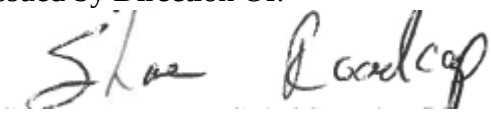
COMMONWEALTH OF PENNSYLVANIA

HEALTH & HUMAN SERVICES IT DELIVERY CENTER

INFORMATION TECHNOLOGY STANDARD

Name of Standard:	Number:
Business Intelligence Required Deliverables	**STD-EKMS018**
Domain:	Category:
Knowledge Management	**Data Warehouse/Business Intelligence**
Date Issued: **12/13/2018**	Issued by Direction Of:  **Shane Roadcap, Chief Solution Management**
Date Revised: **8/20/2019**	

Abstract:

The purpose of this Standard is to establish enterprise-wide standards and guidance for the Pennsylvania Department of Human Services (DHS) Business Intelligence (BI) /Enterprise Data Warehouse (EDW) deliverables.

These deliverables will serve as the primary source of documentation for BI projects and will be used both by technical and end-user staff.

Note that some of these deliverables will also be utilized by other teams (Data Warehouse, Database) and extend to aspects of the Operational System(s) that must be documented prior to having their data incorporated into the EDW that supports data from Department of Human Services applications.

General:

This standard applies to all content developed by Health and Human Services IT Delivery Center (HHS IT DC) Data Warehouse Cognos developers for the DHS Data Warehouse. This standard covers the following deliverables documents:

1. Subject Area Summary & Conformance Matrix
2. Data Warehouse Detailed Bus Matrix
3. Dimensional Model Documentation
4. Physical Data Model
5. Package Data Dictionary
6. OLAP Cube Documentation
7. Framework Manager Package Design and Usability Document
8. Report Design and Usability Document
9. OLAP Cube Design and Usability Document

10. Operational System Screenshot Mapping Document

The standard lists when each of the above deliverables is required, and when it is to be delivered. For each deliverable, detail standards are provided and, when appropriate, a completed example is provided.

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Business Intelligence Standards for Required Deliverables

General Standards for Deliverables

Overall Standard for Deliverable Documentation

- The general requirement for deliverable documentation is that it be as complete and accurate as possible and not the minimum required to be compliant. EKMS will retain final arbitration of what is acceptable Data Warehouse documentation and will require incomplete/inaccurate documentation to be reworked.

Common Deliverable Problems

- Deliverables will be created with deliberate effort to avoid the following common errors:
    - Documentation frequently receives lower-priority in a development effort. It is often completed at the end of development as minimally, and quickly, as possible. This leads to documentation that is terse, inaccurate, or outdated.
    - Documentation is often written by experienced subject matter experts or developers who possess a great deal of domain specific knowledge. This leads to unintended omissions in the documentation as the writers unintentionally omit, "obvious" or "known" information that they are familiar with, but that an individual new to the subject material would not be.
    - Developers or subject matter experts assume the users will have the same technical level of skill, or access to the same systems, they themselves do. (E.g. "The users can always just log into the database and look at the tables to see how this works…" "If they open up the report and look at the report specification they can see…" "They just need to read the SQL code to know where the data comes from…" "Just access screen X in system Y and you'll see how this all fits together…")
    - Documentation provided in early phases of development does not provide stakeholders with a good representation of the product they will be receiving or its actual capabilities.
    - Documentation containing spelling and grammatical errors.
- **Care should be taken when developing documentation to avoid the errors above. The above errors will be acceptable in deliverable documentation provided as part of a Data Warehouse initiative.**
    - Deliverables must be robust, complete, and free of errors.
    - Deliverables provided in GSD and DSD phases must provide project stakeholders with the ability to fully evaluate the project to be delivered and the capabilities it will contain.
    - Deliverables provided in GSD and DSD must provide technical staff with the ability to understand the planned approach and verify it for technical accuracy and best practices.
    - Deliverables should assume the individual reading the documentation has little to no prior business knowledge and take as much time as necessary to fully meet the requirements.

Deliverables and Sensitive Data

- Deliverables must be accessible to all users of the Data Warehouse without having to worry about them containing sensitive or compromising information. (Depending upon circumstances they might also be publicly accessible.)
- **Therefore, no deliverable shall contain sensitive information that could compromise a client's privacy or pose a security risk to Commonwealth systems.** Some examples of this might be: Client health information, Client personally identifying information, addresses, password/login information, URLs, IP addresses, etc.
- Any screenshot/mockup provided as part of a deliverable must always be based off false, mock-up, data or have the sensitive data redacted. Any data redaction must be implemented in a way that cannot be reversed given the requested delivery format of the deliverable. (E.g. In a Microsoft Word document, simply drawing a black shape over an underlying screenshot would not be acceptable as that shape could easily be removed to reveal the underlying screenshot content. Instead, the screenshot should have the image edited in an image manipulation program to remove/redact the sensitive information and that resulting image placed into Microsoft Word.)
- The deliverable creation process must include a step to review deliverables to ensure they follow this policy.

Operational System SDLC Required Deliverables

- The list of deliverables required for the operational system development is listed in the table below.

	Operational System
Development	Operational System Screenshot Mapping Document

Operational System Maintenance/Change Activity Required Deliverables

- Deliverables are to be kept up-to-date as changes are made to the Operational System. This includes both the initial development effort, for which the deliverable is a requirement, as well as **all** subsequent maintenance and change activities.
- The table below lists the documents that are required as deliverables for subsequent maintenance or change activities. These must be supplied at the end of the development phase of those activities:

	Operational System
Development	Operational System Screenshot Mapping Document

Business Inelligence Waterfall SDLC Required Deliverables

- The list of deliverables required for a Traditional/Waterfall development lifecycle, and the phase they are required in, is listed in the table below.

Waterfall Development Method				
	Ad-Hoc Data Model	**Framework Manager Model**	**OLAP Cube**	**Cognos Report**
GSD or Equivalent	• Subject Area Summary & Conformance Matrix	Framework Manager Package Design and Usability Document	OLAP Cube Design and Usability Document	Report Design and Usability Document
DSD or Equivalent	• Data Warehouse Detailed Bus Matrix – Initial Version • Dimensional Model Documentation - Final Version		• OLAP Cube Documentation - Initial Version	
Development	• Data Warehouse Detailed Bus Matrix - Final • Dimensional Model Documentation – Final Version • ERWIN Physical Data Model (PDM)	• Package Data Dictionary	• OLAP Cube Documentation – Final Version	

- Several of the deliverables require both an initial version during DSD, and a final version at the end of the development phase. This is called out in red text in the table above.
    - The intent with this approach is that the same deliverable created during DSD can be re-used, updated slightly, and re-submitted at the end of the actual development phase.
    - This ensures the final deliverable reflects any changes made during the development phase and therefore documents the actual end-product being delivered.

- This also significantly reduces the work that would be required vs. a totally separate deliverable document being submitted.

- Given they will be submitted at the end of DSD, initial versions of deliverable documents must be thought through carefully, completed fully, and be as accurate as possible. They serve to document, and serve as a "blueprint" for, the activities that will occur during the subsequent development phase. **Therefore, the overwhelming portion of the initial deliverable should not require serious additions, or rework, after development phase activities.**
- It will not be acceptable to submit a lacking, incomplete, or inaccurate initial version of a deliverable with the intent of "fixing" it in the final version. **EKMS will retain final arbitration of what is acceptable Data Warehouse documentation and will require initial versions of a deliverable to be reworked if they do not meet standards.**

Business Inelligence Hybrid/Agile SDLC Required Deliverables

- The list of deliverables required for a Hybrid/Agile development lifecycle, and the phase they are required in, is listed in the table below.

Hybrid/Agile Development Method				
	Ad-Hoc Data Model	**Framework Manager Model**	**OLAP Cube**	**Cognos Report**
DSD or Equivalent	Subject Area Summary & Conformance Matrix	Framework Manager Package Design and Usability Document or functional prototype	OLAP Cube Design and Usability Document or functional prototype	Report Design and Usability Document or functional prototype
Development	• Data Warehouse Detailed Bus Matrix • Dimensional Model Documentation • ERWIN Physical Data Model (PDM)	Package Data Dictionary	OLAP Cube Documentation	

- Several of the deliverables required during GSD can be omitted if a functional prototype accessible to the stakeholder community is available. This is indicated in red text in the table above. The intent of this is that the stakeholders can review, and sign-off on, the actual item being developed prior to development occurring.

Business Inelligence Maintenance/Change Activity Required Deliverables

- Several of the deliverables are to be kept up-to-date as changes are made to the Enterprise Data Warehouse. This includes both the initial development effort, for which the deliverable is a requirement, as well as **all** subsequent maintenance and change activities.
- The table below lists the documents that are required as deliverables for subsequent maintenance or change activities. These must be supplied at the end of the development phase of those activities:

Ad-Hoc Data Model	Framework Manager Model	OLAP Cube
• Subject Area Summary & Conformance Matrix • Data Warehouse Detailed Bus Matrix • Dimensional Model Documentation • ERWIN Physical Data Model (PDM)	Package Data Dictionary	OLAP Cube Documentation

Deliverable Style

- Several of the deliverables required in this document provide an example of a completed version of that deliverable. When these examples are provided, it is expected that the layout, formatting, style, and overall "look and feel" of a submitted

deliverable match the example as closely as possible. This is to establish a standard format for all the deliverables of a specific type so that staff will develop familiarity while working with them.

- All deliverables requested in Microsoft Word format must include a page footer with a left justified description of the deliverable and a center justified page number.
- All deliverables requested in Microsoft Word format must include a revision history. This should be a separate page from the rest of the deliverable and the last page of the deliverable.
- Please note the examples provided have a black box page border style applied to them. This is simply to distinguish them as an example and separate from the rest of this document. **Omit the black box page borders in the actual deliverables submitted.**
- As most DHS staff do not have access to color printers, it should be assumed that most deliverables will be printed in black and white/grayscale. **Therefore, with the exceptions noted below, deliverables must not include color unless absolutely required to convey meaning or understanding.** Prior to using color, other avenues should be investigated such as alternative fonts, gray shading, or background patterns as in the examples below. Only if none of these solutions is viable, should color be used.

Fonts	*Italic*	**Bold**	~~Strikethrough~~	Underline	Symbol & Wingding Fonts
Shading	Text	Text	Text	Text	Text
Patterns	Text	Text	Text	Text	Text

- Note that exceptions to the above apply to the portion of the deliverable that represents a mock-up, or screenshot, for an item that will render in color. In these cases, use of color is acceptable as it represents the actual item being delivered. However, more "technical" style deliverables should adhere to the black and white/grayscale requirements above.

Additional Reading and Source References

Some of the example deliverables, and their requirements, are taken from the following work and modified to PA DHS specific requirements: "Chapter 18: How to Design and Document a Dimensional Model." *Star Schema: The Complete Reference*, by Christopher Adamson, McGraw-Hill, 2010, ISBN-13: 978-0071744324, pp. 449–462.

Revision History

Version	Date	Comments
1.0	12/13/2018	Initial Version

Deliverable: Subject Area Summary & Conformance Matrix

This deliverable is composed of two parts, the **Subject Area Summary** document and **Subject Area Conformance Matrix** document. Each is described in more detail below.

Intended Audience:

- Executive Staff
- Management Staff
- Project Stakeholders

Subject Area Summary

Business Reason/Value:

- Simple framework for ensuring requirements and business capabilities are met.
- Identifies all stakeholders for a given analytics area.
- Allows stakeholders to easily review the proposed design and ensure all needed reporting metrics/KPIs are being met.
- Allows nontechnical users to gain a clear understanding of the types of analysis supported by each subject area, even if they do not pursue additional documentation.
- Provides business analyst and technical staff an idea of how subject areas will map to stars-schemas, facts, and dimension tables in the Data Warehouse.
- Identifies high level data refresh, data retention, and security considerations.

Required Document Format and Contents:

- This document is required to be submitted in electronic format as a Microsoft Word 2007 (or later) document.
- A separate **Subject Area Summary** document should be created for each subject area on which reporting/analytics will occur.
    - Note that a single subject area might include multiple reports, cubes, visualizations, tables, or star-schemas. However, all these items should be related.
    - Note that large systems (e.g. CIS, eCIS, HCSIS, etc.) will likely comprise multiple subject areas. It would not be appropriate to have a single 'CIS' subject area, for example.
    - Examples of a single Subject Area might include: Application Processing, Claims, Encounters, Eligibility, Payments, etc.
    - Note that a single subject area may span multiple source/operational systems.
- **Subject Area Summary** documents are living documents that must be kept up-to-date as changes are made to that subject area through new initiatives and maintenance activities.
- Each Subject Area Summary document should contain the following elements and match the example template provided.

Item	Description	Notes
Subject Area Description	Defines the subject area and maps it to familiar business processes.	This can usually be accomplished in one or two sentences.
Roles	States the interest each stakeholder (department or user group) has in the subject area.	This helps prevent subject areas from being confused with departments. Single phrases or short sentences should do the job.
Analytic Requirements	Statements describing the kinds of measurements and level of details.	These statements are similar to grain statements for fact tables, but here they express very specific business requirements.

Item	Description	Notes
Process Measurement	Specific breakdown of measurements, broken into groups by process along with associated dimensional context, refresh, and data retention.	• These statements detail the facts associated with each analytic requirement, as well as the major dimensions of analysis. This should be presented in tabular format with one row per Process Measurement. • For each Process Measurement, the following items should be described: o **Process:** The name of the process being measured. o **Measurement:** The measurements/KPIs required for this process. (These will map to facts in fact tables.) o **Measurement Context:** The dimensions the measurement can be broken down by. (These will correspond to dimension tables in the ad-hoc model.) o **Refresh Frequency:** The timeliness/strategy for data refreshes. o **Data Retention:** The time period during which data must remain available for analysis. • **Security Synopsis:** This is not an exhaustive list of all security considerations for this process but rather a high-level synopsis. (E.g. Contains HIPAA data, Contains PII data, covered by IRS policy X.Y.Z, limited to staff in XYZ business unit, etc.) At a **minimum** this should list which users may see this measurement. • Each Process Measurement should map to its own Star Schema which will be documented separately in the "Star Schema Description" document expressed below.

Example:

Sales Subject Area Summary

Description:

Engagement of prospects and customers for the purposes of securing new orders.

Roles:

Sales	Direct sales activities, including sales calls, proposal creation, and order taking
Sales Management	Monitoring activities of salespeople
Marketing	Correlation of orders with marketing activity
Fulfillment	Use of sales data for demand forecasting and inventory management
Finance	Computation of salesperson commission payments

Analytic Requirements:

1. Tracking **sales calls** by **date**, **salesperson**, and **customer**
2. **Proposal information** by **proposal line**, **date**, **salesperson**, **customer**, and **product**
3. **Order information** by **order date**, **order line**, **salesperson**, **customer**, and **product**
4. **Shipments** by **shipment date**, **shipment line**, **salesperson, customer**, **produc**t, **order line**, and **order date**
5. **Returns** by **date**, **reason**, **product**, **customer**, **order line**, and **salesrep**.

Process Measurement:

Process	Measurement	Measurement Context	Refresh Frequency	Data Retention	Security Synopsis
Sales Calls	Number of sales calls	Date/Time Salesperson Customer Call Type	Weekly (every Monday)	Last 2 calendar years	• Limited to management and sales representatives. • Sales representatives are only allowed to see their own calls.
Proposal	Proposal Quantity Proposal Dollars	Proposal Line ID Salesperson Customer Product Proposal Type	Monthly (first day of the month)	Current month + next 12 calendar months	• Limited to finance team
Orders	Number of Orders Order Quantity Order Dollars Order Cost Dollars Margin Dollars	Order Line Order Date Salesperson Customer Product	Daily excepting federal holidays	Last 7 calendar years	• Limited to the ordering department and sales representatives. • Sales representatives are only allowed to see their own orders. • Contains PII on sales representatives
Shipments	Number of Shipments Shipment Quantity Revenue Dollars	Shipment Date Shipment Line ID Shipper Product Customer Salesperson Order Line Order Date	Daily excepting federal holidays	Last 7 calendar years	• Limited to shipping department.
Returns	Number of Returns Quantity Returned Return Dollars Return Cost Dollars Return Margin Dollars	Return Date Order Line Order Date Salesperson Customer Product Return Reason	Weekly (every Monday)	Last 7 calendar years	• Limited to management and sales representatives. • Sales representatives are only allowed to see their own returns.

Version	Revision Date	Author	Comments
1.0	01/15/2018	John Doe	Initial version
2.0	04/01/2018	John Smith	Added Shipments Subject Area as part of work order XYZ-123-56-B
3.0	06/01/2018	Joe Bloggs	Added Returns Subject Area as part of work order HIJ-987-99-A

Subject Area Conformance Matrix

Business Reason/Value:

- Easily communicates how two subject areas can be compared.
- Provide details on analytic requirements that cross subject areas.
- Cross references each measurement group with the major dimensions of the business.
- Fosters the business user's understanding of the importance of developing a common series of conformed dimensions to enable cross subject area analysis.

