SAS® VISUAL ANALYTICS
AN OVERVIEW OF POWERFUL DISCOVERY, ANALYSIS AND REPORTING
SAS Visual Analytics is a high-performance, in-memory solution for exploring massive amounts of data very quickly. It enables you to spot patterns, identify opportunities for further analysis and convey visual results via Web reports or a mobile platform such as the iPad®.

This presentation is a very brief overview of the many features and capabilities of SAS Visual Analytics. It is meant to get you started quickly, with a relatively modest data set example (only 3.5 million rows). For more in-depth information, you can consult the online User Guide, available via the Help menu, or go to the website at http://www.sas.com/technologies/bi/visual-analytics.html.
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OVERVIEW OF THE DATA

- Insight Toy Company is an organization that produces and sells toys. The data is made up of 14 years of Financial, Manufacturing and Sales & Marketing information, with 127 facilities across the world:
  - **Financial**: product sales, cost of sales, gross margin;
  - **Manufacturing**: unit capacity, reliability, lifespan, etc;
  - **Sales & Marketing**: sales representative, sales rep rating, customer satisfaction, customer distance, etc.

- The data source is made up of 3.5 million rows and 60 columns.

*NOTE: a complete data dictionary is available at the end of this document*
GETTING STARTED IN SAS VISUAL ANALYTICS – THE ESSENTIALS

The toolbar enables you to select your visual explorations and visualizations.

The data pane lists the available categories and measures in your selected data.

The right pane contains tabs that enable you to change the properties of your visualizations, filter the data and create and view comments.

The workspace displays your visualizations.

For more information, please consult the SAS Visual Analytics User Guide, available under the Help menu.
**STEP 1:** starting with a blank workspace, select **Bar Chart** from the toolbar.

**STEP 2:** Drag and drop **Facility Continent**, **Unit Yield Rate** and **Facility Efficiency** on the workspace.

Note: you can select multiple items by holding the **CTRL** key.

In order to explore this in more detail, we will need to create a hierarchy that will allow us to dig deeper and focus our analysis.
BAR CHART – ADD A HIERARCHY

Let's add more “investigative” functionality to this bar chart by creating a drill-down path.

**STEP 1**: From the Data tab, select New Hierarchy.

**STEP 2**: Name it Facility Hierarchy. Select Facility Continent, Facility Country, Facility City and Facility (in that order).
USING A HIERARCHY

Drag the new **Facility Hierarchy** from the Data Pane and drop it on **Facility Continent**.

The new hierarchy has replaced the single-level Facility Continent element. Notice that the appearance of the chart does not change, but a “breadcrumb trail” appears in the upper left of the chart.

Double-click on North America to explore further.
EXPLORING A HIERARCHY

Here you can see that Mexico has a much lower Unit Yield Rate and lower Facility Efficiency than the U.S. or Canada.

Notice the breadcrumb trail highlighted in the upper left.

You can continue to drill-down and gain even more insight.

Double-click on Mexico.
The Hierarchy was created on the fly, without the need to ask our IT department to create a special data structure, and is IMMEDIATELY applicable to all your data, usable for explorations and reports.

Further, you can easily *edit* the hierarchy to drill down, from facilities, to Products, Units, Sales Representatives, etc.
FILTERS

Filters are an easy way to subset the data, allowing you to focus on a specific area.

There are two types of filters: **Local** filters affect only the current visualization, while **Global** filters affect all visualizations currently opened.

Let’s create a simple visualization to practice Filters:

**STEP 1:** starting with a blank workspace, select **Bar Chart** from the toolbar.

**STEP 2:** Drag and drop **Products Hierarchy** and **Product Sale** on the workspace.
FILTERS - BASICS

Let’s focus on 2012 only.

**STEP 1**: Drag and drop the **Transaction Year** field to the filter tab. Put it in the **Local Filters** section.

**STEP 2**: simply drag the left arrow to subset the data to 2012 only.

💡 *Insight:* notice how SAS Visual Analytics automatically lets us know the general distribution of the data?
FILTERS – SELECT AND INCLUDE

Let’s look at all our Product lines, except Puzzle 3D and Card Games.

**STEP 1:** You can select specific items in your visualization (holding the CTRL key), or you can use the mouse to lasso around multiple items.

**STEP 2:** Now right-click and select **Exclude Selection**.

A new filter is added.
FILTERS - ADVANCED

Filters behave differently depending if they are a numerical measure or a category.

