Information Visualization Using Maps in Oracle Business Intelligence 11g

BIWA TechCast
September 8, 2010

Dan Vlamis, Vlamis Software Solutions

Abhinav Agarwal, Oracle BI PM

Dan Abugov, NAVTEQ

Agenda

- BIWA Overview (Dan Vlamis)
- Topic overview and introductory demo (Dan Vlamis)
- OBIEE 11g particulars (Abhinav Agarwal)
- Map Details and Demo of OBIEE Maps (Dan Vlamis)
- NAVTEQ supplies the data (Dan Abugov)
- Q&A (All)

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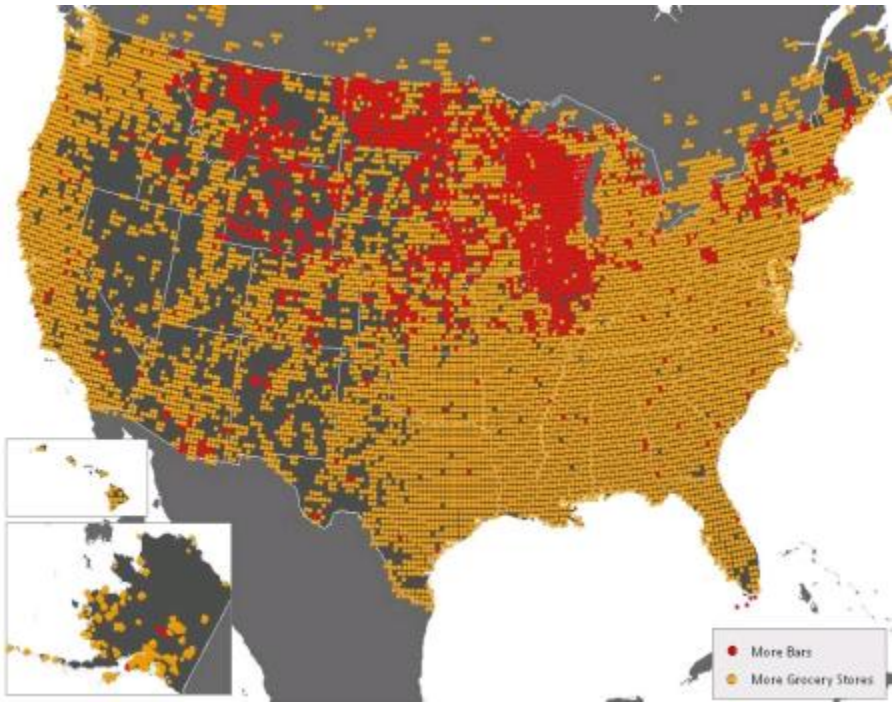
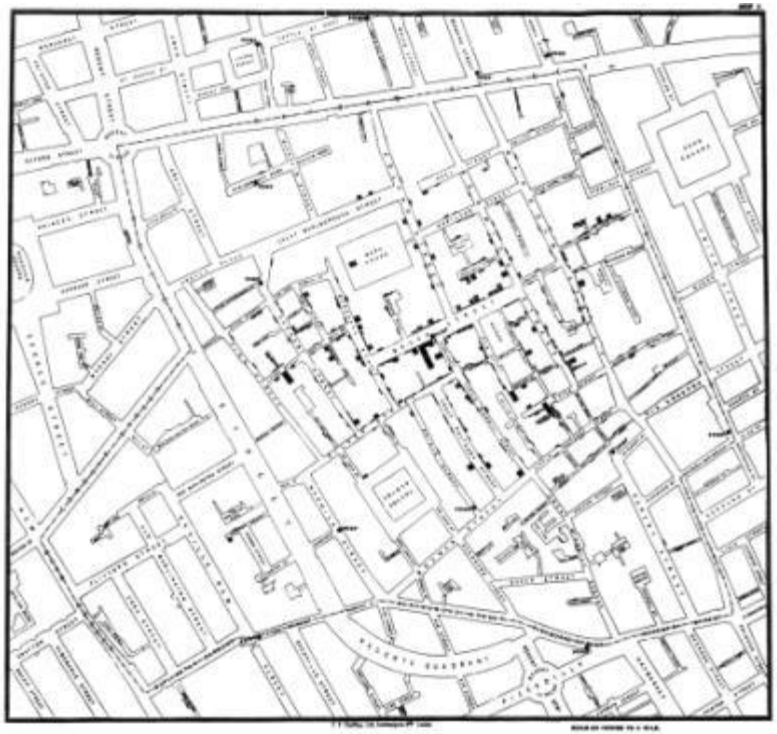
BI and Maps: A Natural Fit

- Maps are a natural choice for representing spatially-related data
- Helps understand many phenomena and their relationships

More bars (red) or grocery stores (brown) per 10,000 people



1854 Cholera incidents and possibly contaminated well



Map courtesy StrangeMaps, Wikipedia (John Snow)

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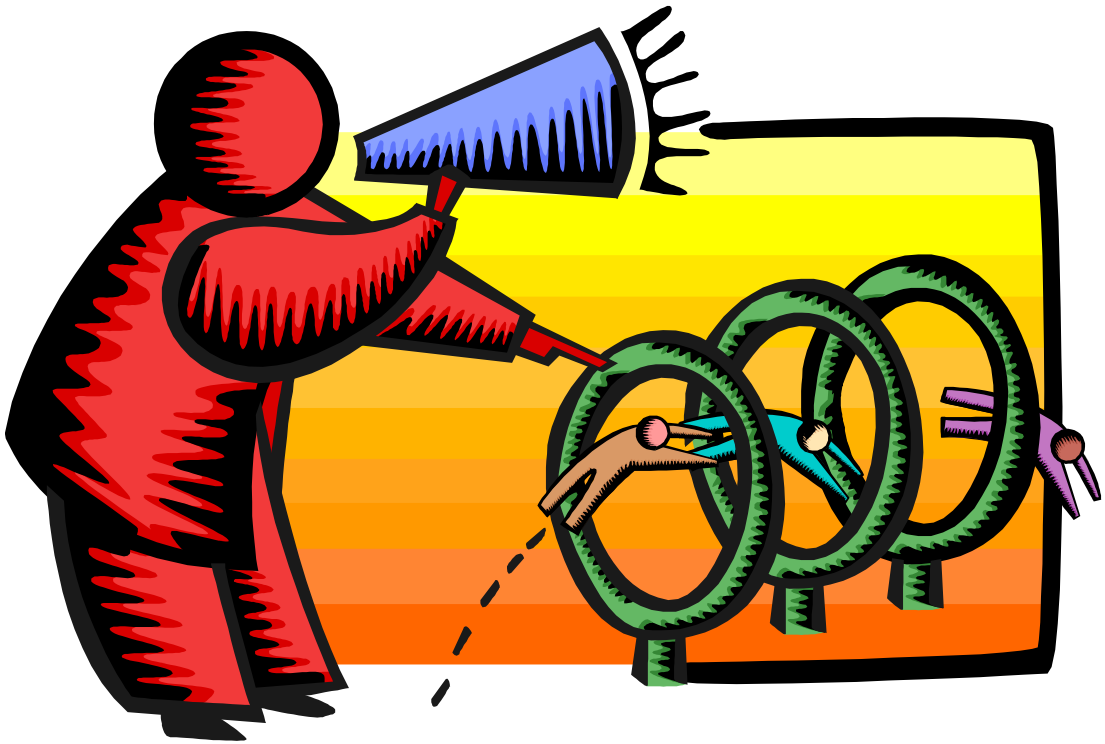
Maps In OBIEE 11g



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Abhinav Agarwal

- Product Manager with Oracle BI EE
  - 16 years of international work experience
  - 8.5 years at Oracle
  - First product manager at Oracle IDC
  - Computer Engineer, MBA (Indian Institute of Management, Bangalore)
  - Technical Editor, “Discoverer 10g Handbook”
- Product Management & Strategy Responsibilities
  - Spatial analytics in Oracle BI EE
  - Advanced visualizations
  - Analytics on mobile devices
  - Oracle BI EE & Office integration
  - Oracle BI SE

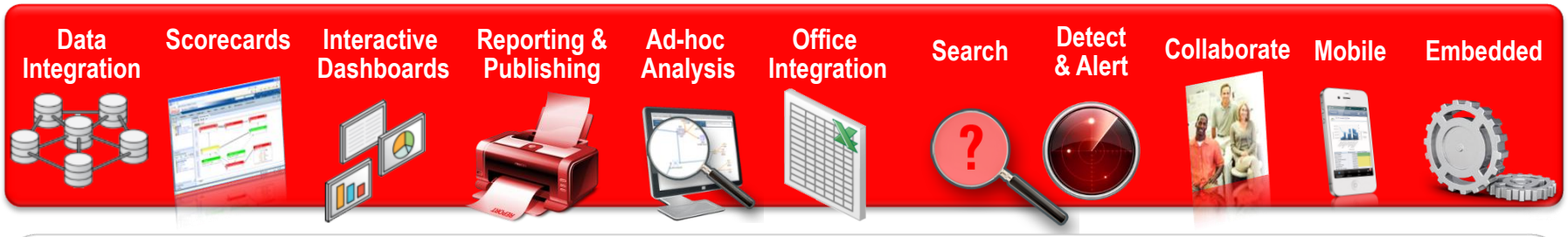
Product Strategy

Overview – Oracle Business Intelligence 11*g*R1

- Delivers best-of-breed products for Query and Analysis, OLAP, Reporting, and Scorecards
- On a complete, open, and architecturally unified Business Intelligence Foundation
- Coupled with leading packaged business intelligence and enterprise performance management applications
- Providing customers with superior alignment, visibility, and fastest time to value

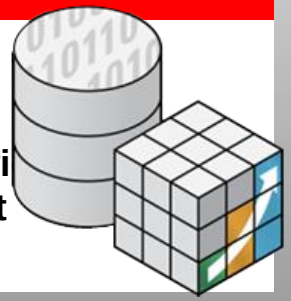
Product Strategy

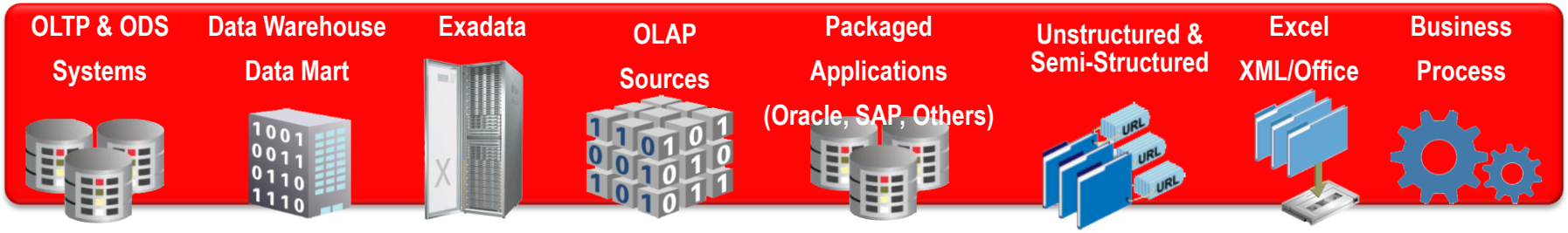
Oracle Business Intelligence 11*g*



Common Enterprise Information Model

- Common Metadata Foundation across all Data Sources
- Common Security, Access Control, Authorization, Auditing
- Common Request Generation and Optimized Data Access Servi
- Common Clustering, Workload Management, & Deployment
- Common Systems & Operational Lifecycle Management