Required Document Format and Contents:

- This document is required to be submitted in electronic format as a Microsoft Word 2007 (or later) document.
- A single **Subject Area Conformance Matrix** should be created for the Data Warehouse as a whole. That is, a single **Subject Area Matrix** may map to multiple **Subject Area Summary** documents. This is a deliberate decision to encourage…
    - Identification and use of conformed dimensions across the enterprise.
    - Business users to identify what type of cross subject area analysis are required.
- As a single **Subject Area Conformance Matrix** is being kept, this means new initiatives should update the existing matrix document.
- Note in the example provided below, the relationship between the **Subject Area Conformance Matrix** and the example **Subject Area Summary** document for the "Sales" subject area. In the example **Subject Area Summary** template, the "Sales" subject area has been added to the example **Subject Area Conformance Matrix** alongside additional "Inventory" and "Finance" subject areas.
- The **Subject Area Conformance Matrix** is a living documents that must be kept up-to-date as changes are made to subject areas through new initiatives and maintenance activities.
- The **Subject Area Conformance Matrix** should contain the follow elements and match the example template below.

Item	Description	Notes
Subject Area Name	The Subject Area Name as taken from the **Subject Area Summary** document above.	
Process Measurement Name	The Process Measurement Name as taken from the **Subject Area Summary** document above.	One row in the matrix for each Process Measurement which is a part of that Subject Area.
Measurement Context & Hierarchy	The Measurement Context as taken from the **Subject Area Summary** document above with high level hierarchies presented.	• Note this is **not** a dimensional model bus matrix with every dimension table being indicated. Rather, this is intended for the business audience and only shows major dimensions/hierarchies that will link subject areas. • One column per significant dimension/hierarchy. • Dimension hierarchies should be grouped together by the dimension they are a part of.

Example:

Subject Area Matrix

		Day		Product		Salesrep			Customer	Warehouse	Order Line
		Day	Quarter	Product	Category	Salesrep	Territory	Region			
Sales	Sales Calls	✓	✓			✓	✓	✓	✓		
	Proposals	✓	✓	✓	✓	✓	✓	✓	✓		
	Orders	✓	✓	✓	✓	✓	✓	✓	✓		✓
	Shipments	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Returns	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Inventory	Inventory	✓	✓	✓	✓					✓	
	Demand Forecast		✓		✓			✓		✓	
Finance	Receivables	✓	✓						✓		✓
	Sales Goals		✓				✓	✓			
	Commission Payments	✓	✓			✓	✓	✓			

Version	Revision Date	Author	Comments
1.0	01/15/2018	John Doe	Initial version
2.0	04/01/2018	John Smith	Added Shipments Subject Area as part of work order XYZ-123-56-B
3.0	06/01/2018	Joe Bloggs	Added Returns Subject Area as part of work order HIJ-987-99-A

Deliverable: Data Warehouse Detailed Bus Matrix

Intended Audience:

- Project Stakeholders
- Business Analyst

Business Reason/Value:

- Begins to supplement higher level documents (e.g. **Subject Area Summary**, **Subject Area Conformance Matrix**) with additional specifics and technical details.
- Provides "at a glance" details on the star-schemas that will support each Process Measurement defined in the "**Subject Area Summary"** document above.
- Cross references each measurement group with the major dimensions of the business.
- Allows analytic staff to easily determine the star-schema required to perform a specific analysis.

Required Document Format and Contents:

- This document is required to be submitted in electronic format as a Microsoft Word 2007 (or later) document.
- Ideally, a single **Data Warehouse Detailed Bus Matrix** should be created for the Data Warehouse as a whole. That is, a single **Data Warehouse Detailed Bus Matrix** may map to multiple **Subject Area Summary** documents. This is a deliberate decision to encourage…
    - Identification and use of conformed dimensions across the enterprise.
    - Allow business users to identify what type of cross subject area analysis is required.
- As a single **Data Warehouse Detailed Bus Matrix** is being kept, this means new initiatives should update the existing matrix document.
- The exception to the above rule is if trying to include diverse subject areas in a single document **begins to reduce readability and understanding**. (I.e. the bus matrix becomes "too busy" for clarity.) In these cases, it may be acceptable to break out separate, related, subject areas into separate bus matrix tables that can be reviewed or printed individually. However, these tables should still be retained in the overall **Data Warehouse Detailed Bus Matrix** document so that a single document maintains a comprehensive overview of what is available in the Data Warehouse as a whole.
- Note in the example provided below, the relationship between the **Data Warehouse Detailed Bus Matrix** and the example **Subject Area Summary**, and **Subject Area Conformance Matrix,** documents for the "Sales" subject area. In the example **Data Warehouse Detailed Bus Matrix** template, these documents have been merged and supplemented with additional technical detail.
- The **Data Warehouse Detailed Bus Matrix** is a living document that must be kept up-to-date as changes are made to subject areas through new initiatives and maintenance activities.
- The **Data Warehouse Detailed Bus Matrix** should contain the follow elements and match the example template below.

Item	Description	Notes
Subject Area Name	The Subject Area Name as taken from the **Subject Area Summary** document above.	
Process Measurement Name	The Process Measurement Name as taken from the **Subject Area Summary** document above.	One row in the matrix for each Process Measurement which is a part of that Subject Area.
Granularity	Granularity of the fact table should be listed.	• Grain is best stated in business terms but may also be specified dimensionally. • Be as precise as possible here and do not assume the user is already a subject matter expert who will already understand the granularity of the process being measured.

Item	Description	Notes
Process Measurements (Facts)	Individual Process Measurements (facts) should be listed for each star-schema.	• All the facts available for that star schema should be listed. • Note that even “factless” fact tables should have facts listed as they will support counts of various types.
Measurement Context & Hierarchy	The Measurement Context as taken from the **Subject Area Summary** document and translated to the relevant dimension table.	• Every dimension table should be indicated with both business and technical names visible. • Significant Degenerate Dimensions should be listed and called out with a (DD) label. • Significant dimension hierarchies should be shown by the dimension they are part of and grouped by shaded bands.

Example:

Data Warehouse Bus Matrix

				Day *day_dim*		Product *product_dim*		Salesrep *salesrep_dim*			Customer *customer_dim*	Warehouse *warehouse_dim*	Orders *order_dim*	Order Line *order_Line* (DD)
		Grain	**Facts**	Day	Quarter	Product	Category	Salesrep	Territory	Region				
Sales	Sales Calls *sales_call_fact*	One row per sales call	Number of sales calls	✓	✓			✓	✓	✓	✓			
	Proposals *proposal_fact*	One row per proposal	Proposal Quantity Proposal Dollars	✓	✓	✓	✓	✓	✓	✓	✓			
	Orders *order_fact*	One row per order line of the order	Number of Orders Order Quantity Order Dollars Order Cost Dollars Margin Dollars	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
	Shipments *shipment_fact*	One row per shipment	Number of Shipments Shipment Quantity Revenue Dollars	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Returns *return_fact*	One row per order line of the return	Number of Returns Quantity Returned Return Dollars Return Cost Dollars Return Margin Dollars	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Inventory	Inventory *inventory_status_fact*	One row per product	Count of Products on Hand	✓	✓	✓	✓					✓		
	Demand Forecast *demand_forecast_fact*	One row per product category per quarter	Projected Product Demand		✓		✓			✓		✓		
Finance	Receivables *receivable_fact*	One row per customer per day	Count of Receivables Receivable Amount Dollars	✓	✓						✓			✓
	Sales Goals *sales_goal_facts*	One row per quarter per salesrep	Sales goal in Dollars		✓				✓	✓				
	Commission Payments *commission_payments_fact*	One row per day per salesrep	Number of Commissions Commission Dollars	✓	✓			✓	✓	✓				

Note table physical names and degenerate dimension (DD) column names are provided in *italic text* next to business names.

Version	Revision Date	Author	Comments
1.0	01/15/2018	John Doe	Initial version
2.0	04/01/2018	John Smith	Added Shipments star schema (shipment_fact) to Sales subject area as part of work order XYZ-123-56-B. Initial version submitted during DSD.
2.1	05/15/2018	John Smith	Updated document to reflect changes made to Shipments star schema (shipment_fact) during the development phase of work order XYZ-123-56-B. Final version submitted at end of development.
3.0	06/01/2018	Joe Bloggs	Added Returns star schema (return_fact) to Sales subject area as part of work order HIJ-987-99-A. Initial version submitted during DSD.
3.1	10/12/2018	Joe Bloggs	Updated document to reflect changes made to Returns star schema (return_fact) during the development phase of work order HIJ-987-99-A Final version submitted at end of development.

Deliverable: Dimensional Model Documentation

This deliverable is composed of two parts, the **Star Schema Summary** document and **Dimension Summary** document. Each is described in more detail below.

Intended Audience:

- Business Analyst
- Project Stakeholders
- Data Scientist
- Technical Staff

Star Schema Summary

Business Reason/Value:

- Provides all the important details of the star in a concise, easy to understand manner.
- Provides both a textual, and graphical, description of the star to improve comprehension.
- Provides analytics staff with the means to identify which star-schema to use for a specific analysis.
- Allows stakeholders to easily review the proposed design and ensure all needed reporting metrics/KPIs are being met.
- Provides visual details on how various bridge tables, outriggers, alias dimensions, and mini-dimensions apply to this star.

Required Document Format and Contents:

- This document is required to be submitted in electronic format as a Microsoft Word 2007 (or later) document.
- A separate **Star Schema Summary** document should be provided for each star schema/fact table being created, or updated, in the Data Warehouse. Each **Star Schema Summary** should be maintained as a separate document.
- Each **Star Schema Summary** document is comprised of both an abbreviated visual diagram of the star schema, and a textual description of that star schema.
- The **Star Schema Summary** is a living document that must be kept up-to-date as changes are made to subject areas through new initiatives and maintenance activities.
- The visual diagram provided in the **Star Schema Summary** should meet the following specifications.
    - All columns in the fact table should be listed.
    - All dimension tables should be listed with role-playing dimensions clearly called out.
    - Dimension table columns should be limited to surrogate and natural keys along with selected attributes of significance.
    - In the accompanying diagram, the following items should be called out by their appropriate abbreviation: Surrogate Keys (SK), Natural Keys (NK), Foreign Keys (FK), Durable Keys (DK), Degenerate Dimensions (DD), Housekeeping Column (HK).
    - Attributes in dimension tables should be numbered to show what type of dimension they are. (E.g. 1 for Type 1 attribute, 2 for Type 2 attribute, 3 for a Type 3 attribute, etc.)
    - Note that the intent of the visual diagram is to provide a quick visual overview of the star schema calling out salient features. It is not intended to list every column comprising that star schema and/or replace the required ERWIN PDM documents described below.
- The textual description portion of the star-schema summary should include all the elements listed in the table below.

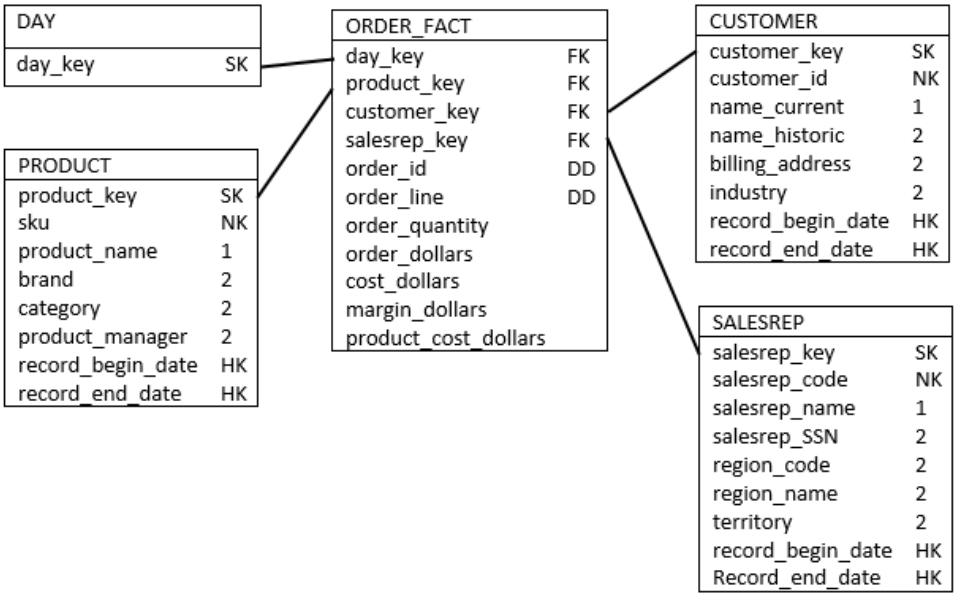
Item	Description	Notes
Star Name	The name of the Star.	

Item	Description	Notes
Process Measurement Name	The Process Measurement Name as taken from the **Subject Area Summary** document above.	
Fact Table Type	The type of the fact table: transaction, period snapshot or accumulating snapshot.	Also note if the fact table is factless, or if it is an aggregate or derived table.
Fact Table Grain	States the exact level of detail represented by each row in the fact table.	• Grain is best stated in business terms but may also be specified dimensionally. • Be as precise as possible here and do not assume the user is already a subject matter expert who will already understand the granularity of the process being measured.
Additive Facts	Lists additive facts stored in the fact table.	• The column name of the fact should be listed as well as a description of what it is. • List any necessary detail to describe unit measurement in the fact if necessary. (E.g. "…in US dollars," or "…in milliliters") • List any special logic used to derive the fact.
Semi-Additive Facts	Lists any semi-additive facts stored in the fact table.	• Should list the dimensions the semi-additive facts are additive over. • The column name of the fact should be listed as well as a description of what it is. • List any necessary detail to describe unit measurement in the fact if necessary. (E.g. "…in US dollars," or "...in milliliters") • List any special logic used to derive the fact.
Nonadditive Facts	Lists nonadditive facts that are not stored in the fact table as well as those that are stored in the fact table.	• For non-stored, nonadditive facts, list the fully additive components available in the fact table. • The column name of the fact should be listed as well as a description of what it is. • List any necessary detail to describe unit measurement in the fact if necessary. (E.g. "…in US dollars," or "...in milliliters") • List any special logic used to derive the fact.
Dimension Tables	Lists all the dimension tables that are part of the star.	• A brief description of the dimension table should be provided. • If a dimension is referenced more than once (aliased/role-playing dimensions), also specify roles. • Also list any degenerate dimensions.
Fact Table Load Frequency	Indicates how often the fact table is updated.	• Examples include: daily, weekly, monthly, real time, etc. • Note any exceptions to the load frequency here.
Fact Table Load Type	Indicates what load strategy is used each time the fact table is updated.	• Examples include: truncate all records and reload, reload last three months of data, update existing records and add new records, etc. • Include any special logic used to determine which records are added, updated, or deleted with each load.
Fact Table Data Retention	Indicates how long data is retained in the fact table.	• Note any special circumstances affecting data in the fact table.

Item	Description	Notes
Drilling Across	Lists important drill-across measurements in which the fact table participates.	List only those that link to requirements defined for the fact table's Process Measurement as defined in the **Subject Area Summary** document above. (the full list of drill-across possibilities is documented in the **Subject Area Matrix** document and does not need to be repeated here.)
Usage Notes	Identify special characteristics of the star, especially those that offer alternative ways to join tables.	Call out the core/custom dimensions, mini-dimensions that can be joined to the main dimension for browse, and bridges that can be used in multiple configurations.
Security Synopsis	Identify any high-level security considerations for this star schema.	• This is not an exhaustive list of all security considerations for this star but rather a high-level synopsis. Examples include: Contains HIPAA data, Contains PII data, covered by IRS policy X.Y.Z, limited to staff in XYZ business unit, etc. • At a **minimum** this should list which users may see the tables in this star. Use both business terms (business team names) and technical terms (groups, roles, etc.). Note that different groups may be allowed to see different tables, columns, or rows, in the star. If necessary, call each of these out independently as needed.
Project	Identifies the project during which the star was created.	• This section may link to a project roadmap, strategy document, or work order number. • The date this star schema was created should also be listed here.
Business Owners	List the business owner(s) of this star-schema.	List who "owns" this object from a business perspective. This should be the group that has the authority to "make decisions" about this object or approve access to this object.
Consumers/Stakeholders	List the consumers and downstream stakeholders of this data.	• List who in the business will be using this data. This should include any downstream consumer of this data. • This should include both internal DHS staff as well as external Commonwealth agencies or business partners. • Also list business subject matter experts here if they are different than the business owners.
Process Source System(s)	Lists the business source systems (operational systems) and business processes used to feed the star and its related dimensions.	• This is not an exhaustive list or data lineage but rather a high-level synopsis. Examples include: HR system, HCSIS operational system, CIS operational system, eCIS operational system, etc. • Note that if the data in this star is provided by an outside entity that should also be listed here. Examples include: PROMISe claims data transfer, FEI recipient study data transfer, etc.
Database System(s) and Location	List all the database systems where the tables in this star schema are stored.	• This should include the database system type, database instance, and schema. Examples: Oracle, EDWP instance, EDW schema. • Note that a star schema may be sourced from multiple database systems, so these should all be listed.
Cognos Package and Location	Indicate the Cognos package(s) where this star-schema is available for analysis.	• Include both the Cognos Package name and namespace for the star-schema. Examples: Ad-Hoc Package, Eligibility Namespace. OLTL Ad-Hoc Reporting Package, CHC Weekly Detail Namespace. • Note the same star schema may be found in multiple Cognos packages and all packages should be listed here.