**Insight:** every time you apply filters, SAS Visual Analytics tells you how much of the data you are looking at.

Options allow you to edit a filter, to refine it even more, with various conditions and operators, to make it as sophisticated as you need.
SAS Visual Analytics allows you to create on-the-fly calculations on all your data.

To create a new calculation, simply select **New Calculated Item...** from the **Data** menu.
CALCULATIONS - CREATING

This is the name of the calculated item. It will appear as a data item in the data pane, available for visualizations.

These are the various data elements that you can use in a calculation.

These are the various functions and operators that can be used to create your formula.

You can specify how the results of your calculations will be aggregated and formatted.

To create (or edit) a calculation, simply:

**STEP 1:** build the structure of your calculation: drag and drop the operator(s) you want on the main window;

**STEP 2:** drag and drop the data element inside the calculation structure.
CALCULATIONS – EDITING

Two calculations have already been created for you in the Insight Toy Company sample data: **Gross Margin**, and **Gross Margin Ratio**.

To view how these calculations were created or modify them, simply select one, right-click and select “**Edit**…”.

💡 Note that it is possible to use the result of a calculation in another calculation.
GEOGRAPHIES

In SAS Visual Analytics, any category field can be designated as a Geography. You might assign a geography to a pre-defined geographic role (such as country name), or create a customized geography data item to identify geographic information that is specific to your organization (for example, sales regions, warehouse locations, oil platforms, and so on).

For the purpose of Insight Toy Company, we have already designated the following fields as Geographic locations:

Further, we have already created one hierarchy, to explore data from continent, to country, region and city.
If you have any visualization opened, minimize them, to start from a blank workspace.

Select **Geography Hierarchy** and hold the **CTRL** key to select **Product Sale**. Simply drag and drop them on the workspace. Because the category selected has been pre-defined as a geography item, SAS Visual Analytics will automatically offer us a Map visual.
ANALYZING GEOGRAPHIES

Since you used a hierarchy, you can drill down on it: double-click on the **North America** and then on the **USA** bubbles.

You can also add another measure. In this case here, by dragging and dropping **Gross Margin Ratio**, you are able to see revenue of each region (the size of the bubbles) as well as their relative Gross Margin contribution (the color of the bubbles).

**Insight:** notice how it is clear that, while the majority of our revenues in the USA comes from the Western and Northern regions (bubble size), clearly the average Gross Margin (bubble color) is better in the **Southeast**.
REFINING GEOGRAPHIES

Geographies can be used for all kinds of visualizations.

For example here, we are looking at **Average Customer Distance** to our facility (color of the bubbles), and the revenue generated from each customer (size of the bubbles).

The center (where all bubbles are blue) represents where our facility is located.

Notice how there doesn’t seem to be a correlation between proximity to our facility, and how much a customer is spending with us?

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CROSSTAB – GETTING STARTED

A crosstab shows the intersections of category values and measure values.

**STEP 1**: starting with a blank workspace, select **Crosstab** from the toolbar.

This creates a blank Crosstab palette. Notice the Roles tab on the right. Each element can have multiple categories or measures.
From the Data tab, select **Facility Country** and drop it on the **Columns** box.

Select **Product Line** and drop it on the **Rows** box.

Select **Product Material Cost** and drop it on the **Measures** box.

Now you have a Crosstab that shows aggregated **Product Material Costs** for each **Product Line** by **Facility Country**.
CROSSTAB – ADDING DEPTH

Let's add more depth to the Crosstab.

Select **Product Make** and drop it on the **Rows** box.

Select **Product Sale** and drop it on the **Measures** box.

Now you have multiple rows and columns of aggregated product financial data, in seconds. It is easy to add or replace elements in this manner.
CROSSTAB – DRILL DOWN WITH HIERARCHIES

Let's create a new crosstab. Simply minimize the one you were working with, and start a new one.

This time, select **Geography Hierarchy** as your Columns, and **Products Hierarchy** as your Rows.

Select **Product Sale** as your Measure.

Notice how, because we are now using Hierarchies, we can drill down or expand on any row or column? You can read more about hierarchies here.
CROSSTAB – CREATING TOTALS

Select the **Properties** tab on the right pane.

You can turn on **Column subtotals** and **totals**

You can turn on **Row subtotals** and **totals**.

You place these before or after the corresponding data item.

You can also rename the Visualization to something more meaningful than the default “Visualization 1”.

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FORECAST – GETTING STARTED

Minimize any open visualizations, to start with a blank workspace.

