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Introduction

The purpose of this job aid is to provide an explanation of dimensional data modeling and of using dimensions and facts to build analyses within the Account Receivables Subject Areas.

**Dimensional Data Model**

The dimensional model is comprised of a fact table and many dimensional tables and is used for calculating summarized data. Since Business Intelligence reports are used in measuring the facts (aggregates) across various dimensions, dimensional data modeling is the preferred modeling technique in a BI environment.

**STARS - OBI** data model is based on Dimensional Modeling. The underlying database tables are separated as Fact Tables and Dimension Tables. The dimension tables are joined to fact tables with specific keys. This is usually called Star Schema.

The star schema separates business process data into facts, which hold the measurable, quantitative data about a business, and dimensions which are descriptive attributes related to fact data.

Examples of fact data include budget amount, expense amount, transaction amount etc.

Related dimension attribute examples include department, fund, SID, time etc.

**Fact Tables:**

Fact tables record measurements or metrics for a specific event. Fact tables generally consist of numeric values and foreign keys to dimensional data where descriptive information is kept. Fact tables are designed to a low level of uniform detail (referred to as "granularity" or "grain"), meaning facts can record events at a very atomic level. This can result in the accumulation of a large number of records in a fact table over time. Fact tables are generally assigned a surrogate key to ensure each row can be uniquely identified.

**Dimension Tables:**

Dimension tables have a relatively small number of records compared to fact tables, but each record may have a very large number of attributes to describe the fact data. Dimensions can define a wide variety of characteristics, but some of the most common attributes defined by dimension tables include:

- Time
- Employee
- **Department**

Dimension tables are generally assigned a surrogate primary key, usually a single-column integer data type, mapped to the combination of dimension attributes that form the natural key.

**Star Schema:**

Star schemas are optimized for querying large data sets and are used in data warehouses and data marts to support OLAP cubes, business intelligence analytic applications, and ad hoc queries.

Within the data warehouse or data mart, a dimension table is associated with a fact table by using a foreign key relationship. The dimension table has a single primary key that uniquely identifies each member record (row). The fact table contains the primary key of each associated dimension table as a foreign key. Combined, these foreign keys form a multi-part composite primary key that uniquely identifies each member record in the fact table.

The Fact Table name in **STARS - OBI Subject Areas** is usually preceded with the name **FACT**. This is done to distinguish the Fact tables from the Dimension Tables.

In the example provided below, the underlying Dimension Tables in this Subject Area are joined to the Fact table to form the star schema.
Subject Area:

A subject area contains folders; attribute columns (Dimensions) and measure columns (Facts) that represent information about the areas of an organization’s business or about groups of users within an organization. Subject areas usually have names that correspond to the types of information that they contain, such as Financials – AR Overview, Financials – AR Item Payments, Financials – AR Item Billing, Financials – AR Item Billing, etc.

There are common Dimensions Tables across Financial Subject Areas such as Time, Ledger and Chartfields. These common Dimensions are followed by Subject Area specific Dimensions such as GL Details, AP Details, AR Line Details and Fixed Assets Details. There are FACT Tables across specific Subject Areas.
Financial Subject Areas

Account Receivables Subject Areas

The Account Receivables is the area where we keep track of organizational Invoice Aging, Item Billing and Payments that happen in a life of an Item. It is used to know amount needs to be received from the customer and the time it took. The Account Receivables are the master subject areas that have the information posted to them from different sources like Item, Item Activity, Item Billing, Payments, Direct Journals and Invoice Aging etc...

There are five subject Areas in STARS that represent the Fixed Asset module in CORE-CT.

- Financials – AR Overview Subject Area
- Financials – AR Invoice Aging Subject Area
- Financials – AR Item Activity Subject Area
- Financials – AR Item Billing Subject Area
- Financials – AR Item Payments Subject Area
- Financials – AR Item Distribution Subject Area
- Financials – AR Payments Direct Journals Subject Area

Financials – AR Overview: This is a summary subject area that provides the ability to report on aging, payment performance, customer balances, due and overdue balances.

