



**SOFTWARE SOLUTIONS**

# **Using Map Views and Spatial Analytics in OBI 11g**

## **Collaborate 2013**

**Presentation 915**

**Dan Vlamis**

**Vlamis Software Solutions**

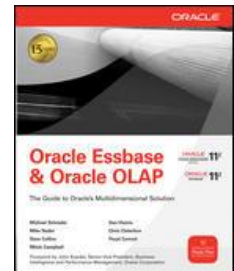
**816-781-2880**

**<http://www.vlamis.com>**



# Vlamis Software Solutions

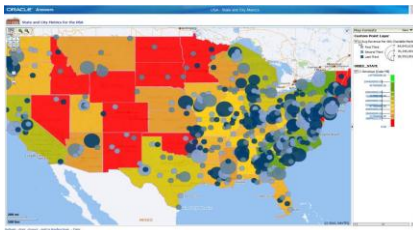
- Vlamis Software founded in 1992 in Kansas City, Missouri
- Developed more than 200 Oracle BI systems
- Specializes in ORACLE-based:
  - Data Warehousing
  - Business Intelligence
  - Design and integrated BI and DW solutions
  - Training and mentoring
- Expert presenter at major Oracle conferences
- [www.vlamis.com](http://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 Nokia map data for OBIEE
- HOL Coordinator for BIWA Summit 2013





# Join the community

- IOUG Oracle Spatial and Graph SIG
  - Signup on the membership/interest list today
  - Talk to board members (Steve Lytle & Steve Pierce)
  - Email: [oraclespatialsig@gmail.com](mailto:oraclespatialsig@gmail.com)
  - \*Increased interest from business/BI communities
- SIG 2013 Events
  - May 21-22: Location Intelligence & Oracle Spatial and Graph User Conference, Washington DC
  - Fall: Oracle OpenWorld San Francisco





# Overview

- Why Maps are a Superior Visualization
- Quick Demo
- Maps are a Native View in OBIEE 11g
- Map Basics in OBIEE 11g
- Oracle MapViewer and OBIEE
- Oracle Locator and Oracle Spatial
- NAVTEQ Data
- Demo of Maps in OBIEE
- Review and Summary



# Why Maps are Powerful

**Maps convey dense, multi-dimensional relationships in data faster and more intuitively than any other graphical display methodology.**





