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**Oracle Business Intelligence 11g**  
Most complete. Most integrated.

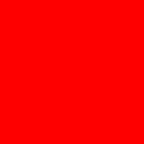


**ORACLE®**

## **Map Views in Oracle Business Intelligence Enterprise Edition, 11g**

Abhinav Agarwal  
Jayant Sharma

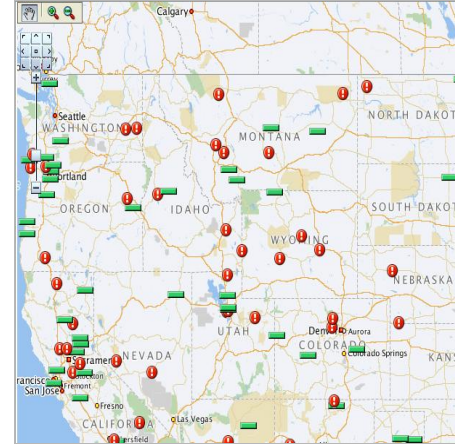
Director, Prod. Mgmt., OBIEE  
Director, Prod. Mgmt., Oracle Spatial



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# Agenda

- Introduction
- Key Concepts
- OBIEE-MapView integration
- Hands-on Lab
- Advanced Topics



# INTRODUCTION

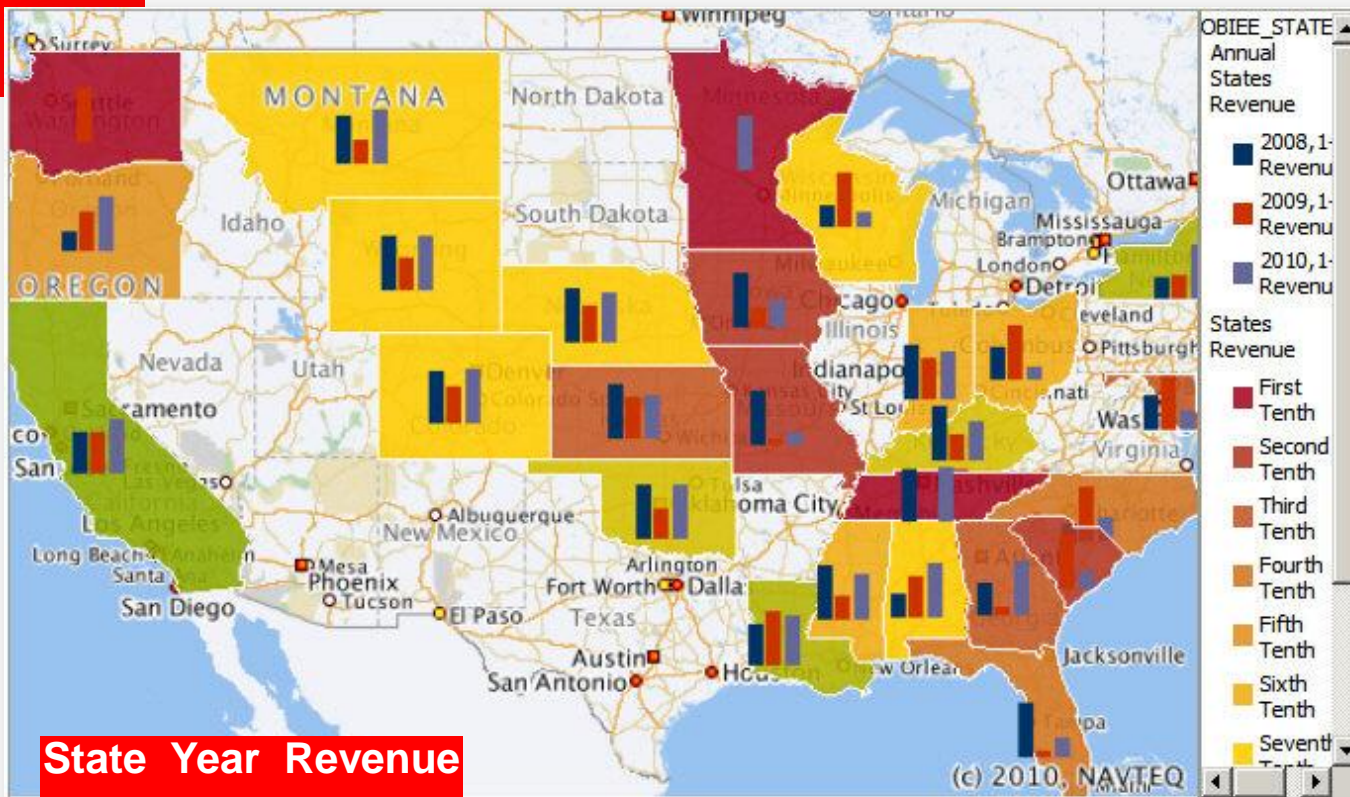
# KEY CONCEPTS

R2 Order Type

CS2 Geo Ctry State Name	T05 Per Name Year	P4 Brand	C62 Ctry Cd3 State Name	1- Revenue	2- Billed Quantity	3- Discount Amount	
AFG_No State	2008	BizTech	USA_California	2,432	281	0	
	2009	BizTech	USA_California	2,615	261	50	
		HomeView	USA_California	2,521	418	49	
ARE_No State	2008	FunPod	USA_California	2,405	316	0	
	2009	FunPod	USA_California	4,065	244	40	
		BizTech	USA_California	1,653	751	246	
ARG_No State	2008	HomeView	USA_California	6,092	446	66	
		HomeView	USA_California	6,729	539	43	
		BizTech	USA_California	4,354	1,138	167	
	2009	FunPod	USA_California	4,810	831	167	
		HomeView	USA_California	4,458	391	170	
		BizTech	USA_California	2,677	414	142	
	2010	FunPod	USA_California	17,245	1,377	963	
		BizTech	USA_California	26,758	2,459	166	
		FunPod	USA_California	42,821	3,915	307	
AUS_NSW	2009	HomeView	USA_California	25,532	2,593	172	
		BizTech	USA_California	29,210	2,534	1,056	
		FunPod	USA_California	19,971	2,528	610	
	2010	HomeView	USA_California	19,902	1,680	543	
		BizTech	USA_California	38,227	3,407	1,694	
		FunPod	USA_California	32,539	2,639	1,720	
BEL_No State	2008	HomeView	USA_California	28,429	2,842	1,620	
	2010	BizTech	USA_California	1,570	191	45	
		BizTech	USA_California	3,377	262	163	
BGD_No State	2008	FunPod	USA_California	1,028	553	63	
	2009	BizTech	USA_California	1,428	130	0	
		BizTech	USA_California	2,754	286	53	
		HomeView	USA_California	3,053	257	59	
BOL_No State	2010	FunPod	USA_California	1,676	289	81	
	2008	BizTech	USA_California	6,358	401	88	
		FunPod	USA_California	2,055	258	59	
BRA_No State	2009	HomeView	USA_California	8,145	947	44	
		HomeView	USA_California	3,451	451	0	
		FunPod	USA_California	1,577	111	132	
	2010	FunPod	USA_California	3,923	369	114	
		HomeView	USA_California	2,580	442	100	
		BizTech	USA_California	6,768	714	81	
CAF_No State	2008	HomeView	USA_California	3,306	258	0	
		FunPod	USA_California	2,245	311	163	
		HomeView	USA_California	2,144	67	67	
		HomeView	USA_California	2,499	103	120	
CAN_No State	2008	FunPod	USA_California	2,536	498	0	
		HomeView	USA_California	5,668	253	66	
		BizTech	USA_California	9,551	897	260	
	2009	FunPod	USA_California	5,039	431	217	
		2010	FunPod	USA_California	5,219	406	282
			HomeView	USA_California	2,023	204	98
CIV_No State	2008	BizTech	USA_California	4,302	428	83	
		FunPod	USA_California	6,758	834	0	
		HomeView	USA_California	1,371	320	26	
	2010	BizTech	USA_California	6,917	670	154	
		FunPod	USA_California	5,379	205	335	
CRI_No State	2009	FunPod	USA_California	1,628	98	47	
		BizTech	USA_California	7,344	1,817	117	
		FunPod	USA_California	2,036	174	0	
		HomeView	USA_California	2,038	257	0	
DEU_No State	2009	BizTech	USA_California	1,525	392	44	
		FunPod	USA_California	2,600	230	104	
		FunPod	USA_California	2,600	230	104	

ORDER TYPE  
STATE  
YEAR  
REVENUE  
BILLED QUANTITY  
DISCOUNT AMOUNT





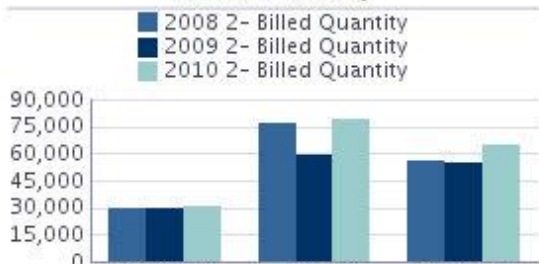
T05 Per Name Year			
2008			
Brand	Order Type	Revenue	Billed Qty
BizTech	Express	270,014	29,884
	Secure	700,246	76,053
	Standard	515,766	55,811
FunPod	Express	293,237	30,378
	Secure	336,798	37,016
	Standard	646,056	68,732
HomeView	Express	138,559	13,403
	Secure	390,563	39,012
	Standard	241,828	23,660

