reporting	Provide Actuals at Final Delivery		
Counting from month 1 at contract award, provide Actual Start and End Month for each activity shown. Provide the Actual Total Labor Hours for each activity shown.	Start Month	End Month	Total Hours
The following seven items should account for all direct hours charged to the software development project (use item 7 for any direct hours not accounted for in items 1 through 6). Explain any contribution of indirect hours in the associated Data Dictionary.			
1. Software Requirements Analysis	3/22/2006	8/27/2008	5,304
2. Hand Code and Database Code Design	5/15/2006	12/31/2007	2,006

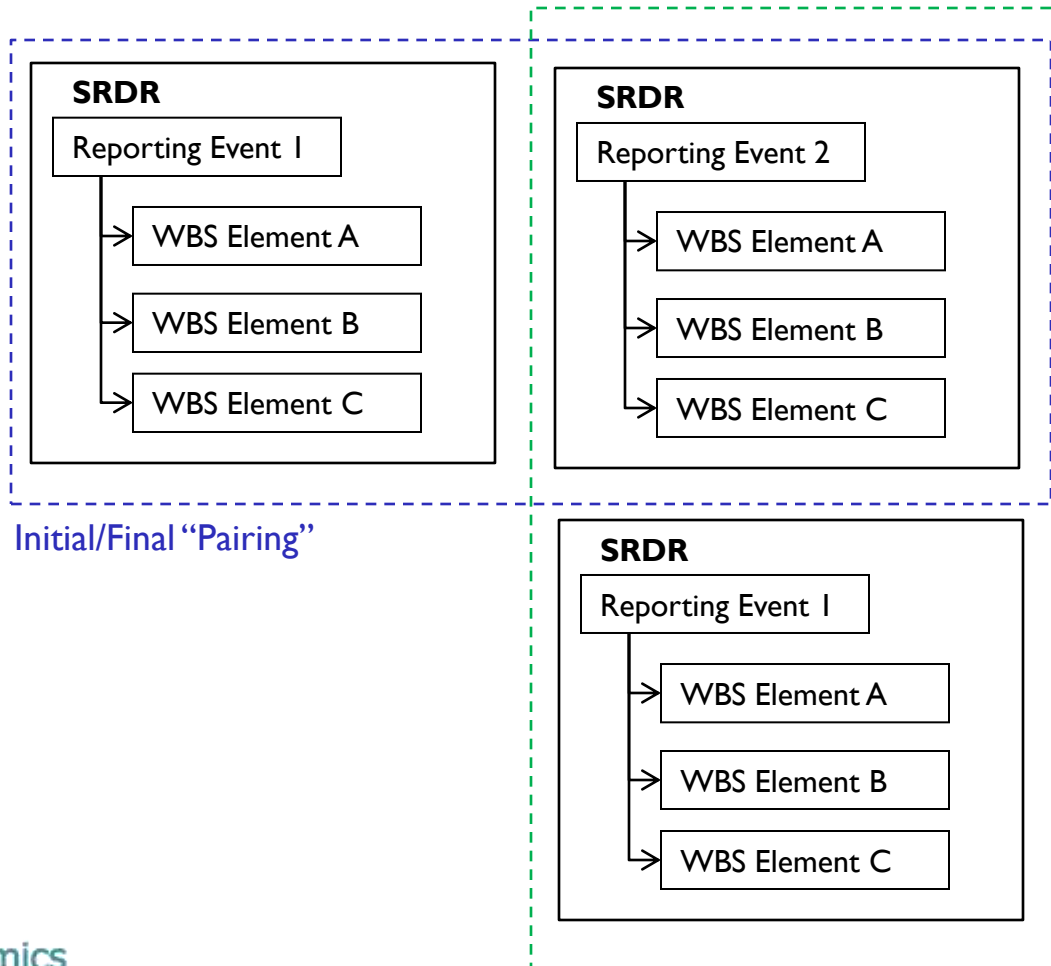


Here effort is reported by language

Sys Eng Phases	Ada		C	
	Delivered?	% of Total Eff Development Effort	Delivered?	% of Total Eff Development Effort
Ada83 (Staff-Months)		31.60		