# Humans Think Spatially





# 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



# 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.
- Whenever location is important!



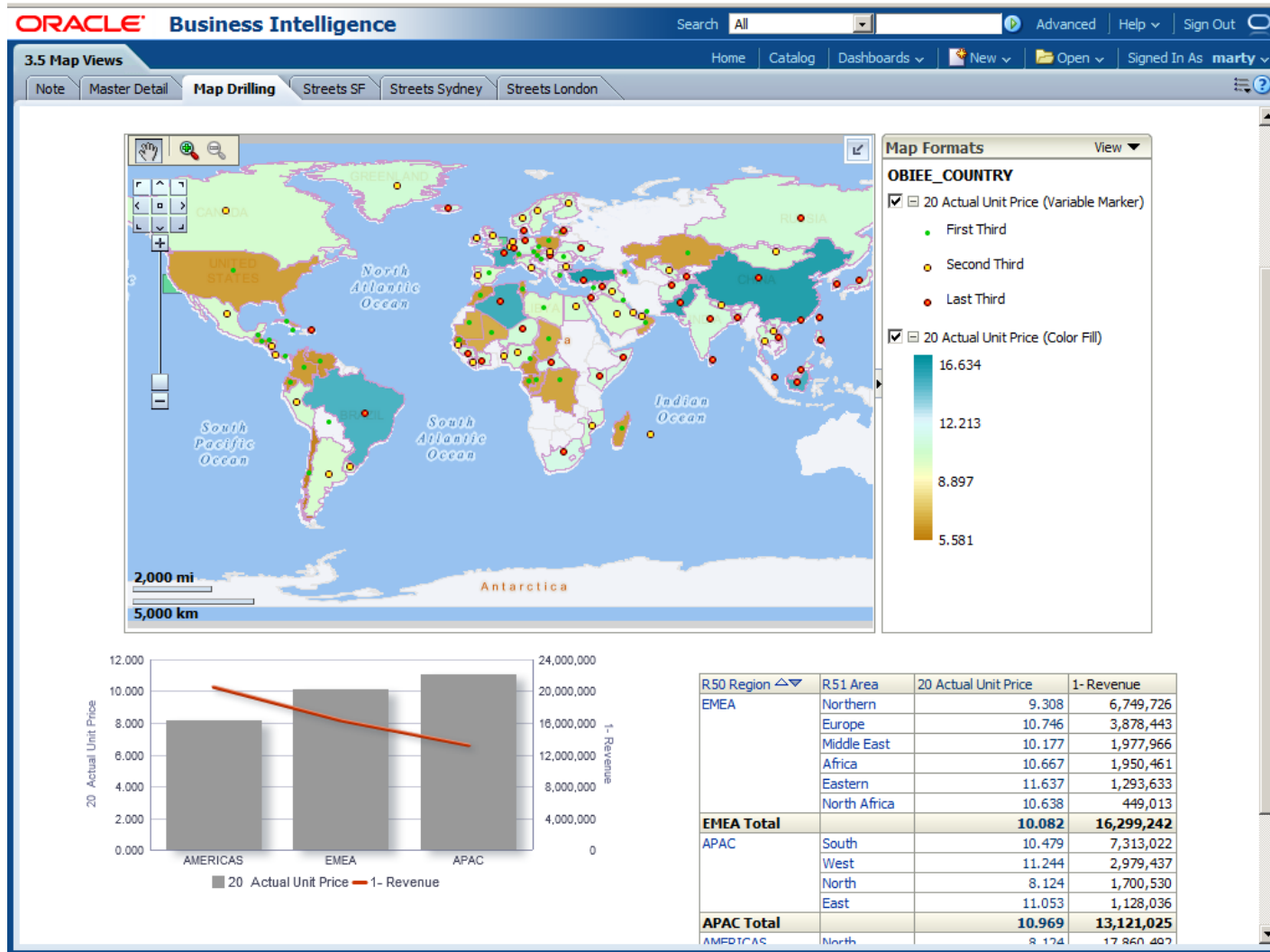


# Map Interactivity in OBIEE 11g

- Display BI data on top of maps
  - Color fill