**Year Brand Order Type Revenue**

**State Year Revenue**

P4Brand BizTech

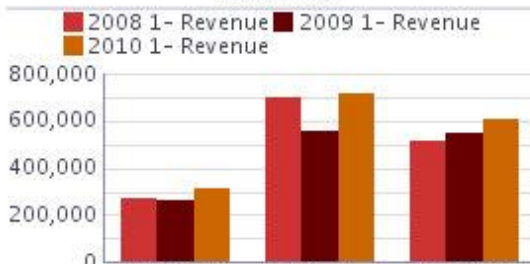
**Billed Quantity**



**Brand Year Billed Quantity**

P4Brand BizTech

**Revenue**



**Brand Year Revenue**

P4Brand BizTech

**Discount Amount**



**Brand Year Discount Amt**

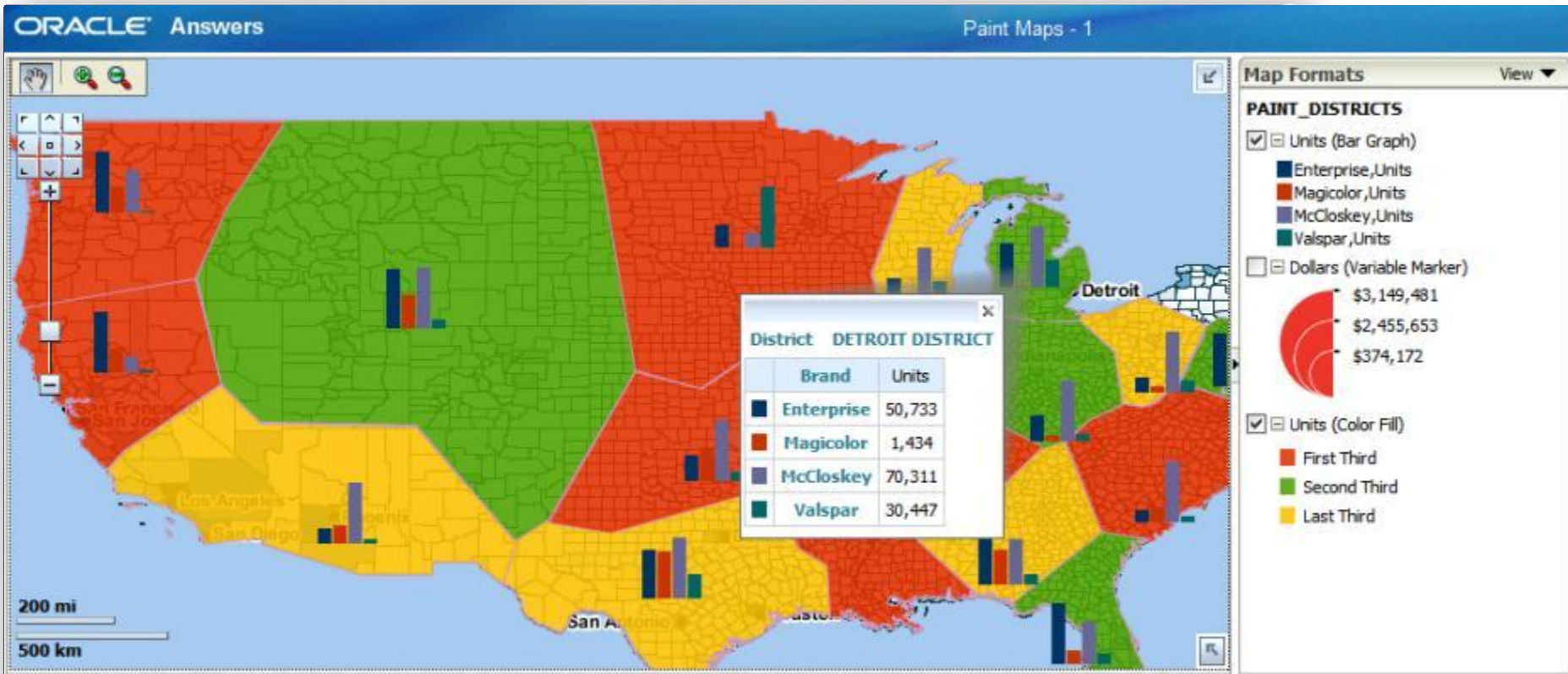
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# When are Map views useful

- Visualizing data related to geographic locations.
- Showing lots of data in a relatively small area.
- Showing or detecting spatial relationships and patterns.
- Drilling down from a (map) overview to a detailed report, chart, or graph.

# Spatial Visualizations

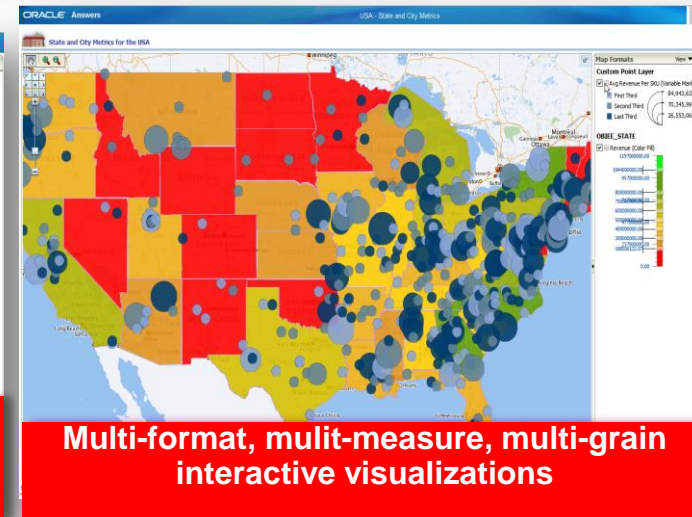
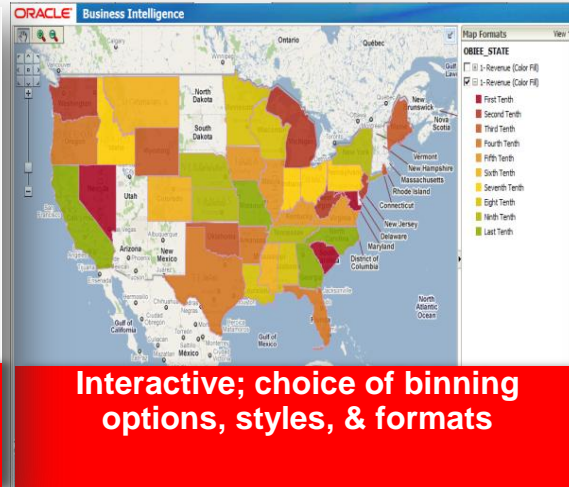
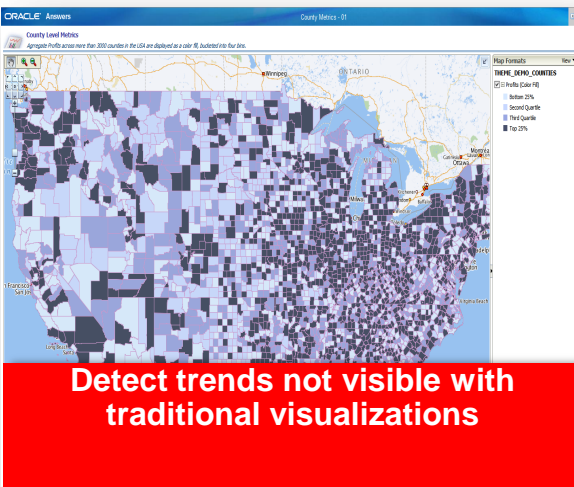
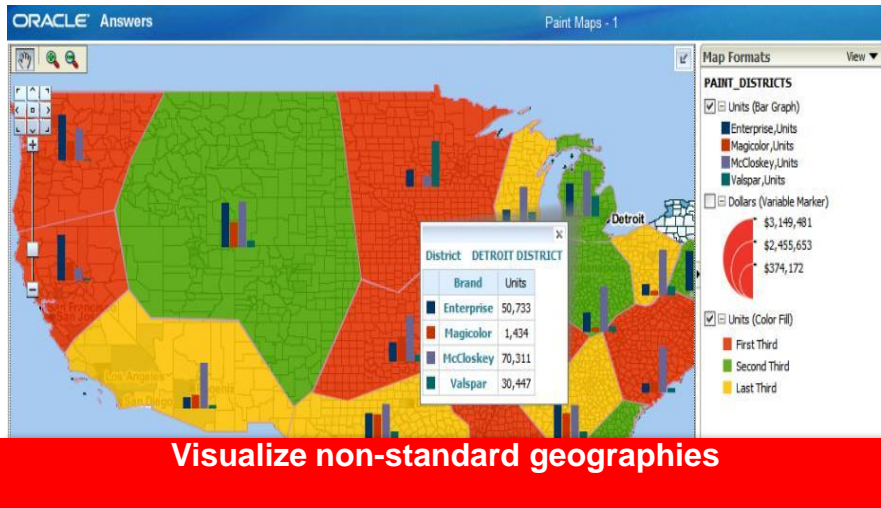


Pivot Table

**MCO - Orlando International**

	# of Flights	% of Total	Delay Perf Index	Delay per Pax-K-Miles	Passengers x Miles
<b>Grand Total</b>	<b>2,062,832</b>	<b>100.0%</b>	<b>7.73%</b>	<b>0.134</b>	<b>147,466,128,945</b>
MCO-ABE Orlando, FL - Allentown/Bethlehem/Easton, PA	2,584	0.1%	6.74%	0.102	228,862,848
MCO-ABQ Orlando, FL - Albuquerque, NM	8,126	0.4%	2.68%	0.046	1,194,773,263
MCO-ACY Orlando, FL - Atlantic City, NJ	368	0.0%	11.50%	0.006	1,040,118,192
MCO-ALB Orlando, FL - Albany, NY	12,646	0.6%	6.24%	0.109	1,256,708,330
MCO-ATL Orlando, FL - Atlanta, GA	173,001	8.4%	13.65%	0.203	1,230,733,303

# Spatial Visualizations





# Providing (yet) More Context (New In 11.1.1.6.0)

2

1

Legend

- 2-Billed Quantity
- 1-Revenue (Color Fill)

Legend Items:

- University
- Military Base
- Block Group - Median Incomes
- WOM\_AIRPORTS
- NTC\_POI\_PHARMACY

Import Layers

Look in: OBIEE\_NAVTEQ\_Sample

Available Layers:

- OBIEE\_STREETS\_X
- RESERVATION
- TEST\_ALL\_CITY
- TEST\_NTC\_AREA\_BUILTUP
- TRACT
- WOM\_AIRPORTS
- WOM\_AIRPORTS\_SIMPLE**
- WOM\_AREA\_STATE
- WOM\_AREA\_STATE\_ABBRV
- WOM\_BACKDROP\_OCEANS

Previewing WOM\_AIRPORTS\_SIMPLE

Preview Map: ELOCATION\_AUTOTESTMAP

Buttons: Help, OK, Cancel

Edit Background Map - ELOC\_WORLD\_MAP

Name: ELOC\_WORLD\_MAP

Location: OBIEE\_NAVTEQ\_Sample1\ELOC\_WORLD Location

Description:

Interactive BI Layers

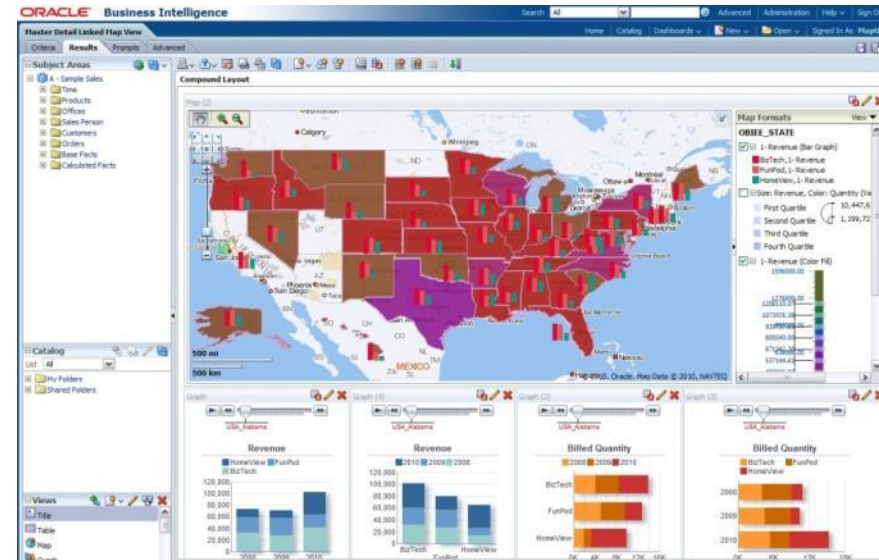
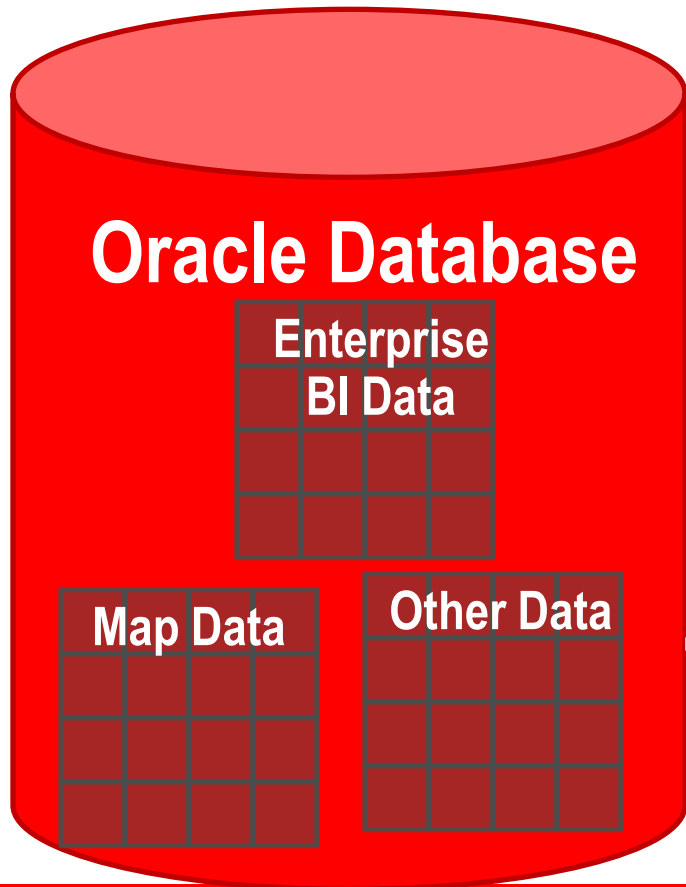
For each layer, select the zoom levels at which associated BI data can display

Layer	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
BLOCK_GROUP																		
ZIP5																		

Buttons: Help, OK, Cancel

# Secure, Resident Data

- With this approach, all spatial and BI Data is safely housed inside your Oracle Database



# OBIEE – MAPVIEWER INTEGRATION

# What is Spatial Data?

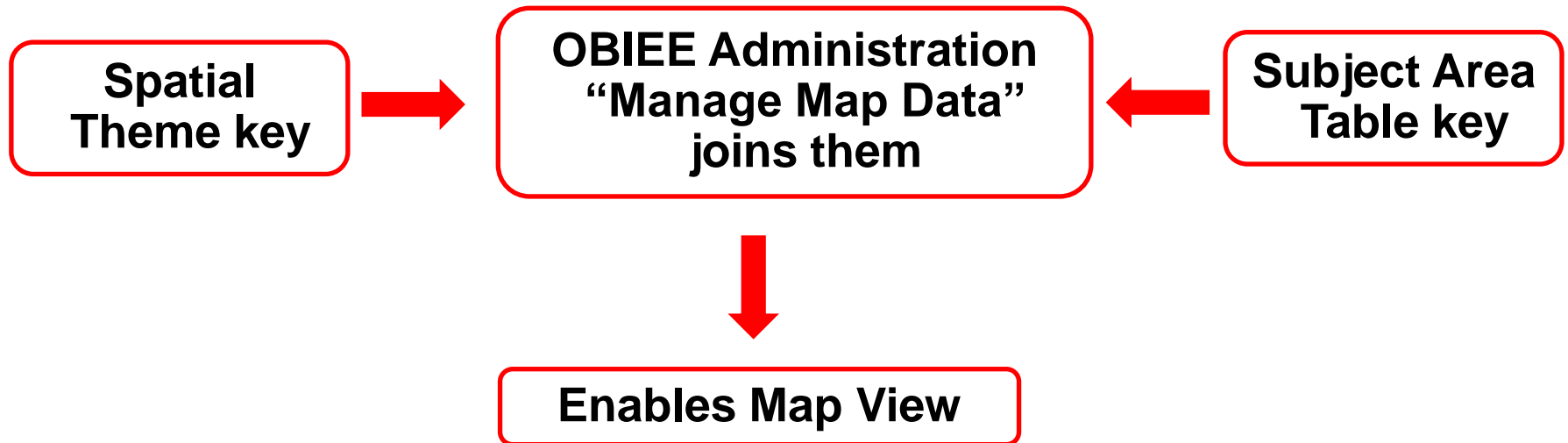
- Business data that contains or describes location
  - Geographic features (roads, rivers, parks, etc.)
  - Assets (cell tower, fire hydrant, electrical transformer, etc.)
  - Sales data (sales territory, customer registration, etc.)
  - Street and postal address (customers, stores, factory, etc.)
- Anything connected to a physical location
- Almost every database contains some form of business data that can be leveraged using spatial technologies
- Location is a “universal key”



# What Spatial Data do you need ?

- **Business Data**
  - This is the data you need in order to show the results of your BI queries
  - For example: country boundaries, states, provinces, postal code areas, etc.
- **Background Data**
  - This is used to build maps on which the business data is displayed
  - Roads, rivers, forests, buildings, etc
  - Could also be from satellite or aerial photos.
  - Not always required
  - Provides context for the business data

