

# Bring Location Analysis to Your Big Data Workloads Using Oracle Big Data Spatial and Graph

Big Data Showcase Theater



September 18–22, 2016  
San Francisco

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Oracle Spatial and Graph Technologies  
September 2016



# Agenda

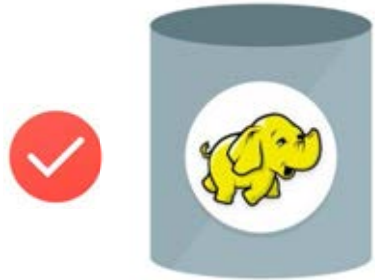
- 1 Why Location Analysis for Big Data
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# Spatial Analysis – It is about relationships



- Are things in the same location? Who is the nearest? What tax zone is this in? **Where can we deliver in 35 minutes?** What is in my sales territory? Is this built in a flood zone?

# Motivation for Oracle Big Data Spatial



Emergence of Hadoop for spatial analysis in business and spatial workflows



Existing Hadoop-based Spatial technologies are Geospatial-centric, not Application-centric



No significant commercial offerings

# Big Data Challenges

Requires more development resources  
and data scientists

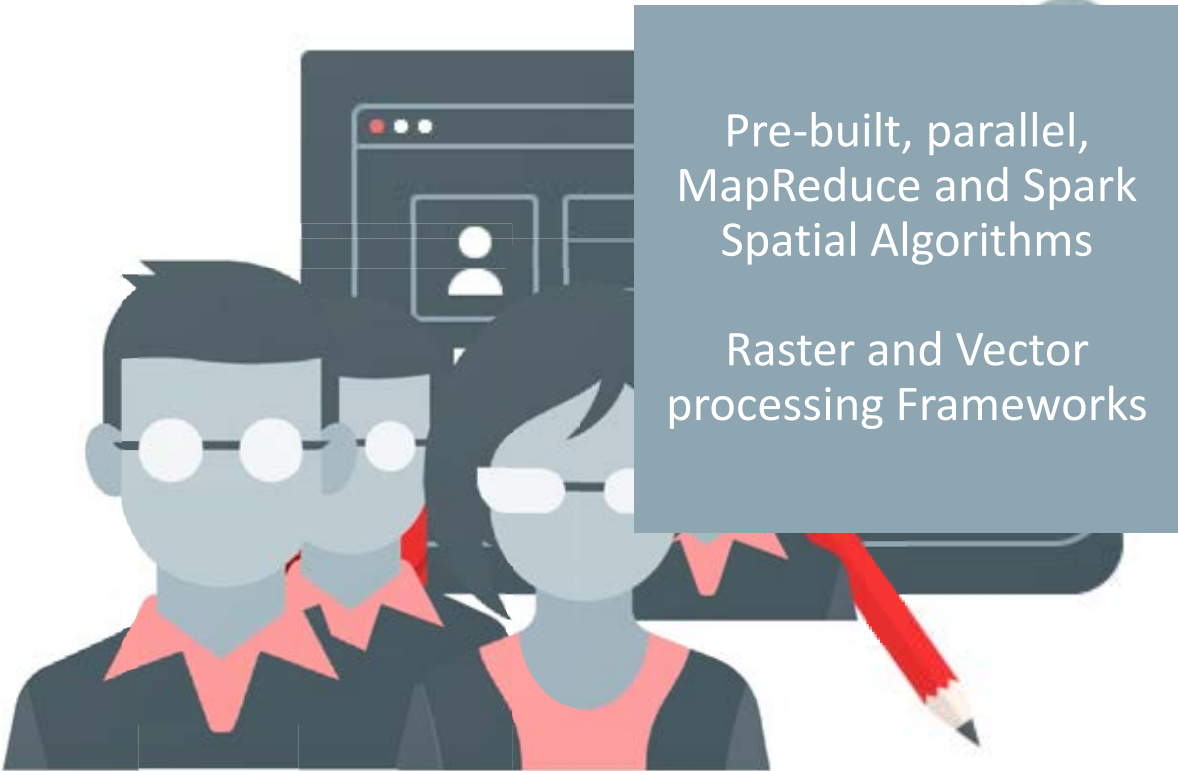


Build your own environment  
from commodity hardware and  
open source software.



