May 2013
Oracle Spatial and Graph
User Conference

ORACLE®

Oracle Spatial and Graph User Conference

May 22, 2013
Ronald Reagan Building and International Trade Center
Washington, DC USA

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GeoSpatial Intelligence

Location Intelligence gets deeper with Indoor Analysis for Retail

Program Agenda

- Who is ICONSULTING
- Indoor Analysis: **Live Demo**
- Indoor Analysis: The solution
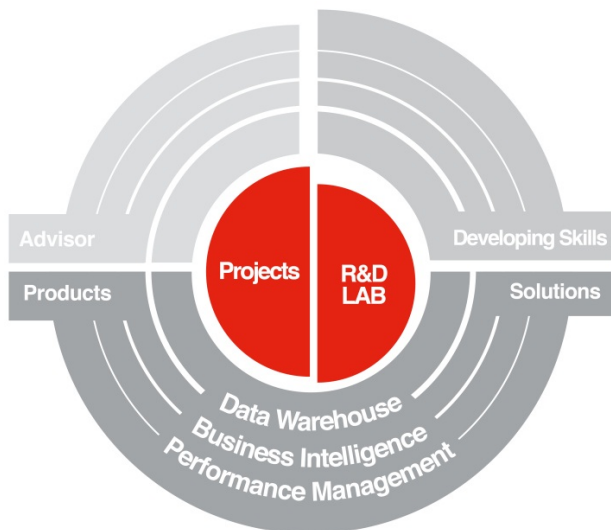- Q&A

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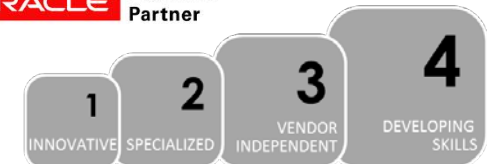- Indoor Analysis: The solution
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Iconsulting

Oracle Spatial and Graph User Conference 2013

ICONSULTING IS AN INDEPENDENT CONSULTING COMPANY SPECIALIZED IN DWH,BI & PM

- Research in our DNA: Iconsulting was born from a spin-off of a prestigious Research University Consortium group focused on Data Warehouse & Business Intelligence with the mission of delivering best in class BI & PM projects

- Strong expertise on all the market leading technologies

- 25% of our time invested in R&D

- Over 300 projects delivered to more than 100 customers

- Professorship in prestigious Italian Universities and Business Schools

- In-house Knowledge Factory School providing education services to professionals who need to develop their skills

- Oracle Platinum Partner, certified on: Data Warehousing, BI Foundation, Essbase, Planning, HFM

ORACLE Platinum Partner

IKNOW — The ICONSULTING KNOWLEDGE FACTORY

ILAB — The ICONSULTING R&D LABORATORY

1 INNOVATIVE   2 SPECIALIZED   3 VENDOR INDEPENDENT   4 DEVELOPING SKILLS

Location Intelligence

- Our Vision

"*Location Intelligence is the extension of traditional BI systems with the spatial dimension.*
It has the capability of managing the typical maps visualizations and interactions combined with all other BI systems information".

Location Intelligence
Our Solutions – Public Administration

- Crime Analysis
- Health Service Analysis
- Job Offers/Application Analysis
- Education Services Analysis
- Traffic & Road System
- Network of Territory Sensors
- Rural Affairs Government Subsidies