Flexible Data Structure

Database captures initial/final “pairings” for analyses that require both. Also provides flexibility to tag and store “roll-ups” using different sets of business rules



User-Defined “Roll-Up”

Flexible Data Structure

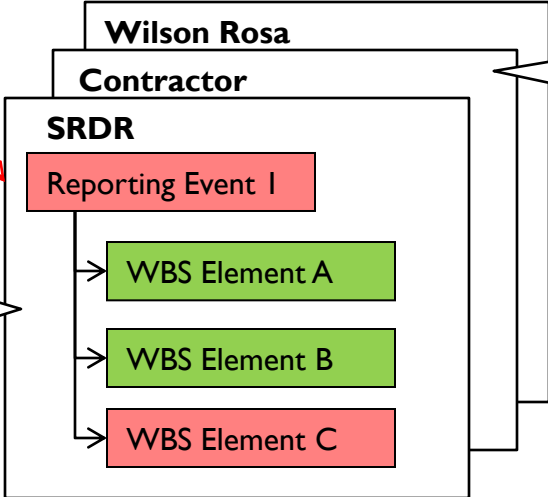
New structure allows us to store “all” the data (multiple sources, multiple levels); provides for total flexibility to compare or merge data from different sources and retrieve the level of data most appropriate for the analysis

Program	Contract #	CSOB Plan #	Reporting Event	Ac. Of Date	Dis Date	Received Date	DDASA-CE 007
Program 1	Contract 1	Plan 1	Event 1	100007	10000	10000	YES
			Event 2	30009	40009	40009	NO
	Contract 2	Plan 2	Event 3	50009	60009	70009	YES
			Event 4	80010	90010	90010	NO
Program 2	Contract 3	Plan 3	Event 5	70011	80011	80011	NO
			Event 6	80012	90012	100012	NO
			Event 7	60011	70011	80011	YES
	Plan 4	Event 8	90014	100014	N/A	NO	
		Event 9	50012	60012	70012	NO	
		Event 10	100015	110015	N/A	NO	

DCARC tracking sheet tells us which Reporting Events have been submitted or are expected

All records are tagged to a “source”, allowing us to quickly track all data back to original source, and retain data from multiple sources for the same event for cross-checks and comparisons

Once SRDR for a Reporting Event is received, data is captured at the lowest WBS element-level to better distinguish missing/bad data and provide flexibility for future analyses



Tracking Missing Data – What’s the “Universe”?

Database incorporates DCARC-provided tracking sheet that contains all delivered and expected SRDRs for programs still active after 2009

Program	Contract #	CSDR Plan #	Reporting Event	As-Of Date	Due Date	Received Date	ODASA-CE DB?
Program 1	Contract 1	Plan 1	Event 1	12/2007	1/2008	1/2008	YES
			Event 2	3/2009	4/2009	4/2009	NO
	Contract 2	Plan 2	Event 3	5/2009	6/2009	7/2009	YES
			Event 4	8/2010	9/2010	9/2010	NO
Program 2	Contract 3	Plan 3	Event 5	7/2011	8/2011	8/2011	NO
			Event 6	8/2012	9/2012	10/2012	NO
		Plan 4	Event 7	6/2011	7/2011	8/2011	YES
			Event 8	9/2014	10/2014	N/A	NO
			Event 9	5/2012	6/2012	7/2012	NO
			Event 10	10/2015	11/2015	N/A	NO