Example:

Orders Star Schema Summary



Star Name:	Orders	
Process Measurement Name:	Booking Orders	
Fact Table Type:	Transaction	
Fact Table Grain:	Order information at the order line level of detail. A single order with multiple lines on it, will have multiple rows in this table, one for each order line.	
Additive Facts:	order_quantity	Quantity of product on order line using standard unit of measure
	order dollars	Extended amount on order line to be billed to customer in US dollars.
	cost_dollars	Extended cost of order line in US dollars.
	margin_dollars	Margin associated with the order line, in dollars. Equivalent to order_dollars minus cost_dollars. Value is in US dollars.
Semi-Additive Facts:	product_cost_dollars	The U.S. Dollar cost of this product. This value is only additive across the Product dimension.
Nonadditive Facts:	margin_rate	Margin dollars as a percentage of order_dollars. This column is not found in the fact table.
Dimension Tables:	Day	Date of the order.
	Product	Product on the order line.
	Customer	Customer who placed the order.
	Salesrep	Salesperson who will receive commission on the order.
	Order Line	(Degenerate Dimension) Unique ID for the order line within an order.
Fact Table Load Frequency:	Daily excepting Federal holidays.	
Fact Table Load Type:	Update old records, add new records since last load.	
Fact Table Data Retention:	Last 7 years of data. Data prior to 2013 will not be found here. Data for Calendar year 2013 was converted from old Ordering System prior to Exa-Order mainframe.	
Drilling Across:	Combine with proposal_fact to identify **close rate.** Combine with shipment_fact to **study fulfillment lag days.**	
Usage Notes:	None	
Security Synopsis:	Data in this star is limited to the ordering department and sales representatives. This corresponds to the "Order_Team," "Order_Team_Mgmt," and "Salesrep" user groups in the LDAP directory. Sales representatives are only allowed to see their own orders. Salesrep dimension contains PII data on salesrep (SSN).	
Project:	Work Order 12-568-ABC, 02/10/2014.	
Business Owners:	Ordering department management team.	
Consumers/Stakeholders:	Downstream consumers of this data include employees of the Orders department and sales reps.	
Process Source System(s):	New Exa-Order mainframe ordering system and order detail data feed from Amazon marketplace.	
Database System(s) and Location:	Oracle Database, SALES_PROD instance, ORDERS schema.	

Cognos Package and Location:	Sales Ad-Hoc Reporting Package, Orders Namespace Sales Representative Reporting Package, Commissions Namespace

Version	Revision Date	Author	Comments
1.0	01/15/2014	John Doe	Initial version submitted during DSD.
1.1	03/28/2014	John Doe	Updated document to reflect changes made to Orders star schema (order_fact) during the development phase of work order Work Order 12-568-ABC. Final version submitted at end of development.

Dimension Summary

Business Reason/Value:

- Communicates the scope and use of the dimension table for business analysts and technical staff.
- Provides graphical representations of the key features of the dimension, such as conformance with other dimensions, participation in significant hierarchies, and core/custom relationships.

Required Document Format and Contents:

- This document is required to be submitted in electronic format as a Microsoft Word 2007 (or later) document.
- A separate **Dimension Summary** document should be provided for each dimension table being created, or updated, in the Data Warehouse. Each **Dimension Summary** should be maintained as a separate document.
- Each **Dimension Summary** document is comprised of both summary level visual diagram(s) of the dimension table and a textual description of that dimension.
- The **Dimension Summary** is a living document that must be kept up-to-date as changes are made to subject areas through new initiatives and maintenance activities.
- The visual diagram provided in the **Dimension Summary** should meet the following specifications.
    - The Dimension summary should start out with a graphical depiction of the dimension showing important dimension columns. Note this does not have to be a complete depiction of every column in the dimension.
    - Sufficient information should be included to communicate the scope and use of the dimension table, and to facilitate review of important design considerations.
    - Information for the dimension should be accompanied by diagrams that illustrate key features of the dimension. These diagrams do not need to capture all columns; detailed column definitions will appear in the detailed documentation. Diagrams should be created for any of the following that apply:
        - Dimensional hierarchies
        - conformance with other dimensions
        - core/custom dimension relationships if present
        - outrigger dimensions if present
        - bridge tables if present
        - mini-dimensions if present
    - When dimensional hierarchies are displayed, they should show all the hierarchies present in the dimension, the key which denotes a unique record at that level in the hierarchy, and the dimensional attributes (columns) relevant to that level in the hierarchy. (Note that every dimension table will likely contain at least one hierarchy.)
    - In the accompanying diagrams the following items should be called out by their appropriate abbreviation: Surrogate Keys (SK), Natural Keys (NK), Durable Keys (DK), and Housekeeping Column (HK).
    - Attributes in dimension tables should be numbered to show what type of dimension they are. (E.g. 1 for Type 1 attribute, 2 for Type 2 attribute, 3 for a Type 3 attribute, etc.)
- The textual description portion of the **Dimension Summary** document should include all the elements listed in the table below.

Item	Description	Notes
Dimension Name	The business name of the dimension table.	
Description	A brief description of the dimension table.	This should be a one or two-line description of the dimension table stated in business terms.
Granularity	States the exact level of detail represented by each row in the dimension table.	• Grain is best stated in business terms. • Be as precise as possible here and do not assume the user is a subject matter expert who already understands the dimension.

Item	Description	Notes
Natural Key(s)	List the column or columns that constitute the natural key in the source system(s).	• This is essential information for the development of a load process and informs slow change behavior. • Include any notes relevant to this key.
EDW Durable Keys	List the column that specifies the EDW durable key.	• This is essential information for the development of a load process and informs slow change behavior. • Include any notes relevant to this key.
Default Value Row	Describe the Default Value row for the dimension.	• Provide the surrogate key value of the Dimension's default value row as well as a business description of what this default value row means. • Every dimension should have at least one Default Value Row.
Special Case Rows	Describe any Special Case rows for the Dimension.	• Describe any special case rows such as "Not Applicable," "Not Found," "Event Has Not Yet Occurred", "Source System Error", "Value Not in Source System," etc.) • For each special case row provide the surrogate key value of that row as well as a business description of what this special row means.
Hierarchies	List all hierarchies present in the dimension.	• These should be accompanied by a textual description of the hierarchies as well as a graphical representation. • The textual description should show the business names of the levels in the dimension, as well as an approximate count of the number of records in each level. • The graphical representation should show the levels in the hierarchy, the business name of each level, the key(s) that defines a unique record in that level, and the attributes (columns) of the dimension relevant to that level.
Conformed Dimensions	List any other dimension tables that conform with this table.	• Each conformed dimension should be documented separately as its own dimension. • This should be accompanied by a graphical representation of the conformed dimension(s).
Outrigger Dimensions	List any outrigger dimension used by this dimension table.	• Each outrigger (snowflake) dimension should be documented separately as its own dimension. • This should be accompanied by a graphical representation of the outrigger dimension and its relationship to the main dimension.
Bridge Tables	List any bridge tables used by this dimension table to join to other dimension tables.	• Provide a written description of the tables involved in the bridge and the business reason why the bridge table is necessary. List any relevant notes required to use the bridge table in an analysis. • This should be accompanied by a graphical representation of the bridge and its relationship to the dimensions. Include cardinality in this diagram.
Mini Dimensions	List any mini-dimensions used by this dimension table.	• Each mini dimension should be documented separately as its own dimension. • Provide a written description of the need for a mini-dimension and list any relevant notes required to use that mini dimension. • This should be accompanied by a graphical representation of the mini dimension and its relationship to the main dimension. Include cardinality in this diagram. Show any fact tables that incorporate that mini dimension.

Item	Description	Notes
Core/Custom Dimensions	List any Core/Custom dimension tables that this dimension table participates in.	• Each core/custom dimension should be documented separately as its own dimension. • Provide a written description of the custom dimensions related to this dimension and an indication of common surrogate keys they all share. • This should be accompanied by a graphical representation of the core/custom dimension(s).
Table Load Frequency	Indicates how often the dimension table is updated.	• Examples include: daily, weekly, monthly, real time, etc. • Note any exceptions to the load frequency here.
Table Load Type	Indicates what load strategy is used each time the dimension table is updated.	• Examples include: truncate all records and reload, reload last three months of data, update existing records and add new records, etc. • Include any special logic used to determine which records are added, updated, or deleted with each load.
Table Data Retention	Indicates how long data is retained in the dimension table.	Note any special circumstances affecting data in the dimension table.
Usage Notes	Identify special characteristics of the dimension, especially those that offer alternative ways to join tables.	Provide details on special case rows.
Security Synopsis	Identify any high-level security considerations for this dimension.	• This is not an exhaustive list of all security considerations for this dimension but rather a high-level synopsis. Examples include: Contains HIPAA data, Contains PII data, covered by IRS policy X.Y.Z, limited to staff in XYZ business unit, etc. • At a **minimum** this should list which users may see this dimension. Use both business terms (business team names) and technical terms (groups, roles, etc.). Note that different groups may be allowed to see different columns, or rows in the dimension. If necessary, call each of these out independently as needed.
Project	Identifies the project during which the dimension was created.	• This section may link to a project roadmap, strategy document, or work order number. • The date this dimension was created should also be listed here.
Business Owners	List the business owner(s) of this star-schema.	• List who “owns” this object from a business perspective. This should be the group that has the authority to “make decisions” about this object or approve access to this object.
Consumers/Stakeholders	List the consumers and downstream stakeholders of this data.	• List who in the business will be using this data. This should include any downstream consumer of this data. • This should include both internal DHS staff as well as external Commonwealth agencies or business partners. • Also list business subject matter experts here if they are different than the business owners.

Item	Description	Notes
Process Source System(s)	Lists the business source systems (operational systems) and business processes used to feed the dimension.	• This is not an exhaustive list or data lineage but rather a high-level synopsis. Examples include: HR system, HCSIS operational system, CIS operational system, eCIS operational system, etc. • Note that if the data in this dimension is provided by an outside entity, that should also be listed here. Examples include: PROMISe claims data transfer, FEI recipient study data transfer, etc.
Database System(s) and Location	List all the database systems where the dimension is stored.	• This should include the database system type, database instance, and schema. Examples: Oracle, EDWP instance, EDW schema.

Example:

Salesrep Dimension Summary

SALESREP	
salesrep_key	SK
salesrep_id	NK
salesrep_durable_key	DK
salesrep_name	1
salesrep_type_id	FK
territory_code	2
territory_name	2
territory_manager	2
region_code	2
region_name	2
region_vp	2
work_location_key	FK
record_begin_date	HK
record_end_date	HK
current_record_indicator	HK
…	

Dimension Name: Salesrep

Description: Contains details on Sales Representatives (salesreps) and the locations they serve. This dimension holds records for both salesreps currently with the company and those who have retired from the company.

Granularity: Each salesperson in this table will have one or more rows. Each row in the table will show the locations a salesperson served for a period of time given by the record_begin_date and record_end_date. Each salesperson will have one, and only one, row noted by the current_record_indicator = 'Y.' This record will represent the most recent data for that salesperson.

Natural Key(s): **salesrep_id** Note that the Natural Key for calendar dates prior to 2013 was from the old Ordering System prior to current Exa-Order mainframe.

EDW Durable Key(s): **salesrep_durable_key** There were instances in the old Ordering System (prior to the current Exa-Order mainframe) where the same salesrep was accidentally assigned multiple salesrep_id. As the operational system still uses these duplicate keys, we generated an EDW durable key to tie them all together. Note that duplicate salesrep_ids should no longer be created operationally after 06/30/2017 but may still be in use after that time.

Default Value Row:

-1 A value of -1 in the salesrep_key surrogate key column indicates the "Salesrep Not Found" situation and will be used when the operational system does not accurately capture the salesrep associated with a business process.

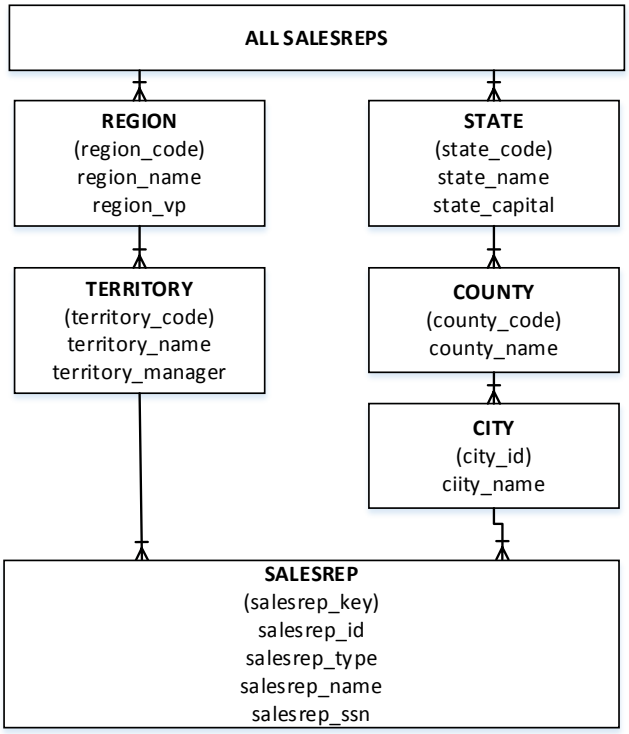
Special Case Rows:

-2 A value of -2 in the salesrep_key surrogate key column indicates a "No Salesrep for this Sale" situation and occurs for a small percentage of orders that do not go through a salesrep.

-3 A value of -3 in the salesrep_key surrogate key column indicates a "Salesrep Not Identified Yet" situation which may occur for a short period of time after the initial sale is made and before the lead salesrep on that order is identified. This condition is not supposed to persist for more than a few hours after the order is made.

Hierarchies:

All Salesreps (1) → Region (6) → Territory (25) → Salesrep (766)
All Salesreps (1) → State (50) → County (201) → City (693) → Salesrep (766)
Note counts above are approximate and may change over time.



Conformed Dimensions:

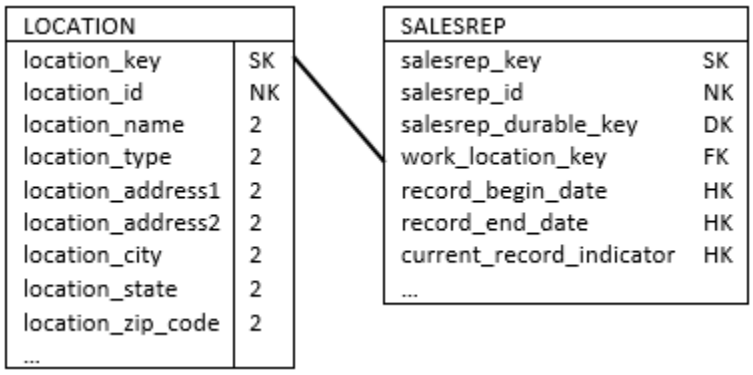
The Salesrep dimension has conformed rollups with the Territory and Region dimensions, and share attributes, as illustrated below.

SALESREP	
salesrep_key	SK
salesrep_id	NK
salesrep_durable_key	DK
salesrep_name	1
salesrep_type_id	FK
territory_code	2
territory_name	2
territory_manager	2
region_code	2
region_name	2
region_vp	2
work_location_key	FK
record_begin_date	HK
record_end_date	HK
current_record_indicator	HK
…	

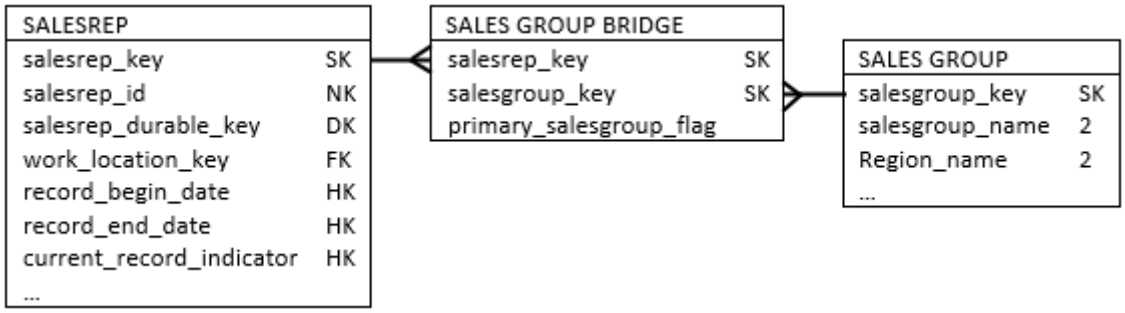
TERRITORY	
Territory_key	SK
territory_code	2
territory_name	2
territory_manager	2
region_code	2
region_name	2
region_vp	2
…	

REGION	
region_key	SK
region_code	2
region_name	2
region_vp	2
…	

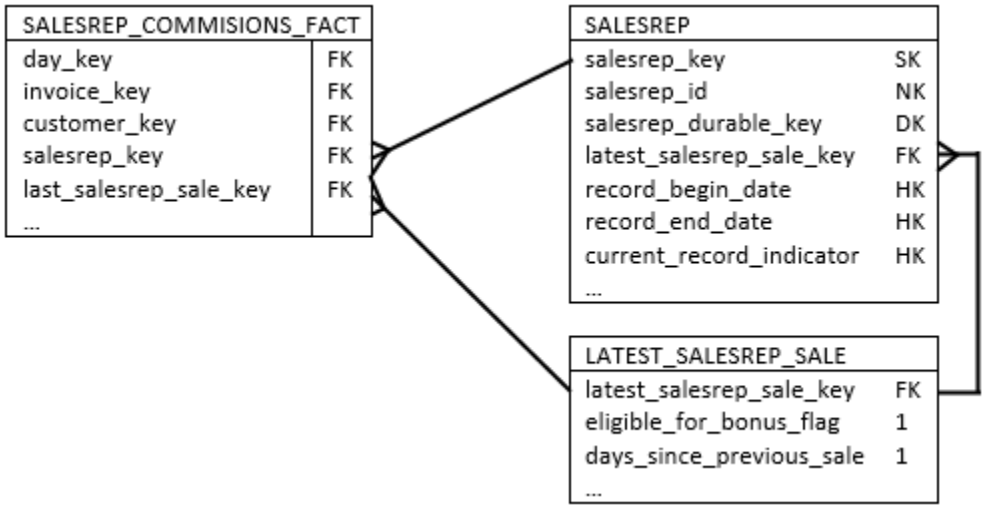
Outrigger Dimensions: The Salesrep dimension used the Location dimension as an outrigger dimension as indicated below.



