RevPro Summit

The Ins and Outs of Data for ASC 606 Adoption
# The Ins and Outs of Data for ASC 606 Adoption

**Topic**

- Introduction
- Data strategy
- Data mapping
- Transformation/Transformation layer
- Data quality assessment/Remediation
- Data Validation
- Conversion/Mock (Entry/Exit criteria/Testing) Cutover approach
- Wrap Up
Data strategy
ASC 606 data considerations
Consider all aspects of data as part of adoption

- Historical data is required for full and modified adoption
- For full it is important to consider the increased volume of data for the 2 additional years
- The volume of historical data will have implications on the data load and data cleansing timeline

- Data quality may be an issue due to acquisitions, system implementations, or different required data for 605 vs 606
- More historical data will be required for the full retrospective approach

- Develop a strategy to manage all aspects of data early
- Includes determination of ASC 606 adoption approach (full vs. modified)

- Mapping the ERP data to the data required in the Revenue Management Solution (‘RMS’) will help with the interface as well as population of historical data for the opening balance

- After the adoption date, it is critical to consider the transformation of data into the Revenue Management Solution (‘RMS’) on a repeated basis
- Future data enrichment needs should be considered depending on the quality assessment of historical data
Example Data architecture

Source environment
- Flat Files/Excel
- Other source system
- ERP System

Data staging and test environment
- Staging Area
- Extract & Profile
- Data Profiling, Analysis, Cleansing
- Cleanse
- Transform
- Transform Data into RMS Structure
- Validate & Load
- Business Mapping Rules
- Data Validation
- Reconciliation

Loading
- RMS Staging Area
- Files

Target environment
- RMS
Data mapping
Source-to-target data mapping

Mapping data from source systems to the target Revenue Management Solution (‘RMS’) is an iterative process as some areas (operational/reporting design decisions) are addressed later in the timeline. Consider: Input (Source)/Process (Enrich & Transform)/Output (Target)

**Step 1: Understanding your Sources**

1. Start with the previously-identified user interface data fields, source systems and tables and the data fit/gap information that was captured and aligned with ASC 606 future state capabilities within the Use Cases (performed as part of Assessment Phase)

2. For the existing current-state data fields, confirm the fields are appropriately mapped back to the physical data layer to obtain the physical layer data field name and the definitive source for that data field (work with client’s IT team as needed)

3. Maintain placeholders for conceptual data fields, identified within the Use Cases as required for future-state revenue recognition, that don’t yet exist in the current-state systems
Source-to-target data mapping (continued)

Step 2: Understanding your Target

Understand the data input requirements within the new Revenue Management Solution (format/attributes, field definition, etc.).

Step 3: Source-to-Target Mapping

Begin the process of mapping physical layer data fields from current-state systems and conceptual data fields that do not yet exist within current-state systems to target data field inputs feeding the Revenue Management Solution.

Confirm that the source and target data fields are completely aligned in their definitions (e.g. data dictionary alignment of what the fields represent). Keep mapping in alignment as conceptual data fields are developed.
Source-to-target data mapping (continued)

Step 3: Source-to-Target Mapping:

6. For current-state data fields that require transformation/enrichment to correctly feed the Revenue Management Solution, identify the rules, logic within the mapping to transform/enrich the data. For example, character to character or numeric to numeric mapping, length of field, combination of/appending source fields into one target field, etc..

7. The transformation/enrichment may need to be performed via different approaches depending on whether we are considering Interface/Migration Rules or Historic Migration Rules. Be sure to have separate sections to capture differences if/as needed.

8. Understand that some Revenue Management Systems are limited on the amount of data they can process before there is an impact to performance, so extract rules/filters may need to be placed on specific current-state data so that the proper volume of data arrives at the Revenue Management Solution.
Transformation/Transformation Layer
Transformation/Transformation Layer – What is it?

Revenue Management Systems typically expect data in a specific format. The Transformation Layer extracts, transforms and loads data into RMS from various systems.

Purpose:

- Automated refreshes!
- Less work for RMS: Instead of RMS hooking into multiple source systems, it interfaces with one
- Decouples systems, making source upgrades easier
- One point of entry for RMS allows robust transformations and error handling
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Loading
- Files
- RMS Staging Area