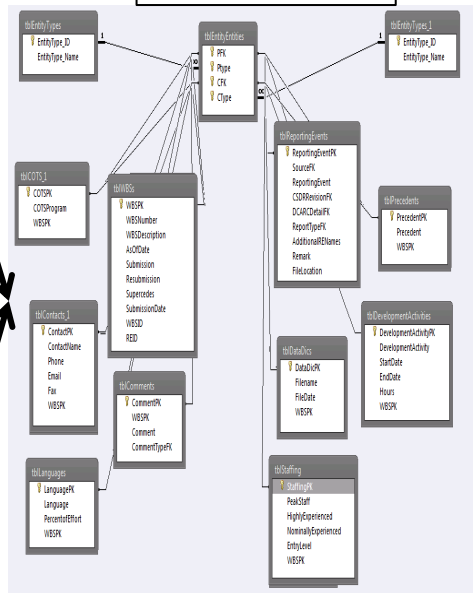
Allows us to track our SRDR data against all “possible” data

How it All Fits Together

DACIMS Data

- ▶ Aircraft
- ▶ EASS
- ▶ Missile
- ▶ Ordnance
- ▶ Ship
- ▶ Cobra Judy Replacement
 - ▶ N00024-04-C-5340
 - ▶ CJR Sub (Northrop Grumman Corporation)
 - ▶ Prime (Raytheon Company)
 - ▶ 2630-3 (4_23_2010), cobra judy replaceme
 - ▶ 2630-3 (7_23_2010), cobra judy replaceme
 - ▶ 2630-3 (10_4_2007), cjr- cbe build 2 fin
 - ▶ 20040308 Cobra Judy Replacement
 - ▶ 20040308 Contract Start
 - ▶ 20060301 Build 1 Start
 - ▶ 20060901 Build 2 Start Build 3 Start
 - ▶ 20061002 Build 1 Complete
 - ▶ 20070801 Build 4 Start
 - ▶ 20080118 Beam Steering Control Final
 - ▶ 20080701 CBE Build 5 Initial Report
 - ▶ 20080804 CBE Build 3 Final Report
- ▶ CVN 78
- ▶ DDG 1000
- ▶ LCS
- ▶ SoS
- ▶ Space
- ▶ Surface Vehicle
- ▶ UAV

Database



Import

Popp/Wilson Data



SRDR View

Find Record Previous Record Next Record

Fields in all capital letters exist on 2011 SRDR form. All others are available for legacy forms.

SECURITY CLASSIFICATION

SOFTWARE RESOURCES DATA REPORTING: Initial DEVELOPER REPORT

Due 60 days after contract award and 60 days after start of any release or build

Reporting Event: Contract Initial Estimate

Section 3.1 Section 3.2 Section 3.3 Section 3.4 Section 3.5 Other

Section 3.1 REPORT CONTEXT AND DEVELOPMENT ORGANIZATION

MAJOR PROGRAM a. NAME: U.S. Army's Brigade Combat Team Modernization (BCTM) Group b. PHASE/MILESTONE: A (Technology Development)

REPORTING ORGANIZATION TYPE NAME/ADDRESS a. REPORTING ORGANIZATION: Northrop Grumman Information Systems, Defense Systems Division
b. DIVISION: Same as Reporting Organization

APPROVED PLAN NUMBER: A-10-A-CL-51 CUSTOMER: BAE Systems CONTRACT TYPE: FFP

WBS ELEMENT CODE: 1.0 WBS REPORTING ELEMENT: Ground Combat Vehicle Program

TYPE ACTION a. CONTRACT NO.: W5SH2V-11-C-0000 c. SOLICITATION NO.: W5SH2V-11-4-0001 e. TASK ORDER / DELIVERY ORDER NO.:
b. LATEST MODIFICATION: 3 d. NAME: U.S. Army's Brigade Combat Team Mod (N/A)

PERIOD OF PERFORMANCE APPROPRIATION SUBMISSION NUMBER: 4
a. START DATE: 20110528 b. NOTICE: c. Procurement: Supersedes Number:
d. END DATE: 20132205 e. O&M: REPORT AS OF: 20120127