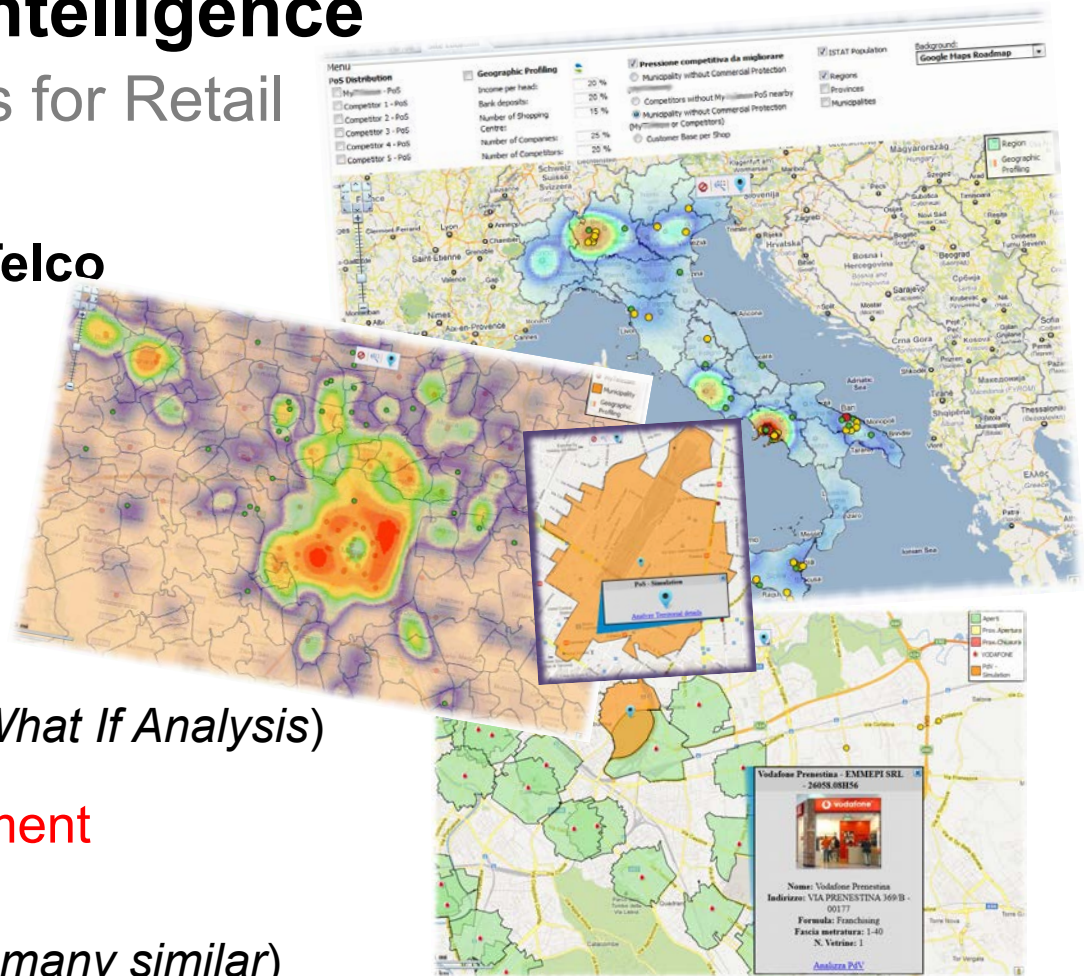**Location Intelligence**

Our Solutions – Private Sector

- **Store Performance & Territory Potential Analysis**

- **Indoor Analysis**

- Financial Services Performance Analysis

- Automotive Dealer Performance Analysis
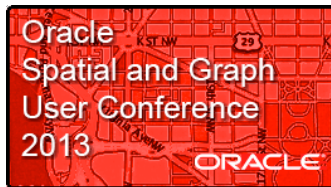
Location Intelligence
Our Solutions for Retail

- Retail company leader in the **Telco industry** for the Italian market

- Requirements and needs
  - Best site location
    - Competitors presence
    - Customer Base
    - Territory potential analysis (*What If Analysis*)
  - PoS Performance Management
    - Area of Influence detection
    - Benchmark analysis (*one vs many similar*)

Location Intelligence
Our Solutions for Retail

- Retail company leader in the **Games and Betting industry** for the Italian market

- Incorporates 3 corporate systems:
  - Oracle Database 11g (cluster)
  - OBIEE 11g (cluster)
  - Essbase 11g

- Supports 2 business units core

Retail Case Study
Requirements

- Need for a brand new efficient (within seconds) system that supports **analysis** and **change management** of PoSs and games machines <u>countrywide</u>, with scalability and security for mission critical data

- Need to integrate disparate data sets:
  - Business data on Essbase
  - Spatial data from relational system (Oracle DB)

Retail Case Study
Requirements and Needs

- ## PoS Floor Management

  - **Analytical**: From country-level to indoor

  - **Operational**: Manage autonomously:
    - New PoSs
    - Machines movements
    - Point of Interests influence on KPIs

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

Indoor Analysis for Retail

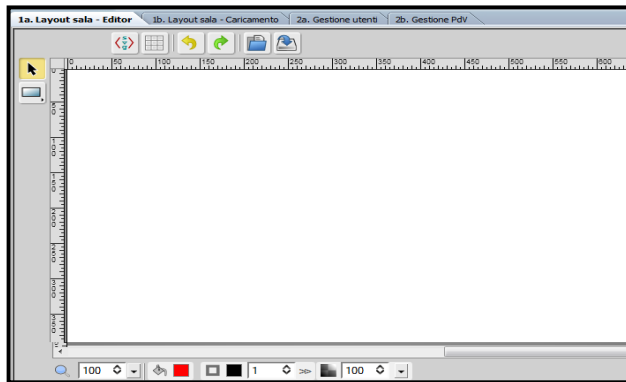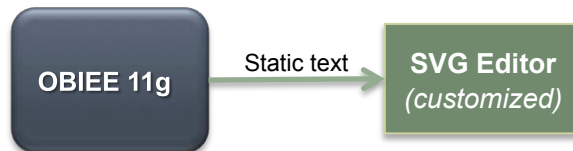# Program Agenda