# Big Data Solution

Make developers and data scientists more productive



Pre-built, parallel,  
MapReduce and Spark  
Spatial Algorithms

Raster and Vector  
processing Frameworks

Optimized, pre-configured  
Big Data Appliance and Cloud  
platforms



# A Complete Big Data Portfolio

Oracle Data  
Integrator

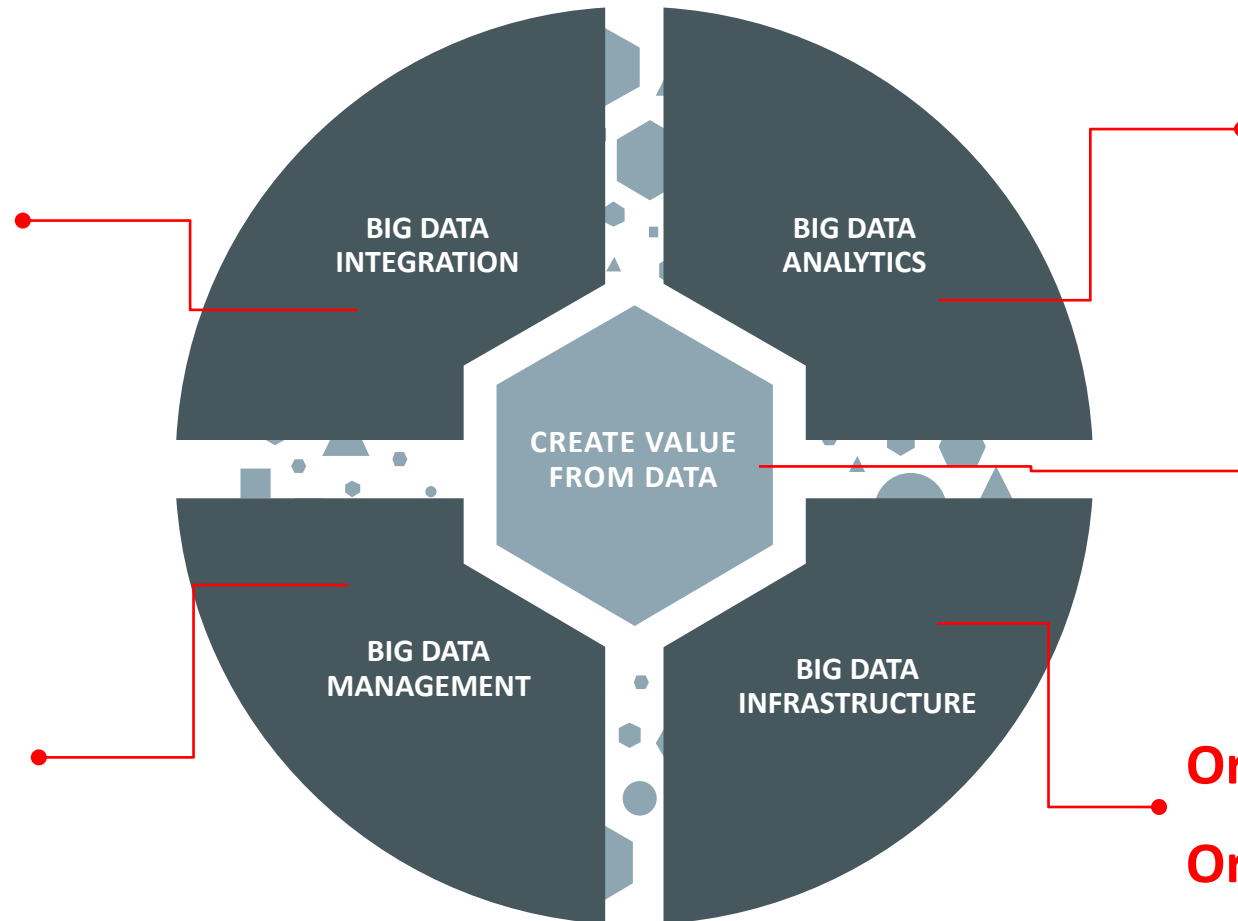
Oracle GoldenGate

Oracle Big Data  
Preparation

Oracle Big Data SQL

Oracle Big Data  
Connectors

Oracle NoSQL  
Database



**Oracle BI EE +  
Data Visualization**

**Oracle Big Data  
Discovery**

**Oracle Big Data Spatial  
and Graph**

Oracle Advanced Analytics