Revision Date: DATE PREPARED: 20120301

NAME (Last, First, Middle Initial) DEPARTMENT TELEPHONE Fax EMAIL ADDRESS

Retrieve and Submit Data

Cost Community

Choose the records you would like to see:

Army Navy Air Force
 Department of Defense Missile Defense Agency

Organizations to include

Select All
Deselect All

Lockheed M...
AgustaWest...
BAE System...
Ball Aerosp...
Bell Helicop...
Boeing
CAE Inc
General Dyn...
General Elec...
Harris
Hill AFB
Honeywell

Total Effort Hours
Between: [] And: []

Total Size (Total SLOC)
Between: [] And: []

Schedule Months
Between: [] And: []

MUST include complete data for:
 Effort Hours
 SLOC

Roll-up Level: Reporting Event

ONLY Include: All Reports

Platform Type: []
Commodity Type: []

Run Query

User Interface

Data Normalization Approach

- Dr. Wilson Rosa and Dr. Brad Clark
 - Inspect Data
 - Context Information
 - Effort Data
 - Schedule Data
 - Project Identifiers
 - Correct Data, Evaluate Quality
 - Normalize Data
 - Adjust SLOC data (physical to Logical, ESLOC)
 - Adjust for Missing Effort Data

Level I Evaluation

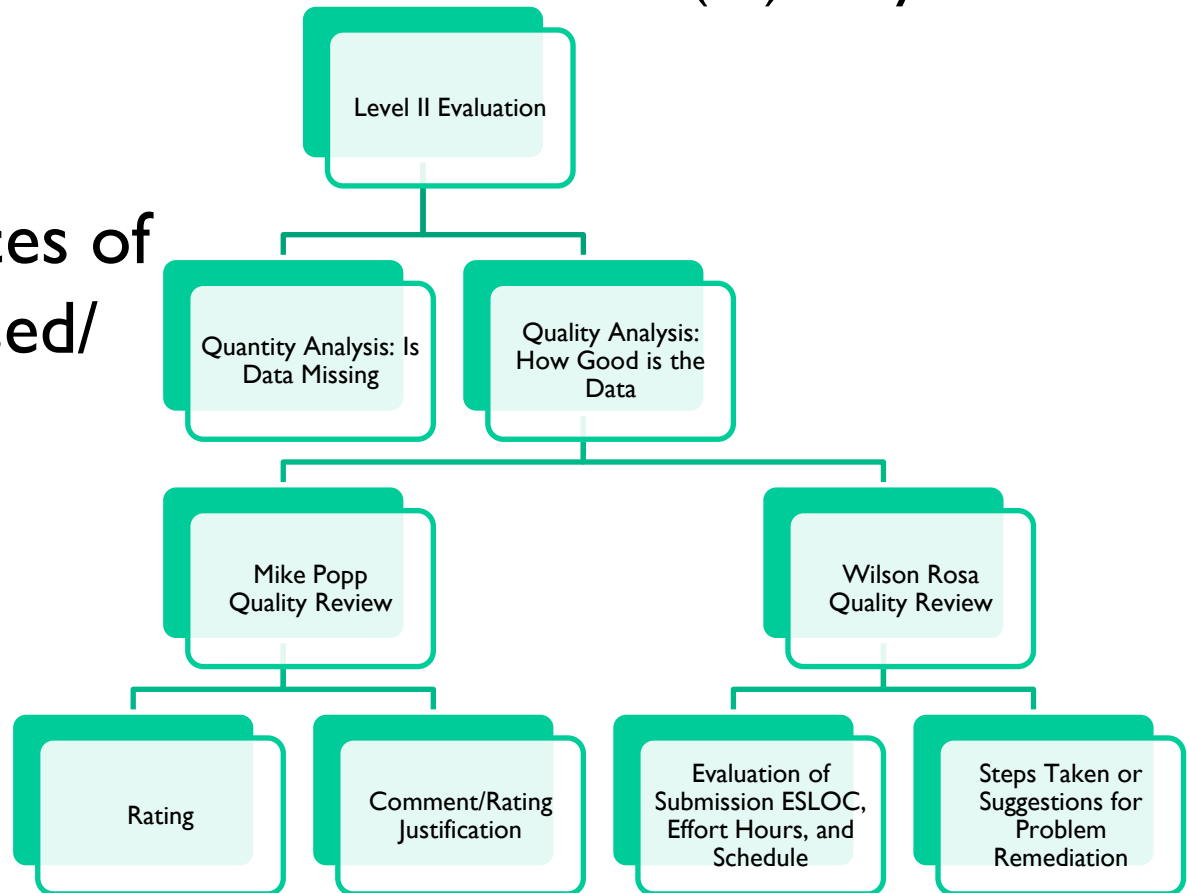
- Purpose: Initial evaluation and “organization” of the data needed to get the data in a more usable form
 - With the tags and user-provided data in the Level I evaluation, the database user can develop initial queries of data that can be used to support estimates and other analyses
- Sample items in Level I:
 - Initial/Final pairing tags
 - Identification (and potential addition) of contract-level and build level roll-ups
 - Data dictionary availability
 - Evaluation of the scope of effort represented in the event