Bridge Tables: The salesrep dimension uses a Sales Group Bridge table to the Sales Group Table. Each salesrep will be associated with one or more Sales Groups. However, each salesrep will be assigned to one primary salesgroup identified by the primary_salesgroup_flag = 'Y', which can be filtered on to return one, and only one, Sales Group for each salesrep. Note that failing to include this flag when using the bridge table in an analysis may lead to double-counting of metrics.



Mini Dimensions: The Salesrep maintains a relationship to the mini-dimension of Latest Salesrep Sale. This is necessary because there are frequent changes to the columns found in the Latest Salesrep Sale dimension as a Salesrep can make multiple sales daily. Including these columns in the Salesrep dimension would "bloat" the number of rows in the Salesrep dimension and cause processing issues for the ETL. Hence, these attributes were moved to an independent mini-dimension. Note the latest_salesrep_sale_key in the Salesrep dimension points to the **latest** record only in the Latest Salesrep Sale dimension.



Core/Custom Dimensions: The Salesrep dimension is a Core Dimension. Since the company has started shifting sales to more online venues, custom versions of the Salesrep dimension have been created as follows. These all share the same salesrep_key. As these are Custom Dimensions, the same salesrep in the Salesrep dimension may also have a record in these Custom Dimensions with the exact same salesrep_key.

Core Dimension		Custom Dimensions				
SALESREP		AMAZON SALESREP		MISC ETAILER SALESREP		
salesrep_key	SK	salesrep_key	SK	salesrep_key	SK	Common attributes
salesrep_id	NK	salesrep_id	NK	salesrep_id	NK	
salesrep_durable_key	DK	salesrep_durable_key	DK	salesrep_durable_key	DK	
salesrep_name	1	salesrep_name	1	salesrep_name	1	
salesrep_type_id	FK	salesrep_type_id	FK	salesrep_type_id	FK	
territory_code	2	territory_code	2	territory_code	2	
territory_name	2	territory_name	2	territory_name	2	
territory_manager	2	territory_manager	2	territory_manager	2	
region_code	2	region_code	2	region_code	2	
region_name	2	region_name	2	region_name	2	
region_vp	2	region_vp	2	region_vp	2	
work_location_key	FK	work_location_key	FK	work_location_key	FK	
record_begin_date	HK	record_begin_date	HK	record_begin_date	HK	
record_end_date	HK	record_end_date	HK	record_end_date	HK	
current_record_indicator	HK	current_record_indicator	HK	current_record_indicator	HK	
		amazon_id	2	etailer_id	2	Type-specific attributes
		amazon_group_id	2	etailer_name	2	
		amazon_commission	2	etailer_start_date	2	
		amazon_active_flag	2	etailer_end_date	2	
		…		…		

Table Load Frequency: Daily excepting Federal holidays.

Table Load Type: Update old records, add new records since last load.

Table Data Retention: Last 7 years of data. Data prior to 2013 will not be found here. Data for Calendar year 2013 was converted from old Ordering System prior to Exa-Order mainframe.

Usage Notes: Each row in the table will show the locations a salesperson served for a period of time given by the record_begin_date and record_end_date. Each salesperson will have one, and only one, row noted by the current_record_indicator = 'Y.' This record will represent the most recent data for that salesperson. (See also the V_SALESREP view which filters this dimension so that the current_record_indicator = 'Y'.)

Security Synopsis: Data in this star is limited to the ordering department and sales representatives. This corresponds to the "Order_Team," "Order_Team_Mgmt," and "Salesrep" user groups in the LDAP directory. Sales representatives are only allowed to see their own orders. The Salesrep dimension contains PII data on salesrep (SSN).

Project: Work Order 12-568-ABC, 02/10/2014.

Business Owners: Ordering department management team.

Consumers/Stakeholders: Downstream consumers of this data include employees of the Orders department and sales reps.

Process Source System(s): New Exa-Order mainframe ordering system and order detail data feed from Amazon marketplace and other internet based etailers with company contracts.

Database System(s) and Location: Oracle Database, SALES_PROD instance, ORDERS schema.

Version	Revision Date	Author	Comments
1.0	01/15/2014	John Doe	Initial version submitted during DSD.
1.1	03/28/2014	John Doe	Updated document to reflect changes made to Salesrep dimension table during the development phase of work order Work Order 12-568-ABC. Final version submitted at end of development.

Deliverable: Physical Data Model

This deliverable is composed of three parts, the **ERWIN Physical Data Model (PDM),** the **Star Schema Diagram(s),** the **Database Data Dictionary**. Each is described in more detail below.

Intended Audience:

- Business Analyst
- Project Stakeholders
- Data Scientist
- Technical Staff

ERWIN Physical Data Model (PDM)

Business Reason/Value:

- Required for the database team to instantiate the Physical Data Model as actual database tables.
- Fully documents **all** tables and columns available for analysis.
- Provides all technical details needed to successfully use the tables for complex analysis.
- Provides details necessary to improve performance of queries written against the table.
- Makes business users aware of any special requirements for analysis that apply to this table (E.g. Security considerations, data governance considerations, etc.)
- Maintains change history on the table and column.

Required Document Format and Contents:

- This document is required to be submitted in electronic format as an ERWIN document.
- **UDP Fields:** The tables below describe text based UDP fields in the **physical model** of the completed ERWIN PDM provided to the database team. An ERWIN template will be created with these UDPs already present to help ease development and ensure standards are met.
    - Note that the Bulk Editor Window of ERWIN can be used to quickly set many of these fields and copy/paste between them for similar objects. (E.g. All tables sharing the same schema or all columns for the same database table.)
    - Note that many of the fields below, particularly for table level UDPs, will have already been documented in deliverables provided previously. Therefore, previous work can be quickly copy-pasted here. However, in some cases, they will need to be filled out more completely than their equivalent in the high-level documentation provided in previous phases of development. Therefore, it is not acceptable to blindly copy-paste from higher level documentation here.
- **Star-Schema Subject Areas:** Within the ERWIN **physical model**, a subject area **should be created for each star-schema in the model**.
    - **All** tables comprising this star-schema should be added to this subject. This includes the Fact Table, all dimension tables, and any bridge or outrigger (snowflake) tables.
    - Ensure that any legends or other notation needed to understand the diagram are also included with each star-schema.
    - Within the Subject Area, the tables should be laid graphically in star-schema format with the Fact table in the center and dimension tables surrounding it.
    - Proper spacing should be placed around the tables to clearly show relationships and minimize the number of relationships (lines) that "jump" over one another in the diagram.
    - As much as possible, the diagram should be laid out to print cleanly on one or more letter or legal sized pieces of paper ensuring that no tables are split across pages. It is understood that, depending upon the number of tables and size of tables, the above may not always be possible, but the goal is to make the data in the diagram as easy as possible to read when viewed and printed on paper.

- The **Physical Data Model** is a living document that must be kept up-to-date as changes are made to subject areas through new initiatives and maintenance activities.
- In addition to the deliverable standards above, the ERWIN Physical Data Model (PDM) will also correspond to all other Commonwealth standards required for the submission of an ERWIN document. These are specific standards that apply to the deliverable and exist above and beyond separate ERWIN document standards.

Table Level UDP Fields		
Item	**Description**	**Notes**
Database System	The database system the table will reside on	Examples: Oracle, SQL Server, Teradata, HIVE, Impala, etc.
Database Instance	This should be the database instance the table will reside in once moved to the production environment.	Examples: EDWP, HADOOP Production Cluster, etc.
Database Schema/Area	This should be the database schema/area the table will reside in once moved to the production environment.	Examples: EDW, HCSIS, ECIS, etc.
Database Table Physical Name	The database physical name of the table	• **Note:** This data is not actually a UDP field. It is included here for completeness. • This value must correspond to all BIS database team standards for naming conventions.
English Name	The English Name of the table	This value must correspond to all BIS database team standards for naming conventions.
Table Type	The type/role of this table in the Data Warehouse	Examples: Dimension, Fact, Bridge
Fact Table Process Measurement Name	The Process Measurement Name as taken from the "Subject Area Summary" document above	Only applicable to Fact Tables. For all others simply enter 'Not Applicable" here.
Fact Table Type	The type of the fact table: transaction, period snapshot or accumulating snapshot	• Only applicable to Fact Tables. For all others simply enter 'Not Applicable" here. • Also note if the fact table is factless, or if it is an aggregate or derived table. • For aggregate or derived Fact Tables, list how they are aggregated or derived.

Table Level UDP Fields		
Item	**Description**	**Notes**
Comment	A verbose textual description of the table	• **Note:** This data is not actually a UDP field but is entered in the "Comment" tab of ERWIN. It is included here to call out the standards expected of the comment. • This value must correspond to all BIS database team standards for column comments. • This comment should be verbose, and fully describe the table and its uses for analytical purposes. **This will usually require more than one or two sentences.** • The comment should **not assume** the reader will already be a subject matter expert, or business stakeholder, of the table. The comment should be verbose and complete enough to provide someone **completely new** to the table a good idea of what data is in the table and how it fits into the business process/event being modeled. This is critical so that new business, and technical staff, who do not have prior business experience, can rapidly understand how to use and/or maintain the table. • Though they are also requested in separate fields below, the table comment should also include the following three items: o Granularity of the table. o Table load frequency. o Table data retention. • This value should have correct spelling and punctuation and should be grammatically correct.
Granularity	States the exact level of detail represented by each row in the table.	• Grain is best stated in business terms. • Be as precise as possible here and **do not** assume the user is a subject matter expert who already understands the dimension.
Table Load Frequency	Indicates how often the dimension table is updated.	• Examples include: daily, weekly, monthly, real time, etc. • Note any exceptions to the load frequency here.
Table Load Type	Indicates what load strategy is used each time the dimension table is updated.	• Examples include: truncate all records and reload, reload last three months of data, update existing records and add new records, etc. • Include any special logic used to determine which records are added, updated, or deleted with each load.
Table Data Retention	Indicates how long data is retained in the dimension table.	• Note any special circumstances affecting data in the dimension table.

Table Level UDP Fields		
Item	**Description**	**Notes**
Source System(s)	Lists the business source systems (operational systems) and business processes used to feed the table.	• This should be a **complet**e list of **all** source systems used to populate the table. This should have more detail than similar fields in higher level documentation above. • Note that if the data in this table is provided by an outside entity, that entity should also be listed here. Examples include: PROMISe claims data transfer, FEI recipient study data transfer, etc. • Note this detail ends at the table level. A similar, more detailed, column will be found at the column level. • At a minimum this value should include one or more of the following depending upon the source system(s) and their type(s): o Source system / table o Source System / file o Web Service Details o Information on Data Feed
Source System Relationship(s)	Relationships among source tables or systems	• For relational sources, describe how source tables are joined together and filtered to derive the data in this table. • For other sources describe the necessary sort/merge/filter processing required to derive the data in this table. • This should be done for each source system listed in the "Source System(s)" column.
Processing Rules	Load requirements for the table that could not be defined at the column level.	• For Fact tables this should include things like the logic required to construct an accumulating snapshot or explain how this table is aggregated/derived from other tables. • For dimensions it may be necessary to define a load strategy and/or order. • Describe special pre and post-processing, and/or conditional rules. • Describe any complex logic. Use pseudo-code if necessary. • Be as precise as possible in this column and try to use **both** business terms and specific column names as necessary. • Assume you are writing to **both** a business analyst and technical reader. The business analyst should have a rough idea of how the data was manipulated to get to this point (which may have an impact on its usefulness to the analysis being performed) while the technical reader should have a good understanding of the actual processing required to get to this point. • Note that due to the complexity of some transformations it may be impossible to list all transformations that occurred to the column. The goal is to provide business users with a good idea of how the table was 1) derived from the source system(s) or 2) computed from other data.

Table Level UDP Fields		
Item	**Description**	**Notes**
Security Requirements	Identify any security requirements for this dimension.	• Note that this field is called "Security Requirements" and **not** "Security Synopsis", which was at a higher level. That's because this field is intended to **go into more detail on actual security requirements**. • This should be a **complete** list of **all** security requirements that apply to this table which are not at the column level. Examples: o Are certain partitions, columns, or rows limited to specific users? o Does data in the table need to be encrypted or masked? o What types of security mandates apply to the entire table based on the data in its columns. (E.g. HIPAA, IRS rules, PII rules, etc.) o Are there any specific data-governance/oversight/review rules that apply to the data in this table specifically and, if so, how do they work and who is involved. (E.g. The table contains information on sexual orientation. Before data in it is used, any analysis must be reviewed by Legal Team XYZ to comply with policy ABC.) o Are there certain types of analysis that are not allowed on this table based upon legal or business rules? (E.g. Identifying people with specific medical conditions, using data in this table in conjunction with another table to "de anonymize" individuals, etc.) • Be as precise as possible with field. • At a **minimum** this should list which users may see this table. Use both business terms (business team names) and technical terms (groups, roles, etc.).
Business Owners	List the business owner(s) of this star-schema.	List who "owns" this object from a business perspective. This should be the group that has the authority to "make decisions" about this object or approve access to this object.
Consumers/Stakeholders	List the consumers and downstream stakeholders of this data.	• List who in the business will be using this data. This should include any downstream consumer of this data. • This should include both internal DHS staff as well as external Commonwealth agencies or business partners. • Also list business subject matter experts here if they are different than the business owners.
Revision History	The creation and revision history of this table	• This is a more detailed version of the "Project" column found in the "Star Schema Summary" and "Dimension Summary" documents above. • Identify the projects in which the table was created or modified. Link this to a specific roadmap, strategy document, or work order number. • List the dates the table was created/modified and fully describe the action/modification taken.
Primary Key	List the columns that make up the Primary Key of the table if there is one.	• List the database column names, and business (English), names that make up this table's primary key. • If there is no Primary Key for the table (as in some Fact or Bridge tables) list this as 'None'

Table Level UDP Fields		
Item	**Description**	**Notes**
Partitions	List the partitions applied to the table here.	• If the table is not partitioned, enter 'None' for this field. • For Partitioned tables, describe the partition type, partition column(s), partition logic and whether new partitions will be created automatically or manually. (E.g. This table is partitioned by Interval on the sales_date field by calendar year. New partitions will be created manually at the start of each year.) • For the type of the partition, use the correct technical name as defined by the underlying database system. (E.g. Range, Hash, Internal, List, etc.)
Sub-Partitions	List the sub-partitions applied to the table here.	• If the table is not sub-partitioned enter 'None' for this field. • For sub-partitioned tables, describe the sub-partition type, partition column(s), sub-partition logic and whether new sub-partitions will be created automatically or manually. (E.g. This table is sub-partitioned by Interval on the sales_date field by calendar month. New sub-partitions will be created automatically as new sales_dates are added to the table.) • Use the correct technical name for the type of the sub-partition as defined by the underlying database system. (E.g. Range, Hash, Internal, List, etc.)
Index Columns and Index Types	List the index columns applied to the table and the type of Index.	• For Indexes, list the Index Name, the column(s) that make up the Index, and the Index Type. When listing the columns comprising the index include both the physical name of the column as well as the business (English) name of the column. (E.g. IDX_SALESREP_ID: The table is Bitmap indexed on the salesrep_id (Sales Representative ID) column.) • All indexes should be listed here, **including** the index that defines the primary key of the table if there is one.
Table Constraints	List any database constraints on the table including Foreign Key Constraints.	• List any database constraints applied to the table and the logic used to define those constraints. • For logic constraints, be as precise as possible in this column and try to use **both** business terms and specific column names as necessary. Assume you are writing to **both** a business analyst and technical reader. • For Foreign Key (FK) constraints, list the table the FK is derived from. Indicate if the constraint is checked by the database system on load or a RELY (or similar) keyword is used.
Compression	Describe any compression applied to this table here.	• If no compression is applied to the table, simply put 'None' here. • List the type of compression applied and any options related to it, use relevant terminology from the underlying database platform here. • List any relevant logic related to compression. (E.g. Partitions less than one year old are not compressed, partitions over 1 year old are compressed for QUERY HIGH, partitions over 3 years old are compressed for ARCHIVE HIGH.)
Initial Rows	Number of rows expected upon implementation	Used for capacity planning.
Annual Growth	Estimated number of new rows each year	Used for capacity planning.

Table Level UDP Fields		
Item	**Description**	**Notes**
ACD	The Add/Change/Delete field as required by the BIS database team.	This value must correspond to all BIS database team standards.

