



OWN THE DATA™

DATA CONFIGURED: IPMDAR IN 2020
A PRESENTATION TO THE VIRTUAL CPM WDC
22 OCTOBER 2020

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AGENDA

- Basis for Standard Schemas
 - Transportation Industry
 - DoD Integrated Digital Environment Policy
- Precursors to IPMDAR
 - Performance Analyzer (PA Transfer File)
 - ANSI X12 839 Transaction Set
 - UN/CEFACT XML schema Formats 1 – 4 (IPMR)
 - IPMR Formats 6 and 7
- Elements of DoD Data Strategy
- Focused Exploration of IPMDAR

DoD PM DATA EVOLUTION TO DIGITAL – BEGINNING STATE


- Collection of Data Through PMOs – DAES
- Manual Input from Submitted Supplier Reports into Central Data Processing ported to Pentagon at USD(A)
- Identification of early signs or breach of Nunn-McCurdy Unit Cost Breach thresholds (10 USC 2433 (1983 as amended))
- Final Internal Product was the Acquisition Board “Comic Book” Introduced 1993
- Used to report Selected Acquisition Report (SAR) to Congress in case of breach

COMIC BOOK – THE CHRISTIE SYSTEM ANALYSIS

4 February 1993

UNCLASSIFIED

Program Name				Nunn-McCurdy Unit Cost Data			
Lead Service	Phase	Next Review	APB Dates/Changes	Current Estimate	Current Year LCR Baseline	Percent Change	
The CHRISTIE System				Initial (DEX)	PAUC: \$0.99 (JAN 93 DAES)	PAUC: \$0.99 (DEC 91 SAR)	0.00
OSD	Refurb.	TBD	Current	CPUC: \$0.99 (JAN 93 DAES)	CPUC: \$0.99 (DEC 91 SAR)	0.00	
Extraordinaire	Others	ACAT	Review Type				
PM: Mr Yockey (909) DYO-CKEY							
PEO: Mr Atwood (703) 695-6352							
OSD: Mr Porter (703) 695-4060	ALL	A-#1	TBD				
			Changes: 2				

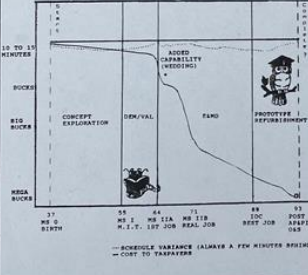


Description, Features, Etc.
 (U) The CHRISTIE System is a high capacity, high speed, random access combat information retrieval system. It is designed to protect against "Pearl Harbor"-type surprise attacks. There are three (3) primary auxiliary systems that have been employed to maximize the performance of the CHRISTIE: (1) LICKLEY CHECKER (Quality Control), (2) TOM (Reflector), and (3) CHERYL (Rescheduler). The CHRISTIE "J" model is a replacement for the CHRISTIE "T" model, and is being deployed with the CHRISTIE "D."
 To date, this system has fully exceeded its mission requirements.

Major Contracts		
Contractor	Contract Name	Ceiling
Investor's Daily	Mind Development	Unlimited
USD(A)	System Integration	Variable
Porter, Inc.	Primary Backup System	FPF
Executive Dining Room	Body Development	\$10.00/day

Contract Performance

THE CHRISTIE SYSTEM
COST/SCHEDULE VARIANCE TRENDS



--- SCHEDULE VARIANCE (ALWAYS A FEW MINUTES BEHIND)
--- COST TO REPAIRS

Program Status	Current APB Objective	Threshold	Current Estimate
Program Initiation	1936	1936	1936
Roll-Out First Unit	1937	1937	1937
Milestone IIA (EMD)	1959	1960	1964
Complete Development	1969	1969	1989
IOC	Jan 90	July 90	Oct 89
Staff Reviews	Wed 1300	Wed 1400	On Call
SLEEP			
Start Complete	Nov 92	Nov 92	DEL
	Nov 96	Nov 96	DEL

Performance

Height	6'6"	6'0"	***
Fuel Type	Fruit	Jello	Coffee/sweets
Primary	Champagne	Beer	Wine
Secondary			
Fuel Consumption			
Primary (per day)	1 pot	1.1 pot	2 pots
File Capacity	2 drawer	4 drawer	20"x20"x12"
Alternate (Frl. PM)	0.2 liter	0.25 liter	1.0 liter
Operational Hours	8 hrs/day	10 hrs/day	Significantly in excess of threshold
File Retrieval	15 min	20 min	< 2 min
Input Mode	(Oral/Written)	Dual Mode	Single Mode###
Transportability	Chevy	Clunker	Porsche Targa
MTBF	1 week	2 weeks	< 1 year
(with Caffeine+++)	Harvard	Cape Cod	Indonesia
Range			

*** Falls SHORT of threshold.
 *** Without caffeine, MTBF drops to zero.
 ### Otherwise, may implode without warning.

Program Highlights:

The "J" model Christie system was initiated in 1936, and rollout of the immature system occurred April 20, 1937. There was no stated national defense requirement for this system. Actually, at that time, there was not even a Department of Defense. A Ronald Reagan, yes, but no DoD.