Level I Evaluation: Roll-Up Types

- It is important to clearly define and implement different types of “Roll-Ups” based on data field
 - May require subtle adjustment of database queries
- Summation (distinct)
 - Total SLOC, effort hours, e.g.
- Max/Most Recent (monotonically increasing)
 - Total SLOC
- Max of Max
 - Peak staff, e.g.
- Extremes (Min/Max)
 - Schedule start and end months, e.g.
- Plurality
 - Programming Language, Application Type, e.g.

Data Quality Analysis

- Leverage to maximum extent previous work of Popp, Rosa, et al.
 - Import where possible, manual review and (re)entry where necessary
- Annotations vs. additional instances of data points (revised/corrected)



Level II Evaluation – Vision

- Purpose: To get the data “analysis-ready”*
- Sample items in Level II:
 - Mapping of SLOC to our ESLOC categories so that ESLOC can be quickly calculated for each data point
 - Mapping of activities to a “standard set of activities” that can be used for effort normalization and cross-data comparisons
 - Evaluation of Wilson Rosa/Mike Popp comments and storage of these assessments in a standard fashion (so they can be quickly used to exclude/include certain data points)
 - Review of Data Dictionary and entry of standard information from the dictionary in our database (examples: code counting logic, definition of each activity)
 - Evaluation and entry of additional “contextual” information that can help with analysis such as Operating Environment and Productivity Type

**Note: Before Level II Evaluations are completed, database can be used to quickly query for a set of data points that meet initial criteria but some of the activities listed below would still need to be conducted manually before the data could be used to support an estimate or as part of a study like the Growth Study. The Level II Evaluation simply completes these steps beforehand.*