Column Level UDP Fields		
Item	**Description**	**Notes**
Database System	The database system the table will reside on.	Examples: Oracle, SQL Server, Teradata, HIVE, Impala, etc.
Database Instance	This should be the database instance the table will reside in once moved to the production environment.	Examples: EDWP, HADOOP Production Cluster, etc.
Database Schema/Area	This should be the database schema/area the table will reside in once moved to the production environment.	Examples: EDW, HCSIS, ECIS, etc.
Database Table Physical Name	The database physical name of the table this column belongs to.	Note that by default, the ERWIN "Bulk Editor" save feature does not include the table name for a column which is why this is required here.
Database Column Physical Name	The database physical name of the column.	• **Note:** This data is not actually a UDP field. It is included here for completeness. • This value must correspond to all BIS database team standards for naming conventions.
Column English Name	The English Name of the column.	This value must correspond to all BIS database team standards for naming conventions.
Data Type and Size	The data type and size of the column.	**Note:** This data is not actually a UDP field but is entered in the "Physical" tab of ERWIN. It is included here for completeness.
NULL Option	The NULL option of the column.	**Note:** This data is not actually a UDP field but is entered in the "Physical" tab of ERWIN. It is included here for completeness.
Default Value	The Default value of this column.	• Note all EDW columns should have a default value set for them.

Column Level UDP Fields		
Item	**Description**	**Notes**
Column Type	The Column Type from an Analysis Perspective.	• This is not the physical data type of the column as implemented in the database. Rather it provides an indication of how that column is used in the model for physical, ETL, and analytical purposes. • Use the following standard abbreviations to identify keys: o SK (surrogate key) o NK (natural key) o DK (EDW durable key) • For Fact tables, use the following standard descriptions o DD (degenerate dimension) o HK (housekeeping column) o Fact – Additive o Fact – Semi Additive o Fact – Non-Additive • For dimension tables use the following standard descriptions: o 1, 2, 3 (type 1, 2, 3 dimension attributes respectively) o Hybrid SCD for Hybrid Slowly changing dimension attributes.

Column Level UDP Fields		
Item	**Description**	**Notes**

Comment	A verbose textual description of the table.	• **Note:** This data is not actually a UDP field but is entered in the "Comment" tab of ERWIN. It is included here to call out the standards expected of the comment.
		• This value must correspond to all BIS database team standards for column comments.
		• This comment should be verbose, and fully describe the table and its uses for analytical purposes. **This will usually require more than one or two sentences.**
		  o The comment should **not assume** the reader will already be a subject matter expert, or business stakeholder, of the table.
		  o The comment should be verbose and complete enough to provide someone **completely new** to the table a good idea of what data is in the table and how it fits into the business process/event being modeled. This is critical so that new business, and technical staff, who do not have prior business experience, can rapidly understand how to use and/or maintain the table.
		• List transformation rules that operate on the source system element prior to that element reaching this table.
		  o Note that due to the complexity of some transformations it may be impossible to list all transformations that occurred to the column.
		  o The goal is to provide business users with a good idea of how the column was 1) changed from the source system or 2) computed from other data.
		  o Assume you are writing to **both** a business analyst and technical reader. The business analyst should have a rough idea of how the data was manipulated to get to this point (which may have an impact on its usefulness to the analysis being performed) while the technical reader should have a good understanding of the actual processing required to get to this point.
		• This value should have correct spelling and punctuation and should be grammatically correct.

Source System(s)	Lists the business source systems (operational systems) and business processes used to feed this column.	• This should be a **complete** list of **all** source systems used to populate the column.
		• Note that if the data in this column is provided by an outside entity, that entity should also be listed here. Examples include: PROMISe claims data transfer, FEI recipient study data transfer, etc.
		• At a minimum this value should include one or more of the following depending upon the source system(s) and their type(s):
		  o Source system / table / field
		  o Source System / file / field
		  o Web Service Details
		  o Information on Data Feed

Column Level UDP Fields		
Item	**Description**	**Notes**
Security Requirements	Identify any column level security requirements.	• This should be a **complete** list of **all** security requirements that apply to this column that were not already documented at the table level. • At a **minimum,** this should list which users may see this column **if they are different than those allowed to see the table**. Use both business terms (business team names) and technical terms (groups, roles, etc.). • Note that different groups may be allowed to see different rows in this column. If necessary, call each of these out independently as needed. • See the notes for Security Requirements at the table level above.
Business Owners	List the business owner(s) of this star-schema.	• List who "owns" this object from a business perspective. This should be the group that has the authority to "make decisions" about this object or approve access to this object.
Consumers/Stakeholders	List the consumers and downstream stakeholders of this data.	• List who in the business will be using this data. This should include any downstream consumer of this data. • This should include both internal DHS staff as well as external Commonwealth agencies or business partners. • Also list business subject matter experts here if they are different than the business owners.
Revision History	The creation and revision history of this column.	• This is a more detailed version of the "Project" column found in the "Star Schema Summary" and "Dimension Summary" documents above. • Identify the projects in which the column was created or modified. Link this to a specific roadmap, strategy document, or work order number. • List the dates the column was created/modified and fully describe the action/modification taken.
ACD	The Add/Change/Delete field as required by the BIS database team.	• This value must correspond to all BIS database team standards.

Star Schema Diagram(s)

Business Reason/Value:

- Provides a visual representation of tables comprising the business processes(s) being modeled and their relationship to each other.
- Provides a visual representation of the tables involved in each star-schema and their relationship to one another.
- Needed to guide power users in the development of complex database queries.

Required Document Format and Contents:

- This document is required to be submitted in electronic format as an Adobe PDF document.
- These documents will be created by printing out (exporting) the **ERWIN Physical Data Model (PDM)** in PDF format.
- The following display options should be enabled within ERWIN prior to printing.
    - For table names, also show the schema name.
    - For columns show the following attributes: Foreign Keys (FK), column data type and size, NULL option.
    - Layout columns in column/grid layout.
    - Display relationships between tables and include cardinality in "crow's feet" notation.
- Print (export) the overall PDM, and print (export) each star-schema subject area separately in PDF format.
- The **Star Schema Diagram(s)** are living documents that must be kept up-to-date as changes are made to subject areas through new initiatives and maintenance activities.

Database Data Dictionary

Business Reason/Value:

- Completely documents the data model at the table level.
- Completely documents the data model at the column level.
- Needed to guide analysts in the development of queries.

Required Document Format and Contents:

- The **Database Data Dictionary** is a living document that must be kept up-to-date as changes are made to subject areas through new initiatives and maintenance activities.
- These documents will be created by exporting the data contained in the **ERWIN Physical Data Model (PDM)** as a Microsoft Excel 2007 (or later) spreadsheet.
- This spreadsheet will contain two tabs. Each of these tabs is described in more detail below.
- **First Tab: Table Level Data Dictionary**
    - The Bulk Editor functionality of ERWIN should be used to export the table level data elements listed below in CSV format. This CSV format should be imported into Excel (importing all columns as text data).
    - The Excel Document should have the following formatting applied:
        - Rows should be sorted alphabetically as follows: Database System, Database Instance, Database Schema/Area, Table Physical Name.
        - The first row of the Excel document should be given the column names specified below and "frozen" so it does not move when the document is scrolled.
        - Column contents should have the "Wrap Text" property turned on as needed and have their width sized appropriately for readability. Text should be aligned vertically and to the left within the cell.
        - Paper Orientation should be set to landscape with a legal page size. (Note, the goal is to minimize the amount of paper required, not necessarily fit all columns below on the same page, which may be impractical.)
        - Columns should be ordered from left to right in Excel as specified below.

Column Order	Data Element	Note
1	Database System	UDP
2	Database Instance	UDP
3	Database Schema/Area	UDP
4	Database Table Physical Name	
5	English Name	UDP
6	Table Type	UDP
7	Fact Table Process Measurement Name	UDP
8	Fact Table Type	UDP
9	Comment	
10	Granularity	UDP
11	Table Load Frequency	UDP
12	Table Load Type	UDP
13	Table Data Retention	UDP
14	Source System(s)	UDP
15	Source System Relationship(s)	UDP
16	Processing Rules	UDP
17	Security Requirements	UDP
18	Business Owners	UDP
19	Consumers/Stakeholders	UDP
20	Revision History	UDP
21	Primary Key	UDP
22	Partitions	UDP
23	Sub-Partitions	UDP
24	Index Columns and Index Types	UDP
25	Table Constraints	UDP
26	Compression	UDP
27	Initial Rows	UDP
28	Annual Growth	UDP

- **Second Tab: Column Level Data Dictionary**
  - The Bulk Editor functionality of ERWIN should be used to export the table level data elements listed below in CSV format. This CSV format should be imported into Excel (importing all columns as text data).
  - The Excel Document should have the following formatting applied:
    - Rows should be sorted alphabetically as follows: Database System, Database Instance, Database Schema/Area, Table Physical Name.
    - The first row of the Excel document should be given the column names specified below and "frozen" so it does not move when the document is scrolled.
    - Column contents should have the "Wrap Text" property turned on as needed and have their width sized appropriately for readability. Text should be aligned vertically and to the left within the cell.
    - Paper Orientation should be set to landscape with a legal page size. (Note, the goal is to minimize the amount of paper required, not necessarily fit all columns below on the same page, which may be impractical.)
    - Columns should be ordered from left to right in Excel as specified below.

Column Order	Data Element	Note
1	Database System	UDP
2	Database Instance	UDP
3	Database Schema/Area	UDP
4	Database Table Physical Name	UDP
5	Database Column Physical Name	
6	Column English Name	UDP
7	Data Type and Size	

Column Order	Data Element	Note
8	NULL Option	
9	Default Value	UDP
10	Column Type	UDP
11	Comment	
12	Source System(s)	UDP
13	Security Requirements	UDP
14	Business Owners	UDP
15	Consumers/Stakeholders	
16	Revision History	UDP

Deliverable: Package Data Dictionary

Intended Audience:

- Business Analyst
- Project Stakeholders
- Data Scientist
- Technical Staff
- End Users Developing Reports Against the Package

Business Reason/Value:

- Fully documents **all** tables and data elements available in the Cognos Package that are available for reporting.
- Correlates data items in the package to their underlying database value.

Required Document Format and Contents:

- The **Package Data Dictionary** is a living document that must be kept up-to-date as changes are made to subject areas through new initiatives and maintenance activities.
- This document is required to be submitted in electronic format as a Microsoft Excel 2007 (or later) spreadsheet.
- While this document can be created fully by hand, it will be faster and easier to create if BSP MetaManager software is utilized. The BSP MetaManager software can extract most of this information from the Framework Manager model itself.
    - The EKMS section maintains a copy of this software and can assist in extracting this information from the model if needed.
    - Note that this extraction process requires Framework Manager development standards be followed so the data required in the Package Data Dictionary is present in the model.
- A single Framework Manager model might require multiple **Package Data Dictionaries** be created from it. A separate **Package Data Dictionary** should be created for each of the following circumstances:
    - Each Cognos package being derived from the Framework Manager model.
    - Each view of the package if different users will have access to different objects within the package. (E.g. Object level security is applied within the Framework Manager model to hide certain data elements from certain users.)
- Each Package Data Dictionary should list the following package objects as rows in the spreadsheet:
    - Filters
    - Calculations
    - Query Subjects
    - Query Items
- **Only visible objects in the business/presentation layer of the model**, should be included in the **Package Data Dictionary**. Lower layers of the model, or items hidden from end users, should not be included in the **Package Data Dictionary**. (The intent of this document is to show end users of the packages the actual elements available for reporting within Cognos.)
- The table below describes the columns that should be present in the Data Dictionary from left to right:
- The **Package Data Dictionary** should contain the following elements and match the example template below.

Column Order	Data Element	Note
1	Object Type	This will be the type of the object in the Framework Manager model and will be one of the following: • Filter • Calculation • Query Subject • Query Item

Column Order	Data Element	Note
2	Object Path	• The path to the object within the model. • Note this path should be edited to start with the namespace that represents the business/presentation layer in the package. Assuming this **Package Data Dictionary** is being extracted from the Framework manager model using the MetaManager tool, this will require a "find/replace" be performed to remove extraneous layers within the model.
3	Name	The name of the reporting object as found in the Framework Manager model.
4	Description	The description of the object as found in the Framework Manager model.
5	Database Table/Field	• For Query Subjects this will correspond to the name of the table in *schema_name.table_name* format. • For Query Items this will correspond to the name of the table and column in *table_name.column_name* format. • For Calculations and Filters this will be left blank.

- The Excel Document should have the following formatting applied:
  - Rows should be sorted alphabetically by the "Object Path" column.
  - The first row of the Excel document should be given the column names specified above and "frozen" so it does not move when the document is scrolled.
  - Column contents should have the "Wrap Text" property turned on as needed and have their width sized appropriately for readability. Text should be aligned vertically and to the left within the cell.
  - Paper Orientation should be set to landscape with a legal page size. (Note, the goal is to minimize the amount of paper required, not necessarily fit all columns below on the same page, which may be impractical.)
  - Columns should be ordered from left to right in Excel as specified by their order above.

Example:

Object Type	Object Path	Name	Description	Database Table/Field
filter	Business View » Order Details » Filters » Order Fact Filters » Latest Year/Month of Data Only	Latest Year/Month of Data Only	This filter will select only the latest year/month of data loaded to the Order Fact table (ORDERS. ORDER_FACT).	
calculation	Business View » Order Details » Calculations » Distinct Count of Orders	Distinct Count of Orders	When the "Auto Group and Summarize" property of the query is set to "Yes" this will show a distinct count of orders. Otherwise, it will show the Order ID.	
querySubject	Business View » Order Details » Order Fact	Order Fact	This table captures the Order information at the order line level of detail.	ORDERS.ORDER_FACT
queryItem	Business View » Order Details » Order Fact » Order ID	Order ID	This is the identifier created during the order process to uniquely identify an order. This is a system generated internal value used to uniquely identify an order using Oracle sequence.	ORDER_FACT.ORDER_ID
queryItem	Business View » Order Details » Order Fact » Day Key	Day Key	This column stores the date when the order took place. It stores in format 'mm/dd/yyyy.'	ORDER_FACT.DAY_KEY

Deliverable: OLAP Cube Documentation

Intended Audience:

- Business Analyst
- Project Stakeholders
- Data Scientist
- Technical Staff
- End Users Accessing the Data in the Cube.

Business Reason/Value:

- Fully documents the structure, metrics, and dimensions in the OLAP cube.
- Correlates data elements and measures in the OLAP cube to their underlying database value.

Required Document Format and Contents:

- The **OLAP Cube Documentation** is a living document that must be kept up-to-date as changes are made to subject areas through new initiatives and maintenance activities.
- This document is required to be submitted in electronic format as a Microsoft Word 2007 (or later) document.
- Each **OLAP Cube Documentation** document is comprised of both summary level visual diagram(s) of the OLAP cube, as well as a textual description of that cube.
- The visual diagram provided in the **Dimension Summary** should meet the following specifications.
    - A diagram, or "map," of the OLAP cube should be created using a table like layout.
        - This diagram should list all dimensions with their hierarchies (drill-down paths) as columns.
        - This diagram should list all levels within a dimension as rows.
    - Each dimension should be labeled clearly.
    - Each level within a dimension's hierarchy should be labeled clearly.
    - Thick borders should be applied to the table to differentiate different dimensions.
    - Thinner borders should be between hierarchies and levels within the same dimension to differentiate them.
    - In the case of a large OLAP cube, with many dimensions, it is acceptable to break the dimension diagram/"map" across multiple rows.
- The textual description portion of **OLAP Cube Documentation** should contain the follow Sections, and items within each section, and should match the example template below.

Section	Item	Description	Notes
Cube Overview	Cube Name	The name of the OLAP cube	This should be listed in the header for this section.
	Process Measurement Name	The Process Measurement Name as taken from the **Subject Area Summary** document above	
	Intended Business Usage	Describe how the business will use this object and/or why it is needed.	• This should include a description of how the business will use the object **and** why it is needed. • This description should include enough information to gauge the impact to the business if the object were to become unavailable.

Section	Item	Description	Notes
	Additive Measures	Lists additive measures (facts) stored in the OLAP cube.	• The name of the measure should be listed as well as a description of what it is. • List any necessary detail to describe unit measurement if necessary. (E.g. "…in US dollars," or "...in milliliters") • List any special logic used to derive the measure.
	Semi-Additive Measures	Lists any semi-additive measures (facts) stored in the OLAP cube.	• The name of the measure should be listed as well as a description of what it is. • List the dimensions the semi-additive measure is additive over. • List any necessary detail to describe unit measurement if necessary. (E.g. "…in US dollars," or "...in milliliters") • List any special logic used to derive the measure.
	Dimensions	Lists all the dimension tables that are part of the OLAP cube.	• A brief description of the dimension table should be provided. • If a dimension is referenced more than once (aliased), also specify roles.
	Load Frequency	Indicates how often the OLAP cube is updated.	• Examples include: daily, weekly, monthly, real time, etc. • Note any exceptions to the load frequency here.
	Load Type	Indicates what load strategy is used each time the OLAP cube is updated.	• Examples include: truncate all records and reload, reload last three months of data, update existing records and add new records, etc. • Include any special logic used to determine which records are added, updated, or deleted with each load.
	Data Retention	Indicates how long data is retained in the OLAP cube.	Note any special circumstances affecting data in the OLAP cube.
	Security Synopsis	Identify any high-level security considerations for this OLAP cube.	• This is not an exhaustive list of all security considerations for this OLAP cube but rather a high-level synopsis. Examples include: Contains HIPAA data, Contains PII data, covered by IRS policy X.Y.Z, limited to staff in XYZ business unit, etc. • At a **minimum** this should list which users may see this OLAP cube. Use both business terms (business team names) and technical terms (groups, roles, etc.).
	Project	Identifies the project during which the OLAP cube was created.	• This section may link to a project roadmap, strategy document, or work order number. • The date this OLAP cube was created should also be listed here.
	Business Owners	List the business owner(s) of this OLAP cube.	• List who "owns" this object from a business perspective. This should be the group that has the authority to "make decisions" about this object or approve access to this object.
	Consumers/Stakeholders	List the consumers and downstream stakeholders of this data.	• List who in the business will be using this data. This should include any downstream consumer of this data. • This should include both internal DHS staff as well as external Commonwealth agencies or business partners. • Also list business subject matter experts here if they are different than the business owners.