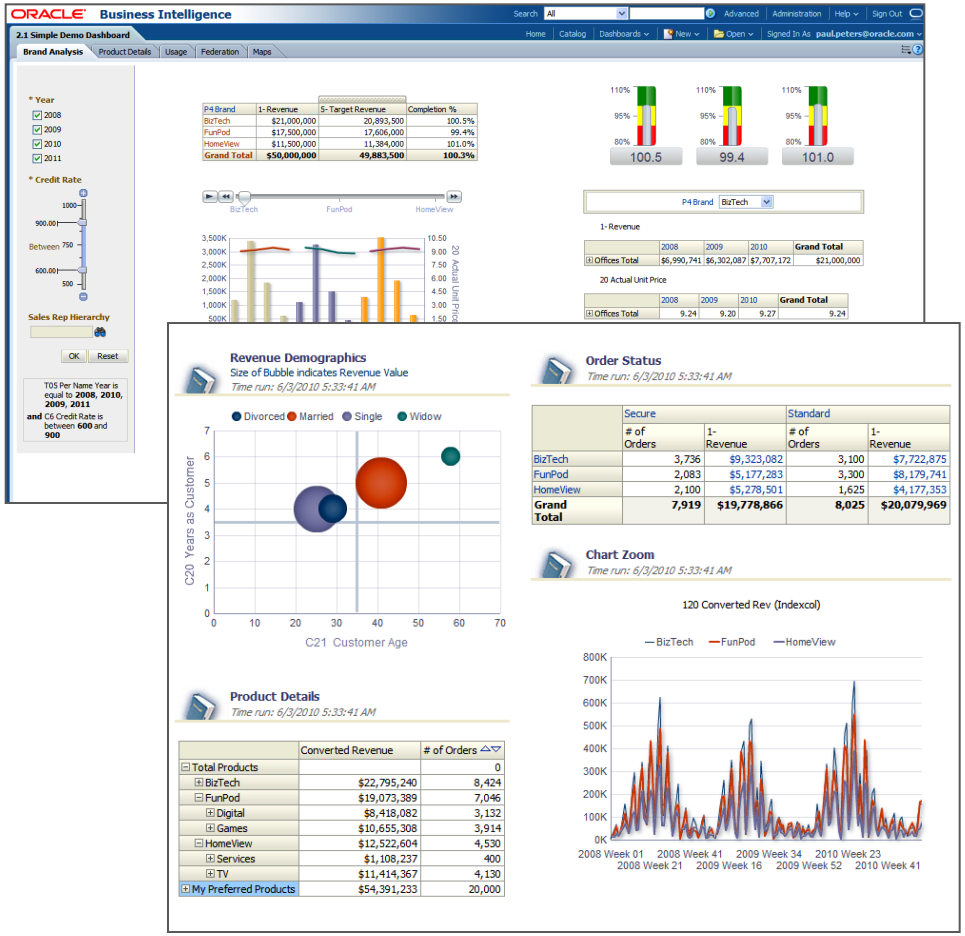


ORACLE

New Interactive Visualizations

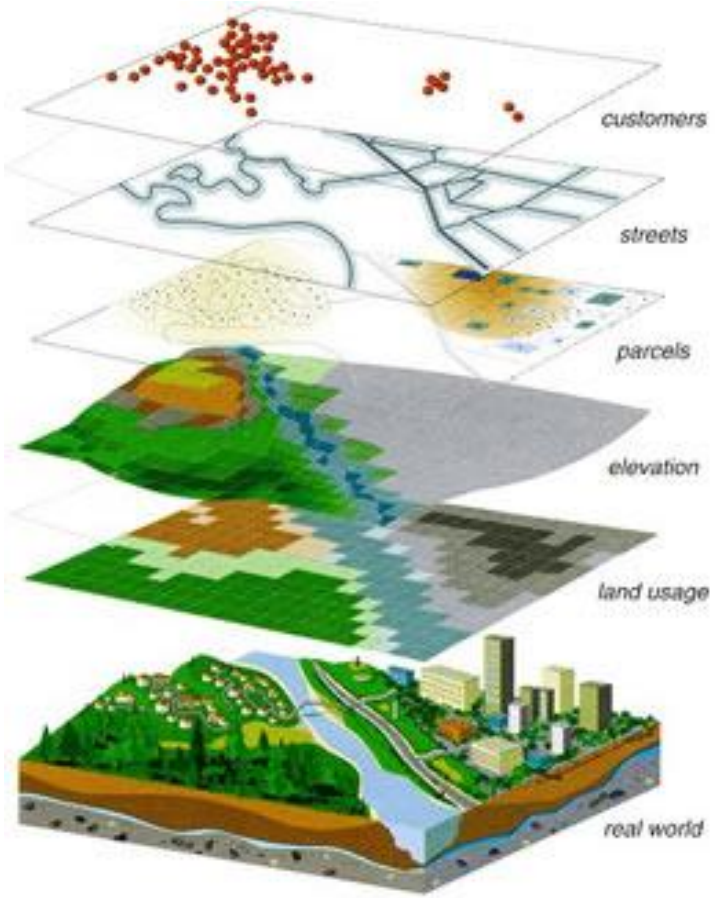
Gain Insight Quicker with Greater Visibility

- **Rich Interactive Visualizations**
- **Animated transitions**
- **Range sliders**
- **Paging sliders**
- **Master-Detail linking**
- **Extensive and extended set of chart types**
- **Consistent, hi-fidelity charting across Oracle product line**



Spatial Intelligence

New Depth and Breadth of Analysis



- **Most business data**
  - Contains geographic dimension
- **Oracle Business Intelligence**
  - Delivers deeper analytical insights through Spatial visualisation and data
  - Increases the ROI of BI & GIS systems

"In effect, Oracle is "flipping the switch" and turning spatial into a product feature when such a capability is needed. It will be daunting to compete against this company.

"Microsoft, beware… we haven't heard much about geospatial and SQL Server integration lately… you are in danger of becoming a non-player. And IBM continues to play with ESRI only, and resists striking out on its own in what could be a missed opportunity."

Directions Magazine
All Things Location

The world's largest resource for "all things location".

Interactive Visualizations

Year	Plant Location Country	Plant Location State	Spend Type	Spend	# of Suppliers	# of Buyers	Invoiced Quantity
2007	BE	Unspecified	ITEM	8,451,585	11	4	11,746
			TAX	288,325	8	4	
	BR	SP	ITEM	706,542	2	3	848
	FR	Unspecified	ITEM	36,058,468	10	8	51,139
			TAX	958,229	9	8	
	GB	Unspecified	ITEM	22,308,436	14	15	45,025
			TAX	464,114	9	4	
	IT	Unspecified	ITEM	8,406,679	11	4	14,435
			TAX	309,027	8	4	
	JP	Unspecified	ITEM	9,606	3	1	25
	NL	Unspecified	ITEM	28,937,424	10	4	44,364
			TAX	461,415	8	2	
	US	AZ	ITEM	136,853	2	1	18,904
		CA	ITEM	37,732,046	42	11	1,884,123
		CO	ITEM	1,080	1	1	90
		DC	ITEM	17,771,255	9	4	74,600
		GA	ITEM	88,411	11	3	59,332
		IL	ITEM	44,876	1	1	2,508
		LA	ITEM	132,583	1	1	17,704
		MA	ITEM	68,870,319	6	1	472,984
		MI	ITEM	31	3	2	545
		NC	ITEM	8,546,510	7	1	5,362
		NY	ITEM	50,640,285	21	5	17,139,790
			TAX	29	2	2	
		OH	ITEM	129,588	3	1	970
		OR	ITEM	84	2	1	28
		TX	ITEM	38,843,715	6	1	575,742
		WA	ITEM	115,436,145	14	5	6,463,985
2008	BE	Unspecified	ITEM	13,333,269	11	4	22,325
			TAX	58,493	6	3	
	BR	SP	ITEM	870,357	2	3	1,061
	FR	Unspecified	ITEM	41,952,960	10	9	56,607
			TAX	136,779	4	7	
	GB	Unspecified	ITEM	22,465,922	14	15	43,092
			TAX	63,570	8	3	
	IT	Unspecified	ITEM	16,737,493	11	4	25,791
			TAX	47,759	6	4	
	NL	Unspecified	ITEM	33,260,624	10	1	50,108
			TAX	76,018	7	1	
	US	AZ	ITEM	33,430	1	1	3,643
		CA	ITEM	60,694,355	40	8	3,106,348
		DC	ITEM	25,200,385	10	2	1,485,759
		GA	ITEM	31,225	5	2	10,763
		IL	ITEM	30,293	3	1	20,784
		LA	ITEM	33,430	1	1	3,643
		MA	ITEM	82,256,650	6	1	524,637
		MI	ITEM	802,112	8	4	3,222
		MO	ITEM	35,370	1	1	3,300
		NY	ITEM	69,697,336	27	5	22,102,803
		TX	ITEM	9,439,856	4	1	129,914
		WA	ITEM	136,069,973	12	5	3,951,135
2009	BE	Unspecified	ITEM	11,697,369	11	4	17,046
	BR	SP	ITEM	1,473,386	2	3	1,899
	FR	Unspecified	ITEM	33,198,938	10	9	44,401
	GB	Unspecified	ITEM	24,755,294	16	17	39,835
	IT	Unspecified	ITEM	12,073,284	10	4	18,328
	NL	Unspecified	ITEM	32,432,405	8	1	47,631
			TAX	0	4	1	
	US	AZ	ITEM	11,837	1	1	1,478
		CA	ITEM	82,716,304	42	11	5,812,906
		DC	ITEM	23,148,814	13	4	98,294
		GA	ITEM	500	3	2	28,554
		IL	ITEM	0	1	1	1
		LA	ITEM	10,896	1	1	1,440
		MA	ITEM	69,615,738	6	1	382,722
		MI	ITEM	0	4	1	6,292
		MO	ITEM	800	1	1	1,600
		NY	ITEM	62,612,113	18	6	25,402,439
		TX	ITEM	1,650	4	2	3,014
		WA	ITEM	92,470,150	7	5	1,354,899

Records 1 - 70 (All Records)

