

SOFTWARE SOLUTIONS

OBI 11g Data Visualization Best Practices

Session 854

Tim Vlamis Vlamis Software Solutions 816-781-2880 http://www.vlamis.com Dan Vlamis Vlamis Software Solutions 816-781-2880 http://www.vlamis.com

Dan Vlamis and Vlamis Software Solutions

- Vlamis Software founded in 1992 in Kansas City, Missouri
- Developed more than 200 Oracle BI systems
- Specializes in ORACLE-based:
 - Data Warehousing
 - Business Intelligence
 - Design and integrated BI and DW solutions
 - Training and mentoring
- Expert presenter at major Oracle conferences
- <a>www.vlamis.com (blog, papers, newsletters, services)
- Developer for IRI (former owners of Oracle OLAP)
- Co-author of book "Oracle Essbase & Oracle OLAP"
- Beta tester for OBIEE 11g
- Reseller for Simba and NAVTEQ map data for OBIEE
- HOL Coordinator for 2012 Collaborate Conference





D Tim Vlamis' Bio

- 20+ years experience in business modeling and valuation, forecasting, and scenario analyses
- Expert in principles and elements of design
- Expert in curriculum development and pedagogical theory
- Professional Certified Marketer (PCM) from AMA
- Active Member of NICO (Northwestern Institute on Complex Systems)
- Adjunct Professor of Business Benedictine College
- MBA Kellogg School of Management (Northwestern)
- BA Economics Yale University

tvlamis@vlamis.com 816-781-2880



Highlights from Gartner's BI Magic Quadrant Report 2012

- BI and Analytics named as "Top Priority" for 2012
- "Organizations continue to turn to BI as a vital tool for smarter, more agile, and efficient business."
- OBI has highest aggregate "Ability to Execute" score.
- Broadest global deployment score
- Average user population nearly 3000
- Average data volumes nearly 5 Terabytes
- Below average complexity scores (mostly used for static reporting)
- Below average ease of use scores
- OBI has low "data discovery" score



Many BI Systems Can Create Beautiful Results





OBI Operates at a Different Scale





Data Visualization Usefulness

- Relies on accurate presentations of facts and comparisons.
- Demands attention to principles of human cognition.
- Dashboards should be designed for effectiveness.
- Dashboards should transparently reveal data selection.
- Dashboards should be designed around user roles and needs.





Exploration

Explanation

SOFTWARE SOLUTIONS



xkcd.com

Visualization Fundamentals

- BI reports and dashboards should be viewed primarily as communication devices.
- Both the principles of human cognition and the needs of the individual user should help guide their proper use.
- Humans are pattern seeking creatures.
- All perception is relative.



Classic Optical Illusions







How many colors do you see?



There are only 3 colors: White, green, and pink. There seem to be two different shades of pink, but there is only one pink.

The Spirals are the Same Color

己





Which Soldier is tallest?







What Attracts Attention

1. Motion

2. Color

3. Size





OBIEE Intro Demo



Tufte's 5 Principles

- Above all else show the data.
- Maximize the data to ink ratio.
- Erase non-data ink.
- Erase redundant data ink.
- Revise and edit.



Graphs and Tables

Graphs and Charts depict visual representations and



Tables show data organized for lookup of specific, precise values or items.

District	Month Dollars WB Fore		WB Forecast Dollars	%Forecast	
ATLANTA DISTRICT	03/01/2008	595,232.0	53 5, 18 5.0	111.2	
BOSTON DISTRICT	03/01/2008	1,882,036.0	1,954,736.7	96.3	
CHARLOTTE DISTRICT	03/01/2008	215,360.0	20 4,59 2.0	105.3	
CHICAGO DISTRICT	03/01/2008	1,381,552.0	1,238,574.0] 111.7	
CINCINNATI DISTRICT	03/01/2008	827,162.0	742,869.0	111.3	
DALLAS DISTRICT	03/01/2008	1,060,316.0	897,654.0	118.1	
DENVER DISTRICT	03/01/2008	955,876.0	1,050,735.4	91.0	
DETROIT DISTRICT	03/01/2008	961,026.0	1,249,333.8	76.9	
JACKSONVILLE DISTRICT	03/01/2008	1,827,434.0	1,892,779.4	96.5	



Keys to Effective Tables

- Enable column and row sorting.
- Use appropriate number format.
- Avoid scrolling if possible.
- Lock titles if do use scrolling (BI Publisher)
- Display significant figures.
 - Don't imply precision that doesn't exist.
- Judiciously use conditional formatting for data exploration.
- Avoid putting text in color.
- Alignment, proximity, contrast.