Section	Item	Description	Notes
Dimension Summary *Note this entire section repeats for each dimension in the cube.*	Dimension Name	The English name of the dimension	This is listed as a section header.
	Dimension Description	A description of the dimension	
	Hierarchies	List all hierarchies/drill-down paths present in the dimension.	• These should be accompanied by a textual description of the hierarchies. • Alternate drill-down paths should be clearly identified. • The textual description should show the business names of the levels in the dimension, as well as an approximate count of the number of records in each level.
	Impacts on Measures	List any special considerations this dimension might have on measures.	• If the dimension will cause duplicate/double counting across certain measures, list these measures and the impact. • If the dimension is not applicable across certain (semi-additive) measures, list these (semi-additive) measures and the impact.
	Default Value Entry	Describe the Default Value entry for the dimension.	• Provide the Dimension's default value entry as well as a business description of what this default value entry means. • Every dimension should have at least one Default Value Entry.
	Special Case Entries	Describe any Special Case Entries for the Dimension.	• Describe any special case entries such as "Not Applicable," "Not Found," "Event Has Not Yet Occurred", "Source System Error", "Value Not in Source System," etc.) • For each special case entry provide the business description of what this special row means.

Section	Item	Description	Notes
	Security Requirements	Identify any security considerations for this dimension.	• Note that this field is called "Security Requirements" and **not** "Security Synopsis", which was at a higher level. That's because this field is intended to **go into more detail on actual security requirements**. • This should be a **complete** list of **all** security requirements that apply to this dimension. Examples: o Are certain hierarchies, or rows limited to specific users? o Does data in the dimension need to be encrypted or masked? o What types of security mandates apply to the dimension based on the data it contains. (E.g. HIPAA, IRS rules, PII rules, etc.) o Are there any specific data-governance/oversight/review rules that apply to the dimension specifically and if so, how do they work and who is involved. (E.g. The dimension contains information on sexual orientation. Before data in it is used, any analysis must be reviewed by Legal Team XYZ to be in compliance with policy ABC.) o Are there certain types of analysis that are not allowed on this dimension based upon legal or business rules? (E.g. Identifying people with specific medical conditions, using data in this dimension in conjunction with another data set to "de anonymize" individuals, etc.) • Be as precise as possible with field. • At a **minimum** this should list which users may see this dimension. Use both business terms (business team names) and technical terms (groups, roles, etc.). • Note that different groups may be allowed to see different dimensions, levels in those dimensions, or rows in the dimension. If necessary, call each of these out independently as needed.

Section	Item	Description	Notes
	Dimension Source	Lists the source systems used to feed the dimension.	• This should be a **complete** list of **all** source systems used to populate the dimension. This should be formatted as a table for readability. • Each hierarchy (drill-down path) and level in that path should be described. • Note that if the data in this dimension is provided by an outside entity, that entity should also be listed here. Examples include: PROMISe claims data transfer, FEI recipient study data transfer, etc. • If the source of the dimension is a relational database system, the following should be listed: o Database Type o Database Instance o Database Schema o Database Table o Database Column • For non-relational database systems, or other source types, this value should include one or more of the following depending upon the source system(s) and their type(s): o Source system / table / field o Source System / file / field o Web Service Details o Information on Data Feed
	Transformation Rules	Indicate rules used to construct the dimension value.	• This should be formatted as a table for readability. • List rules that operate on the source system element prior to that element reaching this dimension. Note that due to the complexity of some transformations it may be impossible to list all transformations that occurred to the dimension. The goal is to provide business users with a good idea of how the dimension was 1) changed from the source system or 2) computed from other data. • Be as precise as possible for this dimension and try to use **both** business terms and specific column names as necessary. • Assume you are writing to **both** a business analyst and technical reader. The business analyst should have a rough idea of how the data was manipulated to get to this point (which may have an impact on its usefulness to the analysis being performed) while the technical reader should have a good understanding of the actual processing required to get to this point. • Use pseudo-code or SQL fragments as needed if processing is complex, requires special lookups, or otherwise requires additional information.
Measure Summary *Note this entire section*	Measure Name	The English name of the measure	This is listed as a section header.
	Measure Description	A description of the measure	• This should be as precise as possible. • Make a distinction between closely related measures such as “Unduplicated Count” or “Duplicative Count”.

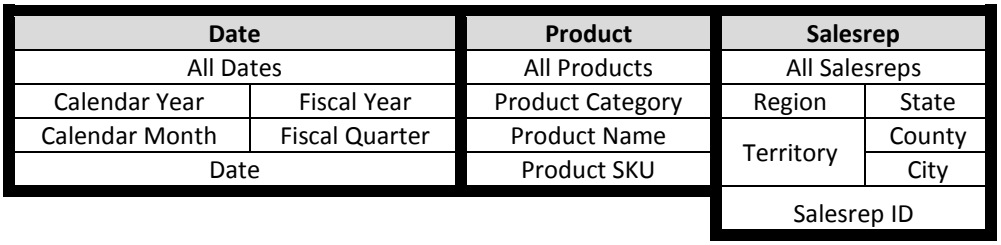
Section	Item	Description	Notes
repeats for each measure in the cube.	Measure Type	This lists the type of the measure.	This should be either “Additive” or “Semi-Additive”.
	Usage Notes	Any special usage notes that are relevant to using the measure accurately	• For semi-additive measures list the dimensions, hierarchies (drill-down paths), and levels in the hierarchy the measure is and is not applicable to. In these cases, both a textual and visual indication of the dimensions/hierarchies/levels the measure is semi-additive across should be provided. • If certain dimensions, or levels in a dimension, will cause double/miscounting of the measure, indicate this with an explanation of why the count is inaccurate.
	Security Requirements	Identify any security considerations for this measure.	• Note that this field is called “Security Requirements” and **not** “Security Synopsis”, which was at a higher level. That’s because this field is intended to **go into more detail on actual security requirements**. • This should be a **complete** list of **all** security requirements that apply to this measure. Examples: o Is this measure limited to specific users? o Does data in the measure need to be encrypted or masked? o What types of security mandates apply to the measure based on the data it contains. (E.g. HIPAA, IRS rules, PII rules, etc.) o Are there any specific data-governance/oversight/review rules that apply to the measure specifically and if so, how do they work and who is involved. (E.g. The measure contains counts of individuals by sexual orientation. Before data in it is used, any analysis must be reviewed by Legal Team XYZ to be in compliance with policy ABC.) o Are there certain types of analysis that are not allowed on this measure based upon legal or business rules? • Be as precise as possible with field. • At a **minimum** this should list which users may see this measure. Use both business terms (business team names) and technical terms (groups, roles, etc.). • Note that different groups may be allowed to see different measures. If necessary, call each of these out independently as needed.

Section	Item	Description	Notes
	Measure Source	Lists the source systems used to feed the measure.	• This should be a **complete** list of **all** source systems used to populate the measure. • Unlike the source listed for dimensions, this does not need to be formatted like a table since it is a single value. • Note that if the data in this dimension is provided by an outside entity, that entity should also be listed here. Examples include: PROMISe claims data transfer, FEI recipient study data transfer, etc. • If the source of the measure is a relational database system, the following should be listed: o Database Type o Database Instance o Database Schema o Database Table o Database Column • For non-relational database systems, or other source types, this value should include one or more of the following depending upon the source system(s) and their type(s): o Source system / table / field o Source System / file / field o Web Service Details o Information on Data Feed
	Transformation Rules	Indicate rules used to construct the measure.	• List rules that operate on the source system element prior to that element reaching this measure. Note that due to the complexity of some transformations it may be impossible to list all transformations that occurred to the measure. The goal is to provide business users with a good idea of how the dimension was 1) changed from the source system or 2) computed from other data. • Unlike the transformations listed for dimensions, this does not need to be formatted like a table since it is a single value. • Be as precise as possible for this measure and try to use **both** business terms and specific column names as necessary. • Assume you are writing to **both** a business analyst and technical reader. The business analyst should have a rough idea of how the data was manipulated to get to this point (which may have an impact on its usefulness to the analysis being performed) while the technical reader should have a good understanding of the actual processing required to get to this point. • Use pseudo-code or SQL fragments as needed if processing is complex, requires special lookups, or otherwise requires additional information.
Drill Through Summary	Drill Through Name	The name of the drill through target	This is listed as a section header.

Section	Item	Description	Notes
Note this entire section repeats for each measure in the cube.	Drill Through Description	A description of the drill through target	• This should be a brief description of the data available in the drill-through target. • Ensure the type of the target (report, cube, visualization) is included.
	Usage Notes		• List any special usage notes that would be required to access, or interpret, the drill through target correctly. • Identify if the drill through contains different data than is in the OLAP cube. • Identify if the drill through contains only a subset of data, or time periods, that are accessible in the OLAP cube. • For drill throughs that are only applicable/accessible from certain dimensions, hierarchies (drill-down paths), or levels, list the dimensions the drill through is accessible from. In these cases, both a textual and visual indication of the drill through should be provided.
	Security Requirements	Identify any security considerations for this drill through.	• Note that this field is called "Security Requirements" and **not** "Security Synopsis", which was at a higher level. That's because this field is intended to **go into more detail on actual security requirements**. • This should be a **complete** list of **all** security requirements that apply to this drill through. Examples: o Is this drill through limited to specific users? o Does data in the drill through need to be encrypted or masked? o What types of security mandates apply to the drill through and the data it contains. (E.g. HIPAA, IRS rules, PII rules, etc.) o Are there any specific data-governance/oversight/review rules that apply to the drill through specifically and if so, how do they work and who is involved. (E.g. The drill through contains counts of individuals by sexual orientation. Before data in it is used, any analysis must be reviewed by Legal Team XYZ to be in compliance with policy ABC.) o Are there certain types of analysis that are not allowed on this drill through based upon legal or business rules? • Be as precise as possible with field. • At a **minimum** this should list which users may see this drill through. Use both business terms (business team names) and technical terms (groups, roles, etc.). • Note that different groups may be allowed to see different drill throughs. If necessary, call each of these out independently as needed.

Example:

Orders OLAP Cube Documentation



Overview: Orders Cube

Process Measurement Name:	Booking Orders	
Intended Business Usage:	This OLAP cube will be used by the ordering department to track overall sales and monitor sales representative performance. This will be the primary means by which the Orders department will reconcile sales totals with the finance department and help forecast product inventory needs. Additionally, individual salesreps will be able to use the OLAP cube to track their commissions and schedule on-site visits with customers experiencing difficulties with their orders (product returns) or who have not made recent purchases.	
Additive Measures:	Number of Orders	Unduplicated Count of Orders
	Total Order Dollars	The total amount of orders in US dollars.
Semi-Additive Measures:	Product Cost Dollars	The total cost of the products sold in U.S. dollars. This value is only additive across the Product Dimension
Dimensions:	Date	The date of the order
	Product	Product(s) associated with the order
	SalesRep	The Salesperson who will receive a commission for the order.
Load Frequency:	Daily excepting Federal holidays.	
Load Type:	Update old records, add new records since last load.	
Data Retention:	Last 7 years of data. Data prior to 2013 will not be found here. Data for calendar year 2013 was converted from the old Ordering System prior to Exa-Order mainframe.	
Security Synopsis:	Data in this star is limited to the ordering department and sales representatives. This corresponds to the "Order_Team," "Order_Team_Mgmt," and "Salesrep" user groups in the LDAP directory. Sales representatives are only allowed to see their own orders.	
Project:	Work Order 12-568-ABC, 02/10/2014	
Business Owners:	Ordering department management team.	
Consumers/Stakeholders:	Downstream consumers of this data include employees of the Orders department and sales reps.	

Dimension: Date

Description:	The date associated with the order.	
Hierarchies:	The date dimension is associated with both a calendar year, and fiscal year hierarchy.	
	Calendar Year	All Dates (1) → Calendar Year (7) → Calendar Month (12) → Date (365)
	Fiscal Year	All Dates (1) → Fiscal Year (7) → Fiscal Quarter (4) → Date (365)
Impacts on Measures:	The Product Cost Dollars measure is not additive across the Date dimension.	
Default Value Entry:	01/01/0001	A value of 01/01/0001 (January 1st 1AD) indicates the order date is not known. This will be used when the order date captured in the operational system is missing or invalid.
Special Case Entries:	12/31/9999	A value of 12/31/9999 indicates the order has not yet occurred. This value is used for orders that are submitted with future order dates. When the order occurs, this date will be substituted with the actual order date.
Security Requirements:	All users of this OLAP cube may see this dimension. (Please see the Security Synopsis section above.) This corresponds to the "Order_Team," "Order_Team_Mgmt," and "Salesrep" user groups in the LDAP directory.	

Dimension Source:

Hierarchy	Level	Source
Calendar Year	Calendar Year	Oracle database, SALES_PROD instance, ORDERS schema, DATE.CALENDAR_YEAR
	Calendar Month	Oracle database, SALES_PROD instance, ORDERS schema, DATE.CALENDAR_MONTH
	Date	Oracle database, SALES_PROD instance, ORDERS schema, ORDER_FACT.DAY_KEY
Fiscal Year	Fiscal Year	Oracle database, SALES_PROD instance, ORDERS schema, ORDER_FACT.FISCAL_YEAR
	Fiscal Quarter	Oracle database, SALES_PROD instance, ORDERS schema, DATE.FISCAL_QUARTER
	Date	Oracle database, SALES_PROD instance, ORDERS schema, DATE.DAY_KEY

Transformation Rules:

Hierarchy	Level	Transformation Logic
Calendar Year	Calendar Year	None.
	Calendar Month	None.
	Date	Dates are taken as is from the Exa-Order system and assigned a Default Value of 01/01/0001 or special value of 12/31/9999 as described above.
Fiscal Year	Fiscal Year	None.
	Fiscal Quarter	None.
	Date	Dates are taken as is from the Exa-Order system and assigned a Default Value of 01/01/0001 or special value of 12/31/9999 as described above.

Dimension: Product

Description:	The product associated with the order
Hierarchies:	The product dimension has a single hierarchy All Products (1) → Product Category (45) → Product Name (367) → Product SKU (23,456)
Impacts on Measures:	The Product Cost Dollars measure is **only** additive across this dimension.
Default Value Entry:	A default value of Stock Keeping Unit Number (SKU) of -1 will be added if the Product Stock Keeping Unit is invalid or unknown. Some order information transitioned from the old Ordering System contained invalid/unknown Stock Keeping Units. The default value of -1 will receive the textual description of "UNKNOWN/INVALID PRODUCT."
Special Case Entries:	None
Security Requirements:	All users of this OLAP cube may see this dimension. (Please see the Security Synopsis section above.) This corresponds to the "Order_Team," "Order_Team_Mgmt," and "Salesrep" user groups in the LDAP directory.

Dimension Source:

Hierarchy	Level	Source
Product	Product Category	Oracle database, SALES_PROD instance, ORDERS schema, PRODUCT.CATEGORY
	Product Name	Oracle database, SALES_PROD instance, ORDERS schema, PRODUCT.PRODUCT_NAME
	Product Stock Keeping Unit (SKU)	Oracle database, SALES_PROD instance, ORDERS schema, PRODUCT.SKU

Transformation Rules:

Hierarchy	Level	Transformation Logic
Product	Product Category	Product Category names are trimmed of leading/trailing whitespace and converted to UPPERCASE. In the event of an invalid/unknown (-1) Stock Keeping Unit Number this will receive a textual value of "UNKNOWN/INVALID PRODUCT."
	Product Name	Product names are trimmed of leading/trailing whitespace and converted to UPPERCASE. In the event of an invalid/unknown (-1) Stock Keeping Unit Number this will receive a textual value of "UNKNOWN/INVALID PRODUCT."
	Product Stock Keeping Unit (SKU)	Stock Keeping Unit Numbers are taken as is from the Exa-Order system and assigned a default value of -1 as described above.

Dimension: SalesRep

Description: The salesperson (salesrep) who will receive commission on the order.

Hierarchies: The salesrep dimension is associated with both a State and Region hierarchy.
All Salesreps (1) → Region (6) → Territory (25) →Salesrep ID (766)
All Salesreps (1) → State (50) → County (201) → City (693) → Salesrep ID (766)

Impacts on Measures: The Product Cost Dollars measure is not additive across the Salesrep dimension.

Default Value Entry:
-1 A value of -1 for the Salesrep indicates the "Salesrep Not Found" situation and will be used when the operational system does not accurately capture the salesrep associated with a business process.