Information

Year
Plant Location Country, State
Spending Type

Spend
Suppliers
Buyers
Invoiced Quantity

Analysis

Interactive Visualizations

Year	Plant Location Country	Plant Location State	Spend Type	Spend	# of Suppliers	# of Buyers	Invoiced Quantity
	BE	Unspecified	ITEM	8,451,585	11	4	11,746
			TAX	288,325	8	4	
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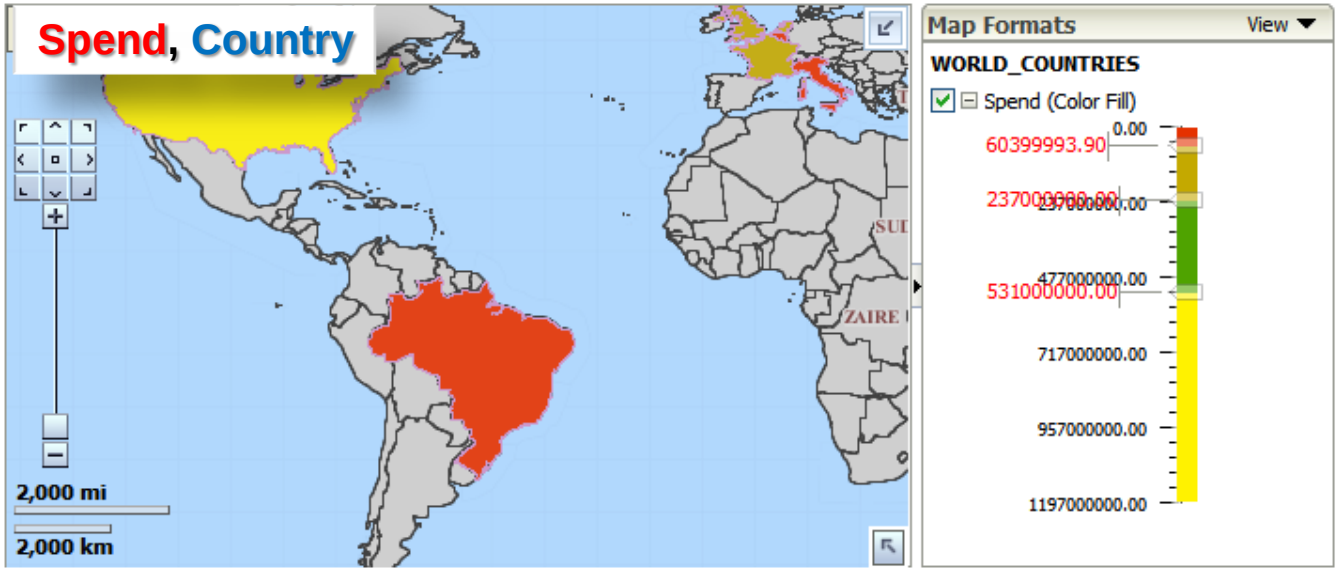
	FR	Unspecified	ITEM	36,058,468	10	8	51,139
			TAX	958,229	9	8	
	GB	Unspecified	ITEM	22,308,436	14	15	45,025

Spend, Country

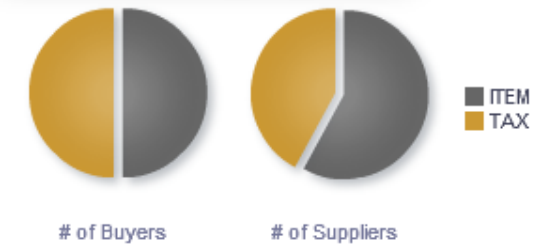


Buyers, Year

Invoiced Quantity, Year

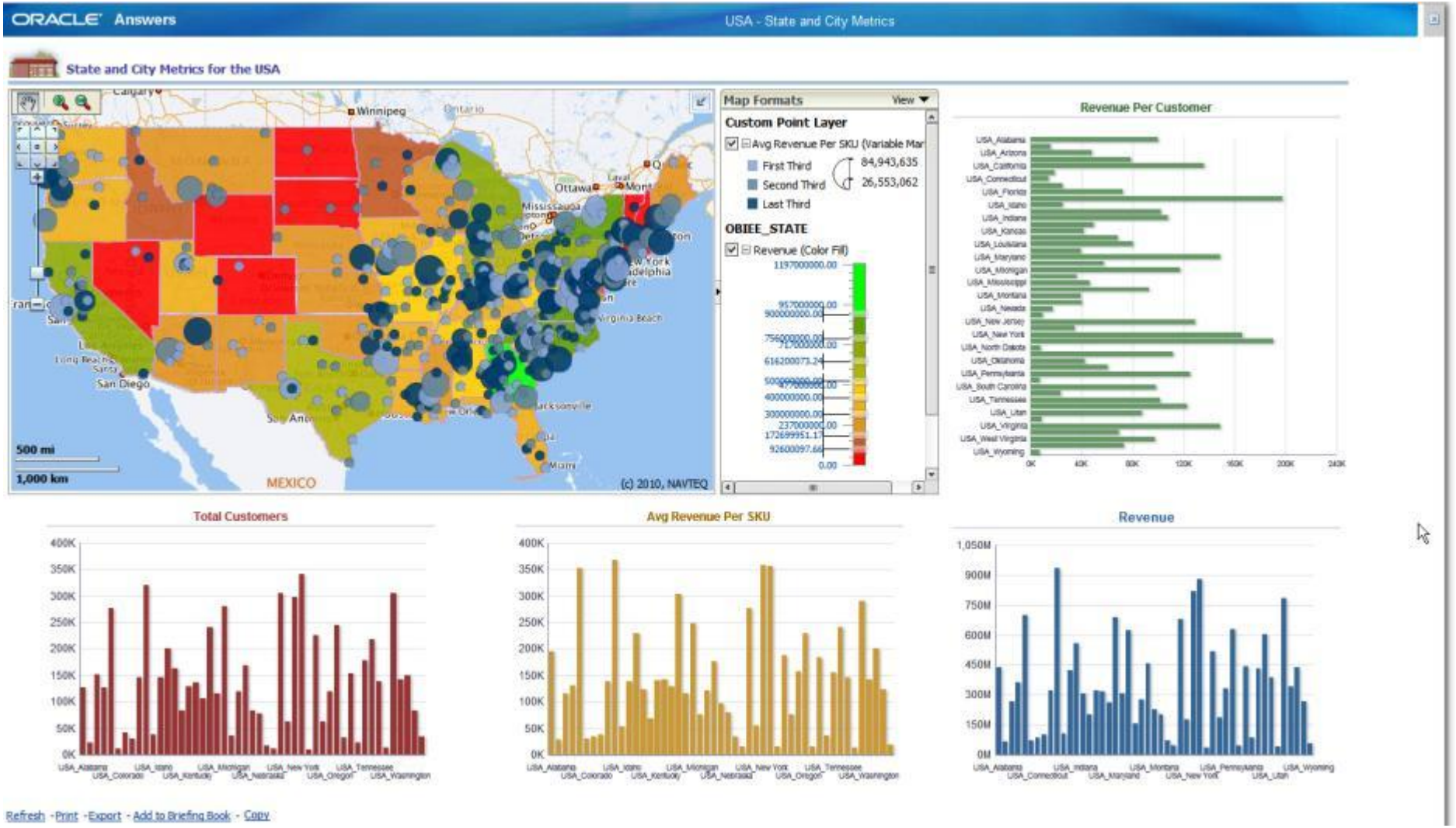
Buyers, Suppliers, Year

Buyers, Suppliers Spending Type



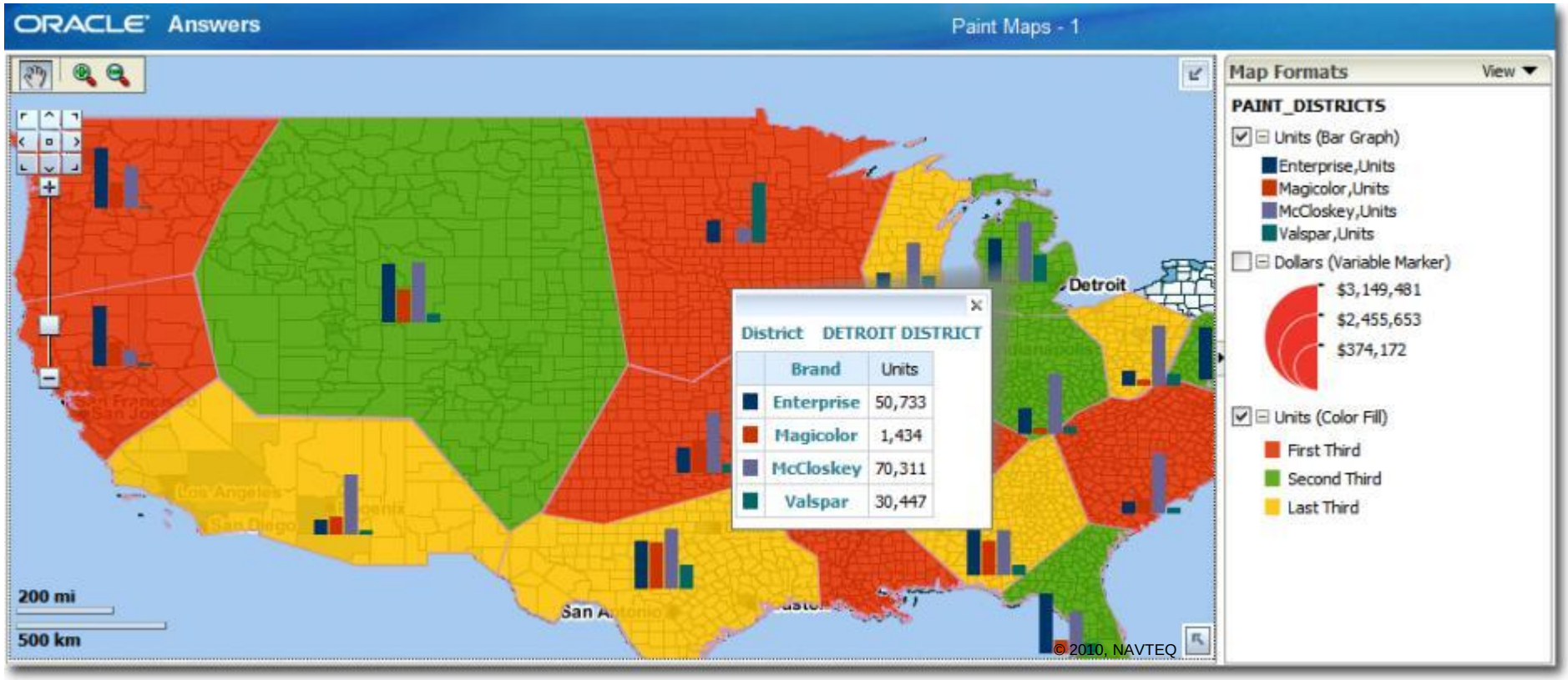
Why Spatial Map Visualizations?