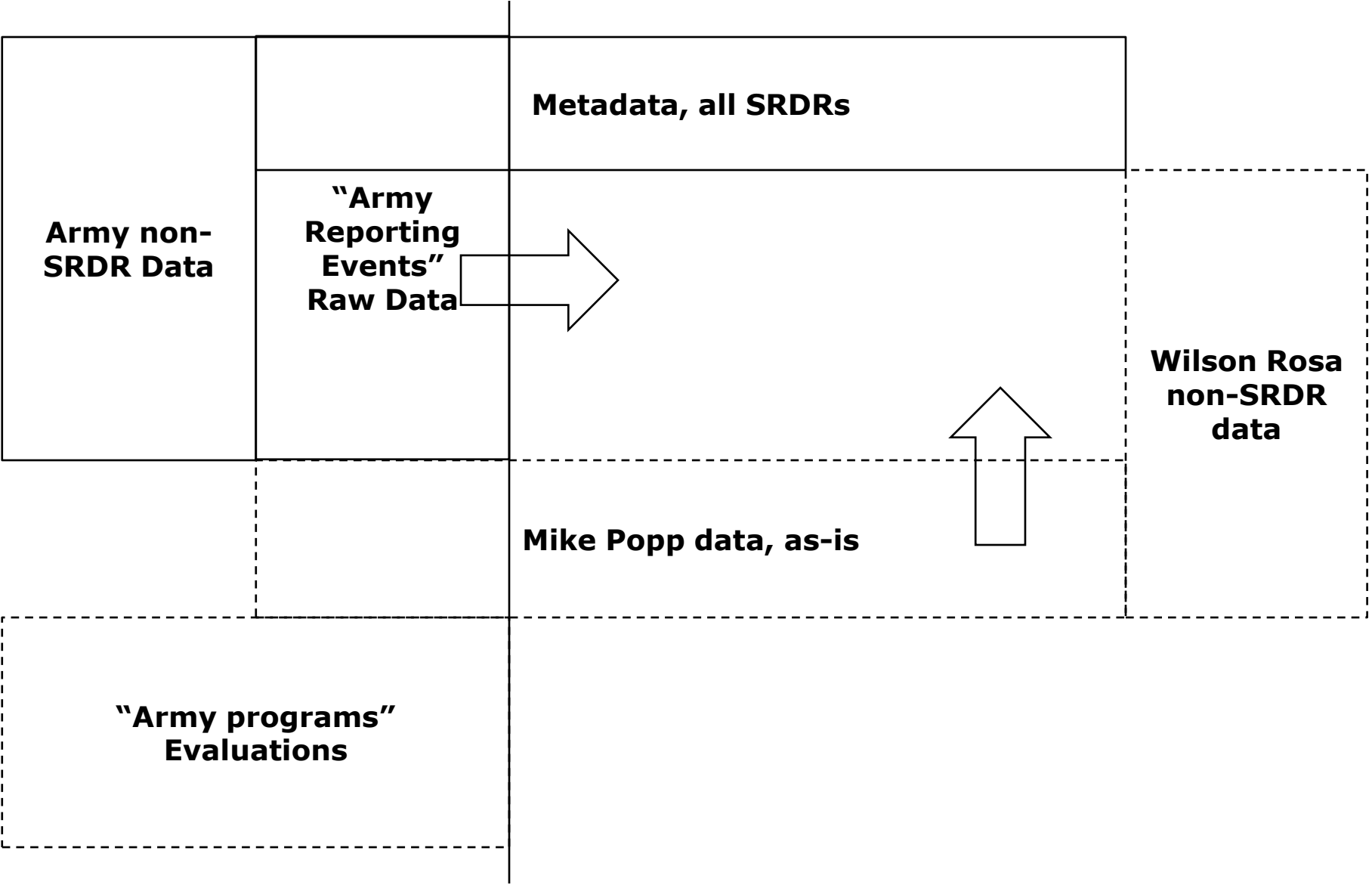
How far we have gotten...

- Multiple iterations with ODASA-CE client
 - Demonstration of incremental capability
- Parallel data entry for Army SRDRs
 - Import of legacy non-SRDR data, All SRDRs metadata
- Version 1.0 incorporates all essential functionality
 - Drill-down
 - Data entry / SRDR view
 - Evaluations (Level 1 and Level 2)
 - Query
 - Go to Original
- Accompanying User Guide
- Prioritize future enhancements and content updates

Data Inventory

- 1007 Total Reporting Events (according to DCARC reports)
 - 863 - Accepted Events
 - 144 - Due in the Future
- We have all 863 accepted events obtained in a bulk download request from DCARC
- Approximately 306 of these 863 have been entered into the database
- Dashboard and Drill-Down functionality in current database support further exploration

Contents of Database



Database Population

- Based on client (ODASA-CE) and community (OSD CAPE, SRDRWG) priorities
- Leverage existing resources to maximum extent possible
 - Import Mike Popp spreadsheet, e.g.
- Analyst involvement still crucial
 - At a minimum, validate against original submissions

Comparison: SEI SCAR

	SCAR	Unified SWDB
Sponsor	USD(AT&L)?	ODASA-CE
Developer	Software Engineering Institute (SEI)	Technomics
Data	5 programs (pilot)	18 programs (Army), 58 programs (Total)
Metadata	??	All SRDRs (DCARC import), including Future
Data Entry	Scraper (DD 2630 only)	Import/manual
Platform	Web-based	Microsoft Access
Popp/Rosa	Separate repository?	Direct incorporation/annotation
Database Components	4 Databases, ...	2 Databases, ...

