Using Data Integration and Data Governance to Extend the Life of USMC Logistics Applications During Migration to GCSS-MC

System of Systems Engineering Collaborators Information Exchange (SoSECIIE)

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Who is CTC?

CTC is an independent, nonprofit, applied scientific research and development professional services organization.
What is the Problem?

• USMC needed to migrate legacy mainframe supply (SASSY) and maintenance (MIMMS) systems to the Oracle based GCSS-MC system in order to modernize and streamline its systems

• The migration period was planned in stages and the cutover would take more than 1 year as units were moved over in groups

• USMC still had the requirement to rollup their Readiness values at the USMC level and report to OSD

• Data Quality problems in the legacy system would further delay the migration
Requirements

• Need to have consistent, repeatable methods for reporting equipment readiness values during and after migration

• Need to help identify issues with the data and assist in cleansing the data prior to and during the migration

• Need to ease the transition to new system by managing reporting externally
GCSS-MC

• GCSS-MC is a multi-block program for Logistics Chain Management that will modernize the entire United States Marine Corps Logistics Architecture and Management across retail supply, wholesale supply, equipment maintenance, and repair functions.

• GCSS-MC will eliminate antiquated and unsupported hardware and software and retire Supported Activities Supply System (SASSY), Marine Corps Integrated Maintenance Management System (MIMMS), among others.

• Oracle is the Systems Integrator using the Oracle E-Business Suite 11i as the core software package.
GCSS-MC Architecture

Successfully Fielding Now!

Development and Testing

LAN/WAN

Release 1.1
CONOPS

Release 1.2
CONOPS

Production System
DISA Mechanicsburg

Replaces 40 year old legacy systems:
MIMMS, SASSY, PC-MIMMS, & ATLASS
GCSS-MC Migration

• Migration was planned in stages beginning July, 2011 and running through December, 2012 for a majority of units

• There will still be pockets of units that do not cut over fully due to unique requirements, remote locations, etc…
CONUS Accounts Cutover by Accounts

All Major Commands are operating in GCSS-MC.
Approach

• Leverage the existing Data Warehouse to store the “blended” information from the legacy systems and GCSS-MC in the MDR during the transition period

• Enhance / Extend Total Life Cycle Management - Operational Support Tool (TLCM-OST) to create a system-independent Decision Support Tool
  – Provide a system-agnostic reporting environment that shields the user from having to know which Authoritative Data Source provided the information
  – Support Readiness Reporting
  – Support Discrepancy Reporting
    • Incorporate metrics and trends
    • Identify responsible organization and measurable values for deviation
is a Web-based decision support tool that:

- Integrates usage, maintenance, and supply data
- Provides one system for readiness visibility
- Provides cost of maintenance data
- Provides reliability, availability, and maintainability data
- Facilitates trend analysis and decision formulation
- Integrates earlier generations of targeted tools into a single decision support dashboard

Several of these tools won Defense Logistics Technology Implementation of the Year Award
Out of Many – One Answer

MDR:
- Loads data from 31 source systems
- Supports 23 applications
- Has 8 exports to other systems
- 1.2 Terabytes of data
- Imports 164 datasets / ~53 million records daily.
- Stores data in “layers”, from raw source system data to functional layout to data marts
The Need for a Systems Engineering Approach

View raw data for data requiring system owner changes=data quality.
Blended Warehouse

Early Stage Migration

MIMMS
SASSY
GCSS-MC

Late Stage Migration

MIMMS/ SASSY

Data Warehouse

Supply / Maintenance Data

TLCM-OST

No change to apps during migration
Approach

• Implement full complement of data quality reports and discrepancy reports prior to and during migration

• Apply Data Governance to Data Sources during migration
  – Define standard terminology and business rules
  – Communication of Business Rules / Calculations
  – Assign responsibility for Discrepancies
  – Provide Measurable metrics monthly – loop back to data owners

• Provide full disclosure of Data Pedigree throughout
  – Transparency of Source
  – Where did this piece of data come from?
Enterprise Logistics Reporting Dashboard

TLCM-OST

Requirements
- AAO Validation Date Has Been Exceeded
- Item Exit Date Has Been Exceeded
- TFSMS AAO Not Equal to Supply Allowance

Small Arms Crane Reporting
- Small Arms Duplicate Serial Numbers
- Small Arms Serial Count Reconciliation
- Small Arms Crane Serial Numbers not Accounted for in USMC Systems
- Small Arms Crane Serial Numbers not Accounted for in USMC Systems but Not Reported in Crane
- Small Arms Serial Numbers with AAO Mismatched between Crane and USMC

Maintenance Production
- Duplicate MARNS records
- Readiness Repeatable Flag Discrepancies between MCBUL 3000 and TFSMS

TFSMS Hierarchy
- Type Support Code Issues
- AOCs Found in SASSY (Crane) but Not in TFSMS

Miscellaneous
- In Transit Visibility (ITV)

Item Exit Date Has Been Exceeded
- Click to drill into:
  - Program Office
  - TACMC
  - Name: MCBUL 77
  - Count: 77

Equipment Accountability Net Asset Posture
- Equipment Accountability Serial
Enterprise Asset Trending / PEI Iron Triangle
• Integrated an innovative Data Pedigree solution into its Software Development Lifecycle (SDLC) process at every data transformation step to capture the migration meta data

• The data was then chained together in both a basic and detailed tree view to allow the user to view field definition, source systems, and business rules at each step
Data Governance

Data Pedigree
Exposes the lineage of a piece of data from its initial source through to end application

Data Quality
Is the value shown in this particular field correct?

Data Validation
Does the number that is being shown for this field in relation to the other fields make sense?
Lessons Learned / Next Steps

• Creating external reports/dashboard away from systems via data warehouse is a very affordable way to provide this capability and shield end users from migrations

• Need to treat Data Warehouse projects as Complex Systems Engineering problems

• Data Governance helps provide structure/responsibility

• Data Pedigree
  – “Ghost” Tables to track lineage of each data instance
  – Very time intensive to document Pedigree but valuable

• Historical data is kept forever so have to “get it right”
  – Have to maintain history and historical calculations as new orders are adopted to historical and current using same rules
Questions?

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