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## SPATIAL

May 2011  
Oracle Spatial User Conference



# Oracle Spatial User Conference

May 19, 2011

Ronald Reagan Building and International Trade Center  
Washington, DC USA



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Oracle Spatial User Conference

**Marco Mantovani**  
R&D Expert

**Vasil Tabaku**  
Project Manager



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# **Location Intelligence and Spatial What-If Analysis**

## **Government: A New Way of Fighting Petty Crime**



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# Agenda

- Background Information
- Live DEMO
- Technical Details
- Benefits
- Conclusions and Future Work

# Iconsulting: Who we are



Iconsulting is a consulting firm specialized in designing and implementing **Data Warehouse, Business Intelligence and Corporate Performance Management** solutions.

Our **mission** is to be a center of excellence, a benchmark in the market, where quality, professionalism and enthusiasm serve client satisfaction.

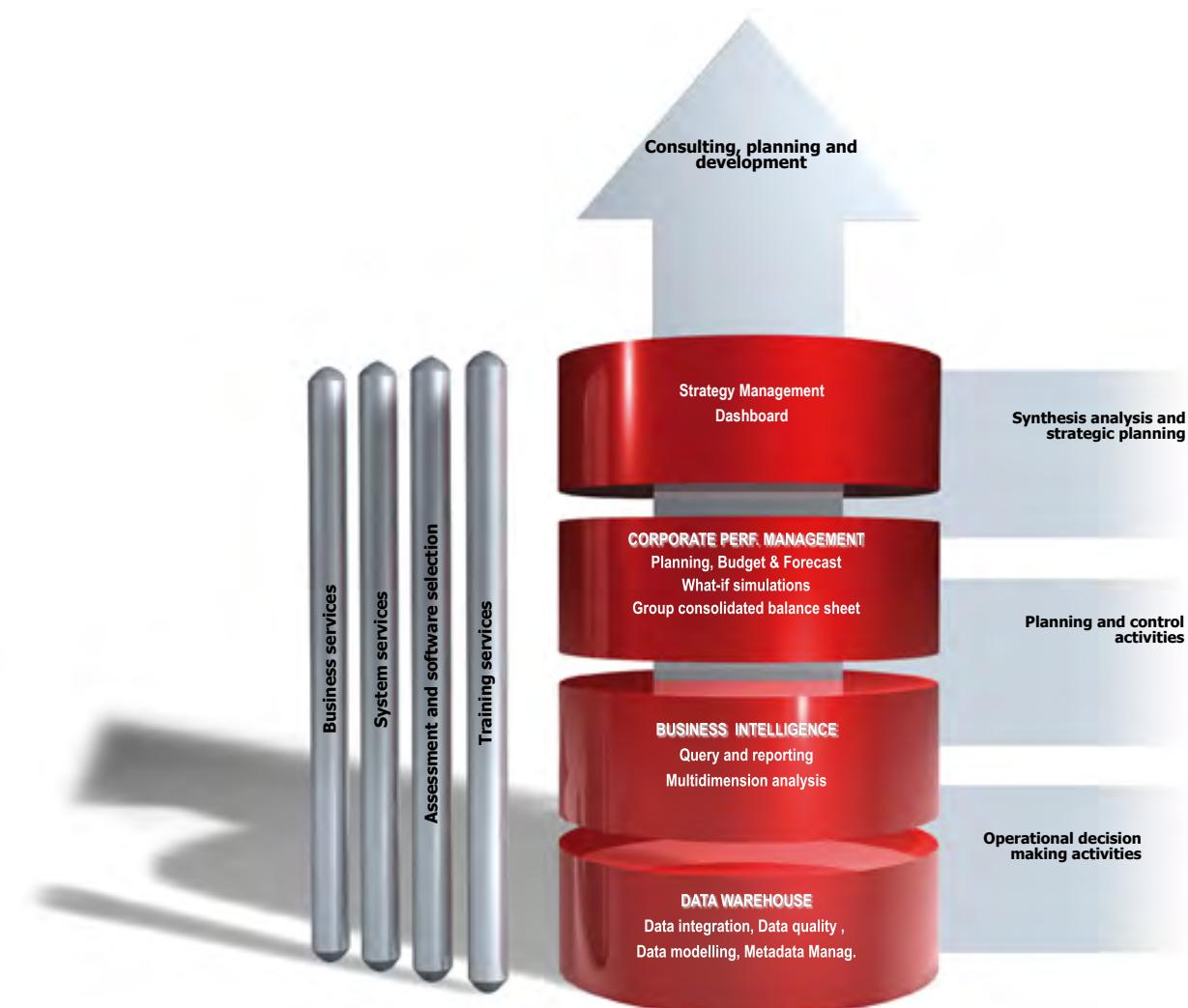
To reach our **goals** we rely on the competence and the passion of our people, on the quality of processes and the experience gained from **over 300** successful projects.