“Software Cost Analysis Repository” webinar, Brad Clark, Jim McCurley, Software Engineering Institute (SEI), July 2, 2013

Disclaimer: Direct insight into SCAR is limited at this time.

The Bigger Picture

- Improve Accessibility and Quality of existing data (Past)
- Improve guidelines for ongoing data collection, i.e., SRDR DID (Present, Pull)
- Improve capture for incoming SRDRs (Present, Push)
- Improve mechanism for data collection on new programs, i.e., XML (Future)

Bibliography

- Cost and Software Data Reporting (CSDR) Manual, 4000.04-M-1, CAPE, November 2011
- Initial Software Developer Report, DI-MGMT-81739B (PDF), 20110525, DI-MGMT-81739B
- Final Software Developer Report, DI-MGMT-81740A (PDF), 20110518, DI-MGMT-81740A
- “How I learned to stop worrying and love the Software Resource Data Report”, Michael Popp, DoDCAS 2012
- “Data Inspection and Normalization Guide: Software Resource Data Reports (SRDR),” Wilson Rosa (DHS), Joseph Dean (AFCAA), and Brad Clark (AFCAA)
- “ODASA-CE Software Growth Research”, Lauren Nolte, Kevin Cincotta, Eric Lofgren, Remmie Arnold, ICEAA 2013 (Best Paper, IT Track)
- “Software Cost Analysis Repository” webinar, Brad Clark, Jim McCurley, Software Engineering Institute (SEI), July 2, 2013
- “Software Estimating Handbook Version 1.0,” Office of the Deputy Assistant Secretary of the Army, Cost and Economics (ODASA-CE), September 2012
- “Software Database User Guide,” Office of the Deputy Assistant Secretary of the Army, Cost and Economics (ODASA-CE), March 2014

In Pursuit of the One True Software Resource Data Reporting (SRDR) Database

Backup

Army SRDR Programs Summary

- Ground Vehicles
 - GCV
 - JLTV
 - PIM
- Missiles and Munitions
 - Excalibur
 - JAGM
 - GMLRS
- Aircraft
 - Apache
 - UH-60M
 - ARH
- Electronics
 - JTRS-GMR
 - WIN-T Increments 2 and 3
 - DCGS-A
 - FBCB2
- System of Systems
 - JLENS
 - IAMD
 - FCS
 - GCSS
 - GFEBS

Army Non-SRDR Programs Summary

- **Ground Vehicles**
 - EFV
- **Missiles and Munitions**
 - AIM-9X Block II
 - AARGM
 - SM-6
 - SDB II
- **Aircraft**
 - B-2 EHF
 - VH-71
 - Super Hornet
 - C-130 AMP
 - Hercules
 - H-1 Upgrades
 - B-2 RMP
 - E-2D AHE
 - F-22
 - KC-46A
 - B-2 DMS
 - CH-53K
 - MH-60R
 - EA-18G
- **Electronics**
 - NMT
 - JATAS
 - CAC2S
 - G/ATOR
 - MPS
 - NAVY ERP
 - MP RTIP
 - IDECM
 - FAB-T
 - ADS
 - CEC
- **UAV**
 - VTUAV
 - MQ-4C
- **Ships**
 - LCS
 - Cobra Judy Replacement
- **Space**
 - SBIRS HIGH
 - GPS OCX
 - NAVSTAR GPS
 - EPS
 - MUOS