# Conceptual Picture



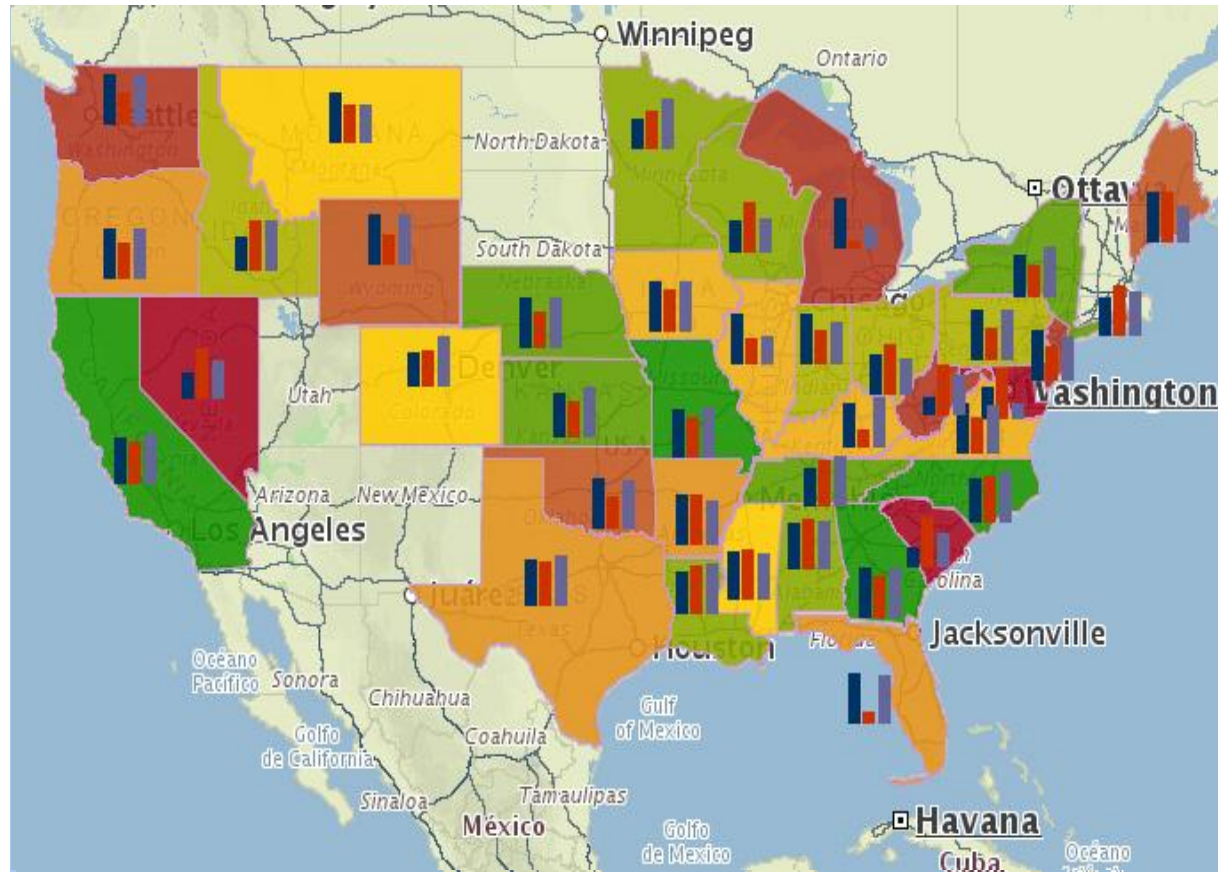
**How do BI & Spatial Data Relate**

# Background Maps

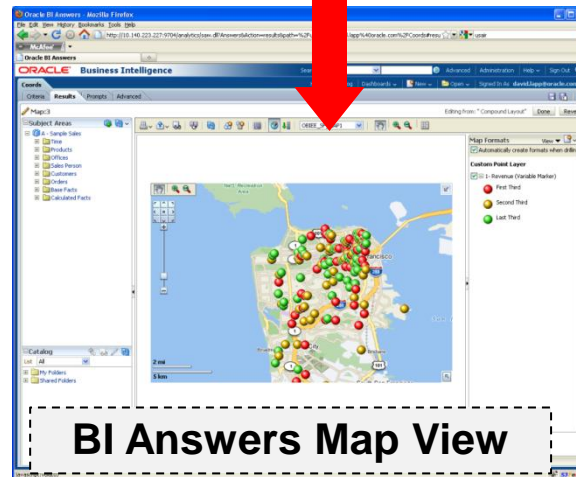
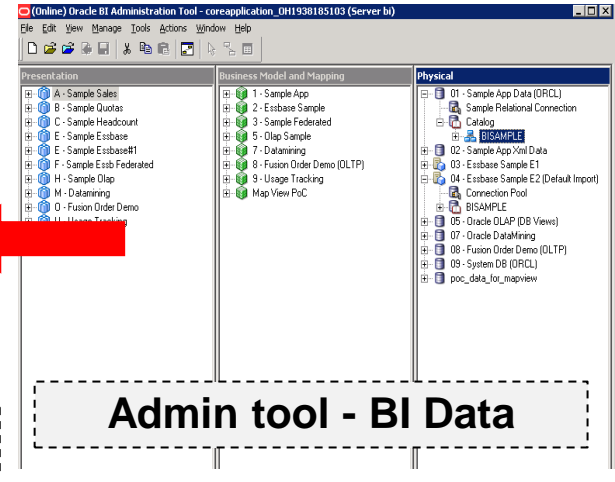
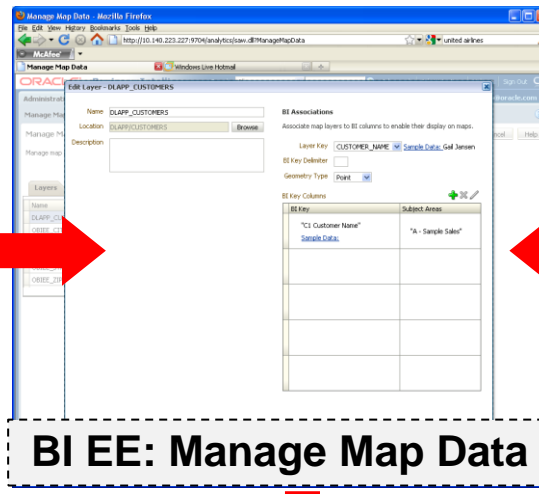
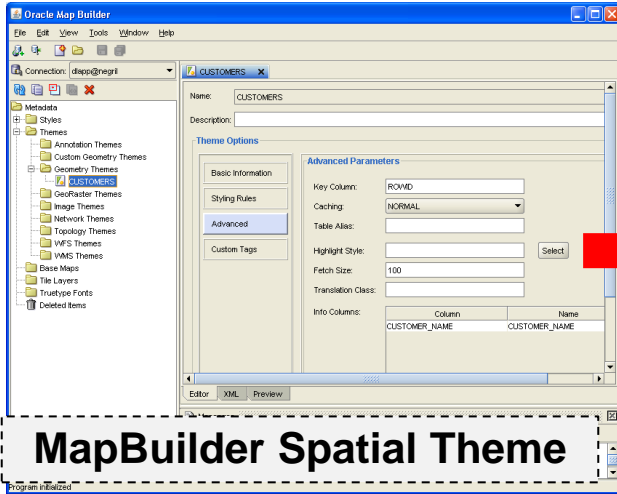
- Internal
  - MapViewer renders spatial data stored in Oracle
- External (3<sup>rd</sup> party map tile servers)
  - Oracle Maps (free)
  - NAVTEQ Maps (requires license)
  - Google Maps (requires license)
  - Others (may require license, planned for future release)

# Map Views: The Mashup

- The thematic shapes, formatted
- Tile imagery, from NAVTEQ Maps
- The mashup, created by OBIEE & MapViewer



# Functional Picture



# Understanding Map Visualizations

## Technical Detour: Foreign Key & NSDP Joins

Emp Table

EMPNO	ENAME	JOB	MGR	DEPTNO
7369	SMITH	CLERK	7902	20
7499	ALLEN	SALESMAN	7698	30
7521	WARD	SALESMAN	7698	30
7566	JONES	MANAGER	7839	20

EMPNO	ENAME	DEPTNO	DNAME	LOC
7782	CLARK	10	ACCOUNTING	NEW YORK
7839	KING	10	ACCOUNTING	NEW YORK
7934	MILLER	10	ACCOUNTING	NEW YORK
7566	JONES	20	RESEARCH	DALLAS
7902	FORD	20	RESEARCH	DALLAS
7876	ADAMS	20	RESEARCH	DALLAS
7369	SMITH	20	RESEARCH	DALLAS
7788	SCOTT	20	RESEARCH	DALLAS
7521	WARD	30	SALES	CHICAGO
7844	TURNER	30	SALES	CHICAGO
7499	ALLEN	30	SALES	CHICAGO
7900	JAMES	30	SALES	CHICAGO
7698	BLAKE	30	SALES	CHICAGO
7654	MARTIN	30	SALES	CHICAGO

```
select e.empno, e.ename,
       d.deptno, d.dname, d.loc
from scott.emp e, scott.dept d
where e.deptno = d.deptno
```

DEPTNO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

Dept Table

# Understanding Map Visualizations

## Technical Detour: Data

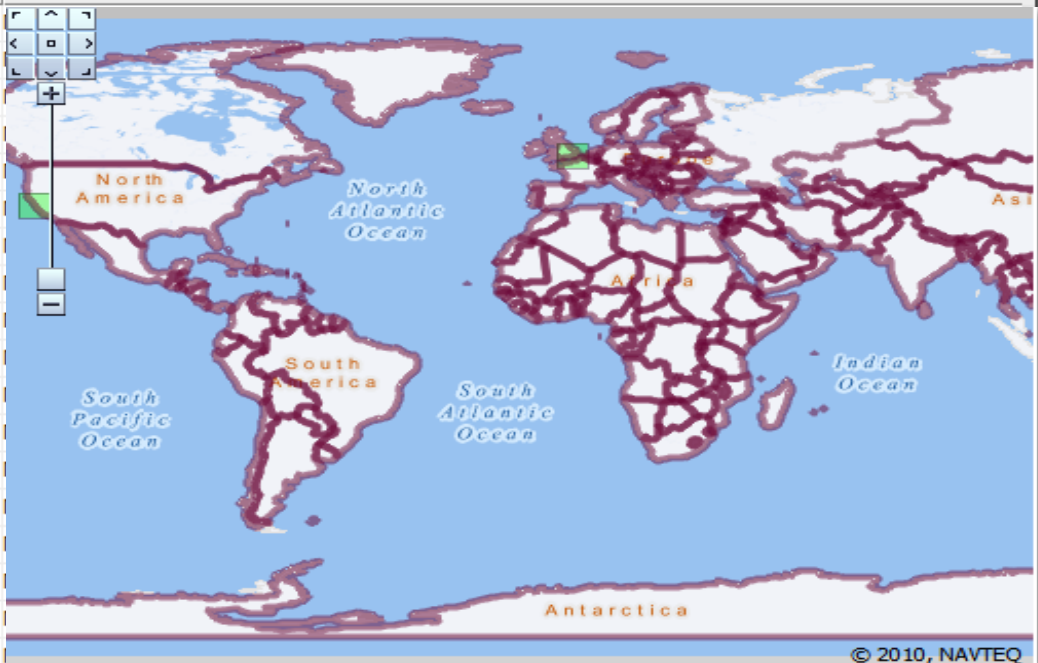
R61 Geo Country Code	R52 Country Name	1- Revenue
AFG	Afghanistan	142,854
ARE	United Arab Emirates	451,993
ARG	Argentina	1,332,024
AUS	Australia	5,408,727
AUT	Austria	43,990
AZE	Azerbaijan	32,608
BEL	Belgium	38,814
BEN	Benin	51,447
BGD	Bangladesh	48,232
BGR	Bulgaria	55,091
BOL	Bolivia	12,870
BRA	Brazil	870,195
CAF	Central African Republic	42,664
CAN	Canada	1,179,357
CHE	Switzerland	61,818
CHL	Chile	19,909
CHN	China	649,899
CIV	Côte D Ivoire	40,290
CMR	Cameroon	36,877
COD	Congo, Democratic Republic Of The	30,575
COG	Congo	59,591
COL	Colombia	32,885
CRI	Costa Rica	37,078
CUB	Cuba	43,203
CZE	Czech Republic	36,663

The Table View – From the Data Warehouse



# Understanding Map Visualizations

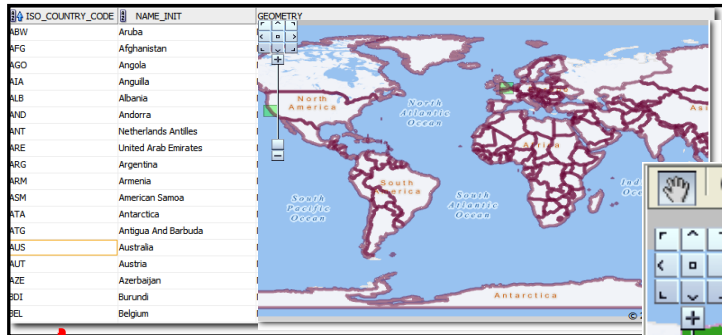
## Technical Detour: Map Definitions

ISO_COUNTRY_CODE	NAME_INIT	GEOMETRY
ABW	Aruba	
AFG	Afghanistan	
AGO	Angola	
AIA	Anguilla	
ALB	Albania	
AND	Andorra	
ANT	Netherlands Antilles	
ARE	United Arab Emirates	
ARG	Argentina	
ARM	Armenia	
ASM	American Samoa	
ATA	Antarctica	
ATG	Antigua And Barbuda	
AUS	Australia	
AUT	Austria	
AZE	Azerbaijan	
BDI	Burundi	
BEL	Belgium	

The Spatial Table – Shape Information (sdo\_geometry)