*"We address those who pursue excellence with an approach based on strong expertise and method. This is our distinctive character."*

# Iconsulting: Our History

- In **1998** the Data Warehouse and Business Intelligence Laboratory was founded, within an important Research Consortium, with the aim of disseminating knowledge and methodologies related to these technologies.
- **1998-2001** The Laboratory established itself as a competence center in the academic field and carried out the first BI projects for companies.
- **2001** Iconsulting was born; a spin-off from the original Laboratory group.
- **2001-Present:** Iconsulting becomes a landmark in the Italian Business Intelligence and Corporate Performance Management market.

# Iconsulting: Our Services





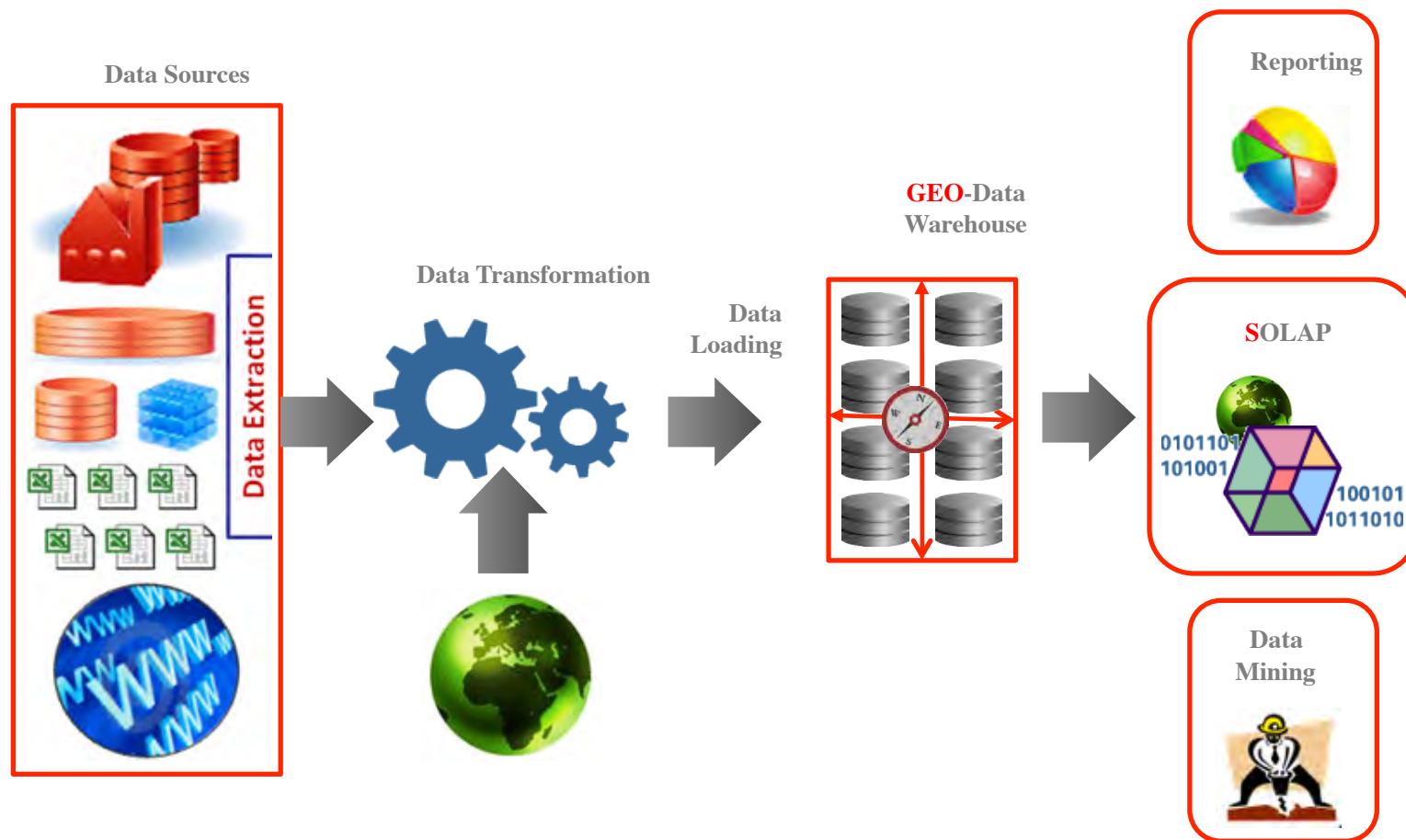
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D E M O N S T R A T I O N