Bad Table

		ELECTROMECHANICAL			PNEUMATIC		
	PERIOD	IN-STORE	WEBSITE	DISTRIBUTOR	IN-STORE	WEBSITE	DISTRIBUTOR
INCLUDES ONLY DATES FROM JANUARY THRU OCT 2007	PERIOD 1	22.36%	11.37%	83.00%	85.34%	20.90%	46.80%
	PERIOD 2	21.22%	15.25%	81.00%	81.31%	18.01%	35.39%
	PERIOD 3	21.64%	13.22%	82.00%	78.29%	29.94%	41.28%
	PERIOD 4	20.89%	13.44%	82.00%	47.82%	16.30%	39.46%
	PERIOD 5	21.90%	13.24%	81.00%	84.58%	17.19%	20.52%
	PERIOD 6	25.09%	14.78%	80.00%	59.93%	31.08%	35.14%
	PERIOD 7	26.23%	14.98%	79.00%	36.35%	32.85%	22.52%
	PERIOD 8	26.83%	13.08%	80.00%	82.10%	30.41%	36.10%
	PERIOD 9	23.79%	14.27%	81.00%	43.40%	25.17%	23.81%
	PERIOD 10	24.39%	12.61%	82.00%	38.21%	17.70%	40.30%





Widgets to Gadgets Ratio

Electromechanical				Pneumatic			
Period	In-store	Website	Distributor	In-store	Website	Distributor	
1	22%	11%	83%	51%	21%	40%	
2	21%	15%	81%	74%	21%	32%	
3	22%	13%	82%	48%	22%	23%	
4	21%	13%	82%	58%	31%	30%	
5	22%	13%	81%	52%	19%	28%	
6	25%	15%	80%	87%	15%	22%	
7	26%	15%	79%	51%	23%	20%	
8	27%	13%	80%	44%	22%	45%	
9	24%	14%	81%	54%	17%	31%	
10	24%	13%	82%	75%	31%	29%	

Ratios calculated using check level detail.

Periods include Jan - Oct 2007



Keys to Effective Graphs

- Do not use 3-D effects.
- Avoid "stop light" color palette.
- Prefer pastel color palettes.
- Avoid bright colors.
- Do not use round gauges or dials.
- Eliminate gridlines, drop shadows, and other graphics.
- Enable interaction for "exploration" graphs
- Prioritize a single message for "explanation" graphs
- Alignment, proximity, contrast.





Baccalaureate Degree Institutions of New Graduate Students- Fall Quarters-Percentages from Type of Institution



Weekday Server Load





	Store 001	Store 002	Store 003	TOTAL
Total Invoices	298,943	687,091	313,140	1,299, 174
/ess				
Cash Invoices	207,256	449,064	141,305	797,625
<i>leav</i> es				
Non-cash Invoices	91,687	238,027	171,835	501,549
consisting of				
Suppressed Invoides	18,888	15,527	6,501	40,916
and				
Customer Invoices	72,799	222,500	165,334	460,633
for purchases from				
Suppressed Customer Names	2,123	4,306	870	7,299
and				
Active Customer Names	2,103	14,747	8,342	25,192
which include				
Duplicate Customer Names	70	693	619	1,382
leaving				
Unique Customer Names	2,033	14,054	7,723	23,810
which include				
Blad Addressies	1,055	5,759	2,406	9,220
leaving				
Mailable Customer Names	978	8,295	5,317	14,590

Using Color Effectively

- Consciously choose a color palate.
- ColorBrewer2.org
 - Sequential schemes



- Designed for ordered data that progresses from low to high.
- Divergent schemes



- Place equal emphasis on mid-range values and extremes at both ends of the data range.
- Qualitative schemes



• Used for nominal and categorical data where magnitude differences between classes should not be emphasized.



Colorbrewer2.org



Copyright © 2012, Vlamis Software Solutions, Inc.

SOFTWARE SOLUTIONS

"A dashboard is a visual display of the most important information needed to achieve one or more objectives, consolidated or arranged on a single screen so that the information can be monitored at a glance."

Stephen Few, Intelligent Enterprise





A Dashboard is a visual presentation of current summary information needed to manage and guide an organization or activity.



OBIEE Dashboard Best Practices

- Dashboards should be customized to the needs of individual users and groups.
- Dashboards should maintain and reflect organizational standards so that they can be properly understood by others in the organization.
- Dashboards should reveal their selection and transformation of data in a transparent manner.
- Dashboards should be purposefully designed and optimized for effectiveness.



Dashboard Standards

- Determine what colors are used for which products.
- Know the organization's typical screen size so a standard number of section columns can be determined.
- Set a standard location for prompts.
- Visually indicate which prompts control which analyses.
- Standards help with:
 - Providing professional look and feel, which instill user confidence
 - Standards help reduce development time and improve productivity and consistency.



OBI Scorecard & Strategy Management

- Integrated toolset in OBIEE
- Follows "Balanced Scorecard" methodology
- Enables corporate goals and objectives to be monitored and managed
- Includes strategy maps, strategy trees, KPI watch lists, and cause and effect maps

ALIGNMEN



Strategy Tree View









Humans Think Spatially





Maps convey dense, multidimensional relationships in data faster and more intuitively than any other graphical display methodology.