(See next page.)

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Based on JAN 93 DAES and DEC 92 SAR data.

Source: Reed White

COMIC BOOK – THE CHRISTIE SYSTEM ANALYSIS

3 February 1993	FOR OFFICIAL USE ONLY UNCLASSIFIED	Based on 01/93 DAES.
The Christie System - Extraordinaire		
<p><u>Program Highlights (con't):</u></p> <p>The system seems to have matured in relative obscurity; the Rip Van Winkle-like 20-year period passes, and the system enters concept development with a Bachelor's degree from MIT in 1959. Not ready for operational employment, the system remains at MIT until 1964, when it completes advanced development, earning a doctoral degree. By this time, the Department of Defense has been established, the Pentagon is bursting with "systems analysts," and the Christie system, though only a prototype, answers to his calling, namely, Bell Telephone Laboratories.</p> <p>In 1966, the system answers to a higher calling that leads to the Pentagon, with a stint in the office of the Assistant Secretary of Defense (Systems Analysis). Although not formally documented, there does seem to be a requirement for the Christie system. As the prototype matures, so does the Systems Analysis organization. The organization evolves into Program Analysis and Evaluation (PA&E) and the Christie system is the Principal Deputy Assistant Secretary (PA&E) from 1972-1976. During the PA&E years, the Christie joined with another defense system to provide an added capability, with advanced capabilities in land warfare.</p> <p>The Christie system's operational employment as a defense system is interrupted in 1976. The Christie system wanders in the wilderness outside of DoD from 1976 to 1989. In 1989, there was an urgent requirement to replace the Tom Christie system. DoD's response, of course, was a four letter word - J - O - H - N. Normal pre-operational testing requirements were waived in order to meet an urgent need for an early IOC. In October 1989, the John Christie system renewed operational employment at DoD. The system has been satisfying its stated mission requirements and was slated for Service Life Extension Program (SLEP), scheduled for 1992-1996. However, having waived the customary pre-operational test procedure created a situation in which the DoD had to cancel the planned SLEP on November 4, 1992.</p> <p>The Christie system prototype was refurbished for deployment in lieu of a production program. However, additional units may occur due to an extensive technology transfer program of "God parenting."</p>	<p><u>Operational Test Results at Time of Program Cancellation:</u></p> <p>The Christie could become a case study for defense acquisition policy analysts. In a recent operational test, the Christie participated in a C-17 meeting with the USD(A) and other principal staff. The Christie was down-loaded with approximately 12" of current scenario-based random access material selected from the 20x20x12 foot primary storage file. During the meeting, Mr. Yockey began to discuss a memo, which had been determined to be missing. The memo concerned certain financial aspects of the C-17. Immediately the Christie went into operation, searching its random access data bank for the memo. Noting Christie's actions, Mr. Yockey told the Christie that there was no need to search for the "missing" memo, because it was "close hold" and Christie would not have it. Whereupon, the Christie system pulled out the memo from its 12" random access file, thereby demonstrating the amazing ability of this system to operate under the most demanding conditions.</p> <p>However, not all testing has been a success. On occasion, without warning, the Christie has been known to implode. For example, it has been demonstrated that the operator must decide in advance the input mode to the Christie. Although the Christie accepts input either orally or from written material, the operator must decide in advance with mode to use. Any attempt at dual mode input may cause the Christie to unexpectedly implode.</p> <p>Another example of this problem has been found in refueling operations. During one recent operational test the Christie fuel was changed from a caffeine based coffee to a "decaf" coffee. The reason for the change had merit--it was ordered by the user of the primary Christie backup system, the Porter. The change was part of a planned Service Life Extension Program (SLEP) for the Porter. However, this change of fuels had a clearly adverse impact on the primary system, the Christie, and the fuel portion of the Porter SLEP has been cancelled. Fuel-related problems have also cropped up in other areas. Prolonged consumption of alternative fuels sometimes results in degraded performance. In a recent joint operational test with Australia, conducted on Bourbon St. in New Orleans, software operating systems were severely degraded, necessitating a re-boot the next morning. On the positive side, the Aussies found the results to be completely satisfactory.</p>	
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Source: Reed White