Target environment
- RMS
## Transformation/Transformation Layer – Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
<th>Pros/Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transformation database</strong></td>
<td>Similar to ETL but contains redundancies</td>
<td>Pros: Leverages existing work done in data quality, transformations, and mappings workstreams. More robust reporting. Revenue data available outside of Rev Rec team. Cons: Less efficient refresh processes</td>
</tr>
<tr>
<td></td>
<td>1. 1:1 extract from source systems</td>
<td>ilda</td>
</tr>
<tr>
<td></td>
<td>2. load into analysis database</td>
<td>ilda</td>
</tr>
<tr>
<td></td>
<td>3. perform transformations to get into RMS format</td>
<td>ilda</td>
</tr>
<tr>
<td></td>
<td>4. 1:1 load into target systems (RMS)</td>
<td>ilda</td>
</tr>
<tr>
<td><strong>Extract Transform Load (ETL)</strong></td>
<td>Using enterprise ETL tools like Informatica PowerCenter, SSIS, IBM Data Stage to:</td>
<td>Pros: Speed and efficiency to move large quantities of data, frequently Cons: Cost*, less resources available onshore *opportunity to leverage offshore</td>
</tr>
<tr>
<td></td>
<td>1. interface with all relevant source systems</td>
<td>ilda</td>
</tr>
<tr>
<td></td>
<td>2. extract data</td>
<td>ilda</td>
</tr>
<tr>
<td></td>
<td>3. perform all needed transformation</td>
<td>ilda</td>
</tr>
<tr>
<td></td>
<td>4. load into source systems</td>
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</tr>
</tbody>
</table>
Data quality assessment & Remediation
### Data quality assessment – Scope, gaps and remediation

#### Critical data elements
- Contracting
- Commissions
- Rebates
- Invoices
- Sales Orders
- Contracts
- Credit & debit memos
- etc..

#### Time period – Open orders
- Full Retro – All orders open as of two years prior to implementation date through today
- Modified Retro – All orders open as of implementation dates

#### Strange/inconsistent values
- Identified via data standard data profiling
- For example, business unit is not consistently defined across systems

#### Violates business rule
- For example, for services, a rate/hr must be captured and quantity must be in hours
- For ratable items, contract start and end date cannot be the same

#### Remediation
- Critical data elements for new orders
  - Changes to systems, processes, and controls

- Critical data elements for existing orders
  - One time fix for existing data population
**Data quality assessment – Where?**

**Source environment**
- Flat Files/Excel
- Other source system
- ERP System

**Data staging and test environment**
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- Transform
- Transform Data into RMS Structure
- Business Mapping Rules
- Validate & Load
- Data Transformation Platform
- Reconciliation
- Data Validation

**Loading**
- Files
- RMS Staging Area

**Target environment**
- RMS
Data quality assessment – Responsibilities

Data profiling results:
- Number of records not meeting rule
- High level analysis
- Impact ($) of line items
- Impact to project
- Criticality

Remediation plan:
- Actionable items to enrich/cleanse data
- Assign ownership
- Remediation of current dataset
- Recommendation of system/process/control changes to ensure data quality for new transactions
- Remediation tracking
Data validation
Data validation

Overview

ERP validation reports

SQL Extract Criteria Validation Report

SQL Open Sales Order Validation Report

SQL Enrichment and Cleansing Validation

SQL RevPro Validation Report

Open balance Validation Report

RevPro Validation
Data validation – Where?

Source environment

Flat Files/Excel

Other source system

ERP System

Data staging and test environment

Staging Area

Extract & Profile

Data Profiling, Analysis, Cleansing

Cleanse

Transform

Data into RMS Structure

Transform Data

Business Mapping Rules

Validate & Load

RMS Staging Area

Loading

Files

Target environment

RMS

Reconciliation

Data Validation
Data validation example

ERP Source Tables → ERP Data service to extract data into SQL using Extract Criteria → SQL – ERP Tables → SQL Queries to filter open sales Order records and Invoice related to sales order → SQL Table with sales order

ERP Report 1: Extract Validation Report – ERP table count
ERP Report 2: Extract Validation Report – Sales Order record count and net value after grouping
ERP Report 3: Extract Validation Report – Invoice record count and net value after grouping

SQL Report 1: Extract validation report – SQL table count
SQL Report 2: Extract validation report – Sales Order record count and net value after grouping (SQL vs SAP)
SQL Report 3: Extract validation report – Invoice record count and net value after grouping (SQL vs SAP)

RevPro Staging for Invoice and sales order → SQL Final Staging → SQL Audit tables for New and Old values → SQL Report 7: SQL Enriched and cleansed – Old and new value comparison

SQL Report 4: Open Sales Order Report – Sales Order record count and net value after grouping (SQL with and without open sales order rules)
SQL Report 5: Open Sales Order Report – Invoice record count and net value after grouping (SQL with and without Open sales Order rules)
SQL Report 6: Sales Order Report – Exclusions Summary and details