Financials – AR Invoice Aging: This is a detailed subject area that provides summary aging balances as well as ability to drill down to invoice transactions. Provides aging analysis from two different perspectives, one with respect to invoice date and the other one with respect to payment due date. The one with payment due date provides analysis of cash flow expected by those due dates. This subject area also provides due and overdue balances aged by predefined buckets. Further this subject area provides ability to drill down from these aging balances to invoice transactions.

Financials – AR Item Activity: This subject area includes all the metrics related to Item Activity such as Item Status, Item, and Item Line etc.

Financials – AR Item Billing: This subject area includes AR Amount related to Item Billing activity with respect to Account, Fund, SID, and other chart fields etc.
Financials – AR Item Payments: This subject area includes AR Amount metric related to Payment with respect to Payment ID, Bank Info.

Financials – AR Item Distribution: This subject area includes AR Amount metric related to Item Distribution activity with respect to Account, Fund, SID, and other chart fields etc.

Financials – AR Payments Direct Journals: This subject area includes AR Misc Pay Amount related to Item Miscellaneous payments that applied directly to journals with Payment and Distribution Sequence numbers.

Using Dimensions and Facts to create an analysis:

These objects in the left pane are based on database tables in the backend and the data model behind these subject area tables is dimensional modeling.

The tables listed from Time, Ledger and Business Unit through Resource Category are the **Dimension Tables** in this subject area.
There is one Fact table for this Subject Area and it is called **Facts – AR Overview**. The Fact Table name in STARS subject areas is usually preceded with the name **FACT**. This is done to distinguish the Fact tables from the Dimension Tables.

Here is an example of a **Financials – AR Overview** Subject Area analysis:
Criteria Tab

Selected Columns

Selected Filters

Results Tab
Financials – AR Overview Subject Area:

The Financials – AR Overview is a summary subject area that provides the ability to report on aging, payment performance, and customer balances, due and overdue balances, and customer accounts.

- **Aging Amount**: This metric shows open Amount from the customer. It is derived from Bal_amt column from PS_ITEM.

- **Total AR Invoice Amount**: This metric AR Invoice amount for each each invoice line item.

- **Remaining AR Invoice Amount**: This metric shows the remaining balance at each invoice level after accounting for partial payments against each invoice line item. This is computed for only open invoice which are still not fully paid. The remaining amount will be equal to invoice amount if no payment is applied.

Fact - Measure Definitions(AR Aging)

- **AR Invoice Amount**: This metric is the total amount of the invoice sent to the customer. It refers ORIG_ITEM_AMT from PS_ITEM when Type_code is ‘INVOICE’.

- **AR Invoice Count**: The count of invoices for the customer.
AR Credit Memo Amount: This metric provides the value of Credit Memo Amount by summarizing all credit memo transactions.

AR Credit Memo Count: The count of credit memos issued for the customer.

AR Debit Memo Amount: This metric shows debit memo amounts issued to the customers.

AR Debit Memo Count: The count of debit memos issued for the customer.

AR Total Payment Amount: This shows total payments received from the Customers that includes both applied and unapplied against outstanding invoices.

Direct Journal Amount: This metric shows amount where pay misc flag is ‘Y’. This is the amount that applied directly to journals.

Total Amount: This metric shows amount where pay misc flag is ‘N’. This is the amount that applied to Payments.

When we try to build a report out of multiple areas in assets like Aging and Transactions. We need to use the AR Overview Subject area as it has all the details.

Example:

Compound Layout View:

Compound Layout view allows us to assemble different views for display on a dashboard.

This is an example of Title and View Selector on the Compound Layout.

View Selector gives users the option to choose a display of information from list of choices (View) presented to them.
Financials – AR Invoice Aging Subject Area:

This is a detailed subject area that provides summary aging balances as well as ability to drill down to invoice transactions. Provides aging analysis from two different perspectives, one with respect to invoice date and the other one with respect to payment due date. The one with payment due date provides analysis of cash flow expected by those due dates. This subject area also provides due and overdue balances aged by predefined buckets. Furthermore, this subject area provides the ability to drill down from these aging balances to invoice transactions.

So if we are developing reports based on point in time aging snapshot data based reports we would use AR Invoice Aging Subject Area.

AR Invoice Aging Dimensions.