Special Case Entries:
-2 A value of -2 for the Salesrep indicates a "No Salesrep for this Sale" situation and occurs for a small percentage of orders that do not go through a salesrep.
-3 A value of -3 for the Salesrep indicates a "Salesrep Not Identified Yet" situation which may occur for a short period of time after the initial sale is made and before the lead salesrep on that order is identified. This condition is not supposed to persist for more than a few hours after the order is made.

Security Requirements: All users of this OLAP cube may see this dimension. (Please see the Security Synopsis section above.) This corresponds to the "Order_Team," "Order_Team_Mgmt," and "Salesrep" user groups in the LDAP directory. However, individual salesreps are only allowed to see their own orders, not those of other salesreps.

Dimension Source:

Hierarchy	Level	Source
Region	Region	Oracle database, SALES_PROD instance, ORDERS schema, SALESREP.REGION_NAME
	Territory	Oracle database, SALES_PROD instance, ORDERS schema, SALESREP.TERRITORY_NAME
	Salesrep ID	Oracle database, SALES_PROD instance, ORDERS schema, SALESREP.SALESREP_ID
State	State	Oracle database, SALES_PROD instance, ORDERS schema, SALESREP.STATE_NAME
	County	Oracle database, SALES_PROD instance, ORDERS schema, SALESREP.COUNTY_NAME
	City	Oracle database, SALES_PROD instance, ORDERS schema, SALESREP.CITY_NAME
	Salesrep ID	Oracle database, SALES_PROD instance, ORDERS schema, SALESREP.SALESREP_ID

Transformation Rules:

Hierarchy	Level	Source
Region	Region	Region and Territory names are trimmed of leading/trailing whitespace and converted to UPPERCASE. For default/special case rows they will receive a value as follows: -1 Unknown -2 No Salesrep for this Sale -3 Salesrep Not Identified Yet
	Territory	
	Salesrep ID	Salesrep IDs are taken as is from the new Exa-Order mainframe ordering system with additional data feeds from Amazon Marketplace and other internet based etailers. As necessary, they are defined a default/special value of -1, -2, or -3 as described above.
State	State	Region, County, and Territory names are trimmed of leading/trailing whitespace and converted to UPPERCASE. For default/special case rows they will receive a value as follows: -1 Unknown -2 No Salesrep for this Sale -3 Salesrep Not Identified Yet
	County	
	City	
	Salesrep ID	Salesrep IDs are taken as is from the new Exa-Order mainframe ordering system with additional data feeds from Amazon Marketplace and other internet based etailers. As necessary, they are defined a default/special value of -1, -2, or -3 as described above.

Measure: Number of Orders

Measure Description:	An unduplicated (distinct) count of orders.
Measure Type:	Additive
Usage Notes:	None
Security Requirements:	All users of this OLAP cube may see this measure. (Please see the Security Synopsis section above.) This corresponds to the "Order_Team," "Order_Team_Mgmt," and "Salesrep" user groups in the LDAP directory. However, individual salesreps are only allowed to see totals for their own orders, not those of other salesreps.
Measure Source:	Oracle database, SALES_PROD instance, ORDERS schema, ORDER_FACT.ORDER_ID
Transformation Rules:	Order IDs are taken as is from the new Exa-Order mainframe ordering system. All orders will always be associated with a unique Order ID.

Measure: Total Order Dollars

Measure Description:	The total amount of orders in US dollars
Measure Type:	Additive
Usage Notes:	None
Security Requirements:	All users of this OLAP cube may see this measure. (Please see the Security Synopsis section above.) This corresponds to the "Order_Team," "Order_Team_Mgmt," and "Salesrep" user groups in the LDAP directory. However, individual salesreps are only allowed to see totals for their own orders, not those of other salesreps.
Measure Source:	Oracle database, SALES_PROD instance, ORDERS schema, ORDER_FACT.ORDER_DOLLARS
Transformation Rules:	Order IDs are taken as is from the new Exa-Order mainframe ordering system. All orders will always be associated with a positive, non-zero, dollar amount of at least .01 (one cent).

Measure: Product Cost Dollars

Measure Description:	The total cost of the products sold in US dollars.
Measure Type:	Semi-Additive
Usage Notes:	This measure is only additive across the Product Dimension and the top levels of the Date (All dates) and Salesrep (All SalesRep) dimensions. Using this measure with other dimensions or levels, will produce incorrect results. Dimensions and levels this measure cannot be used with have been struck-through in the diagram below.

Date		Product	Salesrep	
All Dates		All Products	All Salesreps	
~~Calendar Year~~	~~Fiscal Year~~	Product Category	~~Region~~	~~State~~
~~Calendar Month~~	~~Fiscal Quarter~~	Product Name	~~Territory~~	~~County~~
~~Date~~		Product SKU		~~City~~
			~~Salesrep ID~~	

Security Requirements:	All users of this OLAP cube may see this measure. (Please see the Security Synopsis section above.) This corresponds to the "Order_Team," "Order_Team_Mgmt," and "Salesrep" user groups in the LDAP directory. However, individual salesreps are only allowed to see totals for their own orders, not those of other salesreps.
Measure Source:	Oracle database, SALES_PROD instance, ORDERS schema, ORDER_FACT.PRODUCT_COST_DOLLARS
Transformation Rules:	Order IDs are taken as is from the new Exa-Order mainframe ordering system. It is possible the Exa-Order mainframe will record a NULL value for the Product Cost Dollars, in which case it will receive a default value of $0.00.

Drill Through: Order Details

Drill Through Description: This drill through report will provide details of the orders selected in the cube. Data will be displayed as a textual list of orders at the order level and will include customer information, the total order amount, and the sales commission amount. Additional details will be available providing the shipping status of the order as well as its return status, if any.

Usage Notes: As the data in this report is at the detail level, it will only contain data for orders placed within the last twelve calendar months. Orders placed prior to this period will not be available in the drill through report. Additionally, this drill through report is only accessible if an individual SalesRep ID is first selected in the cube (as indicated by the **bold text** in the diagram below). This drill through report will not function if higher levels in the Salesrep hierarchy are selected (represented by struck through characters in the diagram below). Once the individual Salesrep ID is selected, filters will be applied to the drill through report based upon optional selections made in the Date and/or Product dimensions (as indicated in italics in the diagram below).

<table>
<tr><th colspan="2">Date</th><th>Product</th><th colspan="2">Salesrep</th></tr>
<tr><td colspan="2">All Dates</td><td>All Products</td><td colspan="2">~~All Salesreps~~</td></tr>
<tr><td>Calendar Year</td><td>Fiscal Year</td><td>Product Category</td><td>~~Region~~</td><td>~~State~~</td></tr>
<tr><td>Calendar Month</td><td>Fiscal Quarter</td><td>Product Name</td><td rowspan="2">~~Territory~~</td><td>~~County~~</td></tr>
<tr><td colspan="2">Date</td><td>Product SKU</td><td>~~City~~</td></tr>
<tr><td colspan="3"></td><td colspan="2">Salesrep ID</td></tr>
</table>

Security Requirements: All users of this OLAP cube may see this drill through report. (Please see the Security Synopsis section above.) This corresponds to the "Order_Team," "Order_Team_Mgmt," and "Salesrep" user groups in the LDAP directory. However, individual salesreps are only allowed to see detail data for their own orders, not those of other salesreps. The drill through report will automatically apply this filter based on the salesrep passed in.

Version	Revision Date	Author	Comments
1.0	01/15/2014	John Doe	Initial version submitted during DSD.
1.1	03/28/2014	John Doe	Updated document to reflect changes made to Salesrep dimension table during the development phase of work order Work Order 12-568-ABC. Final version submitted at end of development.

Deliverable: Framework Manager Package Design and Usability Document

Intended Audience:

- Business Analyst
- Project Stakeholders
- Data Scientist
- Technical Staff
- Report Studio Authors

Business Reason/Value:

- Easily communicates the metrics and attributes that will be available for reporting in the package.
- Provide details on dimension attributes.
- Provides a high-level overview of security requirements for the package.

Required Document Format and Contents:

- This document is required to be submitted in electronic format as a Microsoft Word 2007 (or later) document.
- A single **Framework Manager Package Design and Usability Document** should be created for each package. That means a single Framework Manager model requires multiple **Framework Manager Package Design and Usability Documents** if it will be used to generate multiple packages.
- Note the relationship between the "Sales" subject area in the **Subject Area Summary** and **Subject Area Conformance Matrix** and the example below.
- The **Framework Manager Package Design and Usability Document** should contain the following sections and should match the example template below.

Section	Item	Description	Notes
Package Namespace Overview	Subject Area Name	The Subject Area Name as taken from the **Subject Area Summary** document above.	
	Process Measurement Name	The Process Measurement Name as taken from the **Subject Area Summary** document above.	One row in the matrix for each Process Measurement which is a part of that Subject Area.
	Granularity	Granularity of the fact table should be listed.	• Grain is best stated in business terms but may also be specified dimensionally. • Be as precise as possible here and do not assume the user is already a subject matter expert who will already understand the granularity of the process being measured.
	Process Measurements (Facts)	Individual Process Measurements (facts) should be listed for each star-schema.	• All the facts available for that star schema should be listed. • Note that even "factless" fact tables should have facts listed as they will support counts of various types.

Section	Item	Description	Notes
	Measurement Context & Hierarchy	The Measurement Context as taken from the "Subject Area Summary" document and translated to the relevant dimension table.	• Every dimension table should be indicated using business names. • Significant dimension hierarchies should be shown by the dimension they are part of and grouped by shaded bands.
Dimension Attributes	A list of the dimensions available in the star and their attributes		• List each dimension using the same business terms used in the Package Overview Matrix section of the document. • List the attributes (columns) available in that dimension using business terms. • Significant Degenerate Dimensions should be listed and called out with a label.
Filters and Calculations	A list of Calculations and Filters for this namespace		• List any calculations  the users can drag-and-drop into a report from this namespace. o Note that not all facts available in the namespace will necessarily result in a drag-and-drop calculation. It is not necessary to list every fact here, only those that will exist as actual calculations. o Drag-and-drop calculations can include calculated metrics that do not correspond to actual columns in the fact table. Call these calculations out. • List any filters  the users can drag-and-drop into a report from this namespace.
Security Synopsis	A list of security considerations that will apply to that star schema.		• This is not an exhaustive list of all security considerations for this package cube but rather a high-level synopsis. Examples include: Contains HIPAA data, Contains PII data, covered by IRS policy X.Y.Z, limited to staff in XYZ business unit, etc. • At a **minimum,** this should list which users may see this OLAP cube. Use business terms (business team names) the end-users will understand.

Example:

Package Namespace Overview:

				Day		Product		Salesrep					
	Namespace	**Grain**	**Facts**	Day	Quarter	Product	Category	Salesrep	Territory	Region	Customer	Warehouse	Orders
Sales	Sales Calls	One row per sales call	Number of sales calls	✓	✓			✓	✓	✓	✓		
	Proposals	One row per proposal	Proposal Quantity Proposal Dollars	✓	✓	✓	✓	✓	✓	✓	✓		
	Orders	One row per order line of the order	Number of Orders Order Quantity Order Dollars Order Cost Dollars Margin Dollars	✓	✓	✓	✓	✓	✓	✓	✓		✓
	Shipments	One row per shipment	Number of Shipments Shipment Quantity Revenue Dollars	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Returns	One row per order line of the return	Number of Returns Quantity Returned Return Dollars Return Cost Dollars Return Margin Dollars	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Sales Goals	One row per quarter per salesrep	Sales goal in Dollars		✓				✓	✓			
	Commission Payments	One row per day per salesrep	Number of Commissions Commission Dollars	✓	✓			✓	✓	✓			

Dimension Attributes:

Day	Product	Salesrep	Customer	Warehouse
• Day Key • Date • Calendar Year • Calendar Month • Fiscal Year • Fiscal Quarter	• Product Key • Stock Keeping Unit (SKU) • Product Name • Brand • Category • Product manager • Record Begin Date • Record End Date • Current Record Indicator	• Salesrep Key • Salesrep ID • Salesrep Durable Key • Salesrep Name • Salesrep SSN • Salesrep Type ID • Territory Code • Territory Name • Territory Manager • Region Code • Region Name • Region Vice President • State Name • County Name • City name • Work Location Key • Record Begin Date • Record End Date • Current Record Indicator	• Customer Key • Customer ID • Customer Current Name • Customer Historic Name • Billing Address Line 1 • Billing Address Line 2 • Billing Address City • Billing Address State • Billing Address Zip Code • Customer Industry • Shipping Address Line 1 • Shipping Address Line 2 • Shipping Address City • Shipping Address State • Shipping Address Zip Code • Record Begin Date • Record End Date • Current Record Indicator	• Warehouse Key • Warehouse Type ID • Warehouse Region Code • Warehouse Region Name • Warehouse Territory Code • Warehouse Territory Name • Warehouse State Name • Warehouse City Name • Warehouse County Name • Secure Warehouse Indicator • Record Begin Date • Record End Date • Current Record Indicator

Orders (Degenerate Dimension)
• Order ID • Order Line • Shipment ID

Filters and Calculations

	Namespace	Drag & Drop Calculations	Drag & Drop Filters
Sales	Sales Calls	• Number of sales calls • Average Duration of Call (Calculated)	• Current Calendar Month Only • Previous Calendar Month Only • Current Fiscal Quarter Only • Previous Fiscal Quarter Only
	Proposals	• Proposal Quantity • Proposal Dollars • Number of Proposals (Calculated)	• Proposals over $1,000 Only • Proposes over $10,000 Only • Proposals over $50,000 Only • Current Calendar Month Only • Previous Calendar Month Only
	Orders	• Number of Orders • Order Dollars • Margin Percent (Calculated) • Average Order Amount (Calculated) • Median Order Amount (Calculated)	• Orders Over $1,000 Only • Orders Over $10,000 Only • Current Calendar Month Only • Previous Calendar Month Only • Current Fiscal Quarter Only • Previous Fiscal Quarter Only • Last Twelve Calendar Months
	Shipments	• Number of Shipments • Shipment Quantity • Revenue Dollars	• Priority Shipments Only • USPS Shipments Only • Private Carrier Shipments Only • Domestic Shipments Only • Foreign Shipments Only • Current Calendar Month Only • Previous Calendar Month Only
	Returns	• Number of Returns • Return Dollars	• Current Calendar Month Only • Previous Calendar Month Only
	Sales Goals	• Sales goal in Dollars	• Missed Sales Goals Only • Achieved Sales Goals Only • Current Calendar Month Only • Previous Calendar Month Only
	Commission Payments	• Number of Commissions • Commission Dollars • Commission Percent (Calculated)	• Commission Exceeds $1000 • Commission Exceeds 5% • Current Calendar Month Only • Previous Calendar Month Only

Security Synopsis:

- Salesrep dimension contains PII (Salesrep SSN) which will be hidden in the package to all but management staff.
- Sales calls are limited to management and salesreps. Salesreps are only allowed to see their own calls.
- Proposals are limited to members of the finance team.
- Orders are limited to the ordering department and sales representatives. Salesreps are only allowed to see their own orders.
- Shipments are limited to the shipping department.
- Returns are limited to management and salesreps. Salesreps are only allowed to see their own returns.

Version	Revision Date	Author	Comments
1.0	01/15/2018	John Doe	Initial version
1.1	01/21/2018	John Smith	Added information on package filters and calculations

Deliverable: Report Design and Usability Document

Intended Audience:

- Business Analyst
- Project Stakeholders
- End Users Accessing the report
- Technical Staff

Business Reason/Value:

- Describes the high level technical solution to the business problem and provides business area with an understanding of the solution they are committing to.
- Documents the structure, sources, format, and other considerations for proposed report.
- Presents a visual guide to what will be created.

Required Document Format and Contents:

- This document is required to be submitted in electronic format as a Microsoft Word 2007 (or later) document.
- The visual diagram provided should meet the following specifications.
    - A diagram or "map" of the report layout.
        - This diagram should list all data items with their business labels.
        - This diagram should clearly identify functionality employed such as drill-through, summary totals, grouping, sorting, etc.
    - Prompt usage should be clearly identified.
    - Include standard header and footer formats and branding.
- The text portion of this document should contain the follow sections, and items within each section should match the example template below.