TYPICAL NUNN-McCURDY TIMELINES

- Start of Quarter
 - Program Manager Submits Quarterly Cost Report for Prior Quarter (1 – 30 days into quarter)
 - Nunn-McCurdy breach occurs in beginning of quarter (Q + 30 days)
- End of Quarter in which breach occurs (Breach + 60 days)
 - Program Manager Submits Quarterly Cost Report for Prior Quarter (Breach + 90 days)
 - Service Acquisition Executive (SAE) Identities Breach Occurred (Breach + 105 days)
 - Appropriate Secretary notifies Congress of breach in writing (Breach + 135 days)
- DoD submits Selected Acquisition Report (SAR) to Congress (Breach + 195 days)

BELOW DAES REPORTING - TIMELINES

- Physical Reporting: CPR and, in some cases, IMS
- Manual input and reporting
- CDRLs typically 60-75 days after end of reporting period (monthly at best)
- Analysis +15 to 30 days after receipt of reporting
- No central procurement database for comparisons or cross program comparisons
- Individual toolsets heavily reliant on Performance Analyzer (government toolset)
- PM identification of significant breaches provided added delays
- Nunn-McCurdy Breach Thresholds
 - Current Baseline Estimate
 - Significant Breach 15%
 - Critical Breach 25%
 - Original Baseline Estimate
 - Significant Breach 30%
 - Critical Breach 50%