# Crime Analysis Dashboard

# LI Architecture





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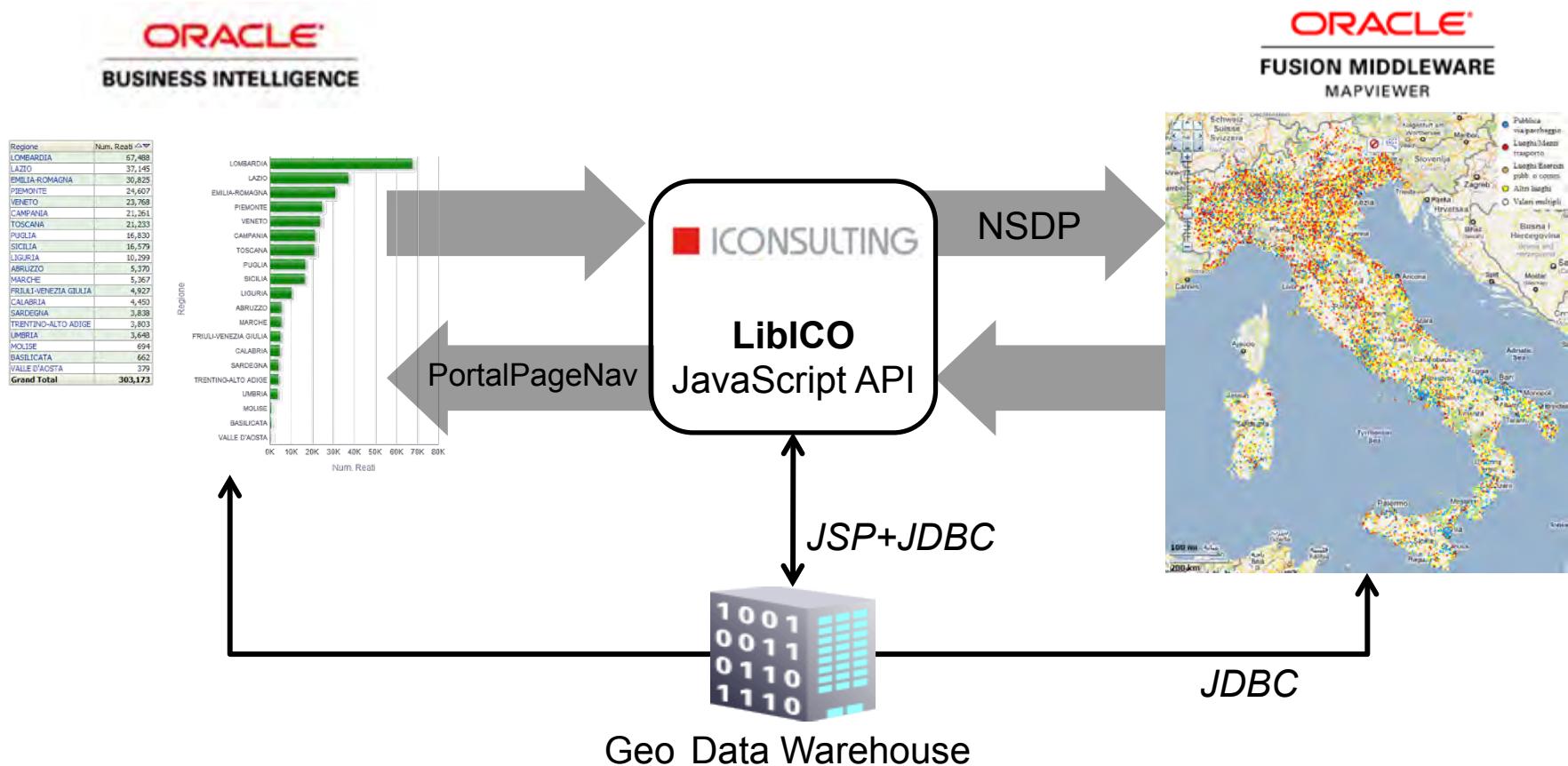
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# Latest Oracle Technology