The Original High-Density Visualization



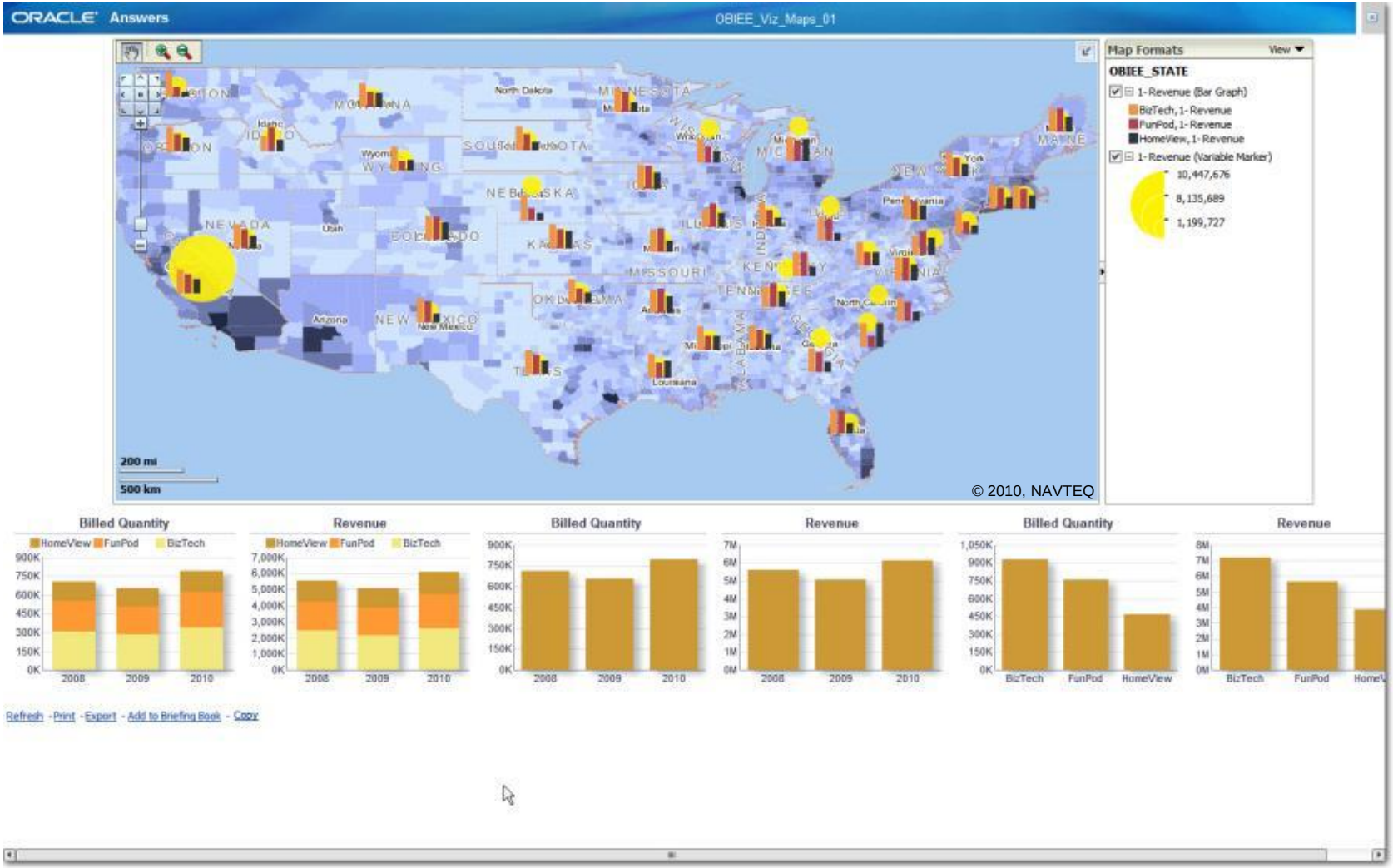
Why Spatial Map Visualizations?

Custom Territories



Why Spatial Map Visualizations?

Ideal For Master-Detail Analysis



Dan Vlamis' Background

- Developer for IRI (former owners of Oracle OLAP).
- Founded Vlamis Software in 1992.
- Wrote portions of Oracle Sales Analyzer.
- Beta tester for Oracle products including OBIEE 11g.
- Oracle ACE.
- Expert speaker at Oracle conferences.
- Co-author of book "Oracle Essbase & Oracle OLAP".
- BI/DW/EPM Track Chair for 2010 Collaborate Conference.
- BA Computer Science Brown University.

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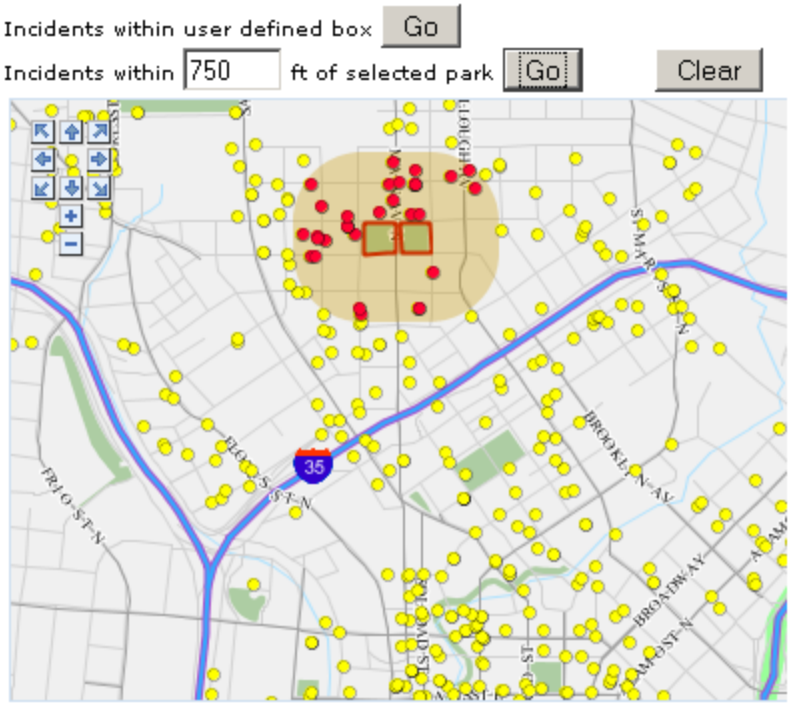
Some Analysis Is Possible Only with Spatial Analytics



Show incidents within 750 ft of selected park

Complaint Detail

Offense Desc	PD Desc	Date Key	Complaint Key	Service Area	Region
CRIMINAL MISCHIEF & RELATED OF	MISCHIEF, CRIMINAL 4, OF MOTOR	18-Feb-03	1026	28	Central
DANGEROUS DRUGS	CONTROLLED SUBSTANCE, POSSESSI	10-Nov-02	30099	28	Central
		10-Mar-03	40099	28	Central
HARRASSMENT 2	HARASSMENT,SUBD 1,CIVILIAN	02-Aug-03	1064	32	Central
	HARASSMENT,SUBD 3,4,5	04-Mar-03	1027	28	Central
		04-May-03	31027	28	Central
		04-Sep-03	41027	28	Central
		19-Sep-03	41028	28	Central
ROBBERY	ROBBERY,UNCLASSIFIED,OPEN AREA	09-Jan-04	41032	28	Central

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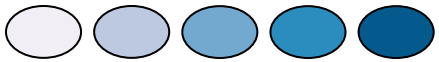
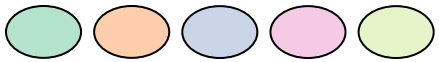
When Are Map Views Useful

- 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 location is important? Can the dimension be plotted on a map?

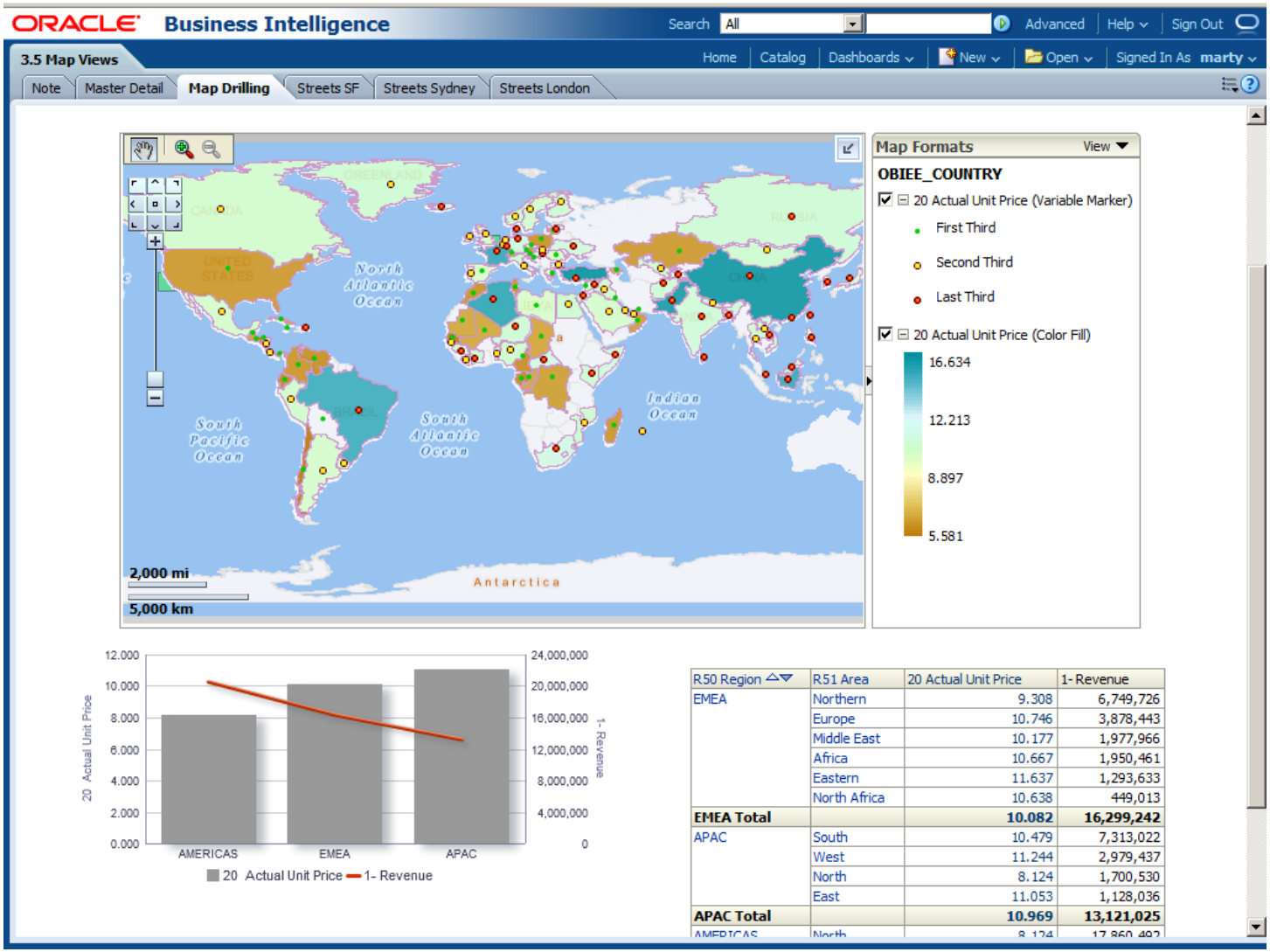
Map View Tips

- 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 pallet. 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.