- Who is ICONSULTING
- Indoor Analysis: **Live Demo**
- Indoor Analysis: The solution
- Q&A

Indoor Analysis

- Architecture: GeoRaster (Backend)
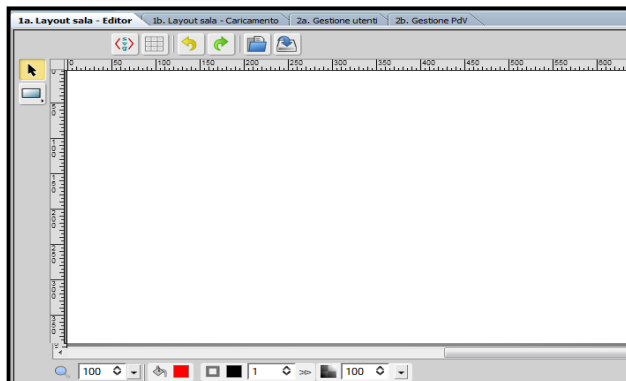

OBIEE 11g → Static text → **SVG Editor** *(customized)*

1a. Layout sala - Editor	1b. Layout sala - Caricamento	2a. Gestione utenti	2b. Gestione PdV

Properties

- Role based
- Week based

Indoor Analysis

- Architecture: GeoRaster (Backend)


```
...
else if (req.equals("loadValidPdv")) {
    String username = request.getParameter("username");
    String role = request.getParameter("role");

    String queryValidPdv = null;

        // Scelgo la query opportuna in base al ruolo dell'utente
    if (role.equals("ADMIN")) {
        queryValidPdv = "SELECT DISTINCT pdv_id, week_ini_val FROM l_svg_content ORDER BY 1,2";
    }
    else {
        queryValidPdv = "SELECT DISTINCT a.pdv_id, a.week_ini_val FROM l_svg_content a " +
        " JOIN v_obiee_variables b ON 'PdV ' || a.pdv_id = b.variable_val " +
        " WHERE user_id = '" + username + "' AND variable_id = 'PDV_VAR' ORDER BY 1,2";
    }

    PreparedStatement pr = con.prepareStatement(queryValidPdv);
    ResultSet rs = pr.executeQuery();

    out.println("PDV_LIST=");
    rs.next();
    out.println(rs.getString(1) + '|' + rs.getString(2));

    while (rs.next())
        out.println("," + rs.getString(1) + '|' + rs.getString(2));
    out.println(";");

    rs.close();
    pr.close();
    out.println("Success1");

}
...
```
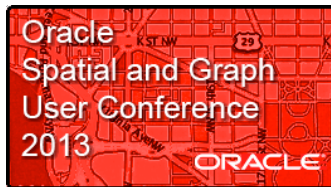
Indoor Analysis
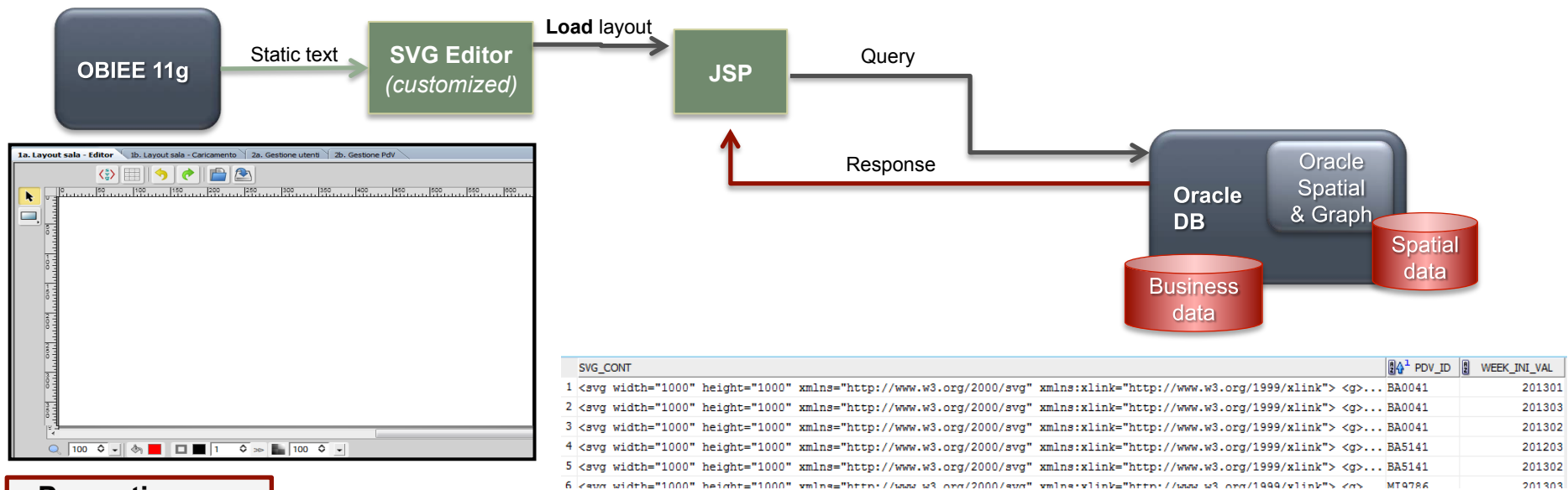
- Architecture: GeoRaster (Backend)