# Understanding Map Visualizations

## Technical Detour: Joining The Two

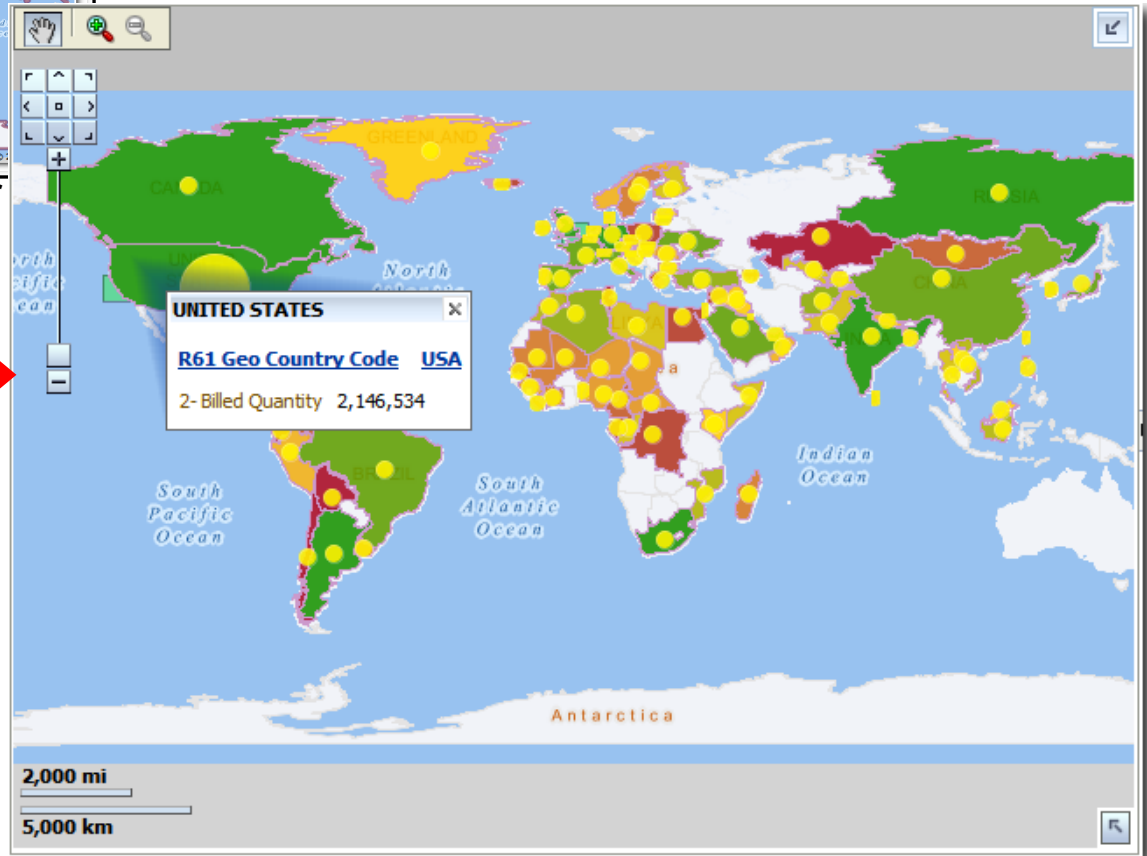


Spatial Data, queried by MapViewer

NSDP  
(Non Spatial Data Provider) Join

R61 Geo Country Code	RS2 Country Name	1-Revenue
AFG	Afghanistan	142,854
ARE	United Arab Emirates	451,993
ARG	Argentina	1,332,024
AUS	Australia	5,408,727
AUT	Austria	43,990
AZE	Azerbaijan	32,608
BEL	Belgium	38,814
BEN	Benin	51,447
BGD	Bangladesh	48,232
BGR	Bulgaria	55,091
BOL	Bolivia	12,870
BRA	Brazil	870,195
CAF	Central African Republic	42,664
CAN	Canada	1,179,357
CHE	Switzerland	61,818
CHL	Chile	19,909
CHN	China	649,899
CIV	Côte D'Ivoire	40,290
CMR	Cameroon	36,877
COD	Congo, Democratic Republic Of The	30,575
COG	Congo	59,591
COL	Colombia	32,885
CRI	Costa Rica	37,078
CUB	Cuba	43,203
CZE	Czech Republic	36,663

Analytics Data, queried by OBIEE

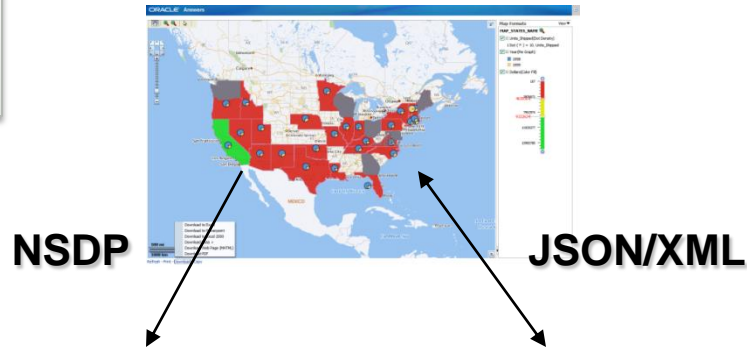


Map View mashup, created by OBIEE (Answers)

# MapViewer BI Integration Architecture

Mapbuilder: Basemaps/  
themes/ styles manager  
(thick client)

NSDP (Non-Spatial Data  
Provider) key MapViewer  
integration feature

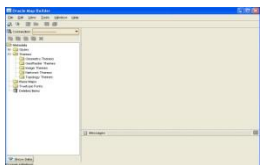


Mapviewer

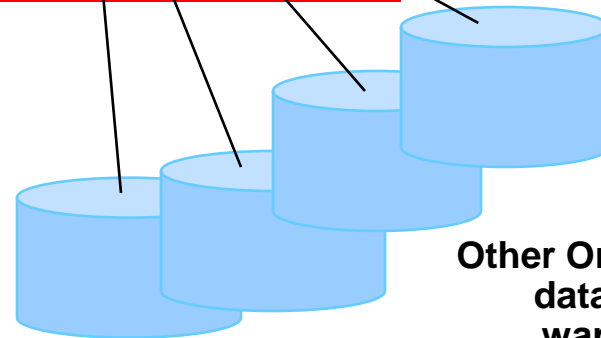
OBIEE

Oracle Fusion  
Middleware

Mapbuilder

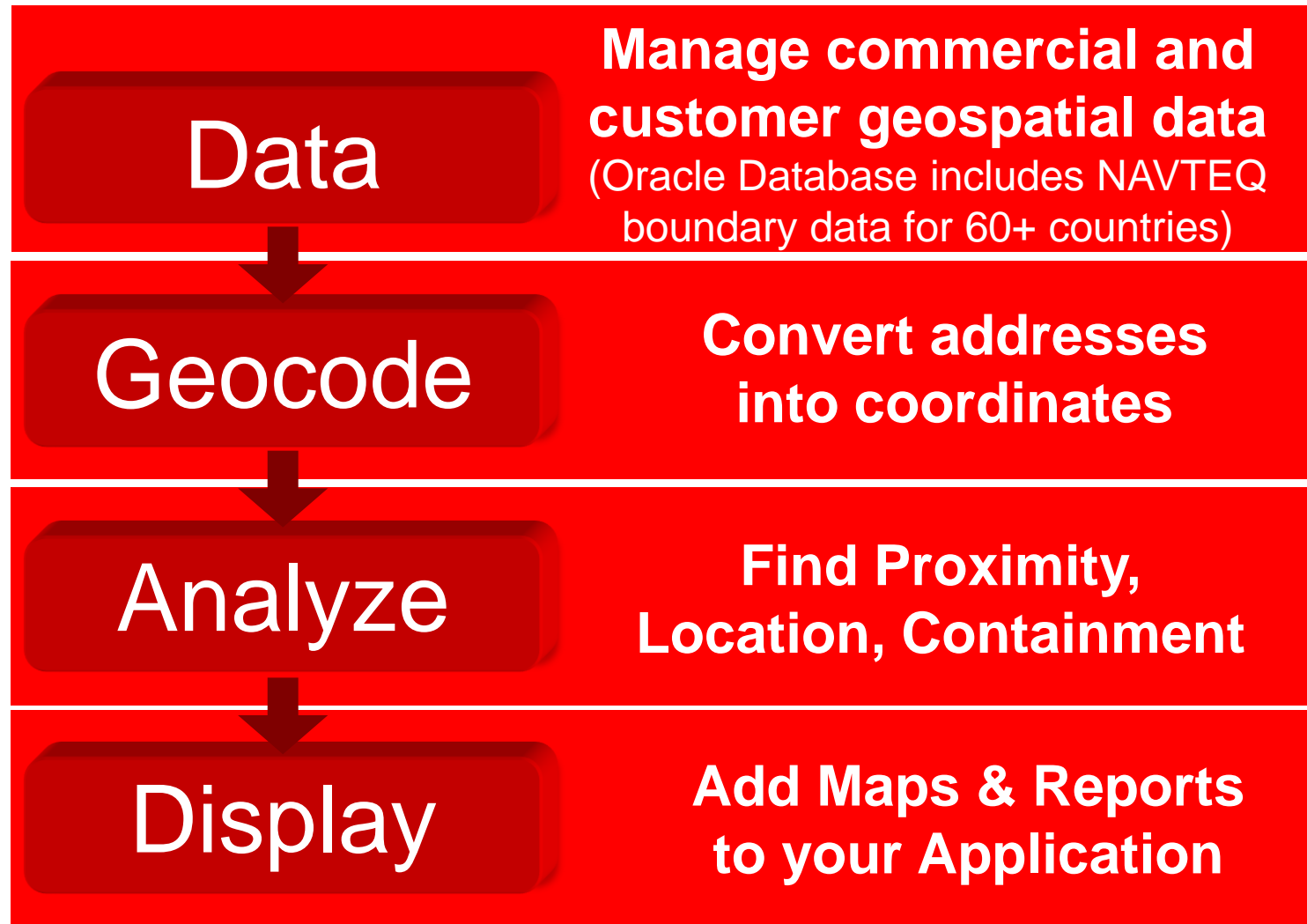


Oracle Database



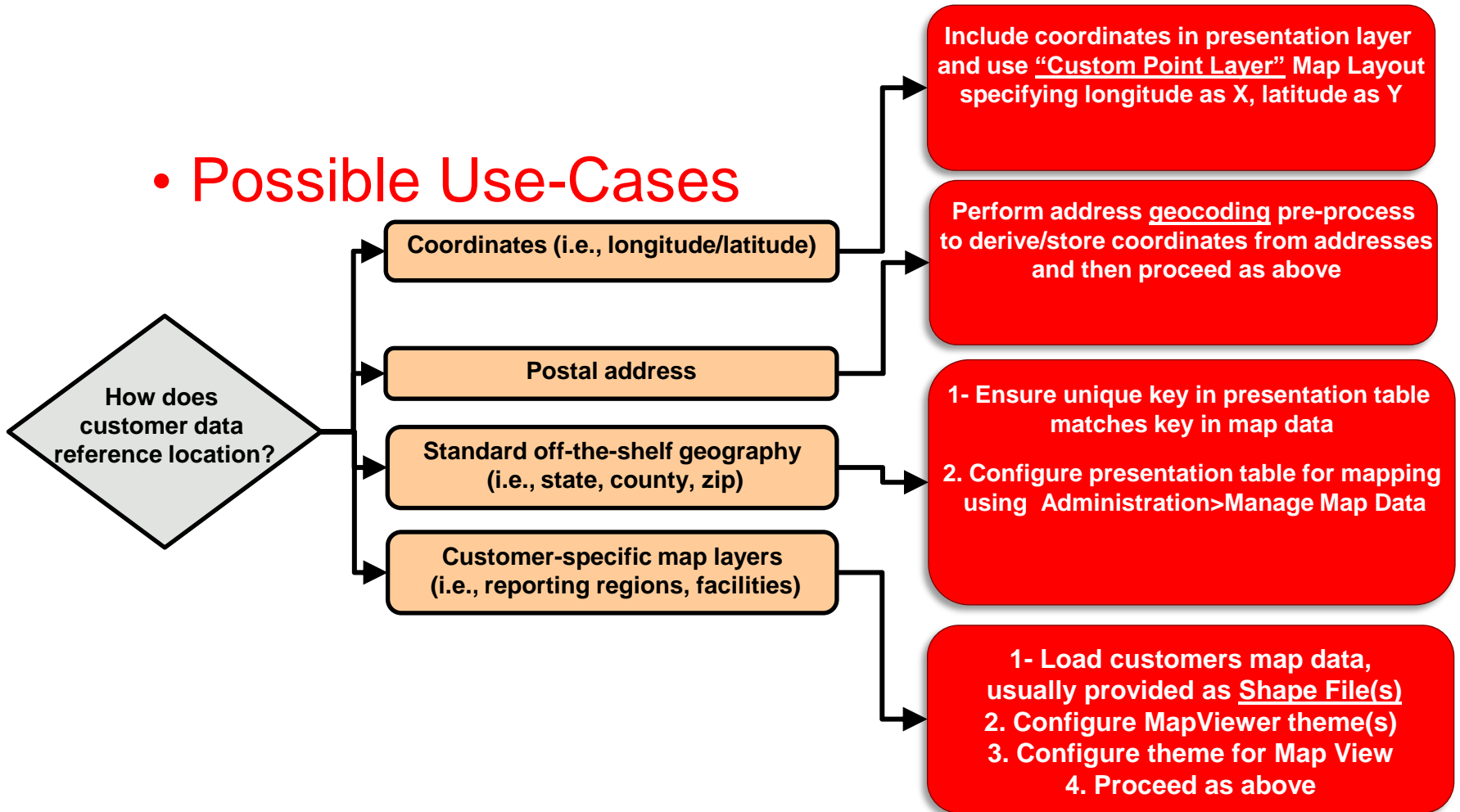
Other Oracle/non-Oracle  
databases, data  
warehouses ...