Click on Analysis then select Forecast. It will then bring up the forecast function.

For the Date Category, select Transaction Month.
Select Product Cost of Sale and Product Sale.

You can also change how many intervals you wish to forecast into the future. Since we are dealing with months here, this will create a forecast for 6 months.
The forecast function created a line chart, forecasting our Product Sale and Cost of Sale for six months.

Now let’s refine our forecast by adding a filter based on Product lines and look at forecasts for specific products.
Let’s drag and drop the Products Line field to the filters tab, so we can create different forecasts for each product line. Here we selected the **Kiosk** product line.

You can find more information on filters [here](#).

You can also click the **Info** button to find out what forecast algorithm was used.
FORECASTING PROPERTIES

You can have the markers plotted to see the markers more clearly. Simply check the **Show Markers** Radio Button under Properties.

If you mouse over date values it will show you specific data ticks for a date. In this view we moused over Jan2013.
If you hover your mouse over the upper right corner of any visualization, you will see an icon appear. Clicking this icon shows the Table View (see bottom of the screen) – the data that is currently feeding your visualization.

This is the data that will be exported if you right-click on your visualization and select “Export Data”. 

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STEP 1: starting with a blank workspace, select Treemap from the toolbar.

STEP 2: Drag and drop Products Hierarchy on the Treemap workspace.
This gives you a Treemap of the highest level of the hierarchy (Product Brands) and defaults to the frequency (i.e. how many rows of data) for each product brand.

In order to get a more insightful chart, you need to add data elements from the Data pane. For this exercise, drag and drop Product Sale and Gross Margin Ratio.
Since you started with a Hierarchy, you can simply drill-down on any rectangles by double-clicking on it. Notice as well the breadcrumb at the top that indicates where you currently are exploring in the hierarchy tree.

💡 Now you can quickly see comparatively speaking which product group has the best relative gross margin (in blue) compared to other groups that have the same level of revenues (size of the rectangle).
Using the mouse as a lasso to highlight multiple boxes, or by holding the **CTRL** key, you can select multiple boxes, and, using a right-click menu, include (or exclude) them from your selection, in effect creating a filter.
HEAT MAPS – GETTING STARTED

**STEP 1**: starting with a blank workspace, select **Heat Map** from the toolbar.

**STEP 2**: Select **Facility Country**, **Product Quality** and **Unit Reliability** from the Data tab with CTRL-click. Drag and drop them onto the Heat Map workspace.
You now have a Heat Map of **Unit Reliability** by **Facility Country** and **Product Quality**.

It would seem that, across all countries, lower product quality and lower unit reliability are related.

Let’s change the presentation somewhat to get a better sense of this.
Lets get a different view of this relationship.

On the Roles tab, drag **Unit Reliability** from the **Color** element and drop it on the **Y axis** element. In effect, swapping **Product Quality** and **Unit Reliability**.

Notice how the map has drastically changed?

Now we see the same information, but from a different, potentially more meaningful perspective.
HEAT MAPS – DRILLING DEEPER

Let's take a deeper dive into areas with the lowest Unit Reliability and Product Quality.

“Lasso” these areas with the mouse by holding the button and selecting the areas to be explored. Then, press the right mouse button to get the menu and select Include Only Selection.

Notice the new filter in the Filters tab? We are now using 2% of the original data.
HEAT MAPS – IDENTIFYING PROBLEM AREAS

Let's dig deeper. Select **Facility** from the Data pane and drag and drop it over **Facility Country**.

Now we have the same data, but at the individual facility level.
HEAT MAPS – IDENTIFYING PROBLEM AREAS

By ‘zooming out’, you can identify each manufacturing unit individually.

To zoom out, simply select the horizontal scroll bar and drag to the left.
CORRELATIONS

Minimize any open visualizations, to start with a blank workspace.

Click on Analysis then select **Correlate Measures**.

Click the first measure (**Customer Distance**), hold the **SHIFT** key and select the last measure. This should select all measure as shown in the screenshot.

Click OK.
Notice the intersection **Customer Satisfaction** and **Sales Rep Rating**. It has a strong Relationship of .9867 ("1" being the strongest possible correlation).

This implies they share a strong relationship.

Double Click this intersection to explore it further.
There is a strong relationship between Customer Satisfaction and Sales Rep Rating. The color is represented as transaction frequency.

Next, drag Gross Margin from the data pane to the Visual pane. This will overlay Gross Margin as the color instead of frequency.
As Customer Satisfaction is increasing, so too is Sales Rep Rating. This is good information.