SQL Report 8: RevPro validation Report – Sales Order record count and net value after grouping (SQL and RevPro)
SQL Report 9: RevPro validation Report – Sales Order record count and net value after grouping (SQL and RevPro)
Conversion/Mock (historical data)
# Level-Set – Data conversion, recast, and testing activities

<table>
<thead>
<tr>
<th>Traditional</th>
<th>Unique to 606</th>
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<tbody>
<tr>
<td>1. Convert</td>
<td>4. Reprocess</td>
</tr>
<tr>
<td>2. Reconcile</td>
<td>5. Validate</td>
</tr>
<tr>
<td>3. Augment</td>
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### Traditional Activities:

1. **Convert**: Line count and total $ reconciliation in each step of the transformation process from source to RMS
2. **Reconcile**: After data has been processed through RMS
3. **Augment**: Manual fixes (similar to topside adjustments) to errors in data population that cannot be fixed in the source
4. **Reprocess**: Run steps 1-3 till error population is remedied and signed off by management
5. **Validate**: Final validation to confirm results of conversion

### Unique to 606 Activities:

- **100% Recon**
  - Technical reconciliation – e.g. line count, dollars
- **Sample Recon**
  - Recon RMS output to source
- **Targeted Enrichment**
  - Manual, linking/de-linking, MSA reviews
- **100% Processing Allocations**
- **Targeted Testing Only 606**
Mock 1 – Conversion ‘prototyping’

The following defines the Approach and Considerations for Mock 1:

• Mock 1 should be considered a prototyping activity for the Conversion Process, it should conducted in a system environment where developers have full access to create programs and react to findings.

• Mock 1 should have limited targets for completeness and accuracy but validate as much data as possible to confirm DQ assessment and remediation readiness - Example Populate 2 months transactions into RMS with 80% success.

• Mock 1 may run in parallel to System Integration testing in other test environments, ideally lagging SIT, this allows for stabilization of Interface programs prior to testing the conversion as logic changes may require re-processing of (potentially long running) conversion processes. Processes should be defined to ensure code, RMS configurations and patches remain up to date in Conversion test environments. Business and Technical teams can develop and document Reports, Procedures, Queries, etc. that will be used to validate accuracy and completeness.
Mock 2 – Conversion ‘dry-run’

The following defines the Approach and Considerations for Mock 2:

- Mock 2 should be a Version controlled environment to test that all components can be deployed into Production using a controlled documented process
- Mock 2 should have ‘Production-Like’ targets for completeness and accuracy however may still not have final RMS configurations, changes to which may impact final results
- Mock 2 may run in parallel to System Integration testing and/or UAT in other test environments, Processes should be defined to ensure code, RMS configurations and patches remain up to date in Conversion test environments
- Business and Technical teams can prove-out and document Reports, Procedures, Queries, etc. that will be used to validate accuracy and completeness
- Prove Data Augmentation and Exception handling processes
- Converted data will span more than one RMS Financial period
Mock 3 – Conversion ‘final dry-run’

The following defines the Approach and Considerations for Mock 3:

• As for Mock 2 but with final frozen RMS Configurations after UAT is completed Full Business Reconciliation for Opening Balance in RMS

Mock 3 suggested scope:

• Opening Balance with final Data Quality, latest UAT frozen RMS code & configuration
• Reduction Order/Contract Mod (Data needed**)
• Opening Balance full reconciliation by business
• Q1 (requires RMS Period close) full reconciliation by business
Lessons Learned
Lessons learned

Data Mapping:
- Recognize that data mapping of historical data and sources may differ from current state data mapping – address these differences in the mapping and approach for historical data conversion

Data Validation:
- All validation performed in RevPro staging area should be included in remediation plan and/or mapping
- For any validation performed in revenue recognition project always think for approach for interface and conversion
- Requirement is clear and is agreed by Business and IT
- Proper audit trail is performed for data to ensure completeness and accuracy of records
- Roles and responsibilities are properly communicated

Transformation/Transformation Layer:
- Parallel testing activities in Conversion environments and SIT and UAT testing – it’s possible to have logic changes that are missed or implications that aren’t fully understood – changes may require regression testing or Conversion re-processing
- Sync Environments: RMS configuration changes, RMS package software and Transformation Layer custom software all need to managed across different test environments
- Transformation performance improves as data quality improves
- Conversion environment should be built on production grade hardware to yield relevant performance testing results

Data Quality:
- Narrow to open orders population
- Prioritize critical data elements
- Agree on materiality upfront
- Quantify errors (net value impact)
- Set deadlines for signoff

Conversion/Mock:
- Understand that additional mocks may be required depending on quality of historical data and establish in advance the number of environments that will be required to support mocks
- Don’t underestimate the amount of time required for validation of mock runs
Wrap-up
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Questions?
Thank you!