Indoor Analysis

- ## Architecture: GeoRaster (Backend)

OBIEE 11g → *Static text* → **SVG Editor** *(customized)*

Load layout → **JSP**

SVG ← (from JSP to SVG Editor)

JSP → Query → **Oracle DB**

Oracle DB → Response → (back to JSP)

Oracle DB — Oracle Spatial & Graph

Business data

Spatial data

Background repo (FS)

....

Properties

- Role based
- Week based

Indoor Analysis

- Architecture: GeoRaster (Backend)

OBIEE 11g → Static text → **SVG Editor** *(customized)* → **Save** layout → **JSP**
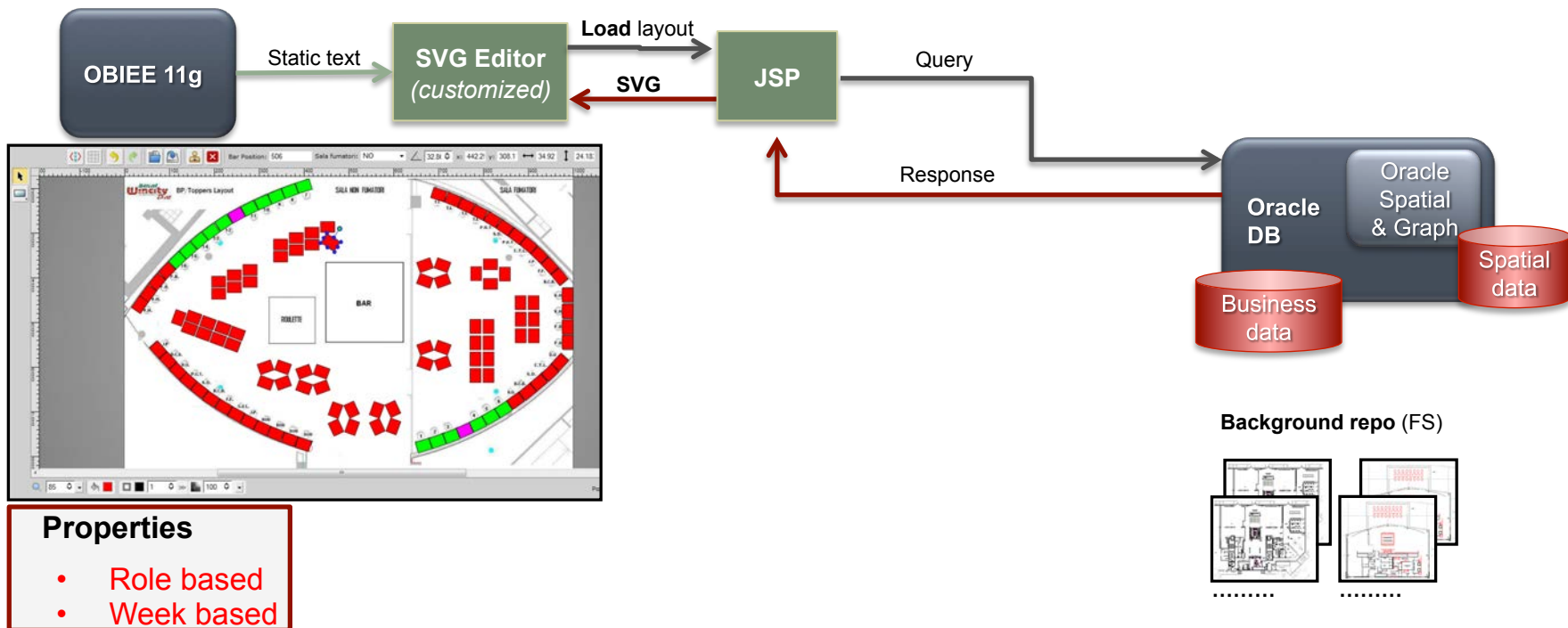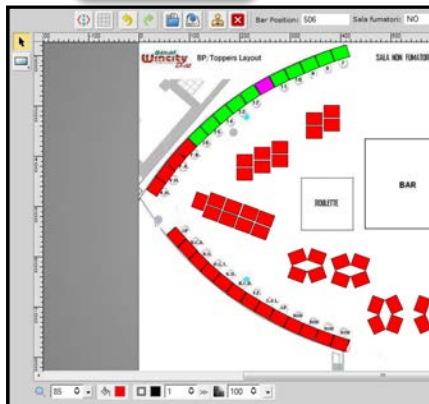
Properties
- Role based
- Week based

```java
else if(req.equals("insertRect")) {
    String content = request.getParameter("content");
    String pdv_id = request.getParameter("pdv_id");
    String week_ini_val = request.getParameter("week_ini_val");

    DocumentBuilderFactory dbf = DocumentBuilderFactory.newInstance();
    DocumentBuilder db = dbf.newDocumentBuilder();

    BufferedReader rd = new BufferedReader(new StringReader(content));
    StringBuilder sb = new StringBuilder();
    String line, id_val;

    while ((line = rd.readLine()) != null) {
            sb.append(line);
    }

    InputStream is = null;

    try {
            is = new ByteArrayInputStream(sb.toString().getBytes("UTF-8"));
    }
    catch (UnsupportedEncodingException ue) {
            ue.printStackTrace();
    }

    Document domDoc = db.parse(is);