# Key Technologies



# Using Spatial Data in OBIEE

## • Possible Use-Cases



# HANDS-ON LAB

# Hands-on Lab

- Create a simple analysis with a map view
- Add charts to the map view
- Master-Detail lining via map views
- Action Links in map views
- Additional material
  - Distance queries
  - Geocoding
  - 3<sup>rd</sup> party map services
  - Full example (import data, create layers, create map views)



# Spatial Analytics & Visualization

## There is a Difference Between The Two

### Spatial Analytics

- Use-cases: “customers within X miles of store”
- Requires at least one spatial dimension
- Results can be visualized with or without Map Views
- Mostly use Oracle Database Spatial (and Locator) features
- Not available OOTB in OBIEE
- Options for doing Spatial Analytics in OBIEE
  - Use the OBIEE EVALUATE function
  - Use the DIRECT DATABASE REQUEST option in Answers
  - Use an OPAQUE view in the RPD

Shops of Type PHARMACY Within 500m of 747 Howard St, San Francisco, CA 94103, US

Time run: 8/24/2011 3:34:08 PM

NAME	STORE_ID	STREET	PHONE
RITE AID	38,231,490	776 MARKET ST	+(1)-415-3970837
WALGREENS	800,675,903	116 NEW MONTGOMERY ST	+(1)-415-3440891
	996,567,584	730 MARKET ST	+(1)-415-3974800
	38,223,392	825 MARKET ST	+(1)-415-5439502

Pharmacies within 500m of specified location

### Spatial Data Visualization

- Use-cases: “plot states sales as color-fill”
- Requires at least one spatial dimension
- Results MUST be visualized with Map Views
- Available as OOTB capability in



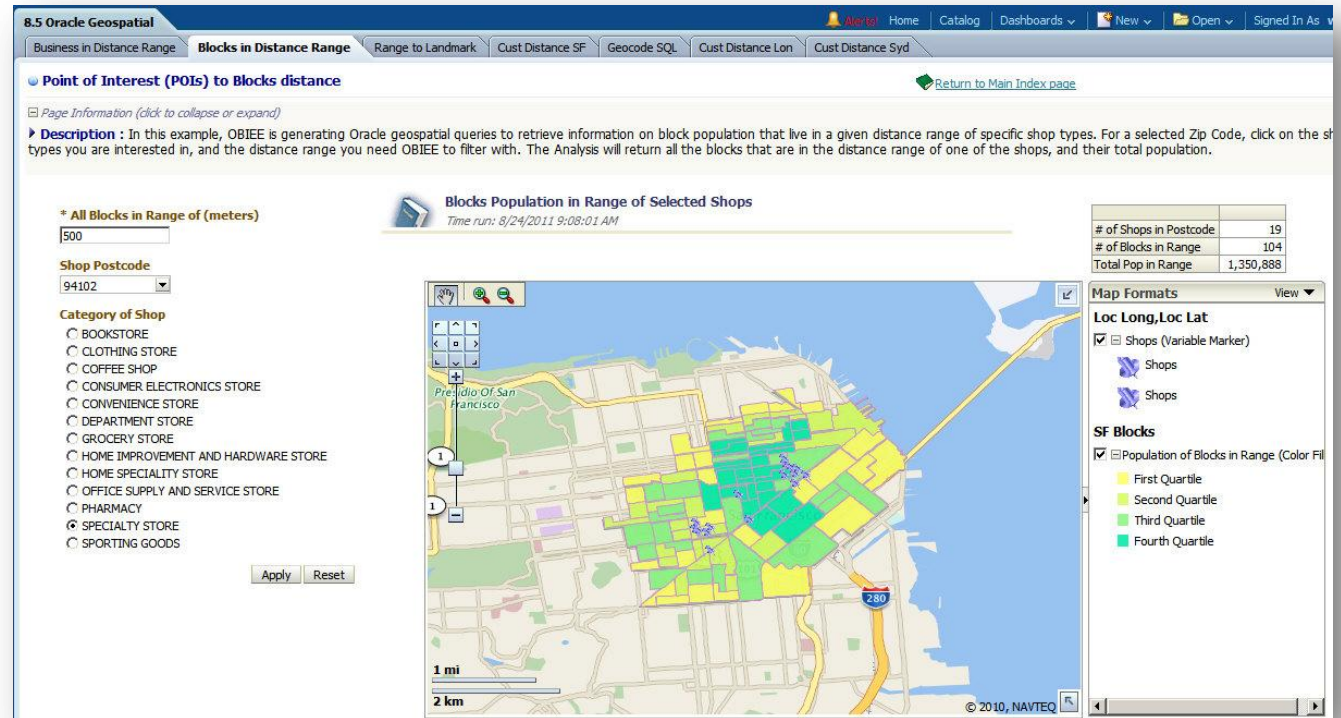
abilities

Displaying Sales Region metrics on a map (aka thematic mapping)

# Spatial Analytics Example 1

## 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

The screenshot displays the Oracle Geospatial interface with the following components:

- Navigation Bar:** 8.5 Oracle Geospatial, Business in Distance Range, Blocks in Distance Range, Range to Landmark, Cust Distance SF, Geocode SQL, Cust Distance Lon, Cust Distance Syd.
- Section Header:** Point of Interest (POIs) to Blocks distance. Includes a link to Return to Main Index page.
- Description:** In this example, OBIEE is generating Oracle geospatial queries to retrieve information on block population that live in a given distance range of specific shop types. For a selected Zip Code, click on the shop types you are interested in, and the distance range you need OBIEE to filter with. The Analysis will return all the blocks that are in the distance range of one of the shops, and their total population.
- Form Fields:**
  - \* All Blocks in Range of (meters): 500
  - Shop Postcode: 94102
  - Category of Shop: Radio buttons for BOOKSTORE, CLOTHING STORE, COFFEE SHOP, CONSUMER ELECTRONICS STORE, CONVENIENCE STORE, DEPARTMENT STORE, GROCERY STORE, HOME IMPROVEMENT AND HARDWARE STORE, HOME SPECIALITY STORE, OFFICE SUPPLY AND SERVICE STORE, PHARMACY, SPECIALTY STORE, SPORTING GOODS.
  - Buttons: Apply, Reset
- Summary Table:**

# of Shops in Postcode	19
# of Blocks in Range	104
Total Pop in Range	1,350,888
- Map:** A map of San Francisco showing blocks colored by population quartiles. A red arrow points from the 'Category of Shop' section to the map.
- Map Formats Panel:**
  - Map Formats: View
  - Loc Long, Loc Lat
  - Shops (Variable Marker): Checked
  - Shops: Two entries with blue icons
  - SF Blocks: Checked
  - Population of Blocks in Range (Color Fill): Checked
  - Legend for SF Blocks:
    - First Quartile: Yellow
    - Second Quartile: Light Green
    - Third Quartile: Medium Green
    - Fourth Quartile: Dark Green

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 SERVICES
- PHARMACY
- SPECIALTY STORE
- SPORTING GOODS

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

The screenshot shows the 'Criteria' pane in Oracle BI Publisher. On the left, the 'Subject Areas' tree is expanded to 'L - Geo Loc', showing sub-areas like 'Business In Range', 'Blocks in range of POIs', 'Population', 'Income', and 'Education Facts'. On the right, the 'Selected Columns' pane lists various columns such as 'Block Group Id', 'POI Category Name', 'Total Pop', 'POI Name', 'Loc Lat', 'Loc Long', '# of POIs', and 'Full Address'. Below this, there is a 'Filters' section with the text 'Add Filters Here.'

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

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:

- BOOKSTORE
- CLOTHING STORE
- COFFEE SHOP
- CONSUMER ELECTRONICS STORE
- CONVENIENCE STORE
- DEPARTMENT STORE

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

OGS\_CATEGORY



# Deconstructing The Analysis

**Physical Table - V\_POI\_Block\_Group**

General | Columns | Keys | Foreign Keys

Name: V\_POI\_Block\_Group

Table Type: Select

Default Initialization String  Use database specific SQL

Database: Oracle 11g

Initialization String:

```
select distinct
b.id as block_group_id,
s.poi_id as poi_id,
d.name as category_name
from
block_group b,
ntc_map_poi_shop s,
ntc_meta_poi_cat_ref d
where
s.iso_country_code='USA' and
s.cat_id = d.cat_id and
d.name = 'VALUEOF(NQ_SESSION.OGS_CATEGORY)' and
s.poi_postcode = 'VALUEOF(NQ_SESSION.OGS_POSTCODE)' and
sdo_within_distance(
b.geometry, s.geometry, 'distance=VALUEOF(NQ_SESSION.OGS_DIST_M
)=TRUE'
```

**2**

Cacheable  
 Cache never expires  
 Cache persistence time

Hint:  
 Description:

OK Cancel Help

For Help, press F1

**Session Variables  
 Values set in Dashboard as  
 Request Variables; passed  
 on down to Server as  
 session variables**

**Variable Manager**

Name	Description
OGS_ADDRESS	Used for Geospatial interaction examples
OGS_CATEGORY	Used for G... 'PHAR... DUAL OGS CATEGORY VALUE =PHARMACY
OGS_POSTCODE	Used for G... '94102' DUAL OGS POSTCODE VALUE =94102'
OGS_DIST_M	Used for G... 1000 DUAL GENERIC NUM VALUE =3
LTS_FILTER_PROD_KEY	Used for G... '747 H... DUAL ADDRESS VALUE =FIXED ADDRESS

