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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

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Location Intelligence and Spatial What-If Analysis Government: A New Way of Fighting Petty Crime

Agenda

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

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Iconconsulting: Who we are



Iconconsulting 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."

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Iconconsulting: 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** Iconconsulting was born; a spin-off from the original Laboratory group.
- **2001-Present**: Iconconsulting becomes a landmark in the Italian Business Intelligence and Corporate Performance Management market.

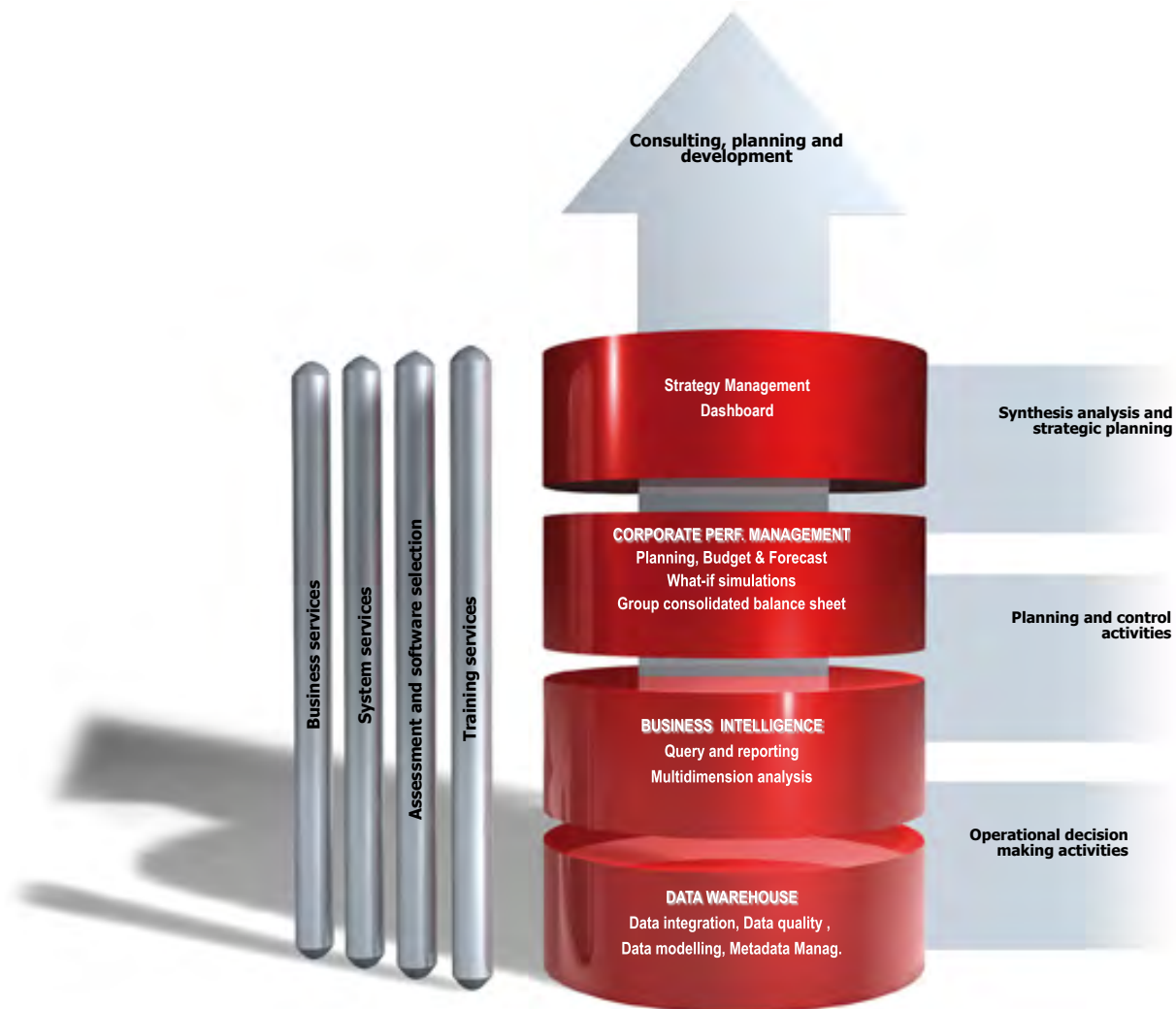
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Consulting: Our Services