    NodeList rectangleNodes = domDoc.getElementsByTagName("rect");

        // Rotation management
    float x1, y1, x2, y2, x3, y3, x4, y4, height, width;

    ......
```

```sql
-- ----------------------
-- Create a spatial index on the spatial extent.
-- ----------------------

--begin execute immediate 'drop index GEO_GEORASTER_idx'; exception when others then null; end;
--execute immediate 'CREATE INDEX GEO_GEORASTER_idx ON GEO_GEORASTER(georaster.spatialextent) INDEXTYPE IS MDSYS.SPATIAL_INDEX';

commit;

-- ---------------------------------------------------
-- Create a predefined GeoRaster theme for MapViewer.
-- ---------------------------------------------------

delete from user_sdo_themes where name = id_sala AND base_table = 'GEO_GEORASTER';
INSERT INTO user_sdo_themes  VALUES (
    id_sala,
    'Test ' || id_sala || ' GeoTiff image',
    'GEO_GEORASTER',
    'GEORASTER',
    '<?xml version="1.0" standalone="yes"?>
     <styling_rules theme_type="georaster" raster_table="GEO_RDT_GEOR" raster_id="' || rdt_geor_ids || '" raster_bands="0">
     </styling_rules>' );

commit;


delete from user_sdo_maps where name= id_sala;
INSERT INTO user_sdo_maps  VALUES (
id_sala,
'',
'<?xml version="1.0" standalone="yes"?><map_definition><theme name="' || id_sala || '"/></map_definition>');
commit;
```
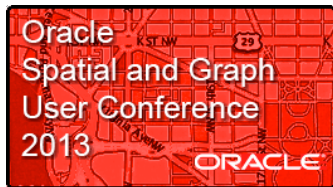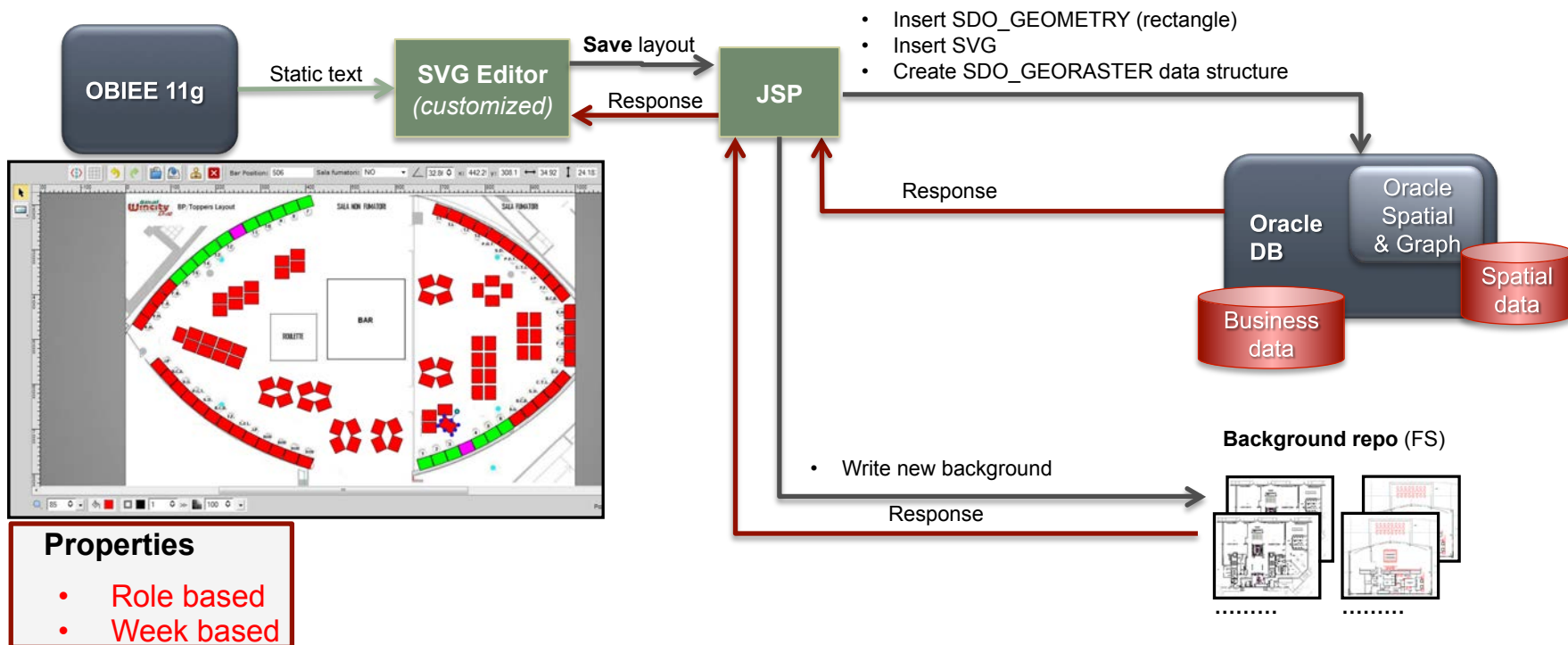
Indoor Analysis