AR Invoice Aging Fact Measure:

Fact - Measure Definitions:

Aging Amount: This metric shows Open Amount from the customer. It is derived from Bal_amt column from PS_ITEM

Total AR Invoice Amount: This metric AR Invoice amount for each each invoice line item.
**Remaining AR Invoice Amount:** This metric shows the remaining balance at each invoice level after accounting for partial payments against each invoice line item. This is computed for only open invoices which are still not fully paid. The remaining amount will be equal to invoice amount if no payment is applied.

Example:

**Compound Layout View:**

Compound Layout view allows us to assemble different views for display on a dashboard.

This is an example of Title and Pivot Table on the Compound Layout.
Financials – AR Item Activity:

This subject area includes all the metrics related to Item such as Item Details, Item Status, AR Amount, etc.

So if we are developing reports to show AR Amount by Item Activity we use AR Item Activity Subject Area.

It sources data from following tables in CORE.

<table>
<thead>
<tr>
<th>Source Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS_ITEM_ACTIVITY</td>
</tr>
<tr>
<td>PS_ITEM</td>
</tr>
<tr>
<td>PS_BUS_UNIT_TBL_AR</td>
</tr>
<tr>
<td>PS_BI_HDR</td>
</tr>
<tr>
<td>PS_BI_LINE</td>
</tr>
<tr>
<td>PS_GROUP_CONTROL</td>
</tr>
<tr>
<td>PSPRCSRQST</td>
</tr>
<tr>
<td>PS_ITEM_ACTIVITY_DISC</td>
</tr>
</tbody>
</table>

AR Item Activity Dimensions.

![Dimensions](image)

AR Item Activity Fact.

![Fact](image)
Fact - Measure Definitions:

**AR Amount:** This metric shows the original entry amount on PS_Item. It refers to ORIG_ITEM_AMT from PS_Item.

**AR Invoice Amount:** The total amount of the invoice sent to the customer. It refers ORIG_ITEM_AMT from PS_ITEM when Type_code is ‘INVOICE’.

Example:

**Compound Layout View:**

Compound Layout view allows us to assemble different views for display on a dashboard.

This is an example of Title and Table View on the Compound Layout.

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Status</th>
<th>AR Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>AES-49</td>
<td>Closed</td>
<td>(54,895.50)</td>
</tr>
<tr>
<td>AES50</td>
<td>Closed</td>
<td>54,895.50</td>
</tr>
<tr>
<td>AES51</td>
<td>Closed</td>
<td>(33,157.55)</td>
</tr>
<tr>
<td>AES52</td>
<td>Closed</td>
<td>(99,513.10)</td>
</tr>
<tr>
<td>AES53</td>
<td>Closed</td>
<td>(32,965.00)</td>
</tr>
<tr>
<td>AES54</td>
<td>Closed</td>
<td>(19,133.25)</td>
</tr>
<tr>
<td>AES55</td>
<td>Closed</td>
<td>(79,549.50)</td>
</tr>
<tr>
<td>AES56</td>
<td>Closed</td>
<td>(20,900.00)</td>
</tr>
<tr>
<td>AES57</td>
<td>Closed</td>
<td>(7,204.75)</td>
</tr>
<tr>
<td>AES58</td>
<td>Closed</td>
<td>(5,723.50)</td>
</tr>
<tr>
<td>AES59</td>
<td>Closed</td>
<td>(54,895.50)</td>
</tr>
<tr>
<td>AES60</td>
<td>Closed</td>
<td>(31,270.50)</td>
</tr>
<tr>
<td>AES61</td>
<td>Closed</td>
<td>(10,098.00)</td>
</tr>
<tr>
<td>AES62</td>
<td>Closed</td>
<td>(19,941.90)</td>
</tr>
<tr>
<td>AES63</td>
<td>Closed</td>
<td>(31,270.50)</td>
</tr>
<tr>
<td>AES64</td>
<td>Closed</td>
<td>(26,516.50)</td>
</tr>
<tr>
<td>AES65</td>
<td>Closed</td>
<td>20,900.00</td>
</tr>
<tr>
<td>AES66</td>
<td>Closed</td>
<td>33,157.55</td>
</tr>
</tbody>
</table>
Financials – AR Item Billing:
This subject area includes all the metrics related to Item such as Item Details, Item Status, AR Amount, Account, Fund, SID, etc.