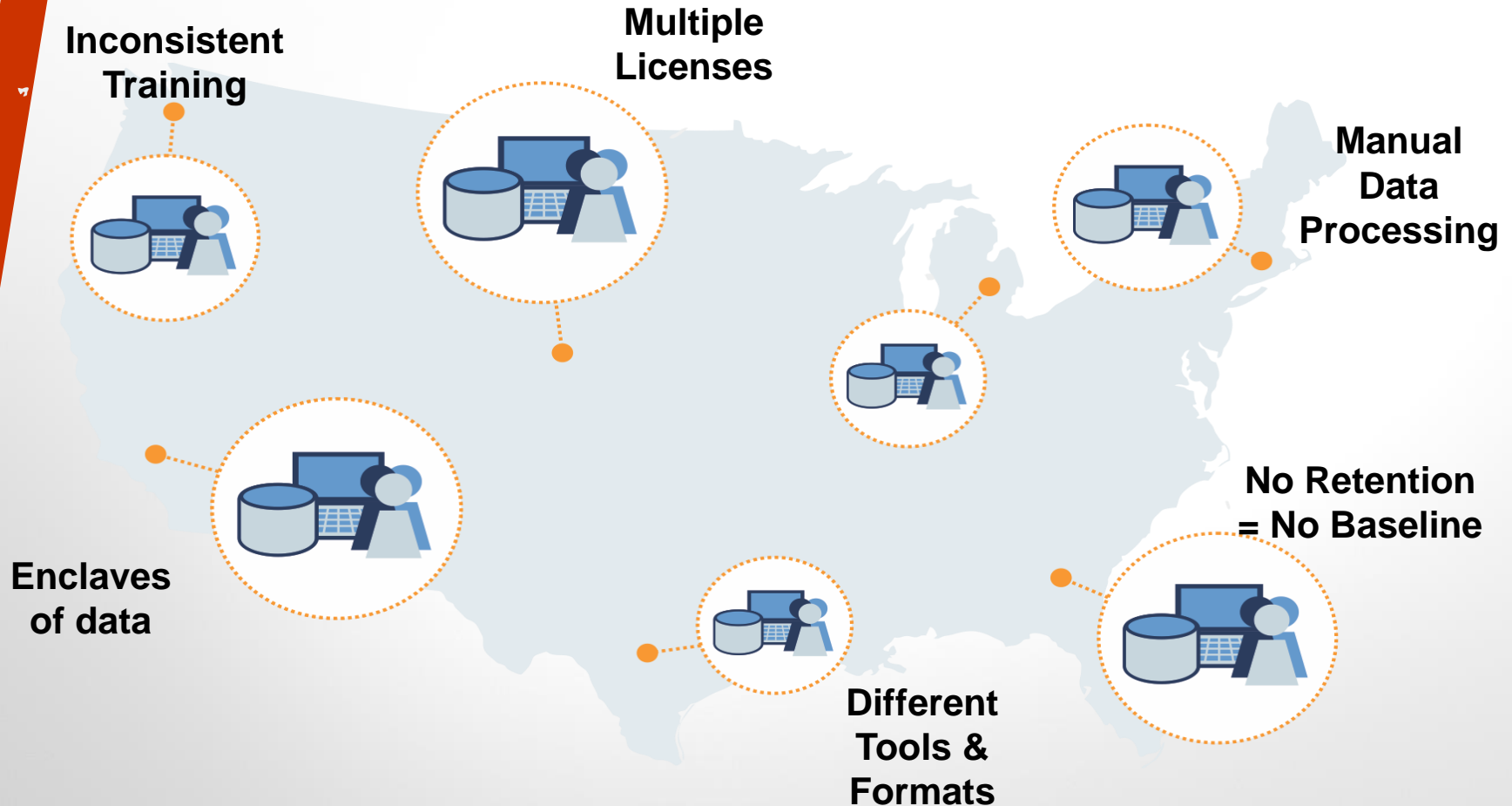
FIRST USES OF STANDARD SCHEMAS

- 1980s - Transportation Industry for use in shipping and receiving of transcontinental and international cargo tracking
- Interstate and International Banking and Financial Industry for rapid and secure transactions
- DoD Publishes Integrated Digital Environment policy in 1997
- Concurrently OUSD(A&T) publishes DoD 5000.2R specifying ANSI X12 839 Transaction Set for cost performance submission

INTRODUCTION OF THE INTEGRATED DIGITAL ENVIRONMENT

- IDE Working Group Created: OSD(AT&L), DCMA, Services
- Assessment:
 - 1985-1997 Lots of study in digital technologies but little progress. Did not keep pace with ISO or ANSI standards