  - FOI (feature of interest) 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 information on maps through mouseovers
- Drill to map detail



# Quick Demo of Oracle BI 11g Maps

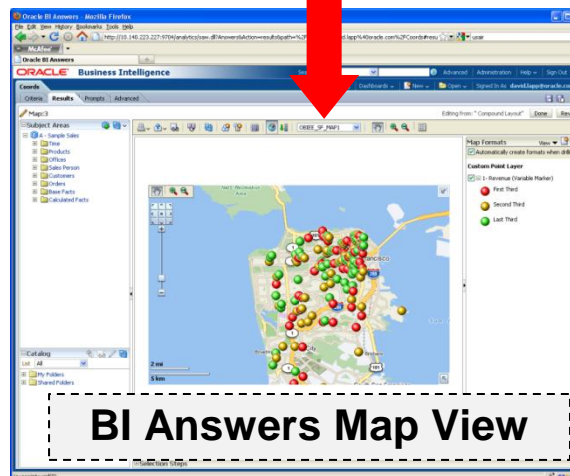
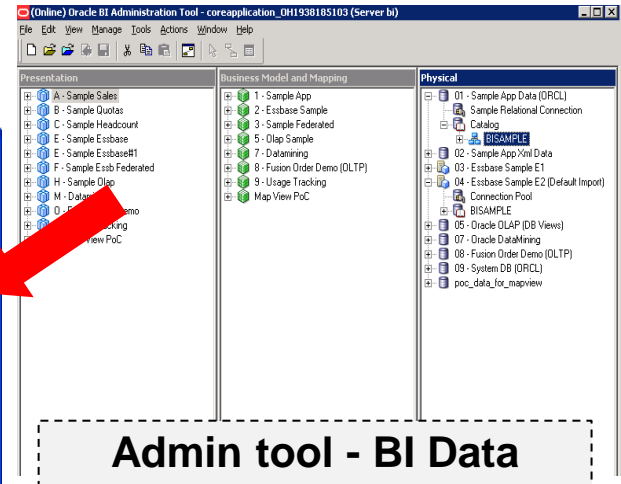
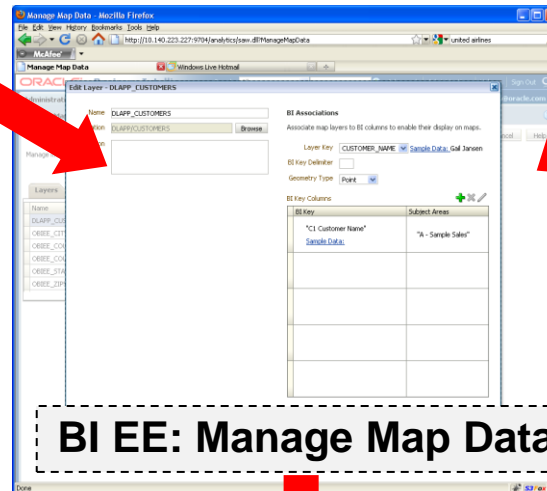
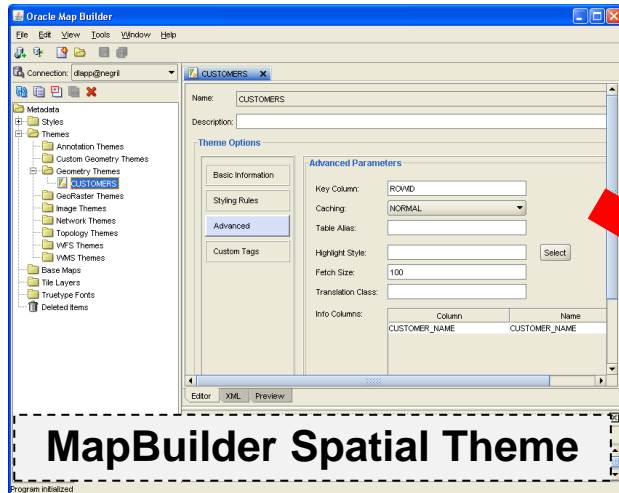