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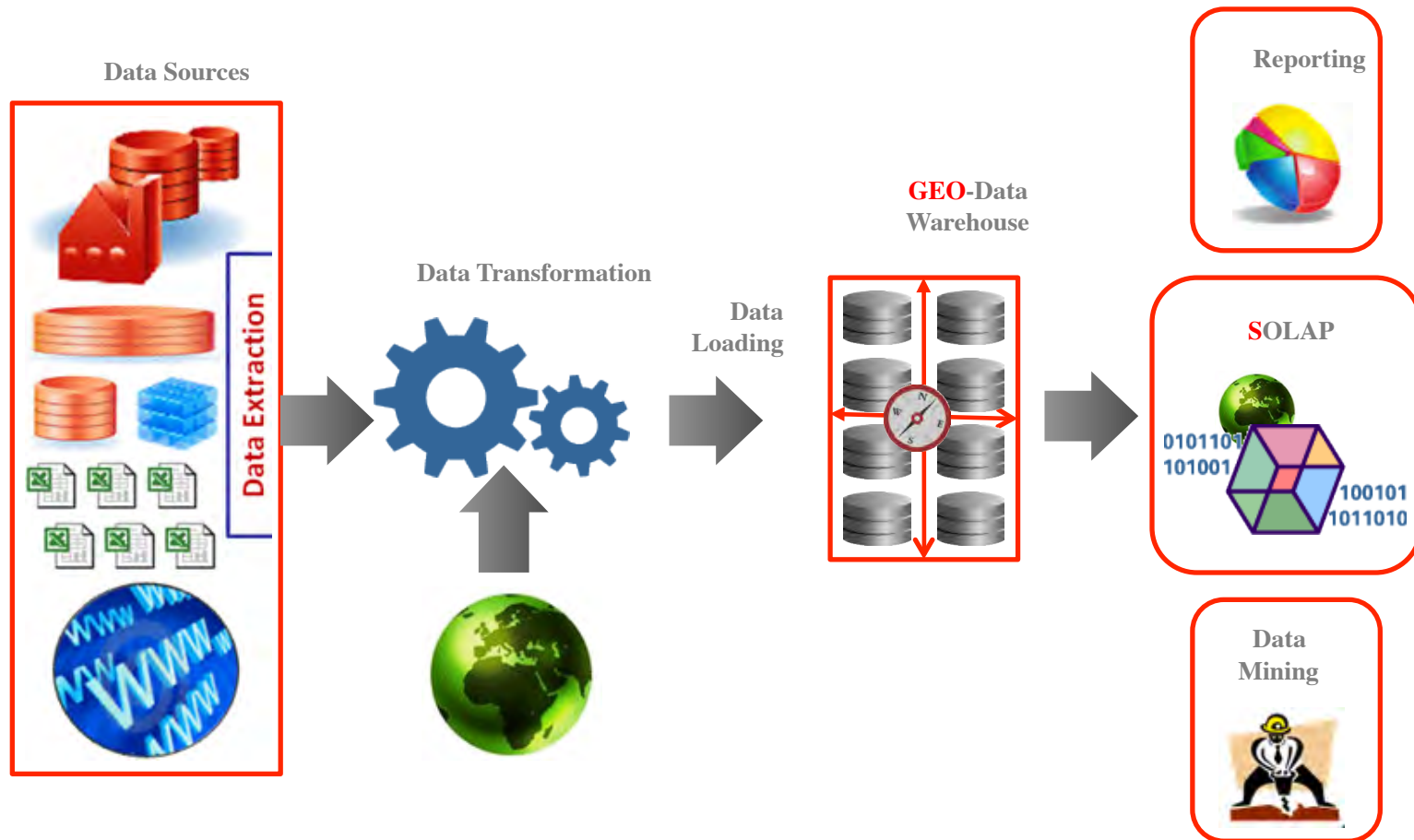
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D E M O N S T R A T I O N