Notice however that some unsatisfied customers, serviced by some of our lesser rated sales representatives (bottom left), are also making us money (Gross Margins in blue). Interesting as well. We'll need to investigate.
For now, let’s focus on the highest Gross Margin transactions.

Using the mouse as a lasso, highlight the bins top right in blue and white as seen in the screenshot. Right click on the highlighted transactions and select **Include Only Selection**. This will create an instant filter on our data.
SATISFIED AND PROFITABLE CUSTOMERS... BUY WHICH PRODUCT?

These are some of your most satisfied customer, providing you with your highest Gross Margins. But which products are they buying? Let’s find out...

Drag **Product Line** into the pane and replace **Customer satisfaction** with **Product Line**.
GROSS MARGIN RATIO – STAR PRODUCTS

Our highest Gross Margins come from **Plush Toy**.

Click the **Bar Chart** icon in the toolbar. The visualization will change to a Bar Chart.

Drag **Gross Margin Ratio** over **Sales Rep Rating**. We can now see that Plush for Satisfied Customers has the highest Gross Margin and % contribution. More than double than any other product.

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BOX PLOTS

Box Plots are a very powerful way to derive multiple statistics about your data. A box plot represents the distribution of data values by using rectangular box and lines called whiskers.

- Outliers
- Maximum Value
- Q3 (75th percentile)
- Median
- Mean
- Q1 (25th percentile)
- Minimum Value

Basically, this means that half of your data ends up in this range for the particular measure you are looking at.
BOX PLOTS – USING THEM

Minimize any open visualizations, to start with a blank workspace. Select **Box Plot** from the toolbar.

Drag and drop one measure, and one category over the workspace. In this example, we have selected to look at the distribution of the **Customer Distance**, per **Cities**.

Notice how we can immediately see the average distance that customers will travel to get to our stores, and that some of our facilities clearly cover a more vast region – reaching customers much more further. Maybe we need to offer different marketing campaigns in those cities? 🤔
Here is another example. Here, you can immediately see your sale price distribution by Product Line. You can see that your “Kiosk” products are selling at the lowest prices, and that your “Promo” product have the widest distribution, going from zero (promotion gifts) all the way to 175 dollars.

By further refining this visualization with filters, you will be able to quickly focus on any region, facility or sale representative that sells at a lower price than anyone else.
STEP 1: starting with a blank workspace, select Bubble Plot from the toolbar.

Please note that the Bubble Plot visualization is one of the more complex ones, as evidenced by the various field roles available.
STEP 2: Assign a GROUP. The Group is important because it dictates how many elements can be displayed on the screen at one time. Here, we will drag and drop Products Hierarchy as our group.
**STEP 3**: Now you can assign the rest of your data elements. For this visualization, you will assign:

- **Sales Rep Rating** for the X Axis
- **Customer Satisfaction** for the Y Axis
- **Product Sales** for the Bubble Size.
Since you chose a Hierarchy as your Group, you will be able to drill-down to further explore your visualization by double-clicking on the bubbles.

Notice the bread crumb trail that expands indicating your drill-down path.

Also note that clearly, the more a sales representative is well rated, the more his/her customers seem satisfied. However, that seems independent of the actual sales revenue (the size of the bubble).
Using your mouse as a lasso, you can select a few bubbles, Right-Click and select **Include Only Selection**, to create a filter on-the-fly, and focus on just those items.

See the [Filters](#) section for more info on filters.
Now, wouldn’t it be interesting to see how that visualization evolves over time?

You can: simply select Transaction Year and drag and drop it in the Animation role.

Now you will be able to play the bubble plot, and see how things evolve over time.

To access the Report Designer, you will first need to go back to Visual Analytics’ Home page. To do so, simply click on the **Home** button.

Please note that in this trial, you will not be allowed to save your current work.
REPORTING IN SAS VISUAL ANALYTICS – THE HOME PAGE

This is your Home page. From here, you can access Explorations, Reports, Prepare your data and manage your servers. Note that in this trial, you can only access Explorations and Reports.

Some content has already been prepared for you. The First Exploration is where you have been working up to now.

Links can be customized for your organization’s needs.

Your recent explorations and reports, as well as your favorites, show up here.

To access Report Designer, click and edit the sample report.
When you click on the Sample Report, you will be given a choice to View it, or Edit it. Click on Edit.
The interface for creating, editing and publishing reports is very similar to the Data Exploration interface, with a few differences…

The Objects Pane lists the various types of tables, graphs, Gauges and Controls for your report.