- ## Architecture: GeoRaster (Backend)

- Insert SDO_GEOMETRY (rectangle)
- Insert SVG
- Create SDO_GEORASTER data structure

OBIEE 11g → Static text → **SVG Editor** *(customized)*

Save layout → **JSP**

Response

Response

Oracle DB — Oracle Spatial & Graph

Business data

Spatial data

Properties
- Role based
- Week based

- Write new background

Response

Background repo (FS)

Indoor Analysis

- Architecture: GeoRaster (Frontend)

OBIEE 11g → Static text → **Map Definition** *(HTML)*

Create layers → **Ico LI Ajax API**

Ico LI Ajax API → Map Layers → **Map Definition** *(HTML)*

Oracle MapViewer

Georaster basemap → **Oracle DB** / Oracle Spatial & Graph

Basemap ← **Oracle MapViewer**

Business data

Spatial data
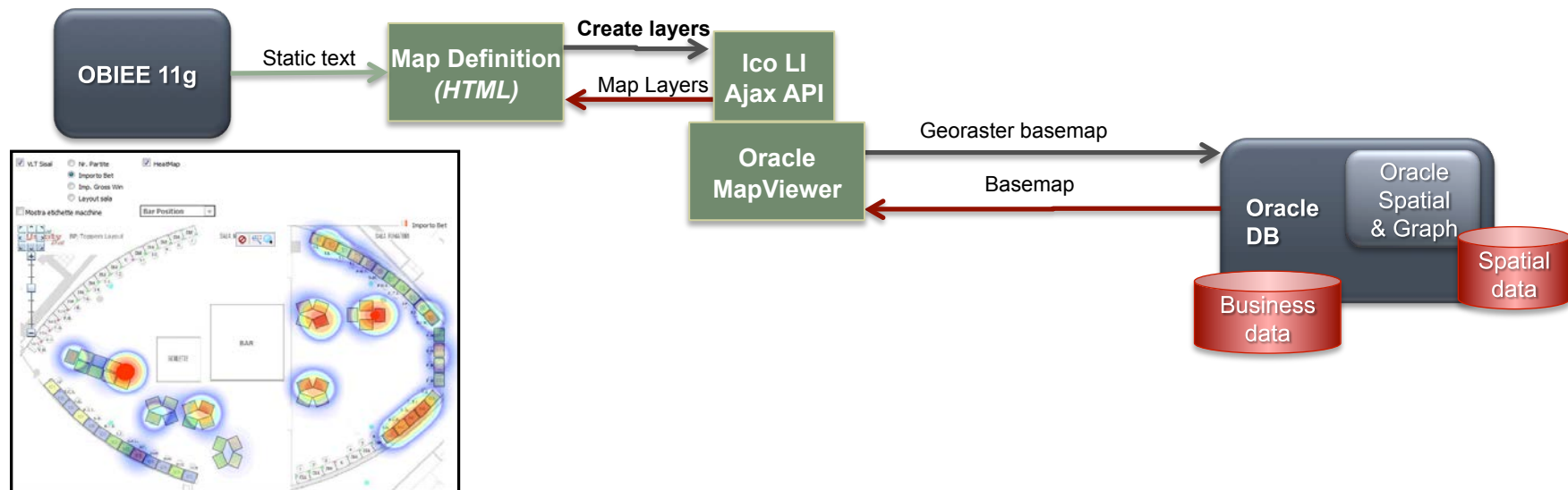
Properties

- Role based
- Week based

Indoor Analysis

- Architecture: GeoRaster independent (Backend)

OBIEE 11g → Static text → SVG Editor *(customized)* → **Save** layout → JSP

Response ← JSP

- Insert SDO_GEOMETRY (rectangle)
- Insert SVG
- ~~Create SDO_GEORASTER data structure~~

Response → Oracle DB / Oracle Spatial & Graph / Spatial data / Business data

Properties
- Role based
- Week based

Background repo (FS)
- Write new background
- Response

Tiles repo (FS)
- **Create tiles**
- Response
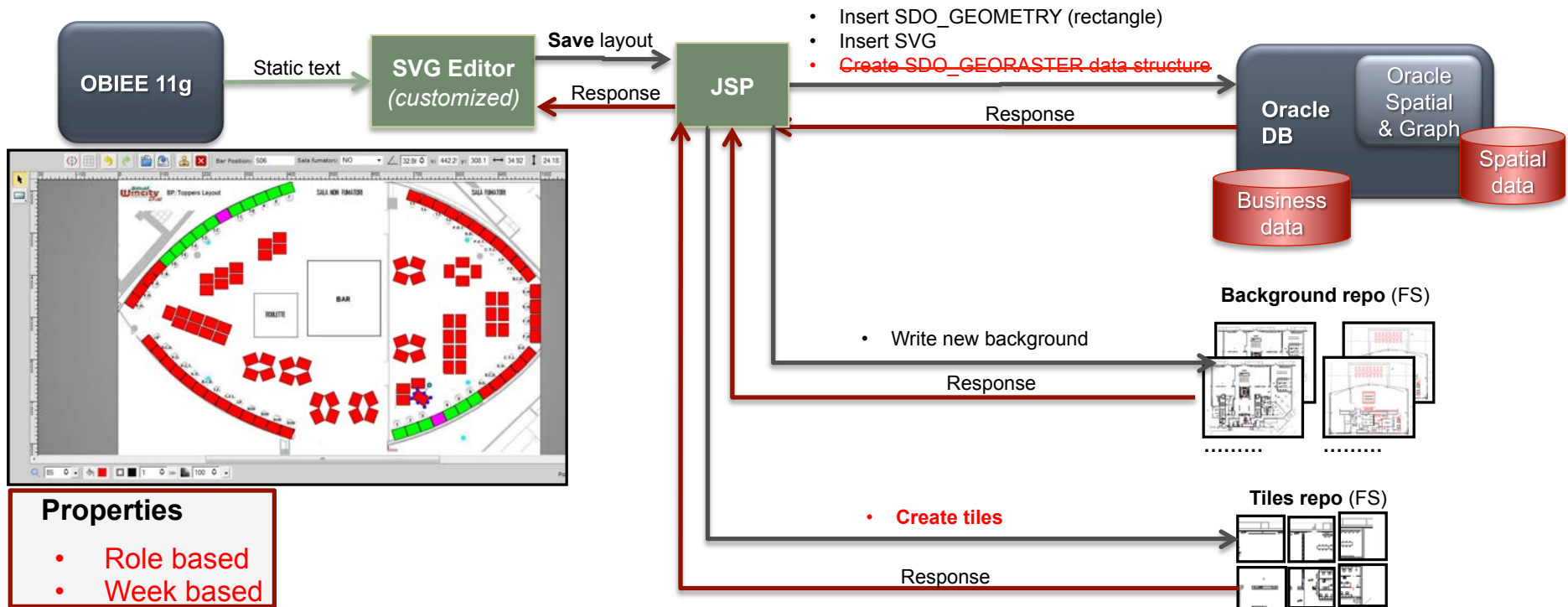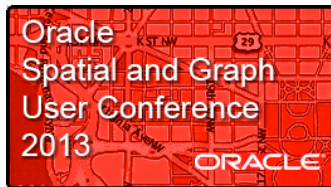
Indoor Analysis