Demo of OBIEE 11g Maps



R50 Region	R51 Area	20 Actual Unit Price	1- Revenue
EMEA	Northern	9.308	6,749,726
	Europe	10.746	3,878,443
	Middle East	10.177	1,977,966
	Africa	10.667	1,950,461
	Eastern	11.637	1,293,633
	North Africa	10.638	449,013
EMEA Total		**10.082**	**16,299,242**
APAC	South	10.479	7,313,022
	West	11.244	2,979,437
	North	8.124	1,700,530
	East	11.053	1,128,036
APAC Total		**10.969**	**13,121,025**
AMERICAS	North	8.124	17,860,492

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Dan Abugov

25 years of database experience

- 10 years at Digital Equipment Corporation (Rdb)
- 10 years at Oracle (mostly location/spatial/maps)
- NAVTEQ (Consultant and Business Development Manager)

Often speaks at Oracle OpenWorld, Oracle Collaborate, Spatial SIG meetings

Major focus: how database applications use maps and location data

Who is NAVTEQ

NAVTEQ is the leading global provider of digital map, traffic and location data that enables navigation and location-based platforms around the world

In-dash Navigation Systems
GPS / Personal Navigation Devices
Internet Portals
Mobile/Cell Phones
Over 100,000,000 uses of our map every day

Commercial and Government (Enterprise)
- Business Intelligence, fleet optimization, mobile workforce management, field service, GIS

NAVTEQ is a Global Company

Approximately 5,000 employees

- 2,300 in Digital Mapping Organization
  - Over 1000 drive the roads every day
- 700 Employees in R&D
- 211 offices in 48 countries
- Over 2,000,000 map changes every day

NAVTEQ

NAVTEQ Content and Oracle Applications

NAVTEQ has been working with Oracle for close to a decade

- Many business use cases
- Deliver turnkey content

ORACLE E-BUSINESS SUITE

ORACLE FUSION MIDDLEWARE BUSINESS INTELLIGENCE SUITE

ORACLE UTILITIES

ORACLE COMMUNICATIONS

ORACLE SPATIAL

ORACLE FUSION MIDDLEWARE UNIVERSAL CONTENT MANAGEMENT

ORACLE RETAIL

NAVTEQ™

ORACLE CUSTOMER RELATIONSHIP MANAGEMENT

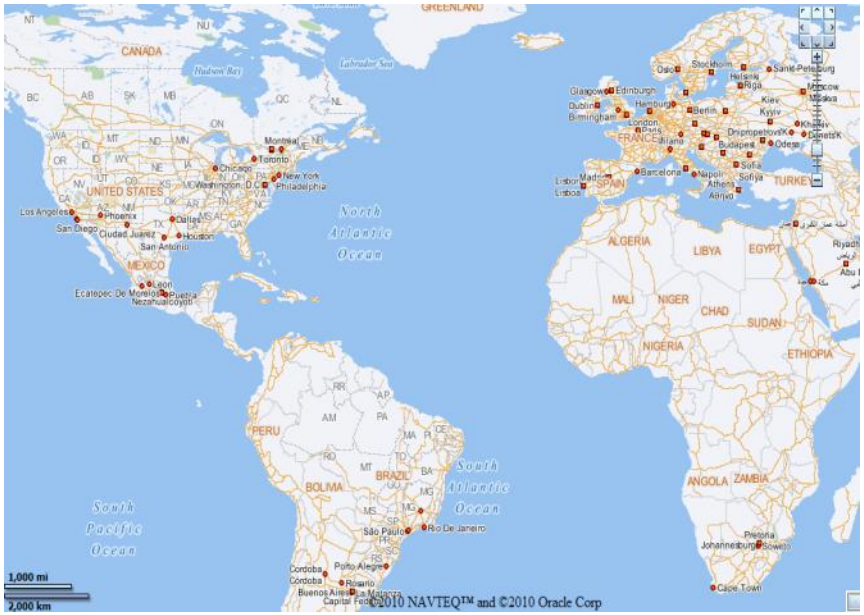
ORACLE Application Express

ORACLE E-BUSINESS SUITE TRANSPORTATION MANAGEMENT

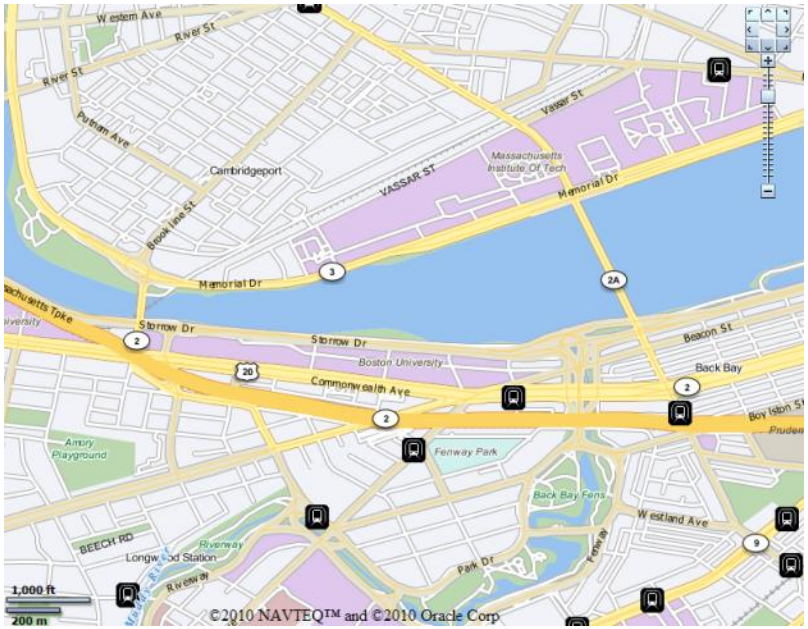
ORACLE FUSION MIDDLEWARE JDEVELOPER

NAVTEQ Content Delivery

High Level boundary data available free with OBIEE, along with other sample data



Detailed content available from resellers, e.g. Vlamis



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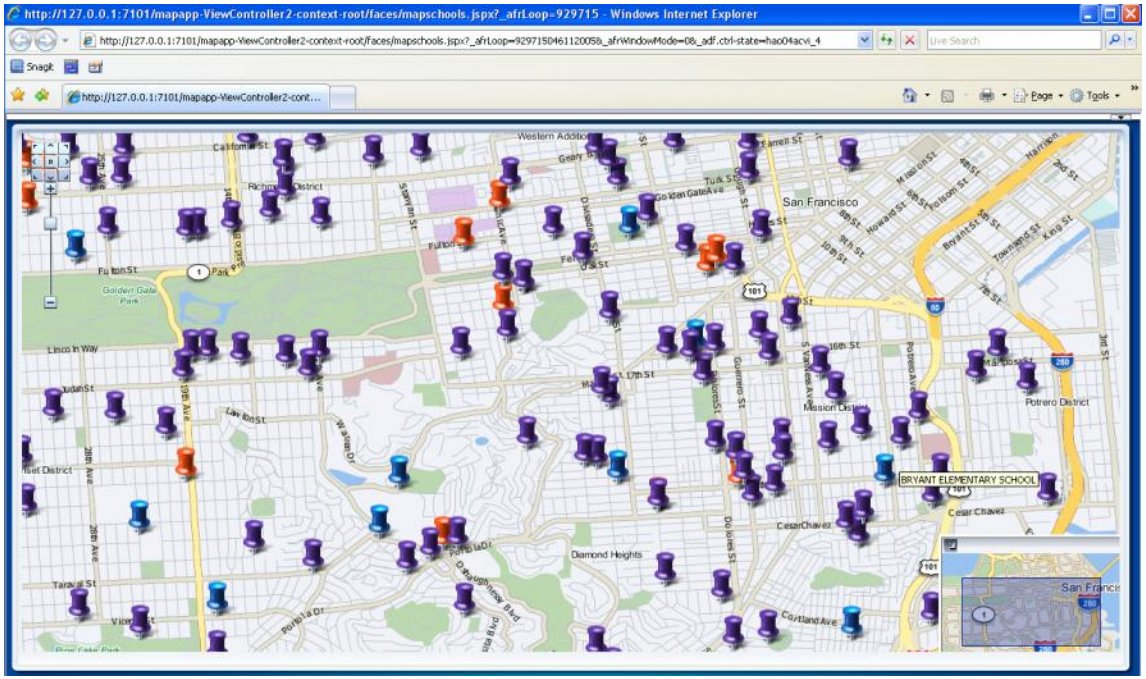
NAVTEQ Content for BI

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

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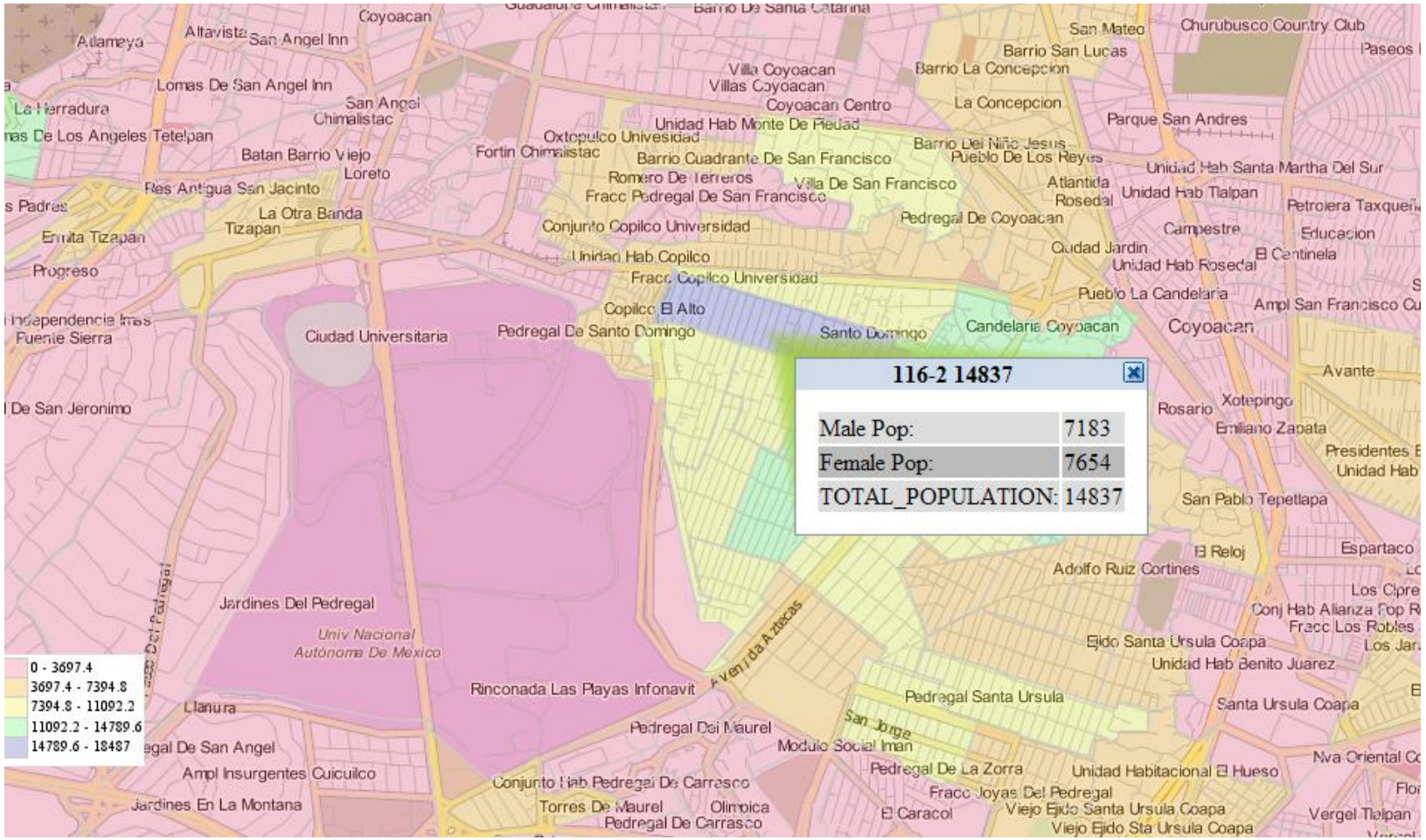
NAVTEQ Content for BI