Crime Analysis Dashboard

LI Architecture



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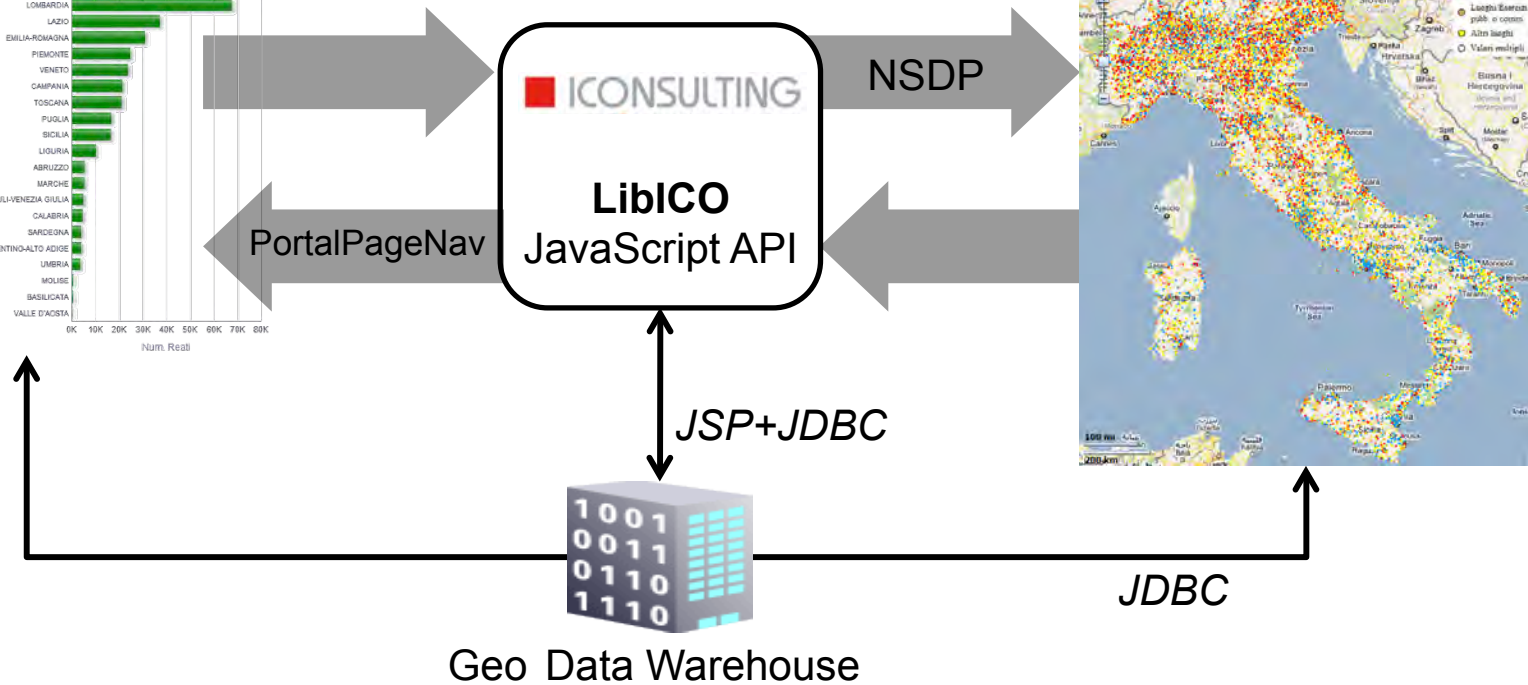
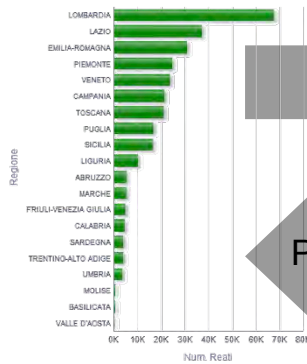
Latest Oracle Technology

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



Iconconsulting Javascript Library

Regione	Num. Reati
LOMBARDIA	57,480
LAZIO	37,145
EMILIA-ROMAGNA	30,825
PIEMONTE	24,607
VENETO	23,768
CAMPANIA	21,251
TOSCANA	21,233
PUGLIA	16,830
SICILIA	16,579
LIGURIA	10,299
ABRUZZO	5,370
MARCHE	5,367
FRIULI-VENEZIA GIULIA	4,927
CALABRIA	4,450
SARDEGNA	3,830
TRENTINO-ALTO ADIGE	3,803
UMBRIA	3,648
MOLISE	694
BASILICATA	662
VALLE D'AOSTA	579
Grand Total	303,173



Iconconsulting 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.