 - 1997-2002 Still focus on PMs responsible for initial collection of data. Main issues were access vs. exchange of data, web tools, collaboration.
 - 2002 Vision and Beyond. Move to enterprise IDE. Eliminate stovepipes to achieve enterprise interoperability and promote access and collaboration.
- IDE Layers:
 - Process. Business processes, culture and knowledge management.
 - Application. Collaboration solutions.
 - Data. Data standards, models, and requirements.
 - Infrastructure. Security, Network, and Storage/Access.

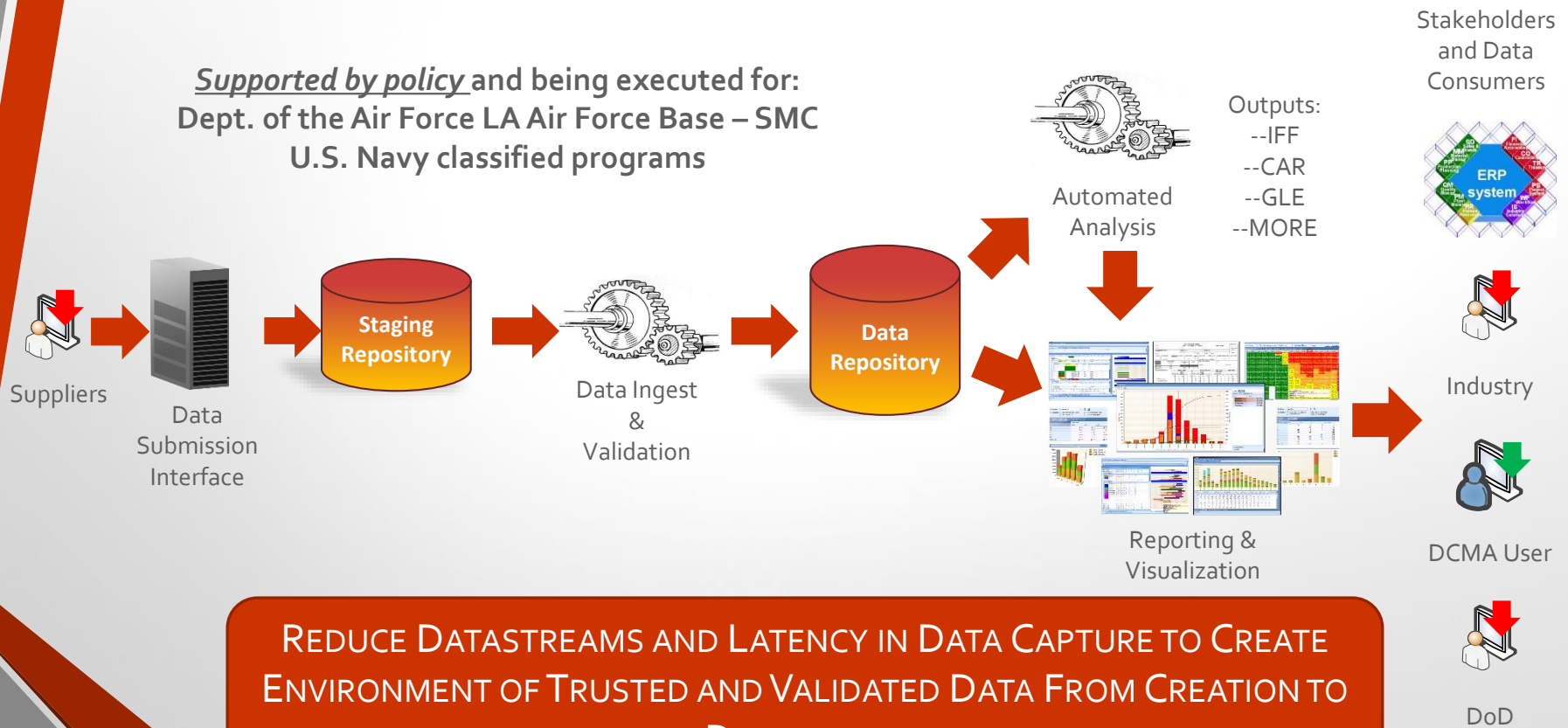
DoD EVOLUTION TO DIGITAL BEGINNING STATE