It sources data from following tables in CORE.

<table>
<thead>
<tr>
<th>Source Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS_BI_ACCT_ENTRY</td>
</tr>
<tr>
<td>PS_BI_LINE</td>
</tr>
<tr>
<td>PS_BI_HDR</td>
</tr>
</tbody>
</table>

This subject area contains Fund, SID, Account related info as well.
So if we are developing reports to show AR Amount by Item Billing we use AR Item Billing Subject Area.

AR Item Billing Dimensions:

AR Item Billing Fact:
Fact - Measure Definitions:

**AR Amount:** This metric gives Billing Amount. It refers to Monetary Amount from PS_BI_ACCT_ENTRY.

Example:

**Compound Layout View:**

Compound Layout view allows us to assemble different views for display on a dashboard.

This is an example of Title and Table View on the Compound Layout.
Financials – AR Item Distribution:

This subject area includes all the metrics related to Item such as Item Details, Item Status, AR Amount, Account, Fund, SID, etc.

This subject area contains AR Amount at the distribution level as well.

It sources data from following tables in CORE.

<table>
<thead>
<tr>
<th>Source File</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS_ITEM_DST</td>
</tr>
<tr>
<td>PS_ITEM_ACTIVITY</td>
</tr>
<tr>
<td>PS_ITEM</td>
</tr>
<tr>
<td>PS_BI_HDR</td>
</tr>
<tr>
<td>PS_BI_LINE</td>
</tr>
</tbody>
</table>

So if we are developing reports to show AR Amount by Item Distribution we use AR Item Distribution Subject Area.

AR Item Distribution Dimensions.
AR Item Distribution Facts.

Fact - Measure Definitions:

**AR Amount:** This metric gives amount from AR_XACT_F where type code is ‘Distribution’. It refers to Monetary Amount from PS_ITEM_DST.

Example:

**Compound Layout View:**

Compound Layout view allows us to assemble different views for display on a dashboard.

This is an example of Title and Table View on the Compound Layout.
Financials – AR Item Payments:
This subject area includes all the metrics related to Item such as Item Payments, Bank info, Pay Flags, AR Amount etc.

This subject area contains AR Amount at the Payment level with pay and bank details.

It sources data from following tables in CORE.

<table>
<thead>
<tr>
<th>Source Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS_PAYMENT</td>
</tr>
<tr>
<td>PS_DEPOSIT_CONTROL</td>
</tr>
<tr>
<td>PS_BUS_UNIT_TBL_AR</td>
</tr>
</tbody>
</table>

So if we are developing reports to show AR Amount by Item Payments with bank, Payment indicators we use AR Item Payments Subject Area.

AR Item Payments Dimensions.

[Diagram showing AR Item Payments Dimensions]

AR Item Payments Fact.

[Diagram showing Fact - AR Payment and AR Amount]

Fact - Measure Definitions:

**AR Amount:** This metric gives amount from AR_XACT_F where type code is ‘Payment’. It refers to Payment Amount from PS_Payment.
Example:

**Compound Layout View:**

Compound Layout view allows us to assemble different views for display on a dashboard.

This is an example of Title and Table View on the Compound Layout.
Financials – AR Payments Direct Journals:
This subject area includes metric related to MISC Payments or Miscellaneous deposits directly applied to journals.

This subject area contains Pay Miscellaneous Amount with Deposit, Payment and Distribution numbers.

So if we are developing reports to show Misc Pay Amount by Business unit, Fund, Account, SID, and other chart fields we would use the AR Payments Direct Journals Subject Area.

AR Payments Direct Journals Dimensions.

AR Payment Direct Journals Facts.
Fact - Measure Definitions:

**AR Pay Misc Amount:** This metric is useful to determine the Direct deposit Amount that is posted directly to journals. This field is derived from MONETARY_AMOUNT column from PAY_MISC_DST in CORE.

Example:

**Compound Layout View:**

Compound Layout view allows us to assemble different views for display on a dashboard.

This is an example of Title and Table View on the Compound Layout.