Postal codes, census boundaries



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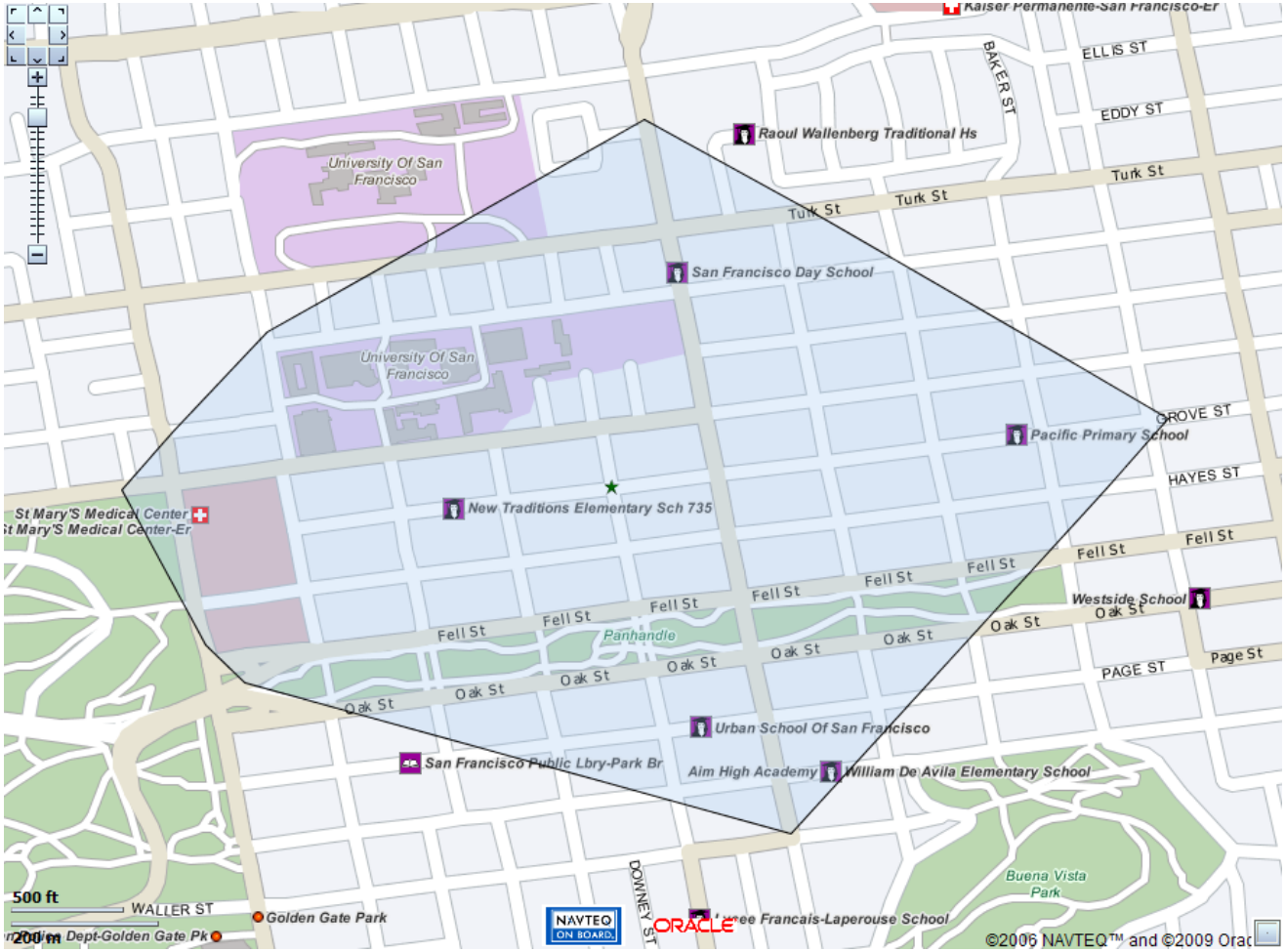
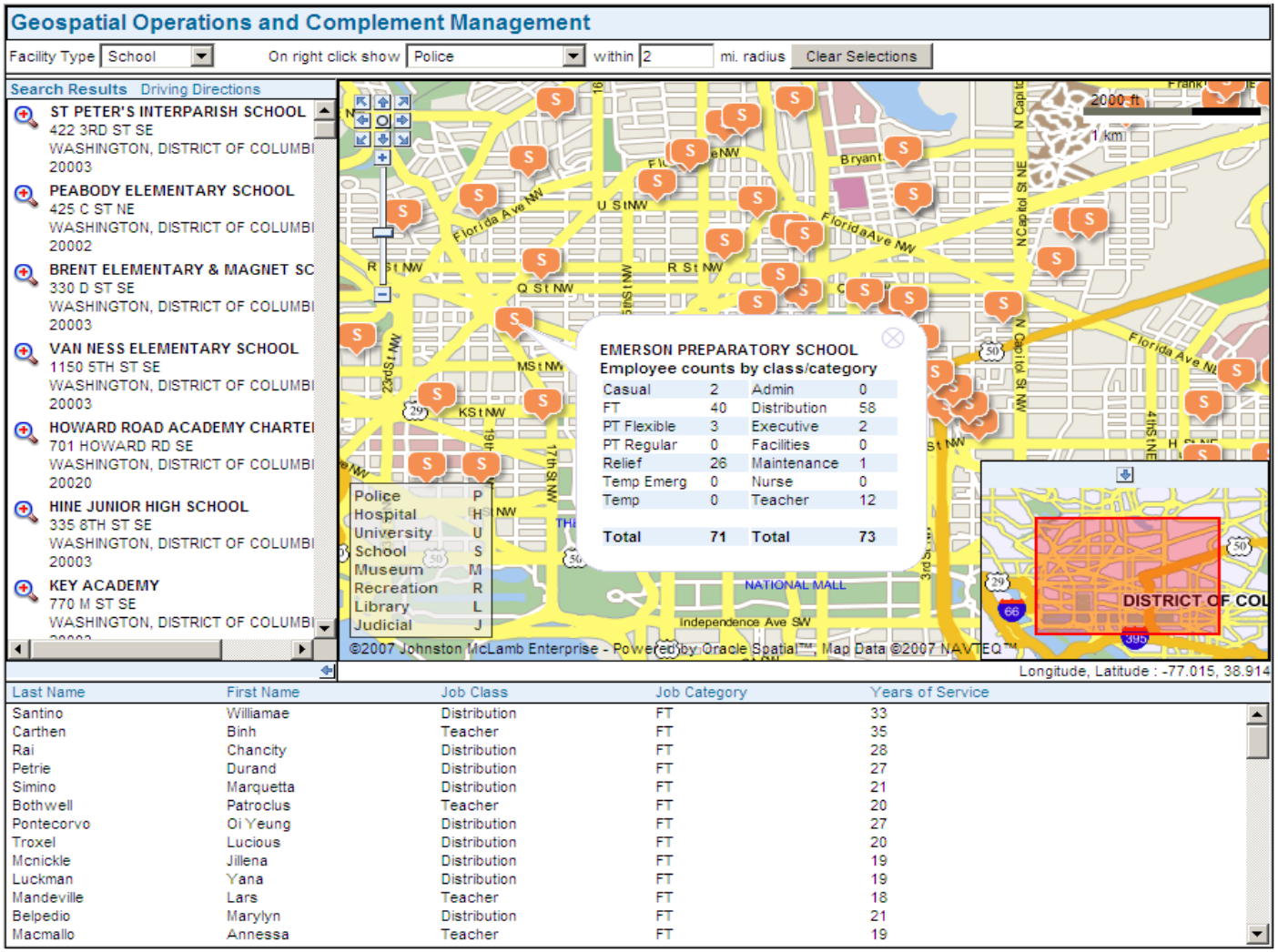
NAVTEQ Content for BI