- Architecture: GeoRaster independent (Frontend)

OBIEE 11g → *Static text* → **Map Definition (HTML)**

Create layers →

Ico LI Ajax API

← **Map Layers**

Oracle MapViewer

Custom basemap

Tiles image

Oracle DB — **Oracle Spatial & Graph**

Business data

Spatial data

Tiles repo (FS)

Properties
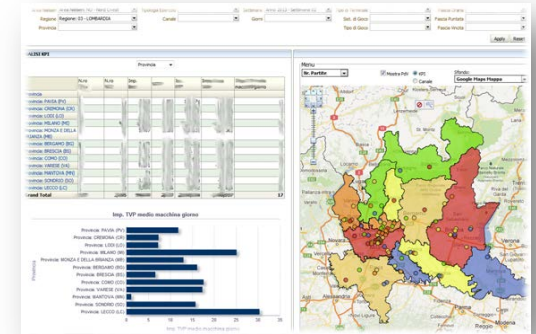
- Role based
- Week based
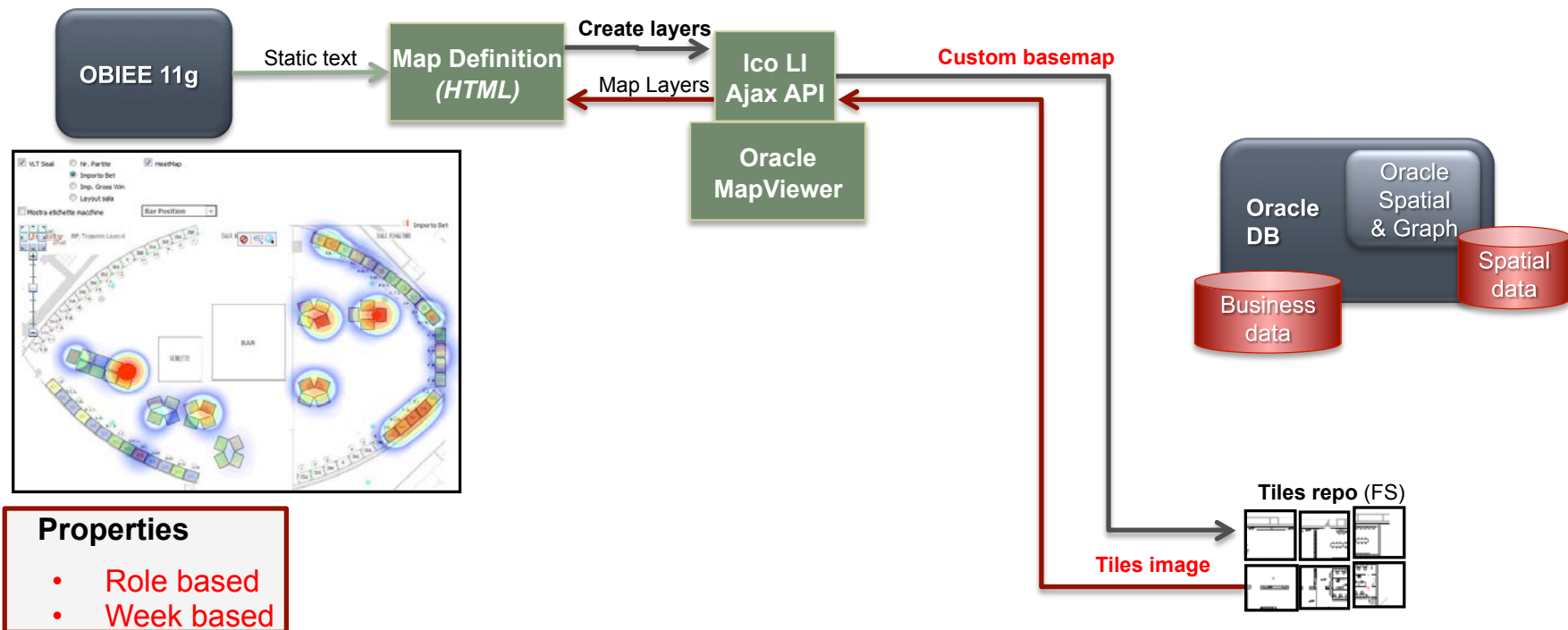
Retail Case Study
Results

- PoS Managers can exploit a solid and transparent system for the management of their PoS

- Organization is now able to manage autonomously the loading of new PoS layout and the placement of new games machines / change of already existing machines

- Top management can now analyze both the high-level situation and the deep-inner details of its core business

- All PoSs addresses and coordinates have been normalized in a consistent format and datum

- Ability to analyze external and internal environment within the same system

Q&A