- Oracle Business Intelligence EE 11g
- Oracle Mapviewer 11gR2
- Oracle Database 11gR2 (with Spatial)
- Oracle Weblogic Server 11g



# Iconsulting Javascript Library



# Iconsuming Javascript Library

- Ajax-based
- **Specific BI functionalities**, extending Mapviewer JavaScript APIs.
  - Bucket Theme, Bar Charts, Pie Charts, Points...
  - Dynamic marker size depending on zoom level.
  - Spatial queries from the dashboard.
  - CircleButton actions.
  - Reverse geocoding for data cleansing.
  - Support for Spatial what-if analysis.

# Iconsluting Library Examples

```
PieChartTheme(themeName, jdbcQuery, keyCol, spatialCol, nsdpValuesCol,  
srid, isVisible, nsdpValuesLabel, enableInfo, pieRadius)
```

PieChart Theme constructor.

*Defined in: [ICO\\_LIB theme automation.js](#).*

## Parameters:

**{String} themeName**

Name of this theme

**{string} jdbcQuery**

SQL query to get the values from the DB

**{string} keyCol**

The name of the SQL primary key (ID) for doing the join for NSDP

**{string} spatialCol**

The name of the SQL col that contains the SDO\_GEOOMETRY data

**{string} nsdpValuesCol**

The name of the column (only one) that contains the values over which the bucket theme will vary on

**{int} srid**

The coords system

**{bool} isVisible**

True -> show this theme

**{string} nsdpValuesLabel**

Contains the name of the column corresponding to those used for the NSDP processing. They will be printed into the legend

