Visualizing Data Using Maps in OBI 11g

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Maps convey dense, multi-dimensional relationships in data faster and more intuitively than any other graphical display methodology. Access to accurate, properly displayed information is critical in a competitive environment. Maps are now built-in to OBIEE 11g as a native view and make data visualization through maps available to all users.

Humans are hard-wired to understand the world spatially. While all maps are only representations and necessarily include many distortions, they are perhaps the most natural interface we normally use in business intelligence visualizations when compared with bar graphs, pie charts, scatter plots, and others. We are used to looking at landscapes and visual depictions of them to understand relationships, important features, and positions.

Spatial data includes any business data that contains or describes location such as street and postal address information (customers, stores, factories, etc.), sales data (sales territories, customer registrations, etc.), physical assets (cell towers, pipe lines, electrical transformers, etc.), or geographic features (roads, rivers, parks, etc.) Basically spatial data comes from anything connected to a physical location.

The following information is provided courtesy of Oracle Corporation.

OBIEE 11g uses the Oracle Application Server called MapViewer to provide an XML API, a Java API, a JSP Tag library, and an OGC WMS interface. MapViewer is a map rendering engine included with OBI that enables OBI to publish data stored in SDO_GEOMETRY columns. MapViewer supports both vector and raster data. It contains a centralized managed symbology, annotation, and map definition rules. MapViewer is a part of OBIEE 11g.

A **Feature** is an entry with spatial and non-spatial attributes such as cities, rivers, and highways. A feature can be represented by a polygon, a line, or a point.

A **Format** or style defines rendering properties for a feature. For example, if the feature is a polygon that shows a county, then the format can define the fill color for the county or can define a pie graph to be drawn over the county. Formats are tied to a particular geographic level such as continent, country, region, state, or city.

A **Theme** is a collection of features and is typically associated with a layer and refers to how such things as state/county borders or major highways and other features are rendered.

A **Layer** is any collection of features and formats that have a common set of attributes and a location. For example, a layer that shows US states can include color coding of states by sales, as well as a pie graph that shows sales per brand for that state. In addition to the US states layer, you can use a layer that displays stores within a state as individual points, with popup notes that show sales for each store.

Layers are displayed on a background or template map. When you zoom in and out on the map, various layers are hidden or displayed. Some layers must be enabled for data, so you can display it in the map. Other layers, such as one that shows roads, are not related to data.

A **Basemap** is a grouping of themes used to create a generic map. It often includes information on min and max scale (also referred to a zoom control.)

A **Map** consists of a basemap or template map and a stack of layers that are rendered on top of each other in a window. A map has an associated coordinate system that all layers in the map must share. The map can be an image file, the object representation of an image file, or a URL that refers to an image file.

Map views use formats to display business intelligence information regarding the columns of data which they are displaying. Following are some of the map view options that exist in OBIEE1g.

- Color Fill (choropleth) — Displays the "Color Fill (Layer) dialog", which you use to render areas in fill colors that indicate that an area meets a particular condition.

  Color fill formats apply to regions or polygons. For example, a color fill format might identify a range of colors to represent the population in the states of a region or the popularity of a product in the states of a region. A map view can have multiple color formats visible at different zoom levels. For example, a color fill format for the layer at zoom levels 1-5 might represent the population of a state, and the county median income for the layer at zoom levels 6-10. You can also specify different colors to identify a range of data values.

- Bar Graph — Displays the "Bar Graph (Layer) dialog", which you use to render a series of data as a bar graph within an area. Graph formats can show statistics related to a given region such as states or counties. For example, a graph format can display the sales values for a number of products in a state.

  Even though you can create multiple graph formats for a particular layer, such creation is not recommend as the formats will overlap on the layer and the displayed results might be undesirable.

- Pie Graph — Displays the "Pie Graph (Layer) dialog", which you use to render a series of data as a pie graph within an area.
- Shape — Displays the "Variable Shape (Layer) dialog", which you use to render a measure column that is associated with an area by drawing markers or shapes within the region. You can also specify different colors for the shape to identify a range of data values.
- Bubble — Displays the "Bubble (Layer) dialog", which you use to render a bubble within an area, similar to the shape format.

- Image — Displays the "Image (Layer) dialog", which you use to render an image within an area, similar to the shape format. You can specify different images to identify a range of data values. You can select images that have been specified by the administrator.
- Custom Point — Displays the Custom Point (Layer) dialog, which you use to render a point format, such as a bubble, image, or shape in a layer. Custom points are displayed at all zoom levels and on top of all other map formatting. When you create a Custom Point format, you select columns to specify the latitude and longitude.

Oracle Locator is a feature of both Oracle Standard and Enterprise Database Editions. Oracle Locator provides basic location functionality. Oracle Locator enables data stored in SDO_GEOMETRY format columns to be rendered as point, line, or polygon. Oracle Locator also enables spatial indexing and spatial operators that use the spatial index for performing spatial inquiries.

Oracle Spatial is an option for the Oracle Database Enterprise Edition. Oracle Spatial provides extensive support for advanced spatial processing and analytics including routing, vector and raster data, topology and network models, and much, much more.

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