# Oracle MapViewer

- Component of Oracle Fusion Middleware
- Runs in WebLogic and other J2EE environments.
- Developer's visualization “toolkit” of programmable Java components and APIs for rendering maps and data.
- Used for embedding maps in web-based applications and rendering location-based content.
- Connects to geospatial application data tables.
- Map Builder is the java application for editing metadata in an Oracle Database (themes, styles, base maps).

# MapViewer “mashup” in OBIEE





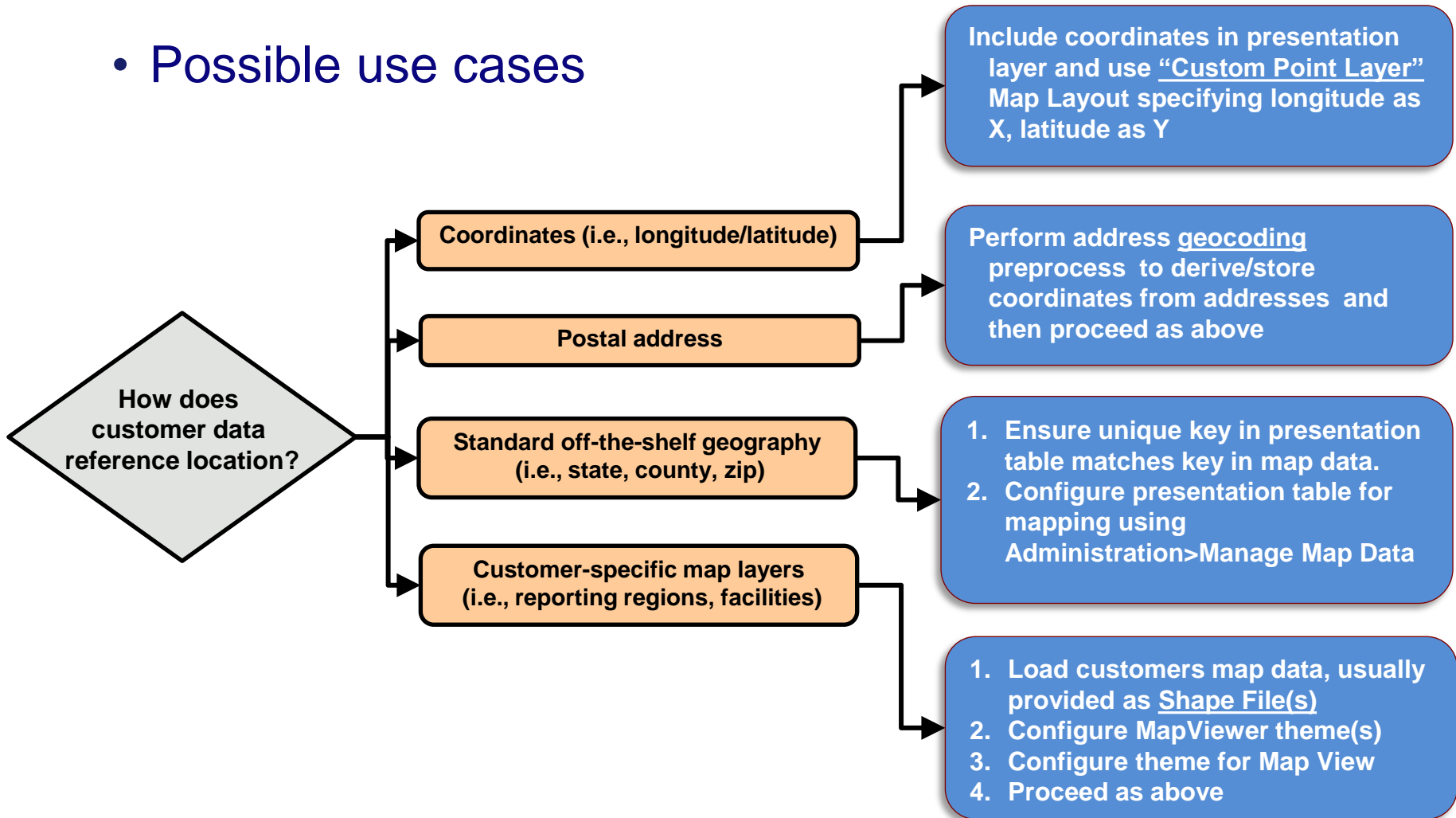
# Map Definitions

- **STYLE**
  - Define rendering properties for spatial shape or point on maps.
  - Can control fill color, border color, line thickness, line style and more
- **THEME**
  - Typically associated with a spatial geometry layer
  - Metadata that specifies geospatial data to be rendered, styles to be applied, and optional query conditions for filtering.
  - County/state boundaries, major highways, etc...
- **BASEMAP**
  - A grouping of predefined 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