Routing data for drive time/drive distance polygons



NAVTEQ

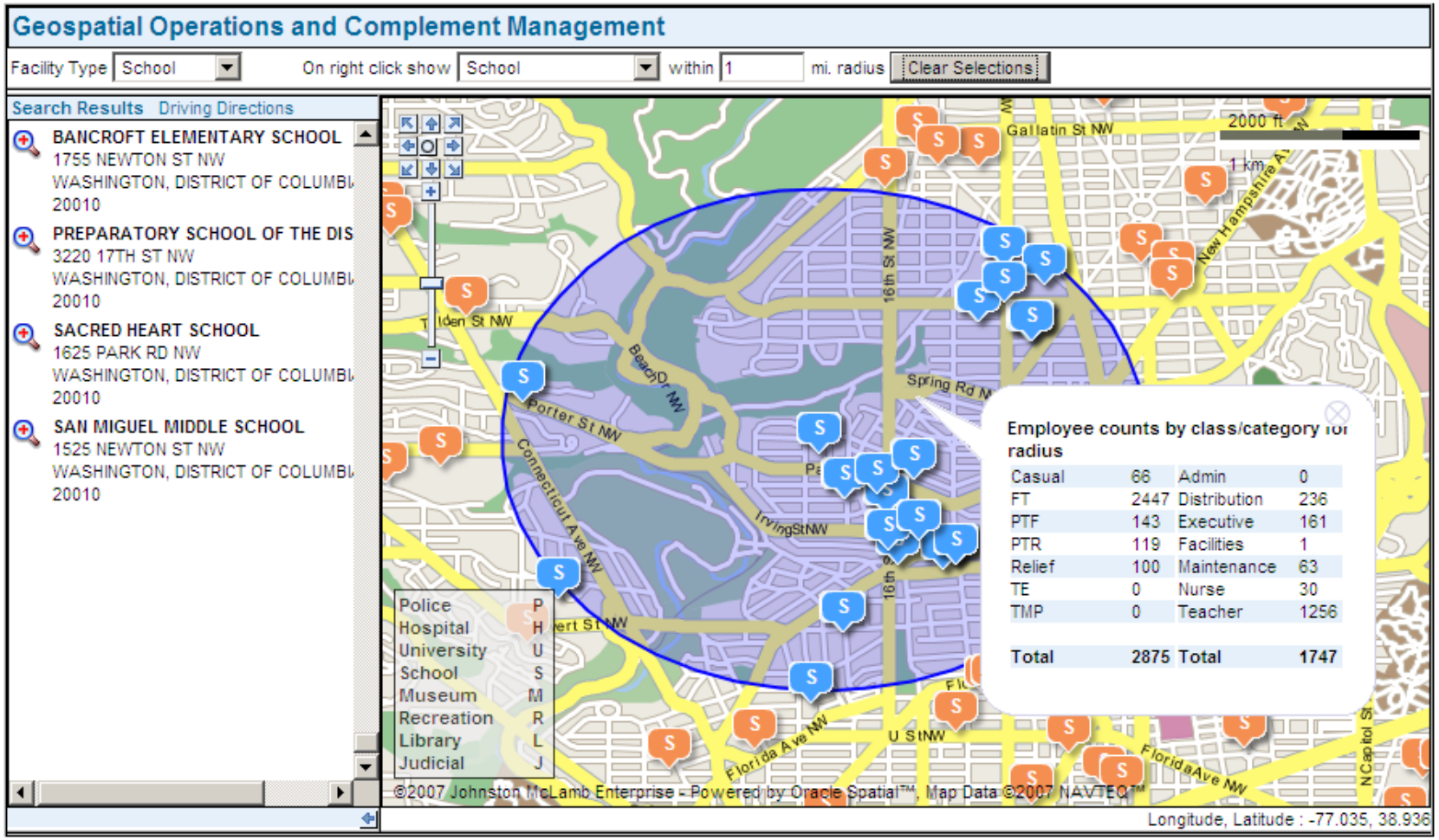
Visual Analytics – Java



Courtesy of Johnston McLamb

NAVTEQ

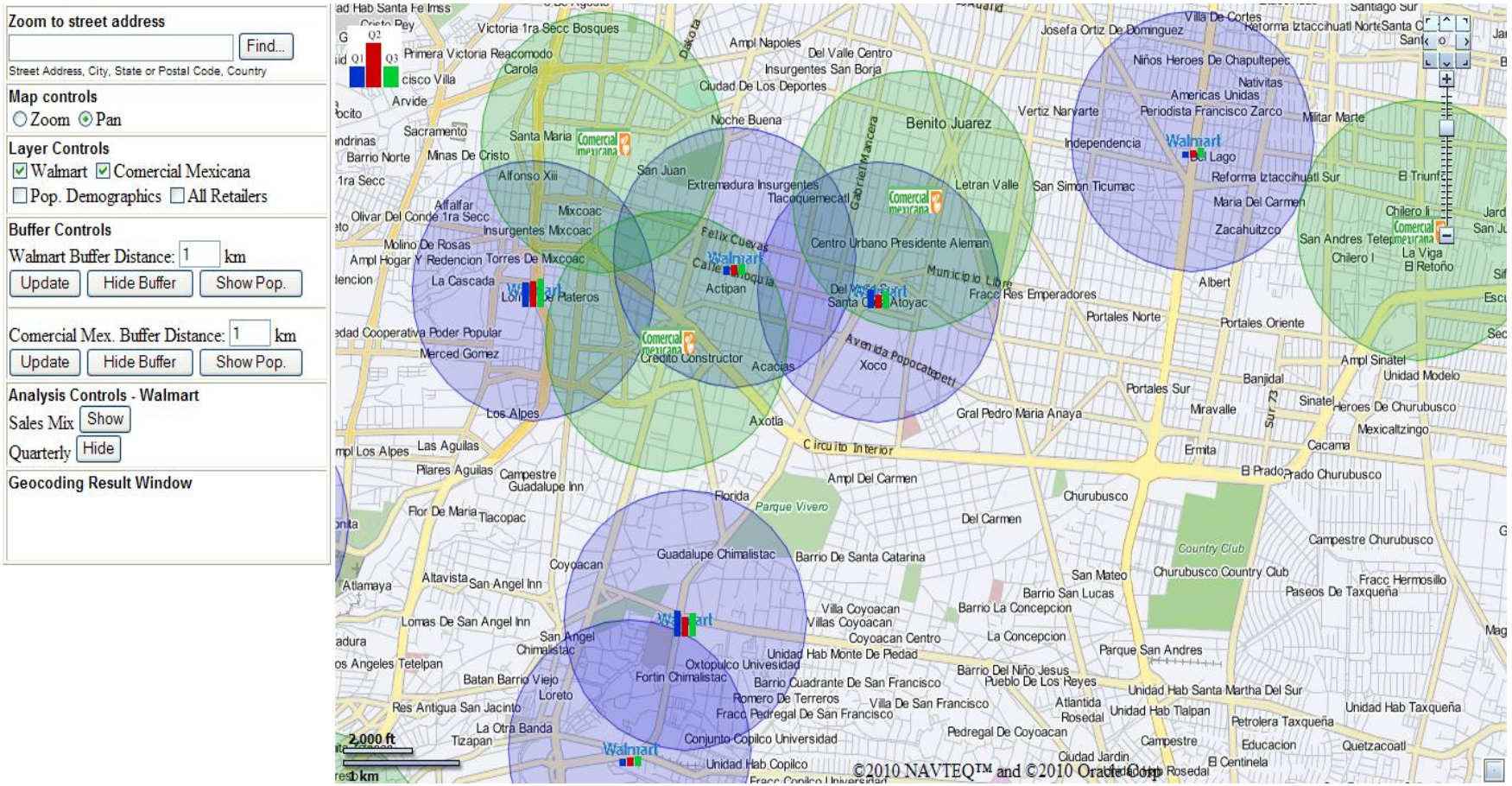
Visual Analytics – Java



Courtesy of Johnston McLamb

NAVTEQ

Visual Analytics



NAVTEQ

Other Types of Maps

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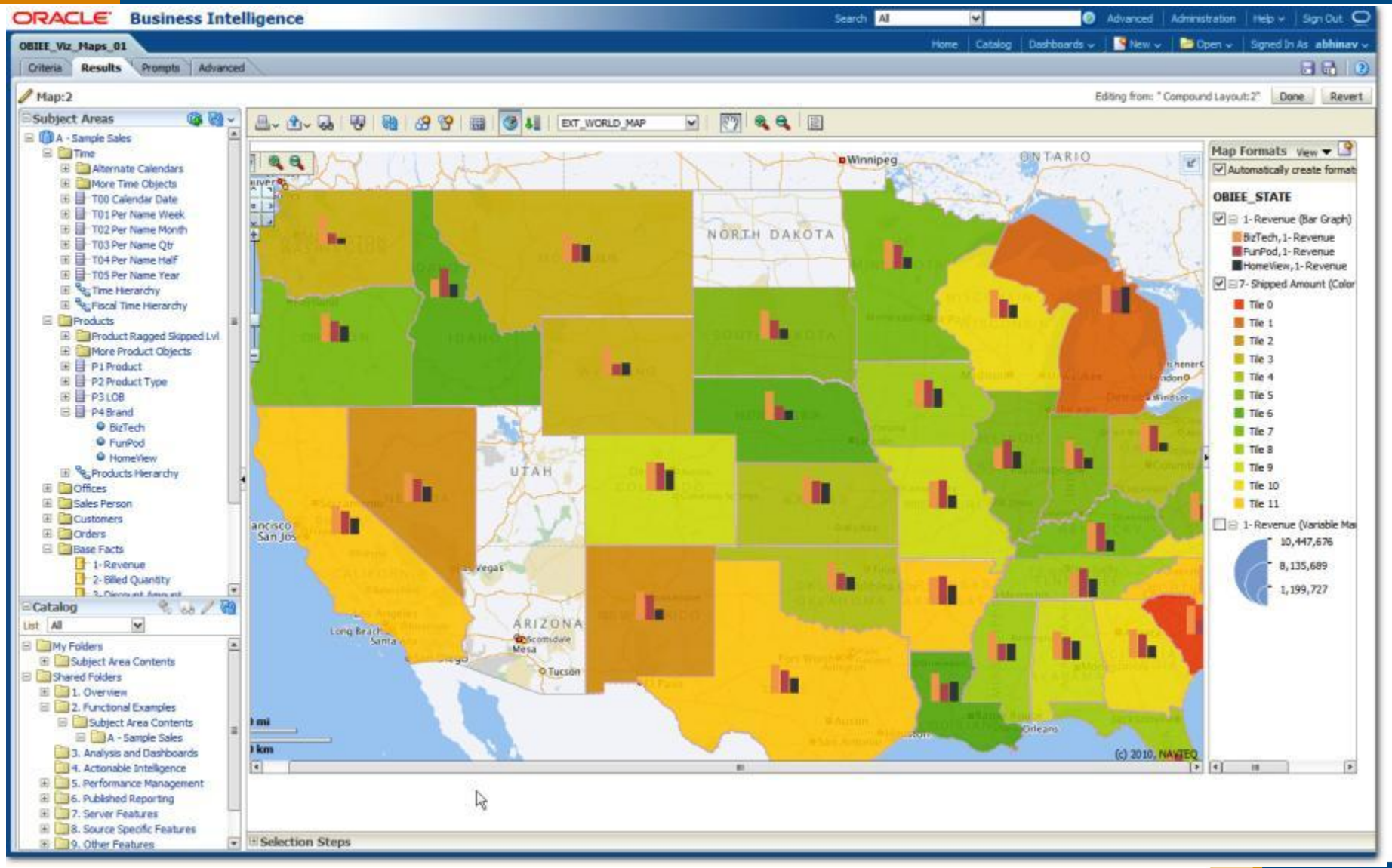
Another example of multiple map formats



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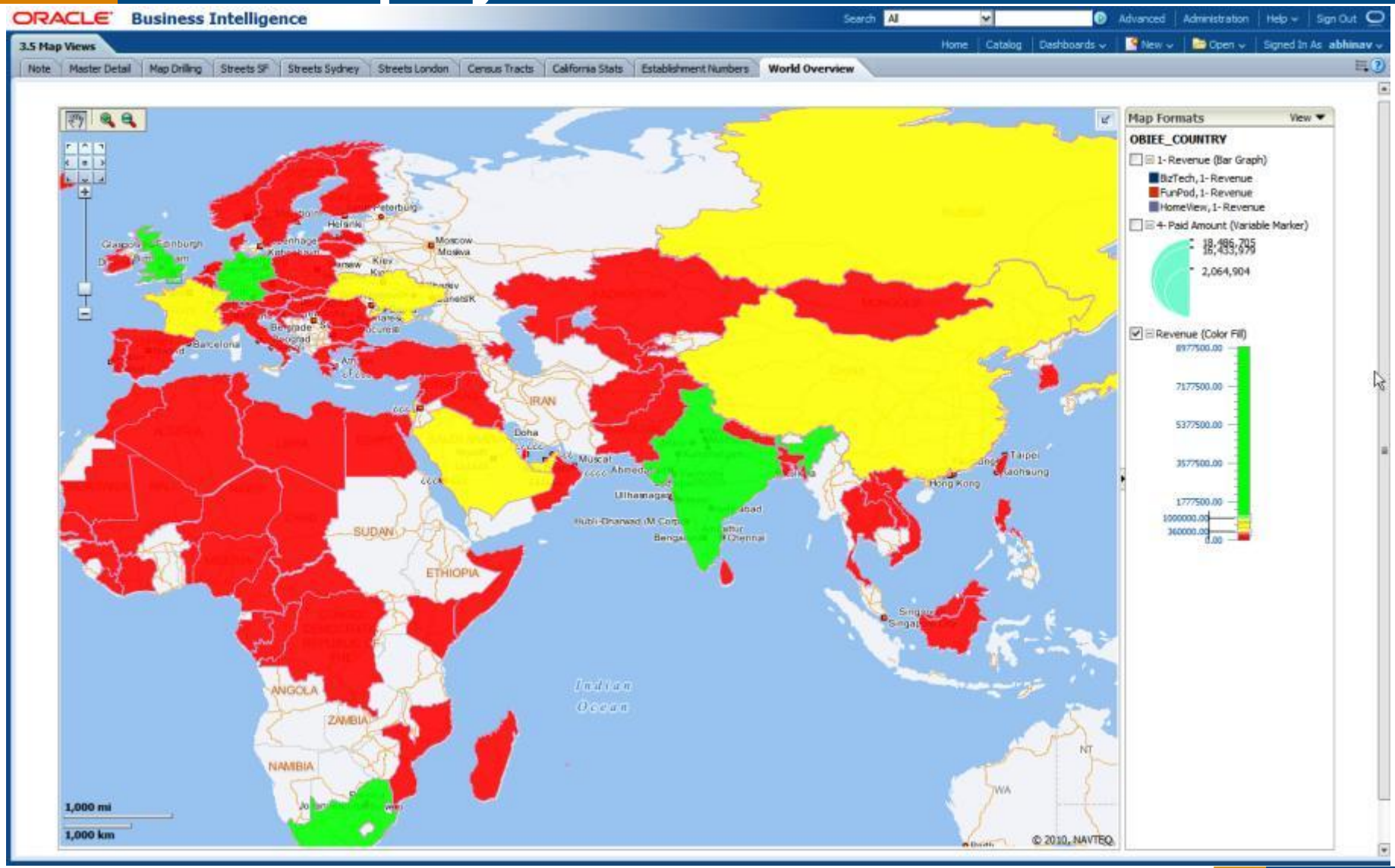
Users choose which formats are displayed