As before, the data pane lists the available categories and measures in your selected data sources.

The right pane contains tabs that enable you to change the properties of your visualizations, filter the data and apply display rules.

The workspace allows for interaction between different objects.

For more information, please consult the SAS Visual Analytics User Guide, available under the Help menu.
For the purpose of this exercise, we’ll show you how to recreate the Sales Overview page.

Reports in SAS Visual Analytics are made of sections (see the three tabs at the top) and each section is made up of tiles. In this section, we have 3 tiles: a pie chart, a line plot, and a treemap. Top right, we also have two pull-downs that allow the user to subset the data (in this case, we’re looking at 2011 and at Europe).

Let’s create a new section by clicking on the + sign at the top.
STEP 1: Drag and Drop two **Drop-Down list** controls in the top part to create section prompts.

STEP 2: Drag and Drop **Facility Continent** on the first Drop-Down list, and **Transaction Year** on the second one.
STEP 1: Drag and Drop a Pie Chart graph object on the report section.

STEP 2: Drag and Drop Product Sale on the pie chart, and then drag and drop Facility Region, and assign it as a Category.
STEP 1: Drag and Drop a Line Chart graph object on the RIGHT side of the report section.

STEP 2: Drag and Drop Product Sale and Gross Margin to the Line Chart. Assign Gross Margin as a New Measure.
REPORTING IN SAS VISUAL ANALYTICS – ADDING A LINE CHART

**STEP 3:** Drag and Drop Transaction Month as a New Category over the Line Chart.

**STEP 4:** In the Line Chart, RIGHT-Click on the Transaction Month, and Select “Sort Ascending”.
REPORTING IN SAS VISUAL ANALYTICS – ADDING A TREEMAP

**STEP 1**: Drag and Drop a Treemap Graph object at the bottom of this report section.

**STEP 2**: Drag and Drop *Product Line* over the Treemap. Then, Drag and Drop *Product Sale* as the New Size, and *Gross Margin Ratio* as the New Color.

💡 Note: you can always re-arrange the tiles afterwards if you prefer.
REPORTING IN SAS VISUAL ANALYTICS – CREATING INTERACTION

STEP 1: To create an interaction between your various Tiles, click on the **Interaction View** button at the top right.

STEP 2: From the **Pie Chart**, Drag and Drop to the **Line chart** and then to the **Treemap** tiles.

When you’re done, go back to the **layout view** by clicking on the upper right button.
You’re almost done! Your report section is now fully functional. Try changing the pull down values, and also click on one section of the pie chart. See what happens.

Now all that’s left to do is to refine the look of the Report Section...
The Properties and Styles tab on the right allows you to change many parameters to improve the look of the various tiles.

The Display Rules tab is used to assign intervals when working with KPI gauges, or to assign a specific color to a data segment (such as product line ‘xyz’).
Here are two more sections of the same sample report.

You can have a ‘Button Bar’ Across the top. The user can simply pick a Product line, and the report automatically adjusts.

