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

Keeping Legacy Systems Viable

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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 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 (LCM) that will modernize the entire United States Marine Corps (USMC) 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 (SI) using the Oracle E-Business Suite 11i as the core software package.
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…
Approach

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

• 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 system provided the data
  - Support Readiness Reporting
  - Support Discrepancy Reporting
    • Incorporate metrics and trends
    • Identify responsible organization and measurable values for deviation
is a Web-based decision support tools 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
TLCM-OST Home Page
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

- GCSS-MC
- MIMMS
- SASSY

Data Warehouse

Supply / Maintenance Data

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?
Data Quality

Prime and Preferred are the same, right?

This field looks similar, let's join on it.

That number looks low, let's sum the group.

That number looks high, let's sort and rank.
Enterprise Logistics Reporting Dashboard
Enterprise Asset Trending / PEI Iron Triangle
Data Pedigree

- 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 Pedigree – Detailed Tree View

Basic View  Detailed Tree View

- TLCMOST, EAE Operation Status Details, UIC-Org (DODAAC)
- TLCMOST, EAE Operation Status Details, TAMCN
- TLCMOST, EAE Operation Status Details, Nomenclature
- ETCMCOPDDBA, EAE_PKG.GET_SERVICE_DETAILS, NOMEN
  - LDRDBA, TFSMS_EQUIP, ITEM_NAME
- TLCMOST, EAE Operation Status Details, Service Req/RO
- TLCMOST, EAE Operation Status Details, BDI 2nd EOM
- TLCMOST, EAE Operation Status Details, DCD
- TLCMOST, EAE Operation Status Details, RDD
- TLCMOST, EAE Operation Status Details, Days Deadlined
- TLCMOST, EAE Operation Status Details, Serial Number
- TLCMOST, EAE Operation Status Details, Unit
- TLCMOST, EAE Operation Status Details, Severity
- TLCMOST, EAE Operation Status Details, Status Code
- TLCMOST, EAE Operation Status Details, Days in Status
- TLCMOST, EAE Operation Status Details, Parts on Order
- TLCMOST, EAE Operation Status Details, Problem Code

Application: LDRDBA
Table: TFSMS_EQUIP
Column: ITEM_NAME
Relation to parent action: Copy
Relation to parent description: First 200 characters
Application description: Import area for LCMI data
Table short description:
Table long description: TFSMS_EQUIP - (TFSMS Equipment) - This table contains equipment table from TFSMS by TAMCN/NSN. This table is being replaced by TFSMS_TAM_CDTS, TFSMS_TAM_ALLOC_POCS, TFSMS_TAM_ATTRIBUTES, TFSMS_TAM_CONTRACTS, TFSMS_TAM_CGS3, and TFSMS_CAR_RELATIONS.
Column short description:
Column long description: The name of an item that is approved for use by the Defense Logistics Service Center or that name selected by the requesting department or DOD agency by being consistent with federal cataloging policies.
Date Last Updated: 10/1/2012  Source Data As Of: 9/17/2012
Data Pedigree Comment Blocks in PL/SQL

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/*<DP_COMMENTS>
<DPH> SCHEMA NAME: TLMCOP
<DPH> SCHEMA TYPE: APP
<DPH> ENT NAME: Sum Tam Summary Row
<DPH> Ent Package:
<DPH> Ent Desc Short:
<DPH> Ent Desc Abbrev:
<DPH> Ent Desc Long:

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<th>RELATED ENTITY NAME</th>
<th>RELATED PACKAGE</th>
<th>RELATED ELEMENT NAME</th>
<th>Relation Action</th>
<th>Relation Desc</th>
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<DPH>*/
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Comment Block - continued

Optional Element Info

<DPE> TAMCN ID
Desc Short: Unique internal identifier assigned to this TAMCN

<DPE> TAMCN
Desc Short: Table of Authorized Material Control Number - unique identifier for this equipment

<DPE> TAMCN Image
Desc Short: Picture of this TAMCN (if available).

<DPE> TAMCN Image
Desc Long: If no image exists, feel free to submit one for system wide use by clicking on icon on TAMCN Summary

<DPE> Nomenclature
Desc Short: Description of the equipment

<DPE> AAO
Desc Short: Total AAO for this TAMCN

<DPE> AAO
Desc Long: Sum of Unit's T/E for this TAMCN rolled up to USMC level

<DPE> Shipped Qy
Desc Short: Total Shipped AAO Quantity for this TAMCN

<DPE> Shipped Qy
Desc Long: Sum of Unit's Shipped Quantity for this TAMCN rolled up to USMC level

<DPE> Planned Qy
Desc Short: Total Planned AAO Quantity for this TAMCN

<DPE> Planned Qy
Desc Long: Sum of Unit's Planned Quantity for this TAMCN rolled up to USMC level

<DPE> Unfunded Qy
Desc Short: Total Unfunded AAO Quantity for this TAMCN

<DPE> Unfunded Qy
Desc Long: Sum of Unit's Unfunded Quantity for this TAMCN rolled up to USMC level

<DPE> Total Value
Desc Short: Total Dollar Value of this TAMCN

<DPE> Total Value
Desc Long: Net Asset Posture X Unit Price for this TAMCN

<DPE> Net Asset Posture
Desc Short: Total Asset Quantities for this TAMCN

<DPE> Net Asset Posture
Desc Long: Includes the Accountable Assets Qy + In Transit Qy + Depot Maintenance Count as reported for this item

<DPE> Accountable Assets Qy
Desc Short: On Hand Quantities for this TAMCN Wholesale + Retail + GFP
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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