Oracle Data-as-a-Service

Oracle Applications

**Oracle Big Data Appliance**

**Oracle Big Data Cloud**

**Oracle Public Cloud**



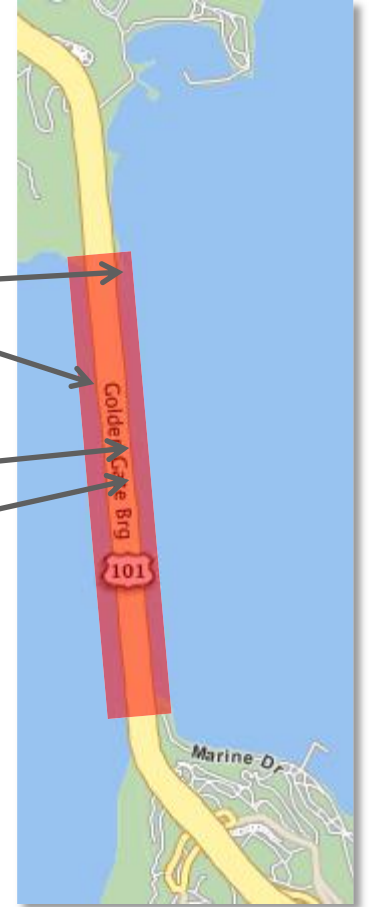
# Oracle Big Data Spatial and Graph



# Data Harmonization: Linking information by location

Are these data points related?

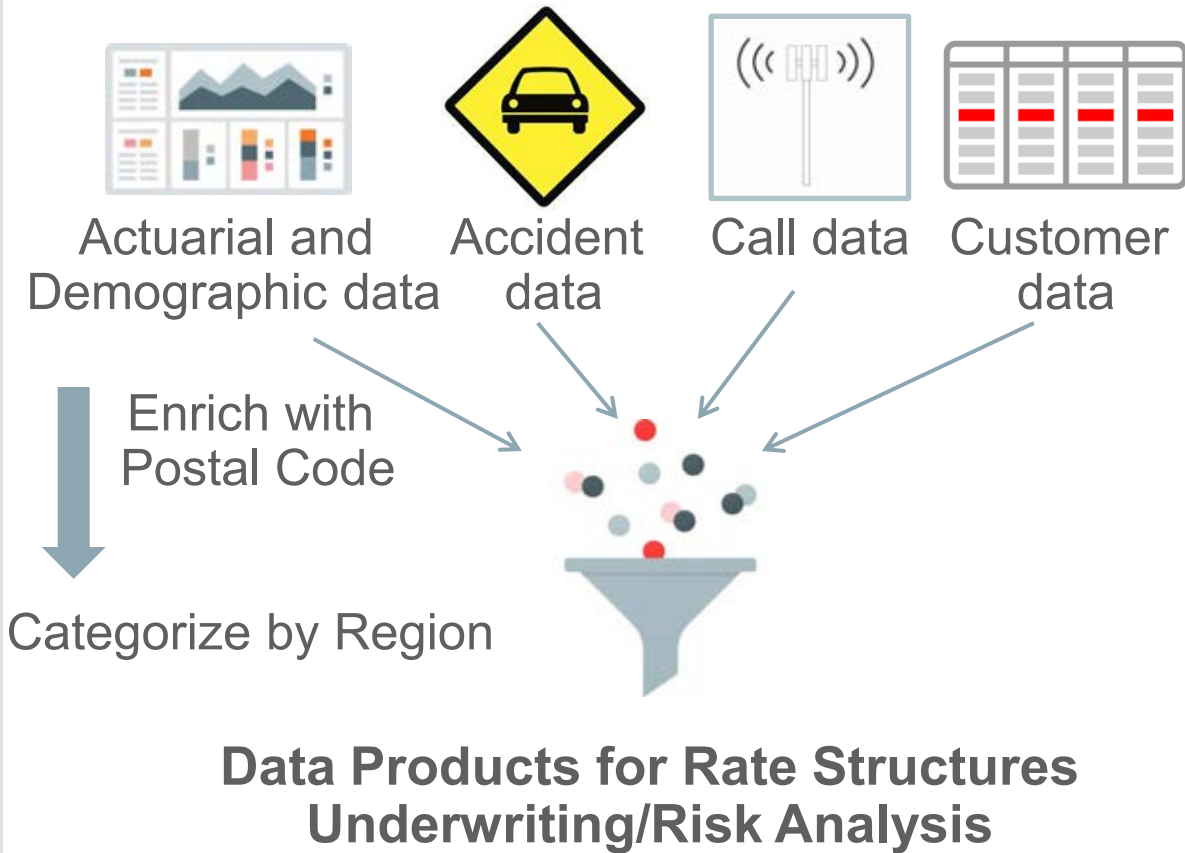
- **Tweet**: sailing by #goldengate
- **Instagram** image subtitle: 골든게이트 교\*
- **Text message**: Driving on 101 North , just reached border between Marin County and San Francisco County
- **GPS Sensor**: N 37°49'11" W 122°28'44"
- Now find all data points around Golden Gate Bridge ...