Here we are looking at our manufacturing effectiveness by regions.
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility</td>
<td>Facility (127) - sales office, or manufacturing location.</td>
</tr>
<tr>
<td>Facility City</td>
<td>City where the facility is located.</td>
</tr>
<tr>
<td>Facility Continent</td>
<td>Continent where the facility is located.</td>
</tr>
<tr>
<td>Facility Country</td>
<td>Country where the facility is located.</td>
</tr>
<tr>
<td>Facility Opening Date</td>
<td>Used to calculate the Facility Age</td>
</tr>
<tr>
<td>Facility Region</td>
<td>Region (within a country) where the facility is located.</td>
</tr>
<tr>
<td>Geography Hierarchy</td>
<td>A hierarchy made up of Continents, Countries, Regions, Cities and Customers</td>
</tr>
<tr>
<td>Product Brand</td>
<td>2 product brands: “Novelty” and “Toy”.</td>
</tr>
<tr>
<td>Product Line</td>
<td>8 product lines. A line belongs to one product brand (see above)</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Product Make</td>
<td>71 product makes. A make belongs to one product line (see above).</td>
</tr>
<tr>
<td>Product Style</td>
<td>335 product styles. A style belongs to one product make (see above).</td>
</tr>
<tr>
<td>Products Hierarchy</td>
<td>A hierarchy that was created to drill down from product brands to line, make, style and product ID.</td>
</tr>
<tr>
<td>Sales Rep</td>
<td>ID of the sales representative that made the sale.</td>
</tr>
<tr>
<td>Transaction Date</td>
<td>Date of the sale, from January 1\text{st}, 1998 to December 31\text{st}, 2012.</td>
</tr>
<tr>
<td>Transaction Month</td>
<td>Month and year of the sale, from January 1998 to December 2012.</td>
</tr>
<tr>
<td>Transaction Weekday</td>
<td>Day of the week when the sale happened (“Monday”, “Tuesday”, etc).</td>
</tr>
<tr>
<td>Transaction Year</td>
<td>Year of the sale, from 1998 to 2012.</td>
</tr>
<tr>
<td>Unit</td>
<td>Manufacturing unit that was used to assemble that product. There are 166 units in total.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Unit Status</td>
<td>Status of the manufacturing unit (e.g. “Active”, Failure”, etc). There are 5 possible status.</td>
</tr>
<tr>
<td>Customer Distance</td>
<td>Distance from the customer address to the nearest sales facility. Anywhere from 100 meters to 50 kilometers.</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>An evaluation of the customer satisfaction, at the time of the sale. Scores vary from about 20% (very low satisfaction) all the way to 100%.</td>
</tr>
<tr>
<td>Facility Age</td>
<td>Age of the facility, from 0 (brand new) to about 32 years old.</td>
</tr>
<tr>
<td>Facility Efficiency</td>
<td>An evaluation of the efficiency of the facility’s operations, based on multiple management factors. Scores vary from 30% to 100%.</td>
</tr>
<tr>
<td>Gross Margin</td>
<td>Product Sale minus Product Cost Of Sale</td>
</tr>
<tr>
<td>Gross Margin Ratio</td>
<td>A percentage of gross margin, calculated by dividing Gross Margin by Product Sale for each transaction.</td>
</tr>
<tr>
<td>Product Cost of Sale</td>
<td>Product Cost of Sale. The purchase and production cost of the product sold.</td>
</tr>
<tr>
<td>Product Material Cost</td>
<td>The raw material component of the Cost of Sale.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Product Price (target)</td>
<td>The standard ideal product price – if the product was deemed 100% quality and the market conditions were ideal, this is what the Product Sale price would be set at.</td>
</tr>
<tr>
<td>Product Quality</td>
<td>An evaluation of the manufacturing quality of the product. Scores vary from 60% to 100%.</td>
</tr>
<tr>
<td>Product Sale</td>
<td>The actual revenue of the sale of that product.</td>
</tr>
<tr>
<td>Sales Rep Customer Base</td>
<td>Amount of potential revenue for all possible customers in a given sales representative’s region.</td>
</tr>
<tr>
<td>Sales Rep Customers</td>
<td>Number of customers a sales representative is responsible for at a given date.</td>
</tr>
<tr>
<td>Sales Rep ID</td>
<td>ID of the sales representative who made that sale.</td>
</tr>
<tr>
<td>Sales Rep Rating</td>
<td>The internal organization’s evaluation of the performance of a sales representative.</td>
</tr>
<tr>
<td>Unit Actual</td>
<td>Products produced from a given manufacturing unit at that point in time.</td>
</tr>
<tr>
<td>Unit Age</td>
<td>Age of a manufacturing unit.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Unit Capacity</td>
<td>Maximum production capacity of a given unit for a given period.</td>
</tr>
<tr>
<td>Unit Discard Rate</td>
<td>A percentage representing the number of products discarded for quality reason, divided by the unit target (see below).</td>
</tr>
<tr>
<td>Unit Lifespan</td>
<td>A ratio represented by 100% minus (age of the manufacturing unit divided by its theoretical lifespan).</td>
</tr>
<tr>
<td>Unit Lifespan Limit</td>
<td>The Unit Lifespan (see above) point at which a facility replaces manufacturing units.</td>
</tr>
<tr>
<td>Unit Reliability</td>
<td>A ratio representing how reliable a manufacturing unit is. It is made up of products discarded for quality reasons, divided by total amount of products assembled by the unit, for a given time period.</td>
</tr>
<tr>
<td>Unit Target</td>
<td>Products that should be produced from a given manufacturing unit at that point in time.</td>
</tr>
<tr>
<td>Unit Yield Rate</td>
<td>A ratio of products produced (‘Unit Actual’) vs. that should be produced (‘Unit Target’)</td>
</tr>
</tbody>
</table>