Disconnected analysis and discontinuous data, multiple data streams, redundancy of application functionality, proprietary barriers

DoD EVOLUTION TO DIGITAL DESIRED END STATE

Supported by policy and being executed for:
 Dept. of the Air Force LA Air Force Base – SMC
 U.S. Navy classified programs



REDUCE DATASTREAMS AND LATENCY IN DATA CAPTURE TO CREATE ENVIRONMENT OF TRUSTED AND VALIDATED DATA FROM CREATION TO DISPOSITION

TRANSITION TO UN/CEFACT XML BACKGROUND & EVOLUTION IN DoD

- NDIA PMSC initiative since 2008
- Continuation of IDE policy from ANSI X12 committee signed by DoD in 1997
- OUSD/PARCA drafts and completes consecutive proofs of concept for UN/CEFACT XML for cost performance data in 2012
- Initially aligned with capturing data from hardcopy CPR reports Formats 1 through 4
- Schedule (Format 6) and cost performance time-phasing (Format 7) added bolstered by additional proofs-of-concept

IPMR Overview

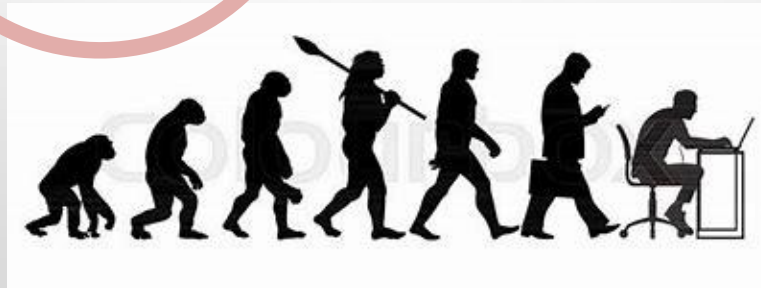
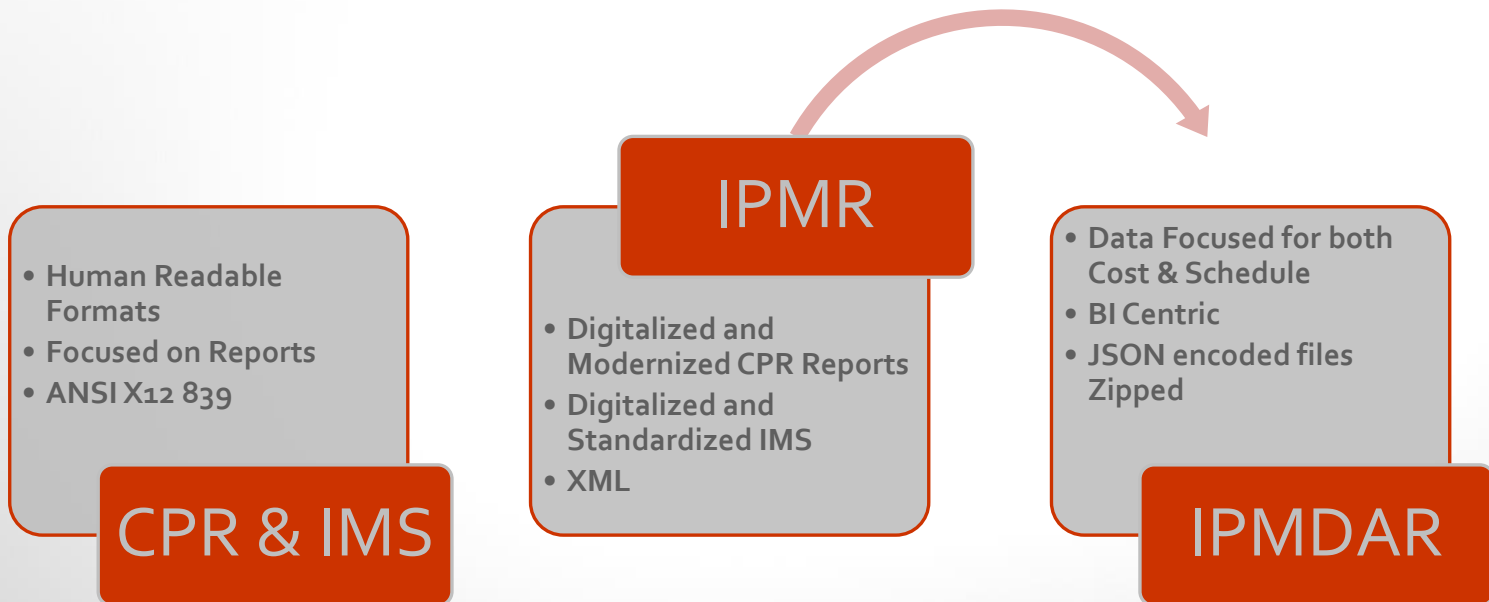
- IPMR leveraged Extensible Markup Language (XML) using the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) schema for CostSchedule data
 - Intent of the government was to use an international standard for the schema
 - Data Exchange Instruction (DEI) are thorough and stringent to fit this wide schema for OSD's stakeholder needs across the formats
 - Format 7 was under utilized but set the potential for data analysis leading to the IPMDAR Contract Performance Dataset
 - High level (same as reporting level in Format 1 oftentimes)
 - Frequency was yearly
 - Format 6 proven out to normalize schedule data, evolving into IPMDAR Schedule Performance Dataset

UN/CEFACT XML

CURRENT STATUS

- Adopted in 2012 through new DoD IPMR standard (DI-MGMT-81861A, of 16-Sep 2015 (Revision B))
- The submissions to the EVM-CR were required to conform to the base XML schemas from the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) Data Library Edition D09B and the related DoD specific Data Exchange Instructions (DEIs)
- Not fully implemented in many areas of industry due to limitations of legacy systems and legacy CDRLs under existing contracts
- Many government agencies receive various cost, schedule, and risk schema or file formats and convert data to UN/CEFACT XML for integration and use by PM stakeholders

DiD Evolution



DoD DATA STRATEGY

30 SEPTEMBER 2020

- Much Broader in Scope (as with IDE) than simply Business Systems but inclusive of them.
- Vision: DoD is a data-centric organization that uses data at speed and scale for operational advantage and increased efficiency.
- Four Essential Capabilities:
 - Architecture. Must allow pivoting on data more rapidly than adversaries are able to adapt.
 - Standards. Family of standards that include not only commonly recognized approaches but also proven and successful methods for representing and sharing data.
 - Governance. Principles, policies, processes, frameworks, tools, metrics, and oversight to effectively manage at all levels, from creation to disposition.
 - Talent and Culture. DoD workforce increasingly empowered to work with data, make data-informed decisions, created evidence-based policies, and implement effective processes.

DATA STRATEGY GOALS

- Make Data Visible – Consumers can locate needed data
- Make Data Accessible – Consumers can retrieve the data
- Make Data Understandable – Consumers can recognize the content, context, and applicability
- Make Data Linked – Consumers can exploit data elements through innate relationships
- Make Data Trustworthy – Consumers can be confident in all aspects of data for decision-making
- Make Data Interoperable – Consumers have a common representation and comprehension of data
- Make Data Secure – Consumers know that data is protected from unauthorized user and manipulation.



WHEN CREDIBILITY MATTERS

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