\* Golden Gate Bridge (in Korean)

# Use Case: Linking Information by Location

## Insurance Industry



**86%** Of Insurance companies agree that analyzing multiple data sources together is crucial to making accurate predictions

**88%** Agree that **linking information by location** is key to combining disparate sources of Big Data

Source: "The big data: How data analytics can yield underwriting gold."  
Survey conducted by Ordnance Survey and Chartered Insurance Institute, 25 April 2013.

# GeoSocial Analysis Use Cases: “Nearest Friends”

“It’s 11:30. Want to meet Jon, Melli, and Albert for lunch @Milano’s today at Noon?”

URGENCY WITH LIMITED AVAILABILITY:  
Lunch promotion to targeted potential “table of 4” who know each other within 1 km.

“We know you and your old college buddies love Elton John. Get together with Tom, Dick and Hari and the rest of the frat next month.”

BROADER SOCIAL REACH; WIDER DISTANCE. NO TIME CONSTRAINT: Concert promotion.

“Great seats @ Cinema 18 for 7:30 show of new Avengers movie tonite. Free popcorn and soft drink for you and Mary. Text her at 555-1234.”

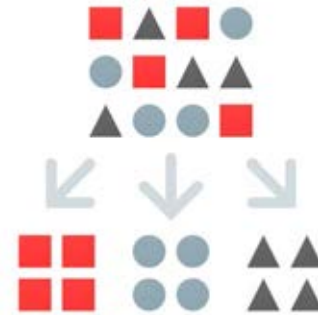
TIME CONSTRAINED: Target people within 20 minute drive 30 minutes before the show.



# What problems can Big Data Spatial analysis address?



**Data Harmonization** using any location attribute (address, postal code, lat/long, placename, etc).



**Categorization and filtering** based on location and proximity



**Preparation, validation and cleansing** of Spatial and Raster data



**Visualizing and displaying** results on a map

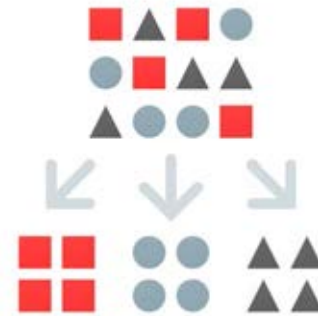


**Spatial querying and analysis** of Hadoop data with SQL

# What features does Big Data Spatial have?



Data enrichment service API using GeoNames and geometry hierarchy data



MapReduce routines for distance calculations, PointInPolygon, buffer creation, Categorization, KMeansClustering, Binning



Spatial processing of data stored in **HDFS or NoSQL**. Raster processing operations: Mosaic and sub-set operations. Geodetic and Cartesian data



HTML5 Map Visualization API



**Hive SQL API**  
**Query from Oracle DB with Big Data SQL & Oracle SQL Connectors for Hadoop**

# Demo

## Discovering location patterns in social media and global incidents

Using Big Data Spatial Analytics and Big Data Discovery



# Summary













## Oracle Big Data Spatial and Graph



- **Commercial, supported software**
- Componentry to **boost efficiency** of data scientists and developers – save time on custom development
- Bring location context to big data – harmonize and offer **new insight** into customers, assets, organizations
- **Extend** existing Big Data applications, **complement** relational environments
- Oracle Big Data Spatial and Graph offers
  - **Dozens of built-in algorithms/enrichment services**, and **map visualization**
  - **Scaleable storage and parallel processing** on Hadoop /Oracle NoSQL
  - Runs on **commodity hardware** or **BDA**, both on-premise or in the Cloud