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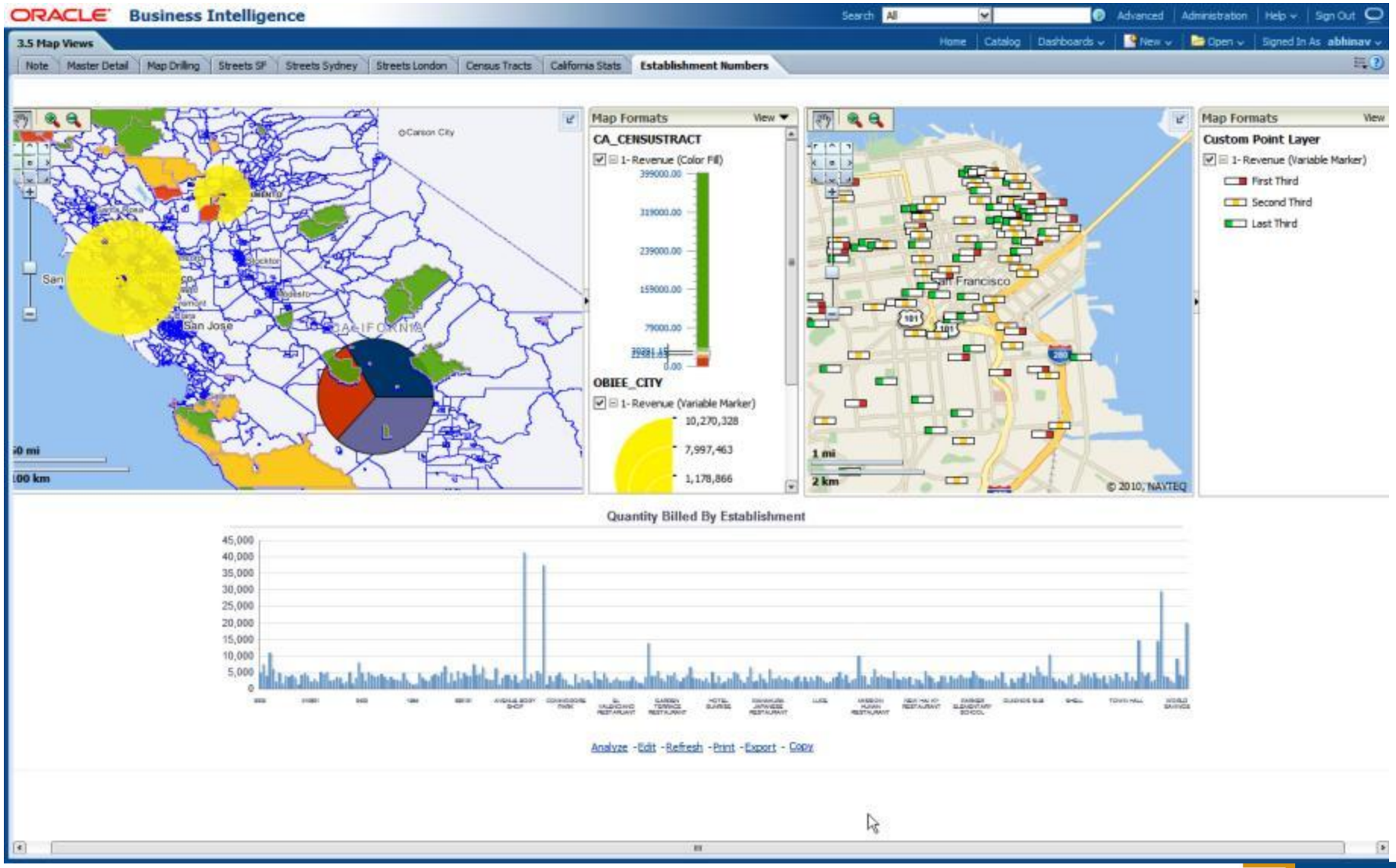
Dashboard Page With Multiple Map Views



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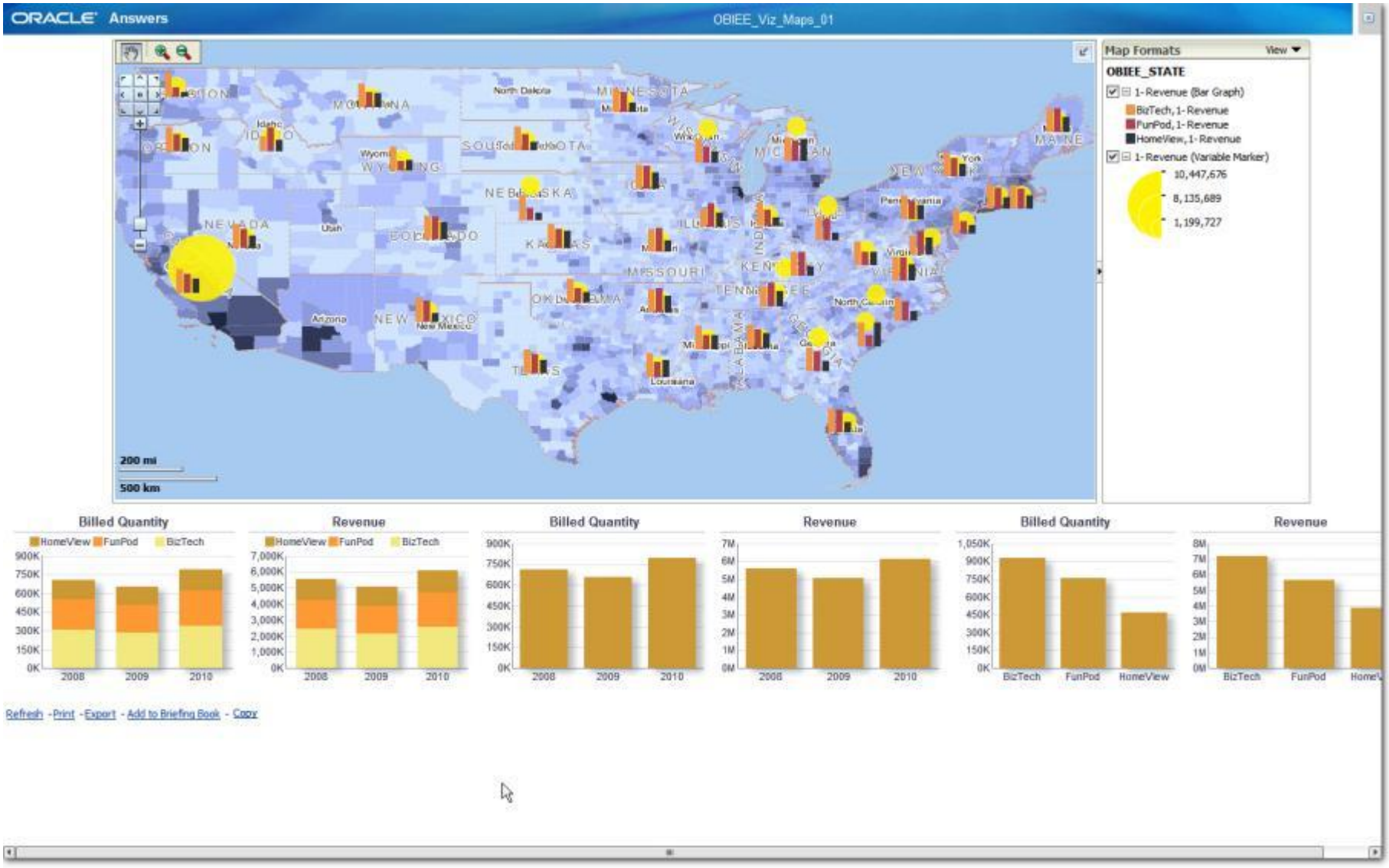
Background Map Can Be a Thematic Map



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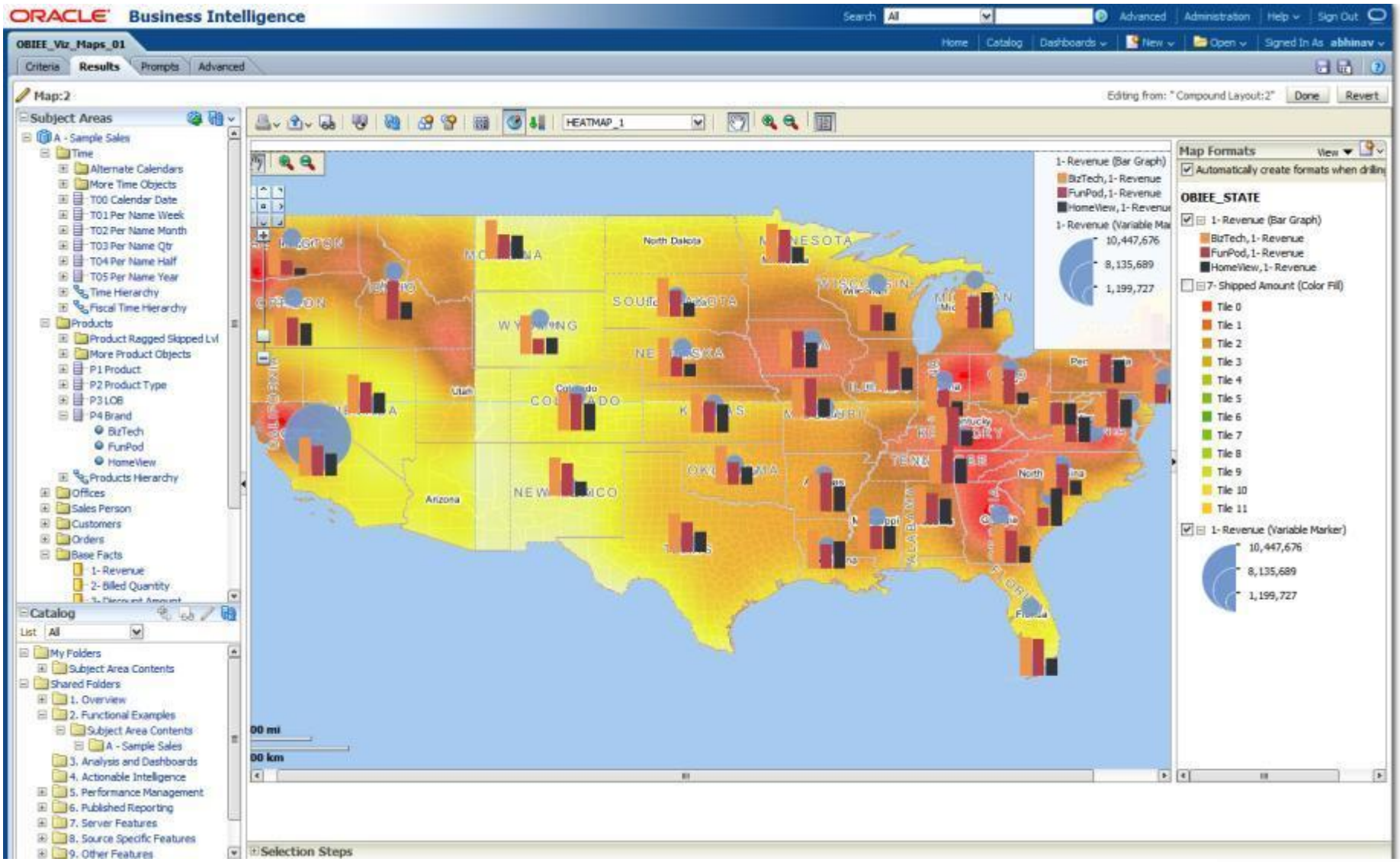
Background Map Can Be a Thematic Map



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Q&A and More Information

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