Iconconsulting 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_GEOMETRY 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.

```
initOBII1(); //Sets up structures for OBIEE 11g
selectedBaseMap = "gm"; //Background selection (e.g. Google Maps)

function showMap() {
    initMapView();

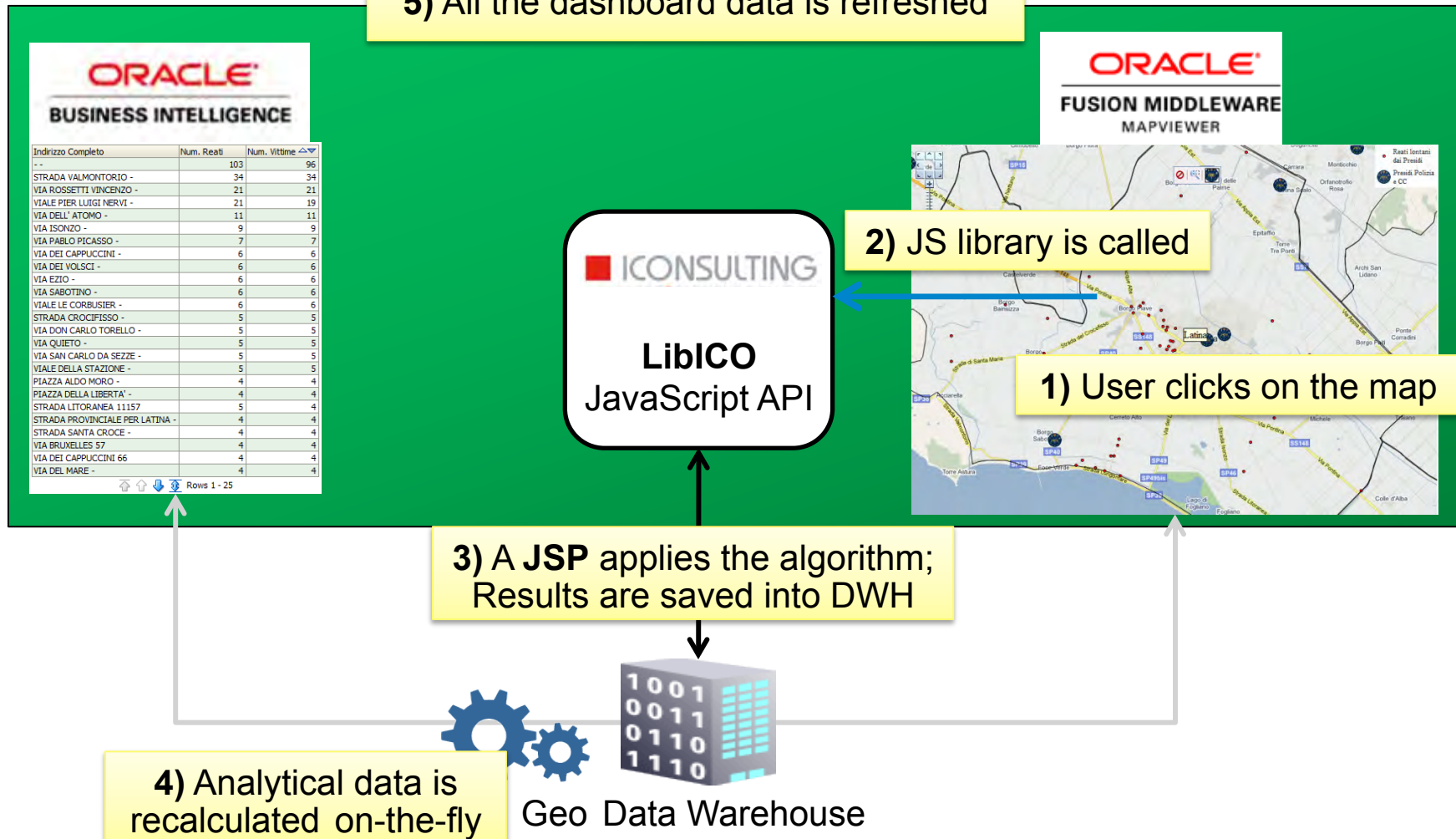
    /* Number of crimes by Region (Bucket theme) */
    var sqlQuery = "select REGION_ID, REGION_NAME, SHAPE from L_GEO_REGION"; // Spatial Data comes from DWH
    regionTheme = new BucketTheme("regionThemeName", sqlQuery, "REGION_ID", "SHAPE", "Number of crimes",
        8307, true, "REGION_NAME", "T.TEXT",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

5) All the dashboard data is refreshed



Spatial What-if Analysis

- Iconsuming 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

- Iconsuming 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.

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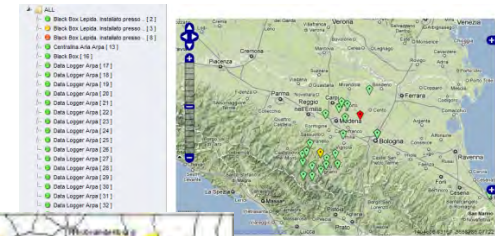
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Future Work

- 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.



Q & A

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