Section	Item	Description	Notes
Report Overview	Report Name	The name of the report	
	Report Description	Describe the report in business terms.	
	Intended Business Usage	Describe business reasoning behind the report's existence.	
	Report Frequency	Indicates how often the report will be run.	Examples include: daily, weekly, monthly, on demand, etc.
	Report Delivery Type	Indicates what format the report is expected in.	Examples include: HTML, Excel, PDF, etc. Also include offline and other viewing expectations such as availability through a document management system or a mobile device.
	Prompts	Identify any prompts used in this report which affect all report components.	• Describe purpose of prompt • Include source of prompt values • Include how prompt will function (i.e. multi-select, calendar, etc.)
	Filters	Identify any filters to be used to eliminate data rows for all report components.	• Describe purpose of filter • Describe filter logic in business terms

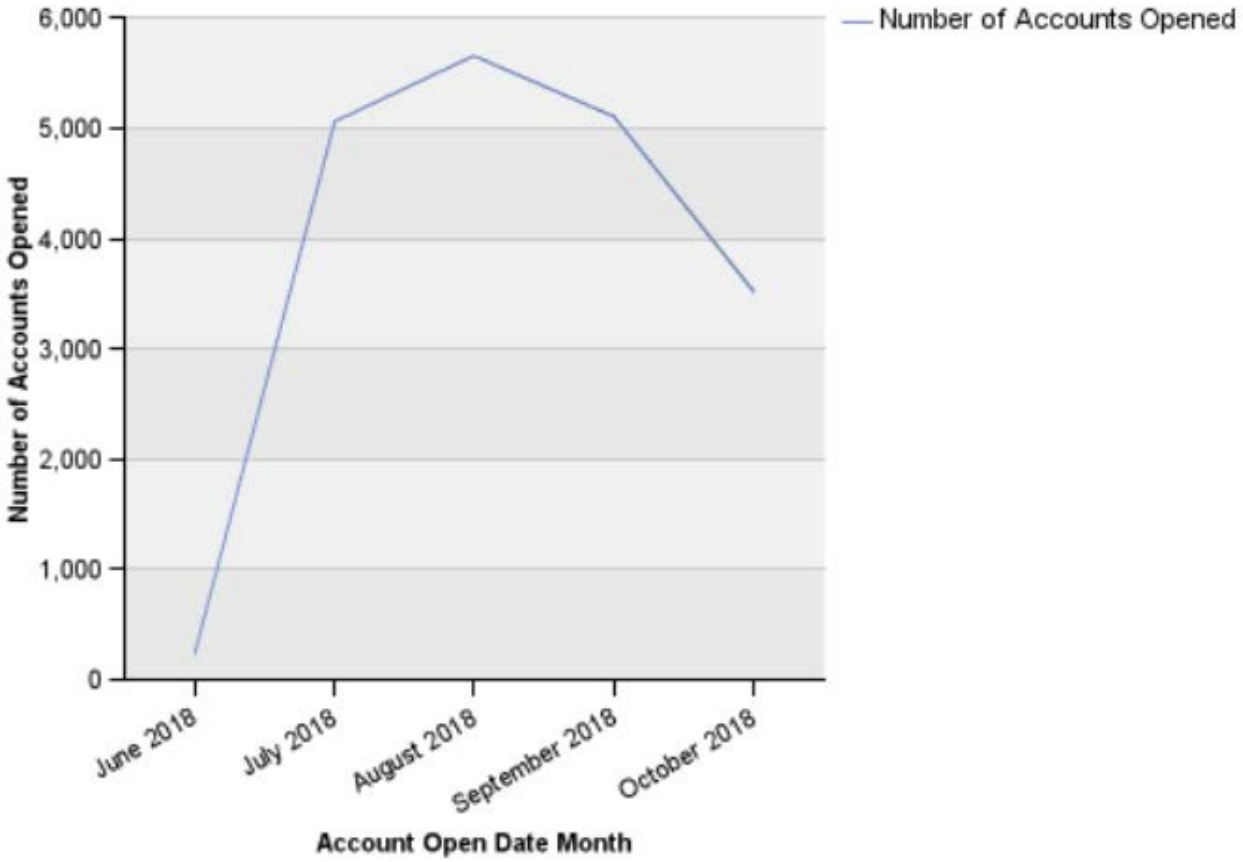
Section	Item	Description	Notes
	Security Synopsis	Identify any high-level security considerations for this report.	• This is not an exhaustive list of all security considerations but rather a high-level synopsis. Examples include: Contains HIPAA data, Contains PII data, covered by IRS policy X.Y.Z, data limited to staff in XYZ business unit, etc. • At a **minimum** this should list which users may see this report. Use business terms here.
	Project	Identifies the project during which the report was created.	This section may link to a project roadmap, strategy document, or work order number.
	Business Owners	List the business owner(s) of this report.	Also list business subject matter experts here if they are different than the business owners.
	Stakeholders	List the business stakeholder(s) of this report.	
Report Detail *Note this entire section repeats for each report component.*	Report Object Name	List the name of report object being described.	
	Report Object Type	List the report component type being described.	Examples include: list, crosstab, pie chart, map, etc.
	Data Items	List data items visible on report.	• The name of each item should be listed as well as a description. • List any necessary detail to describe the item such as Totals/Metrics/ Counts/Aggregations, masking, visibility on report, etc. • List any special logic used to derive the data item.
	Prompts	Identify any prompts used in this report which affect only this specific report component.	• Describe purpose of prompt • Include source of prompt values • Include how prompt will function (i.e. multi-select, calendar, etc.)
	Filters	Identify any filters to be used to eliminate data rows for only this specific report component.	• Describe purpose of filter • Describe filter logic in business terms
	Drill Through Functionality	Indicates detail reporting that can be drilled down to from the report.	• The name of the data item should be listed as well as a description of what detailed information is needed. • Include name of report or visualization that the drill through functionality will display. Should match a report design and usability document.

Example:

Accounts Opened in June 2018 Thru October 2018

Processing Region Code = 03

Processing Region Code	Benefit Classification Code	Benefit Sub-Classification Code	Number of Unique Households
03	ABC	00	31
		08	1
		71	5
	ABC - Summary		36
	XYZ	00	3
		71	1
	XYZ - Summary		4
03 - Summary	39		
Overall - Summary			39



Report Name: TANF Accounts Opened in Report Timeframe

Report Description: This report shows statistics on the number of unique households that received Temporary Assistance for Needy Families (TANF) benefits, as well as the number of TANF accounts that were opened within a given timeframe.

Intended Business Usage: Keep track of monthly demand and customer service through account opening number and time frame. Also make sure the processing type matches the request.

Report Frequency: Report will be run monthly on 2nd Monday of each month. An on-demand version will run as requested.

Report Delivery Type: Monthly report should be PDF placed in TANF Processing folder in Docushare. On demand version will be HTML with drill-thru options enabled.

Prompts:

Prompt Name	Source	Required Y/N?	Multi-Select Y/N?	Description
Target Processing Regions	TANF Processing Region Reference Table	No	Yes	This prompt allows the user to select on which processing regions the report should pull information. If the user makes no selections on this prompt, then data for all processing regions should be pulled by the report.
Report Timeframe Begin Date	Date – Default to 2016/01/01	Yes	No	This prompt allows the user to place a limit on the earliest date that an account record can have as its Account Open Date.
Report Timeframe End Date	Date – Default to current date	Yes	No	This prompt allows the user to place a limit on the latest date that an account record can have as its Account Open Date.

Filters:

- Only count households that are receiving assistance under benefit classifications associated with the Temporary Assistance for Needy Families (TANF) program. These categories are identified by the codes 'ABC' and 'XYZ'.
- Only select households whose (public assistance) accounts were managed by processing regions that were identified by the selections made by the report executor in the "Target Processing Regions" prompt. If no options were selected in the "Target Processing Regions" prompt, select all households regardless of which processing region's Assistance Office (AO) managed those households' accounts.
- Only count households that had at least one (public assistance) account that opened after the date selected via the "Report Timeframe Begin Date" prompt. If no date was selected for the prompt "Report Timeframe Begin Date", count all households regardless of when any of the accounts associated with them began.
- Only count households that had at least one (public assistance) account that opened before the date selected via the "Report Timeframe End Date" prompt. If no date was selected for the prompt "Report Timeframe End Date", count all households regardless of when any of the accounts associated with them began.

Security Synopsis: All OIM TANF users can see and run this report.

Project: TANF Process Monitoring, Work Order 12-567-ABC, 02/10/2018

Business Owners: Central Office Managers, DAPS units

Stakeholders: TANF Processing Unit members, Central Office Managers

Unique Households by Processing Region, Benefit Classification, and Benefit Sub-Classification

Report Object Type: List

Data Items:

Processing Region	A numeric code that identifies the processing region where the Assistance Office (AO) that manages the benefits of a given household is located.
Benefit Classification Code	An alphanumeric code that indicates what benefit sub-classification the recipients of a given account are receiving benefits under. A single benefit classification may contain several benefit sub-classifications.
Benefit Sub-Classification Code	An alphanumeric code that identifies the sub-category of the program that the recipients on an account are receiving benefits under.
Number of Unique Households	The number of unique combinations of Processing Region and Household Identification Number across all accounts under a given combination of processing region, benefit classification, and benefit sub-classification.
Total (Benefit Classification)	Total number of accounts opened in a given processing region within the portion of the report timeframe that fell within a specific calendar year.
Total (Processing Region)	Total number of accounts opened in a specific processing region between the beginning and end dates of the report timeframe.
Total (Grand Total)	This number represents the total number of accounts that were opened within the report timeframe across all processing regions.

Prompts: No prompts specific to list

Filters: No filter logic specific to list

Drill Through Functionality:

Drill Thru Data Item	Description	Report Name
Unique Households by Processing Region, Benefit Classification, or Benefit Sub-Classification	This drill-through report gives a list of all the unique households in the processing region specified. This report can be activated from any of the totals in the Region, Benefit Classification, and Benefit Sub-Classification rows.	TANF Processing Detail Report

TANF Budgets Opened by Year and Month

Report Object Type: Line Chart

Data Items:

Number of Accounts Opened	This number is the number of accounts that were opened during a given month. This is the measure used to generate the trend line.
Budget Open Date Month	A text value that identifies the year and month during which a specific account was opened.

Prompts: No prompts specific to chart

Filters: No filter logic specific to chart

Drill Through Functionality: No Drill Throughs specific to chart

Version	Revision Date	Author	Comments
1.0	01/15/2018	John Doe	Initial version
1.1	01/21/2018	John Smith	Added information on "Unique Households by Processing Region, Benefit Classification, or Benefit Sub-Classification" drill through report

Deliverable: OLAP Cube Design and Usability Document

Intended Audience:

- Business Analyst
- Project Stakeholders
- End Users Accessing the cube
- Technical Staff

Business Reason/Value:

- Describes the high level technical solution to the business problem and provides business area with an understanding of the solution they are committing to.
- Documents the structure, measures, dimensions, and other considerations for proposed OLAP cube.
- Correlates data elements and measures in the OLAP cube to their underlying source value.

Required Document Format and Contents:

- This document is required to be submitted in electronic format as a Microsoft Word 2007 (or later) document.
- This document should contain the following sections, and items within each section should match the example template below.

Section	Item	Description	Notes
Cube Overview	Cube Name	The name of the OLAP cube	
	Intended Business Usage	Describe business reasoning behind cube's existence.	
	Measures	Lists measures (facts) stored in the OLAP cube.	• The name of each measure should be listed as well as a description. • List any necessary detail to describe unit measurement, if necessary. (E.g. "…in US dollars," or "…in milliliters") • List any special logic used to derive the measure. • List whether measure is additive or requires distinct count logic.
	Load Frequency	Indicates how often the OLAP cube is updated.	Examples include: daily, weekly, monthly, near real time, etc.
	Load Type	Indicates what load strategy is used each time the OLAP cube is updated.	• Examples include: truncate all records and reload, reload last three months of data, update existing records and add new records, etc. • Include any special logic used to determine which records are added, updated, or deleted with each load.
	Data Retention	Indicates how long/how much data is to be retained in the OLAP cube.	Note how data retention limits will be achieved and any special circumstances affecting data in the OLAP cube.

Section	Item	Description	Notes
	Drill Through Functionality	Indicates detail reporting from which measure in the OLAP cube.	• The name of the measure should be listed as well as a description of what detailed information is needed. • Include name of report or visualization that the drill through functionality will display. Should match a report design and usability document.
	Security Synopsis	Identify any high-level security considerations for this OLAP cube.	• This is not an exhaustive list of all security considerations for this OLAP cube but rather a high-level synopsis. Examples include: Contains HIPAA data, Contains PII data, covered by IRS policy X.Y.Z, data limited to staff in XYZ business unit, etc. • At a **minimum** this should list which users may see this OLAP cube. Use business terms here.
	Project	Identifies the project during which the OLAP cube was created.	This section may link to a project roadmap, strategy document, or work order number.
	Business Owners	List the business owner(s) of this OLAP cube.	Also list business subject matter experts here if they are different than the business owners.
	Stakeholders	List the business stakeholder (s) of this OLAP cube.	
Dimension Detail *Note this entire section repeats for each dimension in the cube.*	Dimension Name	The English name of the dimension	
	Dimension Description	A description of the dimension	
	Hierarchies	List all hierarchies/drill-down paths present in the dimension.	• The textual description should show the business names of the levels in the dimension, as well as an approximate count of the number of records in each level.
	Impacts on Measures	List any special considerations this dimension might have on measures.	• If the dimension will cause duplicate/double counting across certain measures, list these measures and the impact. • If the dimension is not applicable across certain (semi-additive) measures, list these (semi-additive) measures and the impact.
	Dimension Source	Lists the source systems used to feed the dimension.	• This should be a complete list of all source systems used to populate this dimension and their type. Use a table for readability. Type should indicate: o Database (relational or non-relational) o Existing source or new to initiative

Example:

Overview: Orders Cube

Intended Business Usage: Describe business reasoning behind cube's existence.

Measures:

Measure	Description
Number of Orders	Unduplicated (distinct) count of orders.
Total Order Dollars	Total amount of orders in US dollars.

Load Frequency: Daily excepting Federal holidays.

Load Type: Update old records, add new records since last load.

Data Retention: Last 7 years of data. No data prior to 2013 available. Data for calendar year 2013 was converted from the old Ordering System prior to Exa-Order mainframe.

Drill Through Functionality:

Drill Thru Data Item	Description	Report Name
Order measure	Provide details of the orders selected including a textual list of orders at the order level and customer information, the total order amount, and the sales commission amount.	Order Details

Security Synopsis: Data is limited to the ordering department and sales representatives. Sales representatives are only allowed to see their own orders.

Project: Work Order 12-568-ABC, 02/10/2014

Business Owners: Ordering department

Stakeholders: Ordering department and sales representatives

Dimension: Date

Dimension Description: Date associated with the order.

Hierarchies: The date dimension is associated with both a calendar year, and state fiscal year.

- Calendar Year Date (1) → Calendar Year (7) → Calendar Month (12) → Order Date (365)
- Fiscal Year Date (1) → Fiscal Year (7) → Fiscal Quarter (4) → Order Date (365)

Impacts on Measures: No impact

Dimension Source:

Date	Existing Oracle database table	SALES_PROD instance, ORDERS schema, ORDER_FACT.DAY_KEY

Dimension: Product

Dimension Description: Product associated with the order

Hierarchies:

- All Products (1) → Product Category (45) → Product Name (367) → Product SKU (24,000)

Impacts on Measures: No impact

Dimension Source:

Product SKU	Existing Oracle database table	SALES_PROD instance, ORDERS schema, PRODUCT.SKU

Dimension: Salesrep

Dimension Description: Salesperson (salesrep) who will receive commission on the order.

Hierarchies: Sales person dimension is associated with both a State and Region hierarchy.
Salesreps (1) → Region (6) → Territory (25) →Salesrep ID (770)
Salesreps (1) → State (50) → County (270) → City (700) → Salesrep ID (770)

Impacts on Measures: A value of -1 for the Salesrep indicates the "Salesrep Not Found" situation and will be used when the operational system does not accurately capture the salesrep associated with a business process.

Dimension Source:

Salesrep ID	Existing Oracle database table	SALES_PROD instance, ORDERS schema, SALESREP.SALESREP_ID

Version	Revision Date	Author	Comments
1.0	01/15/2018	John Doe	Initial version
1.1	01/21/2018	John Smith	Corrected for spelling and grammar. Added updated counts for salesrep dimension.

Deliverable: Operational System Screenshot Mapping Document

Intended Audience:

- Enterprise Knowledge Management System Design Team

Business Reason/Value:

- Fully documents all operational screens.
- Correlates data items in the operational screens to their underlying database values and/or code (such as PL/SQL).

Required Document Format and Contents:

- The **Operational System Screenshot Mapping Document** is a living document that must be kept up to date as changes are made to subject areas through new initiatives and maintenance activities.
- This document is required to be submitted in electronic format as a Microsoft Word 2007 (or later) document.
- Visible objects and invisible objects (like calculations, get procedures, functions (FN_GET_PNLTY_DAYS), for example) in the screenshot of the application should be included in the **Operational System Screenshot Mapping Document**.
- Do not include validations or buttons, such as .NET code.
- This document should include a clearly readable screenshot of every screen in the operational system, and an accompanying chart (with examples) with the following elements corresponding to each screenshot:

Field	Database element on operational system	Exact location of corresponding code (such as PL/SQL) which calculates this field
End Date	[schema] table.column	[tfs] parent_folder/child_folder/ PKG_PRCS_INV.sql (USP_GET_INV_SRCH)

- The Word Document should have the following formatting applied to the table:
    - Column contents should have the “Wrap Text” property turned on as needed and have their width sized appropriately for readability.
    - Paper Orientation should be set to landscape with a legal page size. (Note, the goal is to minimize the amount of paper required, not necessarily fit all columns below on the same page which may be impractical.)
    - Columns should be ordered from left to right as specified by their order above.

Exemptions from this Standard:

Any request for an exemption to this standard must be made to and approved by Data Warehouse in the Solution Management Division in the Health and Human Service Information Technology Delivery Center (HHS IT DC).

Refresh Schedule:

All standards and referenced documentation identified in this standard will be subject to review and possible revision annually or upon request by the HHS Information Technology Delivery Center Domain Leads.

Standard Revision Log:

Change Date	Version	Change Description	Author and Organization
2/18/2016	1.0	Initial issue	Joe Sweigard, EKMS
2/26/2018	1.1	Reviewed for completeness	Larry Leitzel, EKMS
8/20/2019	1.2	Update Organization	Larry Leitzel, EKMS