# Using Spatial Data in OBIEE 11g

- Possible use cases







# Oracle Locator and Oracle Spatial

- Oracle Locator is a **feature** of both Oracle Standard and Enterprise Database Editions.
- Oracle Locator provides basic location functionality.
  - Point, line, and polygon spatial locations (SDO\_GEOMETRY)
  - Spatial indexing
  - Spatial operators that use the spatial index for performing spatial inquiries.
- Oracle Spatial is an **option** for Oracle Database Enterprise Edition
  - Provides extensive support for advanced spatial processing and analytics including routing, vector and raster data, topology and network models, and more.



# 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



# Map View Tips

- 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. [www.colorbrewer2.org](http://www.colorbrewer2.org)



# 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

number of data classes on your map  
3 [learn more >](#)

the nature of your data  
sequential [learn more >](#)

pick a color scheme: BuGn

multihue      single hue

(optional) only show schemes that are:

☐ colorblind safe    ☐ print friendly

☐ photocopy-able    [learn more >](#)

pick a color system

☒ RGB    ☐ CMYK    ☐ HEX

adjust map context

☐ roads

☐ cities

☒ borders

select a background

☒ solid color

☐ terrain

color transparency

[learn more >](#)

how to use | updates | credits

## COLORBREWER 2.0

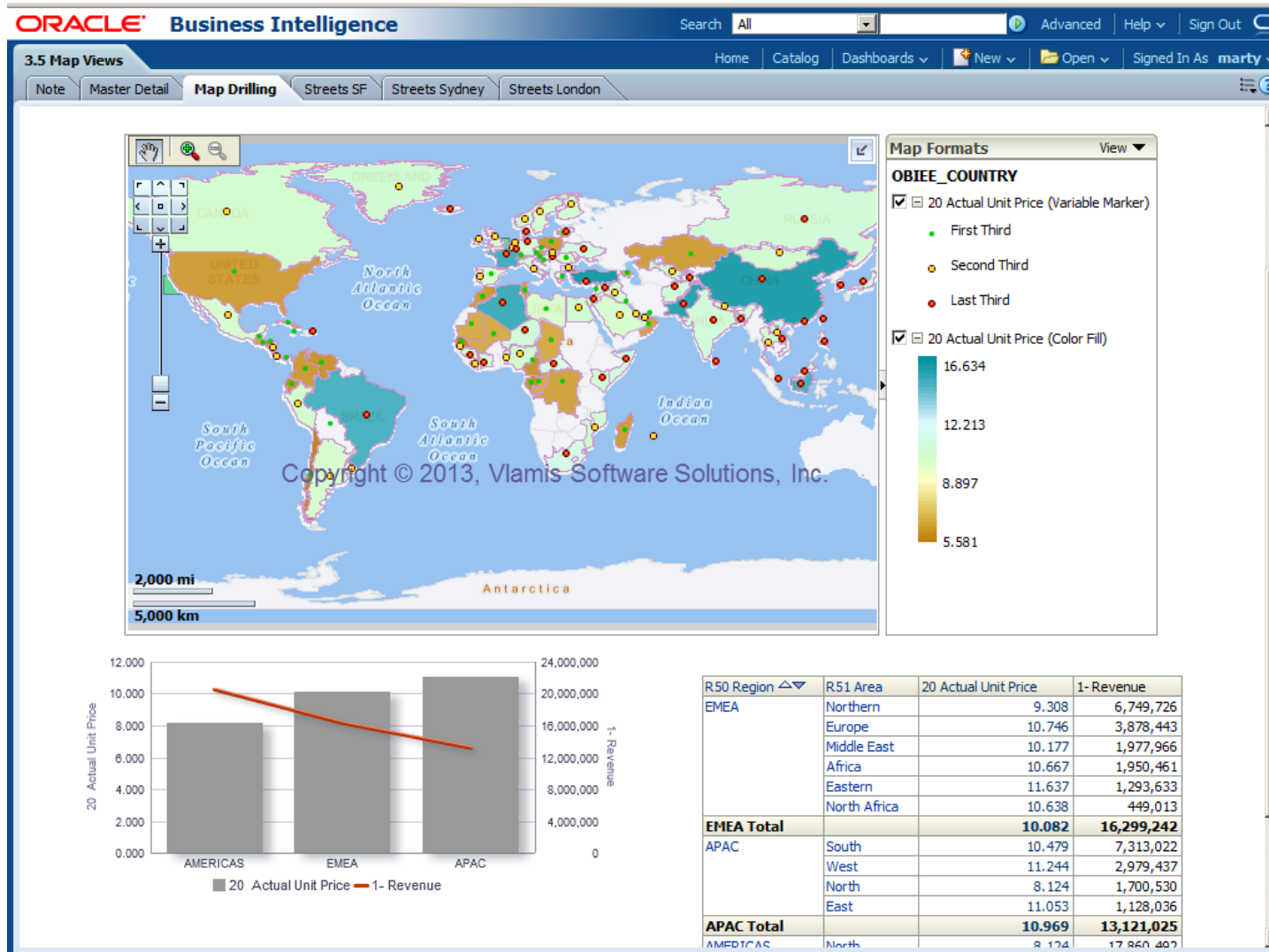
color advice for cartography

EXPORT YOUR COLORS >>

SCORE CARD

[learn more](#)

# Demo of Oracle BI 11g Maps







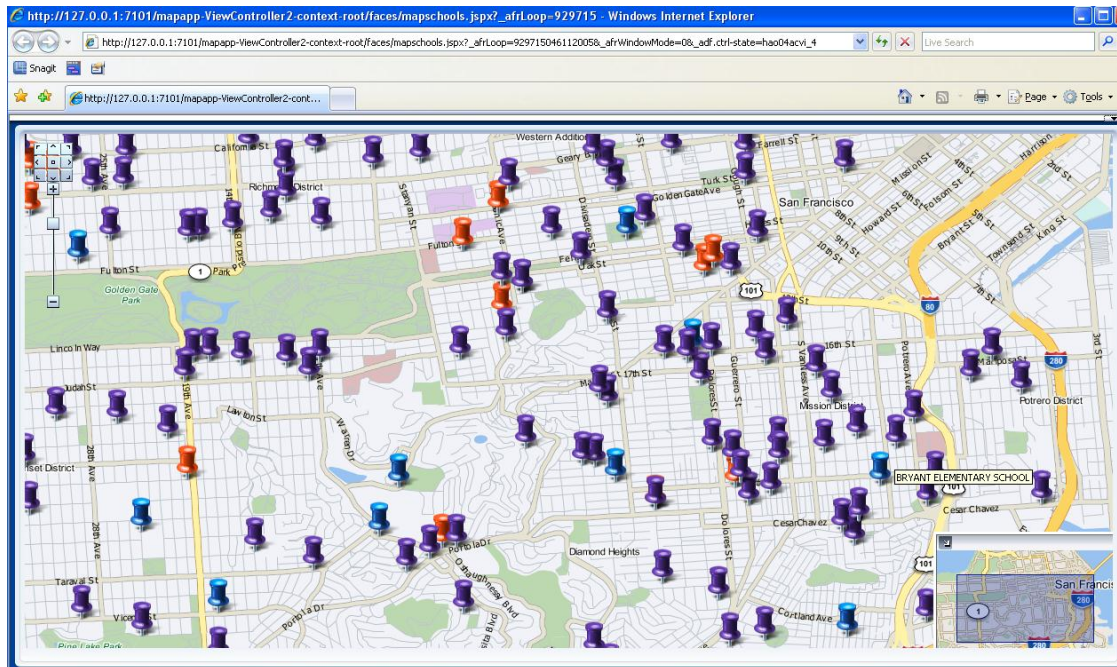
# Nokia Location & Commerce Data Formerly NAVTEQ