**{bool} enableInfo**

**{int} pieRadius**

Ray of the pie

# Iconsulting Library Examples

- Quick and simple development.
- Best performances and results.

```
initOBIEE(); //Sets up structures for OBIEE 11g
selectedBaseMap = "gm"; //Background selection (e.g. Google Maps)

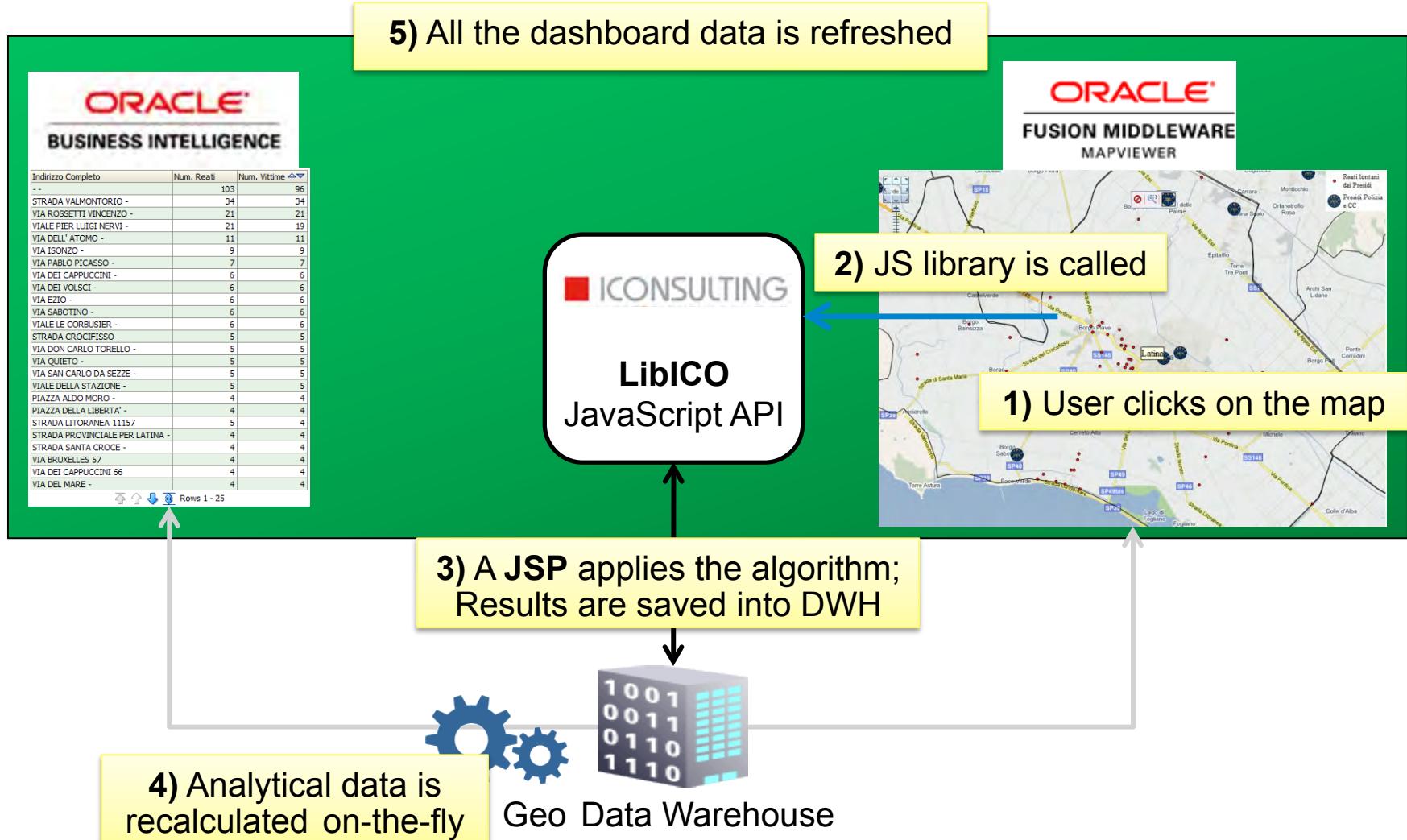
function showMap() {
    initMapView();

    /* Number of crimes by Region (Bucket theme) */
    var sqlQuery = "select REGION_ID, REGION_NAME, SHAPE from L_GEO_REGION"; // Spatial Data comes from DWH
    regionTheme = new BucketTheme("regionThemeName", sqlQuery, "REGION_ID", "SHAPE", "Number of crimes",
        8307, true, "REGION_NAME", "T.TEXT", true, false, true, false, true, false);

    /* Number of crimes by Region (Bar Charts) */
    sqlQuery = "select REGION_ID, REGION_NAME, SHAPE_CENTROID from L_GEO_REGION";
    barChartTheme = new BarChartTheme("barChartThemeName", sqlQuery, "REGION_ID", "SHAPE_CENTROID",
        "Crimes CARABINIERI,Crimes POLICE,Crime OTHERS", 8307, true, "Carabinieri,Police,Others",
        false, 30, 40, 0, 51000);

    addStandardToolBar(); // Adds Iconsulting Map Toolbar
    mapview.display();
}
```

# Spatial What-if Analysis



# Spatial What-if Analysis

- Consulting JS Library + JSP Page:
  - One JSP page for each algorithm.
  - DWH is accessed through JDBC.
  - Ajax communications → Best user experience.
- For complex what-if analysis, a MOLAP (i.e. Oracle Essbase) may be used:
  - The JSP page can use Essbase Java APIs.
  - OBIEE 11g integrates well with Essbase.

# Benefits

- Consulting JavaScript Library
  - Quickly develop complex Location Intelligence dashboards.
  - Reuse JavaScript code.
- Spatial What-if Analysis
  - Go beyond traditional spatial analysis.
  - Operational tool to make better decisions.
- Fighting petty crime
  - Great help in investigations.

# Conclusions and Future Work

## Conclusions and Future Work

### Conclusions

- By using Location Intelligence organisations can **derive new insights, optimize their processes** and **make better decisions**.
- Oracle Suite gives a **complete all-in-one solution** to meet a multitude of needs.

### Future Work

Migration to Oracle OBIEE 11g: integration with maps will be much **easier**; users will be able to customize or create maps on their own.

- Spatial-OLAP: a **MOLAP** architecture that can store maps and data.

# Future Work

- Future Work:
  - Mobile Location Intelligence.
    - Analysis driven by GPS information.
  - Real-time Location Intelligence.
    - Sensor network monitoring.
  - Isochrone analysis.
  - Predictive Location analysis.
    - Based on historical trends.



Map



Q&A

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