What is Spatial Data?

- Business data that contains or describes location
 - Street and postal address (customers, stores, factory, etc.)
 - Sales data (sales territory, customer registration, etc.)
 - Assets (cell towers, pipe lines, electrical transformers, etc.)
 - Geographic features (roads, rivers, parks, etc.)
- Anything connected to a physical location



"Clutter is not an attribute of information, clutter is a failure of design... fix the design rather than stripping all the detail out of the map." Edward Tufte

The Visualization of Quantitative Information



When Are Map Views Useful?

- Visualizing data related to geographic locations.
- Showing or detecting spatial relationships and patterns.
- Showing lots of data in a relatively small area.
- Drilling down from a (map) overview to a detailed report, chart, or graph.
- When is location important? Can the dimension be plotted on a map?





- Think about what scale to use. Different map scales will reveal different patterns and insights.
- Use Variable marker to display two measures on a map at a point – size and color.
- Avoid overlapping shapes too much.
- Be aware of spatial distortions E.g. Texas is larger than Connecticut.
- Look at color palette. <u>www.colorbrewer2.org</u>



Map Definitions

- FEATURE
 - Provide a spatial context: cities, highways, rivers, etc...
 - Features of Interest: store location, postal boundaries, pipelines, etc...
- STYLE
 - Define rendering properties for features
 - Can control fill color, border color, line thickness, line style and more
- THEME
 - Collection of features
 - Typically associated with a spatial geometry layer
 - County/state boundaries, major highways, etc...
- BASEMAP
 - A grouping of themes to create a map
 - Maps can share themes
 - When associating a theme with a map, can specify min scale and max scale (sometimes known as zoom control)
- MAP
 - Basemap with additional themes overlain





Map Interactivity in OBIEE 11g

- Display BI data on top of maps
 - Color fill
 - FOI point display
- Interact with other Dashboard Elements
 - Drive map content with dashboard prompts
 - Drive map content through drilling and navigation
 - Drive other dashboard elements through map interactions
- Reveal additional information on maps through mouseovers
- Drill to map detail





Map View Formats

- Color Fill (choropleth)
 - Percentile, Value, Continuous binning
 - Dashboard user run-time slider
- Graphs Bar, Pie
 - Adjustable graph size
 - Series by second dimension
- Bubble (variable sized)
 - Min-Max size specification
 - Color specification

- Variable Shape
 - Circle, Triangle, Diamond
 - Customizable
- Image
 - Imported via MapViewer
 - More can be added from MapBuilder
- Custom Point Layer
 - Uses Lat / Long
 - Does not require a Layer Def





- NAVTEQ is the leading global provider of digital map, traffic and location data that enables navigation and location-based platforms around the world.
- NAVTEQ data is licensed direct or through a reseller.
- Licenses are use specific.
- NAVTEQ data resides inside your own Oracle Database.
- NAVTEQ publishes an ODF (Oracle Data Format) version of its data designed specifically for use in an Oracle Database.





Demo of Oracle BI 11g Maps





5













Add Scale Lines for Slider Prompts





Add Layers for Additional Insights





Variable Markers Add Insight





Master Detail Linking









- Show nominal data values in comparison to one another.
- Start with zero.
- If use a logarithmic scale, clearly notate.



Stacked Bar Chart



- Somewhat confusing, not great for representing change.
- Total is most clearly represented number.
- Typically stack with largest values on the bottom.
- Single scale can make for interesting intra-bar comparisons.





Prod A
Prod B
Prod C
Prod D

- Typically used for showing parts of whole by percentage.
- Not great for piece to piece comparisons.
- Limit number of pieces.
- Can be interesting to show lots of pies together if significant differences exist.
- Stephen Few hates them.
- Do not use 3-D.





- Show a pattern or progression over a continuous range or period.
- Can be valued within a range to highlight a particular pattern (careful!).
- Maintain a rectangular shape close to golden proportion.





- Shows single data points at the intersection of two values.
- Often depict a large number of discrete data points (hundreds or thousands).
- Useful for seeing the patterns in comparisons of two variables.
- Trend lines are often added.
- Clearly notate if use logarithmic scale(s).





- Special type of scatter plot.
- Size of bubble is related to a third variable.
- Greatly reduces number of points that can be depicted.
- Best for depicting approximate values and comparisons.



Data Mashups are important

- Heterogeneous data sources are expanding
- Systems need to handle massive amounts of data
- Need a single "launching pad" for analytical info
- Believability, usability, and Calvin Mooers



Can Bring New Data Sources into OBI



Publish Other Information in OBI

- Creates a single "landing page" for analytic info.
- OBI can publish anything in HTML.
- OBI can interact with other websites either in frame or in new window.





tvlamis@vlamis.com www.vlamis.com

816-781-2880





http://23.23.195.238:7001/analytics/saw.dll ?BIEEHome&startPage=1

http://23.23.195.238:7001/analytics/saw.dll ?Dashboard