**3**

**Session Variable - OGS\_ADDRESS**

Name: OGS\_ADDRESS

Enable any user to set the value

Security Sensitive

Initialization Block:  
 DUAL ADDRESS VALUE =FIXED ADDRESS

Default Initiator:  
 '747 Howard St, San Francisco, CA 94103, US'

Description:  
 Used for Geospatial interaction examples

OK Cancel Help

**Opaque View  
 Parameterized SQL utilizes Oracle Spatial function  
 (sdo\_within\_distance) to perform spatial analytics**

**Business Model and Mapping**

- 11 - Geo Loc
  - Block Group Facts
  - Sources
    - Ntc Map Poi Shop
    - Block Group
    - Poi Id
    - POI Category Name
    - Block Group Id
    - Block Label
  - POI Details
  - POI\_Business\_In\_Range
    - Sources
      - V\_Business\_POI\_Near\_A
    - cat\_id
    - Bus name
    - POI\_ID\_Bus
    - Category name
    - POI\_Facts

**Physical**

- 10 - BI Publisher Audit
- 10 - System DB (ORCL)
- 11 - Sample Geo Loc
  - OBIEE\_NAVTEQ
    - BLOCK\_GROUP
    - GC\_POI\_NA
    - NTC\_META\_POI\_CAT\_R...
      - CAT\_ID
      - NAME
      - TABLE\_NAME
    - V\_POI\_Block\_Group
      - block\_group\_id
      - category\_name
      - poi\_id
    - V\_POI\_In\_Range\_Business
      - cat\_id
      - name
      - POI\_id

**1**

# Spatial Analytics Example 2

## Stores Within Range of Address

- Stores of selected type within range of street address

The screenshot shows the Oracle Geospatial web interface. The main content area displays a "Geocode Report Made of direct Physical Database SQL Query". The address "747 Howard St, San Francisco, CA 94103, US" is entered in the "Type in or Select Address" field, and a distance range of "500" meters is set. The report title is "Shops of Type PHARMACY Within 500m of 747 Howard St, San Francisco, CA 94103, US". A summary table shows 4 stores in the range. Below this, a table lists the details of the pharmacies.

NAME	STORE_ID	STREET	PHONE
RITE AID	38,231,490	776 MARKET ST	+(1)-415-3970837
WALGREENS	800,675,903	116 NEW MONTGOMERY ST	+(1)-415-3440891
	996,567,584	730 MARKET ST	+(1)-415-3974800
	38,223,392	825 MARKET ST	+(1)-415-5439502

- Requires Spatial analytic functions (`sdo_geocode` & `sdo_within_distance`)

# Deconstructing The Analysis

ORACLE® | Search | All | Advanced | Administration | Help | Sign Out

8.5 Oracle Geospatial | Alerts | Home | Catalog | Dashboards | New | Open | Signed In As weblogic

Business in Distance Range | Blocks in Distance Range | Range to Landmark | Cust Distance SF | **Geocode SQL**

**Geocode Report Made of direct Physical Database SQL Query** | [Return to Main Index page](#)

Page Information (click to collapse or expand)

**Type in or Select Address**

747 Howard St, San Francisco, CA 94103, US

**Set Distance Range (meters)**

500

**Select shop type**

BOOKSTORE

CLOTHING STORE

COFFEE SHOP

CONSUMER ELECTRONICS STORE

CONVENIENCE STORE

DEPARTMENT STORE

PHARMACY

Shops of Type PHARMACY Within 500m of 747 Howard St, San Francisco, CA 94103, US

# of Stores in Range: 4

Time run: 8/24/2011 11:51:40 PM

PHARMACY

NAME	STORE_ID	STREET	PHONE
RITE AID	38,231,490	776 MARKET ST	+(1)-415-3970837
WALGREENS	800,675,903	116 NEW MONTGOMERY ST	+(1)-415-3440891
	996,567,584	730 MARKET ST	+(1)-415-3974800
	38,223,392	825 MARKET ST	+(1)-415-5439502

Analyze - Edit - Refresh - Print - Export - Copy

Apply Reset

Edit Prompt: Set Distance Range (meters)

Prompt For Column: 1

Label: Set Distance Range (meters)

Description:

Operator: is equal to / is in

User Input: Text Field

Options

Require user input

Default selection: Specific Value

500

Text Field Width: Dynamic 120 Pixels

Set a variable: Presentation Variable

DISTANCE

Help OK Cancel

**Prompts**  
Three prompts set in Dashboard: Address, Range, Shop-type

Definition

Add prompts for users when they run this analysis.

Prompt Label
Page 1
Type in or Select Address
<b>Set Distance Range (meters)</b>
Select shop type

**Prompts**  
E.g. Distance prompt sets @{{DISTANCE}} Presentation Variable



# Deconstructing The Analysis

## Creating a Direct Database Request

boards ▾ New ▾ Open ▾ Signed In As weblogic ▾

Select Subject Area

- A - Sample Sales  
Main Subject Area for SampleApp 11g Build 10722
- B - Sample Quotas  
Bridge Table Modelling examples
- C - Sample Headcount  
Balance Based Metrics Examples
- D - Sample Federated  
Multiple Data-source Federation Examples
- E - Sample Essbase  
Essbase Datasource Examples
- F - Essbase Interaction  
Essbase Interaction Examples
- G - Sample Essbase GL  
Essbase GL Financials Examples
- H - Sample Olap  
Oracle OLAP Datasource Examples
- I - Sample TimesTen
- Create Direct Database Request**  
Create a new SQL request that will be sent directly to the database. The results of the request, if any, can be displayed and manipulated within Answers, and subsequently incorporated into Interactive Dashboards and Delivers.
- Create Analysis from Simple Logical SQL  
Create analysis by entering simple logical SQL to Oracle BI Server.

**Direct Database Request  
Plugs in the three  
Prompts values via  
Presentation Variables**

**Spatial Functions**  
sdo\_distance\_within  
geocode\_address

*Geocoding is the process of associating spatial locations (longitude and latitude coordinates) with postal addresses.*

Connection Pool  
Enter the name of the Oracle BI Server connection pool you wish to use for this analysis. This must match exactly the name of an existing connection pool in the Oracle BI Server Administration program.

objee\_navteq

SQL Statement  
Enter a database-specific SQL statement. This statement will be issued as-is to the database associated with the specified Connection Pool. Analysis as Oracle BI Server security rules can not be applied.

```
select s.poi_id store_id, s.name, s.poi_house_number || ' ' ||
s.poi_street_name street, s.poi_phonenumber phone, d.name as category_name
from ntc_map_poi_shop s, ntc_meta_poi_cat_ref d
where
s.cat_id = d.cat_id and
d.name = '{@CATEGORY}{PHARMACY}' and
sdo_within_distance(geometry,
geocode_address('@{ADDRESS}{747 Howard St, San Francisco, CA 94013, US}'),
'distance=@{DISTANCE}{2000} unit=m')='TRUE'
```

Result Columns  
Add or remove columns by changing the SQL statement and presentation variables. You can also add or remove columns by clicking on the buttons below its name. Some types of statements may not support all column types.

STORE_ID	NAME	STREET	PHONE	CATEGORY_NAME
double	varchar	varchar	varchar	varchar
←/→	←/→	←/→	←/→	←/→

**Result Columns  
Columns can be used to  
construct Answers  
views**

# Spatial Analytics Example 3

## Distance Between Offices and Customers

- Office locations
- Customer locations
- Calculate distance between Office and Office's Customers
- Display Office & Customer locations

**ORACLE Business Intelligence**

8.5 Oracle Geospatial

Business in Distance Range | Blocks in Distance Range | Range to Landmark | **Cust Distance SF** | Geocode SQL | Cust Distance Lon | Cust Distance Syd

Point to Point Distance : Office to Customers

Page Information (click to collapse or expand)

Description : On this dashboard, OBIE calculates the distance between offices location and customers of these offices. Select offices in the city, and see the list of the customers show on the map with their distance to their offices.

City:  San Francisco

Office:  Casino Office,  Eiffel Office,  Merrimon Office,  Perry Office

Office to Customer Distance  
Time run: 8/24/2011 11:51:29 PM

D1 Office: Casino Office

	Distance in Meters	1-Revenue
Addison Hurd	5,165	10,296
Arentina Downey	8,375	60,655
Bertha Oddell	8,090	30,295
Biddy Ross	6,993	81,645
Colburn Tillman	5,583	11,929
Enos Silvis	12,573	61,305
Geraldine Gentle	3,483	3,371
Henry Dunbar	4,286	1,691
Jimmy Lease	1,759	5,795
Lauren	8,139	2,492

Map: San Francisco, showing the location of the 'Casino Office' and a customer named 'Carrol Ridgeway'. A tooltip for the customer shows: 1-Revenue: 35,002; C65 Longitude: -122.41753; C64 Latitude: 37.77653; C1 Customer Name: Carrol Ridgeway.

- Requires Spatial analytic functions (`sdo_geocode` & `sdo_distance`)

# Deconstructing The Analysis

**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, formula and filters, apply sorting, or delete by clicking or hovering over the button next to its name.

Offices Customers Distance Base Facts Cust Geo Codes Office Geo Codes

D1 Office C1 Customer Name Distance in Meters 1-Revenue C64 Latitude C65 Longitude D64 Latitude D65 Longitude

**Edit Column Formula**

Column Formula Bins

Folder Heading Distance

Column Heading Distance in Meters

Custom Headings

Contains HTML Markup

Aggregation Rule (Totals Row) Default (None)

Available

**Subject Areas**

- A - Sample Sales
  - Time
  - Products
  - Offices
  - Sales Person
  - Customers
  - Orders
  - Other Objects
  - Base Facts
  - Calculated Facts

**Column Formula**

```
EVALUATE(sdo_geom.sdo_distance(  
sdo_geometry(2001, 8307, sdo_point_type(%1,  
%2, null), null, null), sdo_geometry(2001, 8307,  
sdo_point_type(%3, %4, null), null, null), 0.05,  
"unit=meter") as float, "Office Geo Codes". "D65  
Longitude", "Office Geo Codes". "D64  
Latitude", "Cust Geo Codes". "C65 Longitude",  
"Cust Geo Codes". "C64 Latitude")
```

## EVALUATE Function Wraps Spatial functions

**sdo\_distance** - calculates  
distance between two points

**sdo\_geometry** - converts the  
long/lat coordinates into spatial data  
type

**sdo\_point\_type** - specifies that  
long/lat coordinates are for a point  
spatial data type

# NAVTEQ Maps in Map Views

- Download required content and docs from NAVTEQ's developer site ([www.navteq.com/oracle](http://www.navteq.com/oracle)). Scroll down to Web Services section and get content for NAVTEQ's map service.
- Extract NAVTEQ\_Map\_Service.dmp from archive. Import it using Oracle imp/exp.  
`imp username/password file=NAVTEQ_Map_Service.dmp full=y`
- Add map definition to required metadata view  
`insert into USER_SDO_CACHED_MAPS select * from NAVTEQ_MAP_SERVICE;`
- Obtain license key (token) from [enterprise@navteq.com](mailto:enterprise@navteq.com)
- Update metadata entry with key value  
Edit and use provided sql script or use MapViewer's Admin page

# NAVTEQ Maps in Map Views

- Use in OBIEE once the map service is configured in MapViewer

The screenshot displays two overlapping dialog boxes in the OBIEE MapViewer interface. The top dialog, 'Import Background Maps', shows a list of available maps with 'NAVTEQ\_LBSP' selected. The bottom dialog, 'Edit Background Map - NAVTEQ\_LBSP', contains fields for Name, Location, and Description, along with an 'Interactive BI Layers' table.