# Big Data Spatial and Graph at OOW 2016

View this list at <http://bit.ly/FODSpatialGraph>, <http://bitly.com/2bRrLpb>

Date/Time	Title		Location
<b>Monday, Sept 19</b>			
8:30 a.m. - 10:30 a.m.	Building a Java Recommender System in 15 Minutes with Graph Technologies [TUT5289]	 	Parc 55 - Cyril Magnin II/III
4:15 p.m. - 5:00 p.m.	Graph and Link Analysis: Discovering Network Relationships in Big Data [CON6445]		Park Central - Olympic
4:00 p.m. - 6:00 p.m.	Apply Location Intelligence and Spatial Analysis to Big Data with Java -- Hands On Lab [HOL6255]	 	Hilton - Franciscan Room C/D
<b>Tuesday, Sept 20</b>			
1:00 p.m. - 1:20 p.m.	Bring Graph Analysis to Relational and Hadoop Data [THT7821]		Moscone South Exhibition Hall - Big Data Theater
4:00 p.m. - 5:00 p.m.	High-Speed Video and Image Processing with Java and Hadoop [CON5543]	 	Parc 55 - Mission
6:15 p.m. - 7:00 p.m.	Meet the Experts: Oracle's Big Data Management System [MTE7224]	  	Moscone South - 306
7:15 p.m. - 8:00 p.m.	Meet the Experts: Spatial and Graph Technologies for Database, Big Data, and the Cloud		Moscone South - 306



# Big Data Spatial and Graph at OOW 2016

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Date/Time	Title	Location
<b>Thursday, Sept 22</b>		
10:45 a.m. - 11:30 a.m	Build Applications on Spark, Hadoop, and NoSQL with Oracle Big Data Spatial and Graph [CON6585]	Park Central - Olympic










## Showcase Theater Presentations

Date/Time	Title	Location
Tuesday, Sep 20 1:00 - 1:20 p.m.	Bring Graph Analysis to Relational and Hadoop Data	Big Data Showcase Theater
Wednesday, Sep 21 1:00-1:20 p.m.	High Speed Video and Image Processing Using Oracle Big Data Platform	Big Data Showcase Theater
Wednesday, Sep 21 2:30 - 2:50 p.m.	Bring Location Analysis to Your Big Data Workloads Using Spatial	Big Data Showcase Theater



# Big Data Spatial and Graph at OOW 2016

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## Demos

Date/Time	Title		Location
Monday - Wednesday	Oracle's Spatial Technologies for Database, Big Data, and the Cloud	   	Moscone South Exhibition Hall – 101 Oracle Database Showcase (left side)
Monday - Wednesday	Oracle's Graph Database and Analytics for Database, Big Data, and the Cloud	   	Moscone South Exhibition Hall– 101 Oracle Database Showcase (left side)
Monday - Wednesday	Discover and Analyze Relationships with Oracle Big Data Spatial and Graph		Moscone South Exhibition Hall Big Data Showcase (SBD-016)

## Partners

Date/Time	Title		Location
Monday – Wednesday	Tom Sawyer Software		Moscone South Exhibition Hall - Booth #436
Monday – Wednesday	DataNinja (DocomoInnovations)		Moscone South Exhibition Hall - Booth #1741
Monday – Wednesday	interRel Consulting		Moscone South Exhibition Hall - Booth #3208

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# Resources

- Oracle Big Data Spatial and Graph OTN product page: [www.oracle.com/technetwork/database/database-technologies/bigdata-spatialandgraph](http://www.oracle.com/technetwork/database/database-technologies/bigdata-spatialandgraph)  
– White papers, software downloads, documentation and videos
- Oracle Big Data Lite Virtual Machine - a free sandbox to get started: [www.oracle.com/technetwork/database/bigdata-appliance/oracle-bigdatalite-2104726.html](http://www.oracle.com/technetwork/database/bigdata-appliance/oracle-bigdatalite-2104726.html)
- Hands On Lab for Big Data Spatial: [tinyurl.com/BDSG-HOL](http://tinyurl.com/BDSG-HOL)
- Blog – examples, tips & tricks: [blogs.oracle.com/bigdataspatialgraph](http://blogs.oracle.com/bigdataspatialgraph)
-  @OracleBigData, @SpatialHannes, @Jeanlhm      Oracle Spatial and Graph Group

# Q&A

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