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



# Nokia Content for OBI

- Geocoding
- Points of Interest



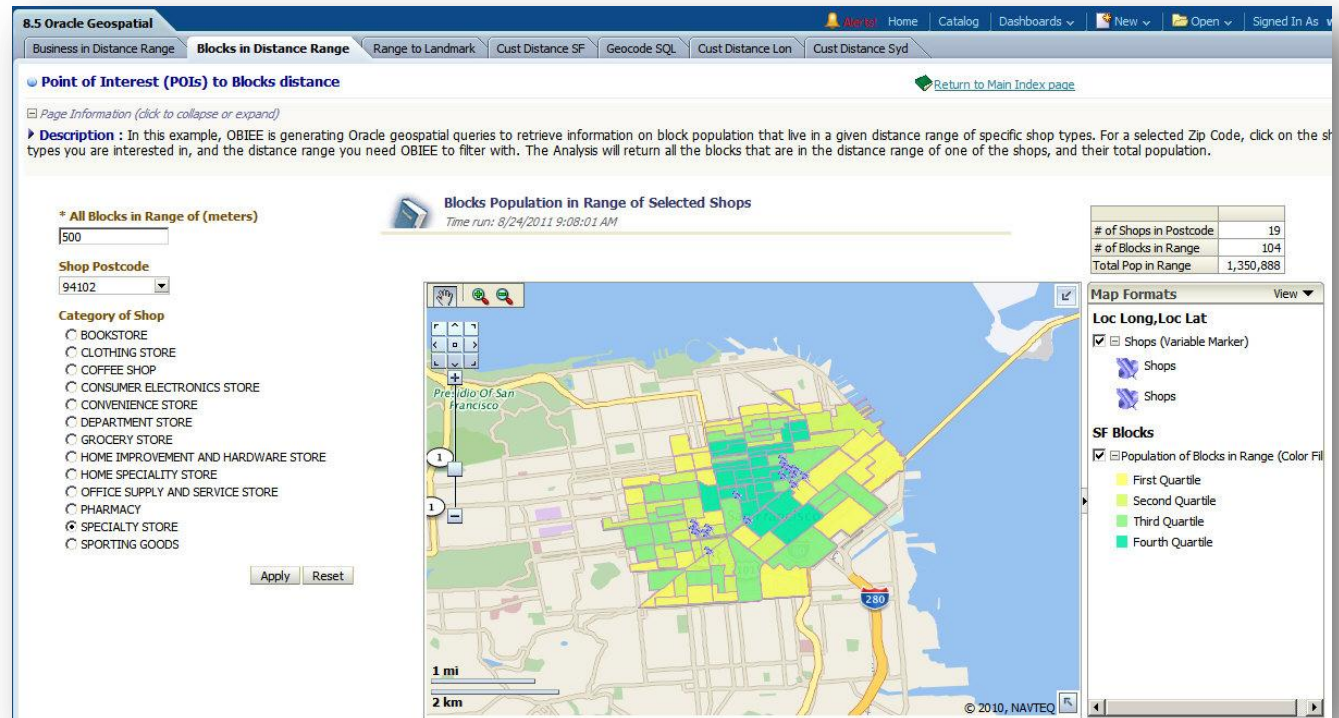
AIRPORT  
ALTERNATE FUEL STATION  
AMUSEMENT PARK  
ATM  
ATTORNEY  
AUTO DEALERSHIP-USED CARS  
AUTO DEALERSHIPS  
AUTO PARTS  
AUTO SERVICE AND MAINTENANCE  
AUTOMOBILE CLUB  
BANK  
BANQUET HALL  
BAR OR PUB  
BOATING  
BOOKSTORE  
BORDER CROSSING  
BOWLING ALLEY  
BOWLING CENTRE  
BUS STATION  
BUS STOP  
BUSINESS FACILITY  
BUSINESS SERVICE  
CAMPING  
CAR WASH/DETAILING  
CARGO CENTRE  
CASINO  
CEMETERY  
CHECK CASHING SERVICE  
CHURCH  
CINEMA  
CITY HALL  
CIVIC/COMMUNITY CENTRE  
CLEANING AND LAUNDRY  
CLOTHING STORE  
COCKTAIL LOUNGE  
COFFEE SHOP  
COMMUTER RAIL STATION  
COMPUTER AND SOFTWARE  
CONSUMER ELECTRONICS STORE  
CONVENIENCE STORE  
CONVENTION/EXHIBITION CENTRE



# Spatial Analytics Example

## People Living Within Distance of Store Type

- Population Information (by census blocks) on people living within distance of specified Store Type



- Requires Spatial analytic function (`sdo_within_distance`)
- Combines non-BI data (population information)