**Interactive BI Layers**  
For each layer, select the zoom levels at which associated BI data can display

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
OBIEE_STATE																			



*O* & *A*

**SOFTWARE. HARDWARE. COMPLETE.**



# “Spatial” Tables

- Just like regular tables
- Contain a column of type SDO\_GEOMETRY to store the geometric shape of the objects

```
CREATE TABLE map_countries (  
  id          NUMBER PRIMARY KEY,  
  name       VARCHAR2(30),  
  geometry   SDO_GEOMETRY  
);
```



# Spatial Data

- Contains a list of X and Y coordinates for points that describe the shape

```
SQL> SELECT geometry FROM map_countries WHERE name =  
'France' ;
```

```
SDO_GEOMETRY (  
  2007, 8307, NULL,  
  SDO_ELEM_INFO_ARRAY(1, 1003, 1, 2209, 1003, 1,  
    2427, 1003, 1, 2465, 1003, 1, 2511, 1003, 1  
  ),  
  SDO_ORDINATE_ARRAY (  
    6.63215688, 45.102186, 6.77118888, 45.142299,  
    6.86673792, 45.115519, 6.90344604, 45.12864,  
    ...  
    -3.2208998, 47.377866, -3.245697, 47.353725  
  )  
)
```

Coordinate  
system of the  
shape (here  
Longitude/Latitud  
e)

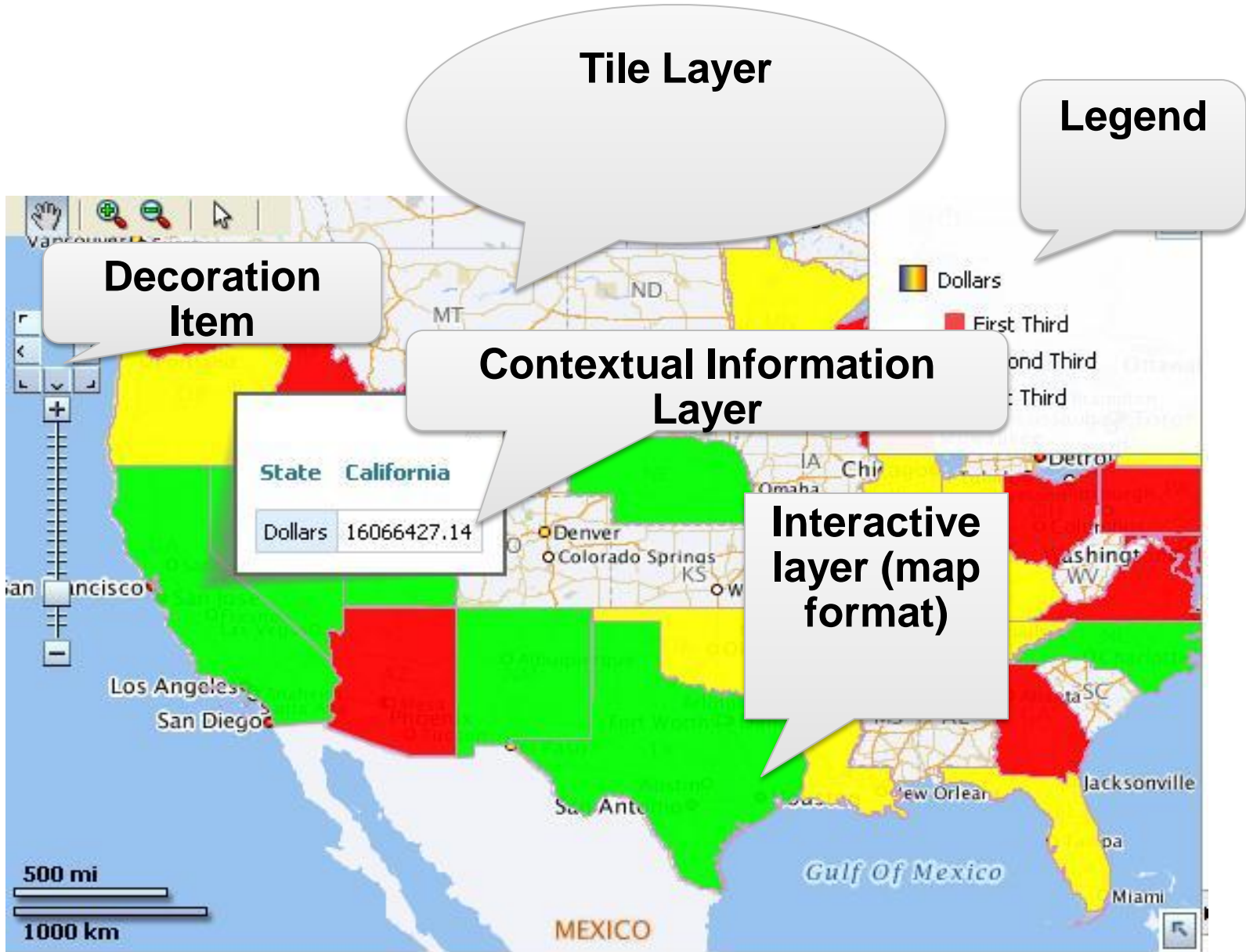
Coordinates of  
one point of the  
shape

# Free data: “World Sample Data Set”



- World Sample Data Set
  - Country and region boundaries down to three levels:
    - Down to commune / municipality boundaries
  - Major roads
  - Major cities
- Provided by Navteq
  - Shipped with Oracle 11g
  - Downloadable from OTN
  - 300 MB zip file, 1.7GB in database
- Royalty free
  - But you still need to acknowledge Navteq’s copyright!
- Good enough for simple mapping and analysis

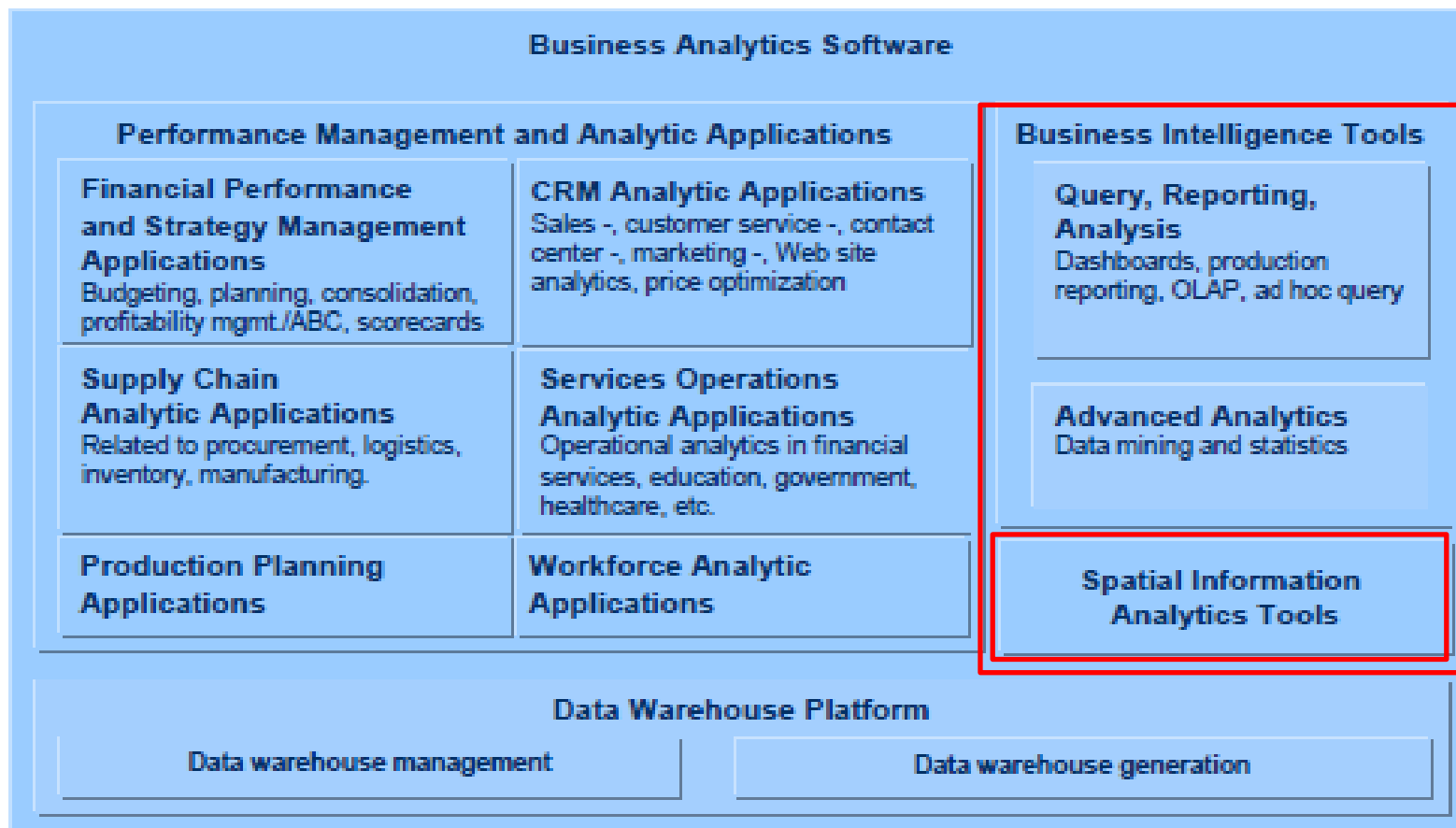
Albania	Gibraltar	Portugal
Andorra	Great Britain	Puerto Rico
Australia	Greece	Romania
Austria	Hungary	Russia
Belgium	Ireland	San Marino
Bosnia and Herzegovina	Italy	Serbia and Montenegro
Bulgaria	Latvia	Slovak Republic
Canada	Liechtenstein	Slovenia
Croatia	Lithuania	Spain
Czech Republic	Luxemburg	Sweden
Denmark	Macedonia	Switzerland
Estonia	Moldova	Ukraine
Finland	Monaco	United States
France	Netherlands	Vatican City
Germany	Norway	
	Poland	



# Spatial is a Natural BI Component

**IDC recognized BI sector.**

IDC's Business Analytics Software Taxonomy, 2009



Source: IDC, 2009