# Deconstructing The Analysis

## The Dashboard Components

### Map View

Standard Answers view

### Pivot View

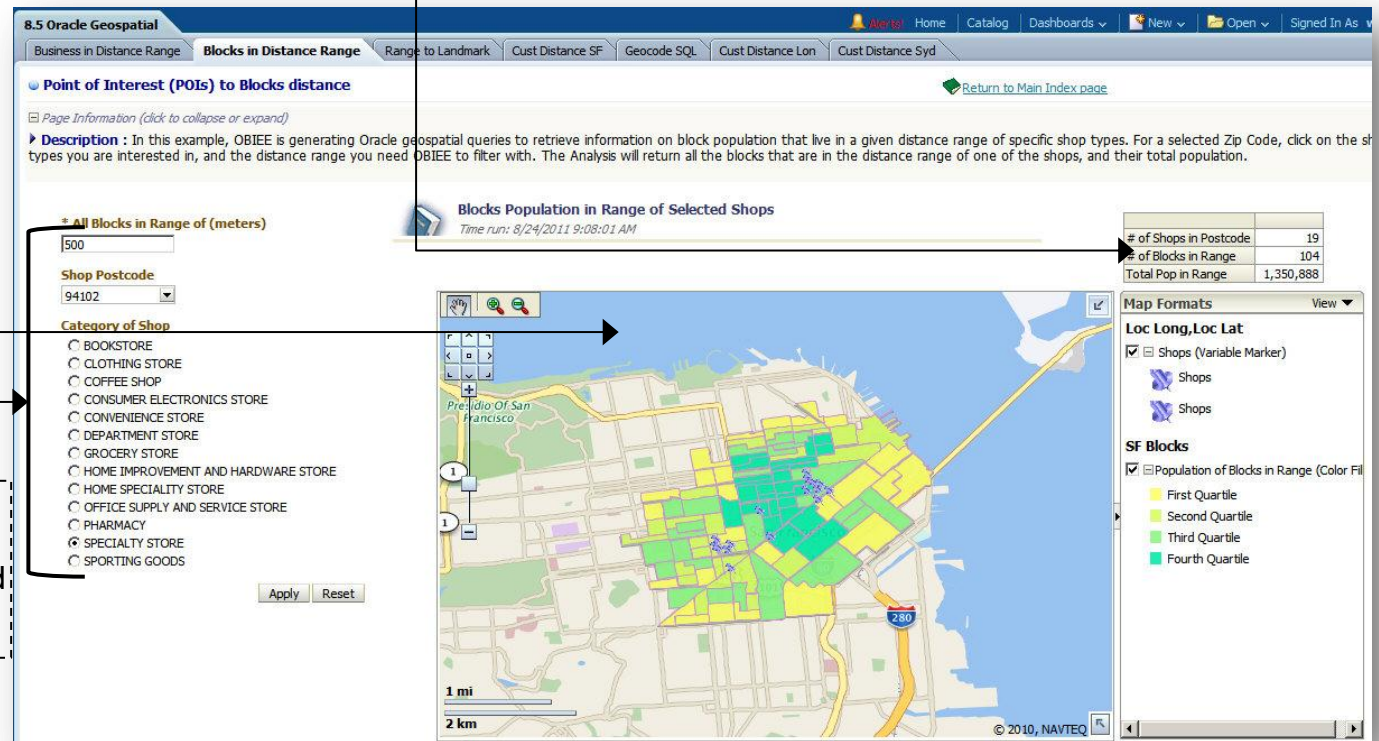
Standard Answers view

### Answers Criteria

Underlying table in RPD is an OPAQUE view with parameterized SQL containing Spatial functions

### Distance, Postal Code, Category Prompts

Populate request variables; passed on down as Session Variables







# Deconstructing The Analysis

## Prompts, Variables, Opaque Views

**Answers Criteria**  
Columns from Subject Area  
(L – Geo Loc)

\* All Blocks in Range of (meters)  
500

Shop Postcode  
94102

Category of Shop

- ☐ BOOKSTORE
- ☐ CLOTHING STORE
- ☐ COFFEE SHOP
- ☐ CONSUMER ELECTRONICS STORE
- ☐ CONVENIENCE STORE
- ☐ DEPARTMENT STORE
- ☐ GROCERY STORE
- ☐ HOME IMPROVEMENT AND HARDWARE
- ☐ HOME SPECIALTY STORE
- ☐ OFFICE SUPPLY AND SERVICE STORE
- ☐ PHARMACY
- ☐ SPECIALTY STORE
- ☐ SPORTING GOODS

### Prompts

Populate request variables; passed on down as Session Variables to BI Server

Prompt Label
Page 1
All Blocks in Range of (meters)
Shop Postcode
Category of Shop

**Blocks Population in Range of Selected Shops**

Criteria Results Prompts Advanced

**Subject Areas**

- L - Geo Loc
  - POI Details
    - # of POIs
    - POI Id
    - POI Name
    - Full Address
    - Loc Lat
    - Loc Long
    - Country Code 2
    - House Number
    - Municipality Name
    - Postal Code
    - Street Name
  - Blocks in range of POIs
    - Population
    - Income
    - Education Facts
      - Total Pop
      - Households
      - Med Household Income
    - POI Category Name
    - Block Group Id
    - Block Label

**Selected Columns**

Double click on column names in the Subject Areas pane to add them to the analysis. Once added, drag-and-drop columns to reorder them. Edit a column's properties, filters, apply sorting, or delete by clicking on the button next to its name.

Blocks in range of POIs | POI Details

Block Group Id | POI Category Name | Total Pop | POI Name | Loc Lat | Loc Long | # of POIs | Full Address

**Filters**

Add filters to the analysis criteria by clicking on Filter option for the specific column in the Selected Columns pane, or by clicking on the filter button in the Filter pane head saved filter by clicking on add button after selecting its name in the catalog pane.

Add Filters Here.

**Edit Prompt: Category of Shop**

Prompt For Column: POI Category Name

Label: Category of Shop

Description:

Operator: is equal to / is in

User Input: Radio Buttons

**Options**

Radio Buttons Values: Specific Column Values

- BOOKSTORE
- CLOTHING STORE
- COFFEE SHOP
- CONSUMER ELECTRONICS STORE
- CONVENIENCE STORE
- DEPARTMENT STORE
- GROCERY STORE
- HOME IMPROVEMENT AND HARDWARE
- HOME SPECIALTY STORE
- OFFICE SUPPLY AND SERVICE STORE
- PHARMACY
- SPECIALTY STORE
- SPORTING GOODS

☐ Include "All Column Values" choice in the list

☐ Limit values by: All Prompts

☐ Require user input

Default selection: Specific Value

SPECIALTY STORE

Set a variable Request Variable

OQS\_CATEGORY

# Deconstructing The Analysis

The screenshot displays the Vlamis software interface with several key components:

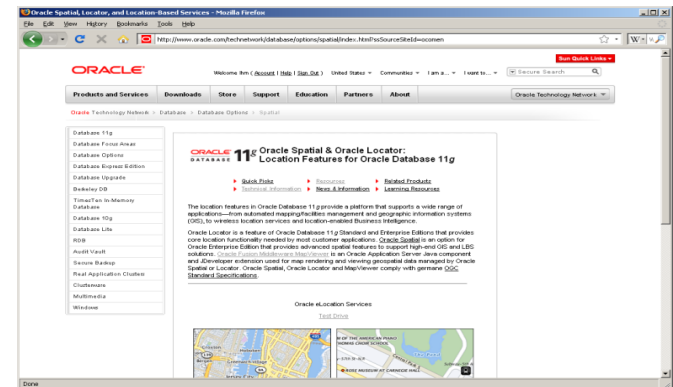
- Physical Table - V\_POI\_Block\_Group:** The main configuration window for the table. It shows the 'Initialization String' tab with a SQL query using Oracle Spatial functions. A callout box labeled '2' points to the `sdo_within_distance` function in the query.
- Session Variables:** A callout box labeled '3' points to the 'Session Variables' section, which lists variables like `OGS_ADDRESS` and `OGS_DIST_M`. A text box explains: "Session Variables Values set in Dashboard as Request Variables; passed on down to Server as session variables".
- Session Variable - OGS\_ADDRESS:** A dialog box showing the configuration for the `OGS_ADDRESS` session variable, including its name, security settings, and default initializer.
- Business Model and Mapping:** A tree view on the right showing the mapping of business model entities (like 'Geo Loc', 'Block Group Facts') to physical tables (like 'V\_POI\_Block\_Group'). A callout box labeled '1' points to the 'V\_POI\_Block\_Group' table in the mapping.
- Physical Table Mapping:** A table listing the physical tables and their columns, including 'V\_POI\_Block\_Group' with columns 'block\_group\_id', 'category\_name', and 'poi\_id'.

**Opaque View**  
Parameterized SQL utilizes Oracle Spatial function (`sdo_within_distance`) to perform spatial analytics



# For more information

- Oracle Business Analytics: [oracle.com/bi](http://oracle.com/bi)
  - @OracleAnalytics
  - @OracleBITech
  - [www.youtube.com/evolvingBI](http://www.youtube.com/evolvingBI)
- Oracle Spatial and Graph Resources:
  - [www.oracle.com/technetwork/database/options/spatialandgraph/spatial](http://www.oracle.com/technetwork/database/options/spatialandgraph/spatial)  
White papers, downloads, case studies & more
  - IOUG Spatial and Graph SIG
  - @oracledatabase
  - [www.facebook.com/OracleDatabase](http://www.facebook.com/OracleDatabase)





# Oracle Test Drive

- Free to try out Oracle BI
- Go to [www.vlamis.com/testdrive-registration/](http://www.vlamis.com/testdrive-registration/)
- Runs off of Amazon AWS
- Hands-on Labs based on Collaborate 2012 HOLs
- Test Drives for:
  - Oracle BI
  - BI Publisher
  - Microsoft Excel against Oracle OLAP
  - Oracle Data Mining
  - Map Views in OBIEE 11g
- Once sign up, you have private instance for 5 hours
- Available now



# Vlami Collaborate Presentations

Presenter	Session	Time	Title
Tim Vlami	OAUG	Mon 2:30 – 3:30	12633 Data Visualization Best Practices in Oracle Business Intelligence Applications
Tim Vlami	IOUG	Tues 2:00 – 3:00	726 Advanced Dashboard Design in OBI 11g
Dan Vlami	IOUG	Wed 8:15 – 9:15	915 Using Map Views and Geospatial Analytics in OBI 11g
Dan Vlami	IOUG	Wed 3:00 – 4:00	785 Blazing BI: The Analytic Options to the Oracle Database
Chris Claterbos	IOUG	Wed 4:15 – 5:15	732 Advanced OLAP: Making the Hard Stuff Easy
Cathye Pendley	IOUG	Wed 4:15 – 5:15	798 Vlami Process and Maturity Model: BI Project Best Practices
Chris Claterbos	OAUG	Thurs 12:15 – 1:15	12837 Mobile BI: Using When and Where You Need It



# Thank You!

## Thank You for Attending Session **915 Using Maps and Geo Spatial Analytics in Oracle Business Intelligence 11g**

### Presenter Information

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