

**Geomarketing Analysis: a developed solution for
Italy's Leading Supermarket Chain, Unicoop Firenze**
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Keywords

Geomarketing, Spatial, Network Data Model, Business Intelligence

Introduction

Unicoop Firenze is Italy's largest consumer cooperative, with more than one million consumer-members and sales of over 2 billion euros. It deployed a rich location intelligence system, with interactive geomarketing features, including detailed analysis of business facts and dynamic user-defined areas. The Unicoop system includes a geo-datawarehouse with dashboards to better evaluate business opportunities on a specific territory, on the base of statistical and socio-economical data coming from Institutional sources. Unicoop and system integrator Bridge Consulting deployed this system on an Oracle Database Exadata Machine, using Oracle Business Intelligence Enterprise Edition, Oracle MapViewer, and Oracle Spatial Network Data Model and Geocoding features. The developed solution incorporates all of Business Intelligence systems and all of departmental systems, and supports Marketing, Development and Management divisions analyses.

Dashboard solution includes:

- Territorial analysis of supermarket-receipts
- Analysis of consumer-member behaviors
- Product traceability to contact the customer in case of any fault or problem
- Geomarketing analysis to:
 - Locate relationships of consumers and supermarkets
 - Study the territory capability to locate new stores
 - Study the market share by territories
 - Place Consumer-members, owned and competitor stores

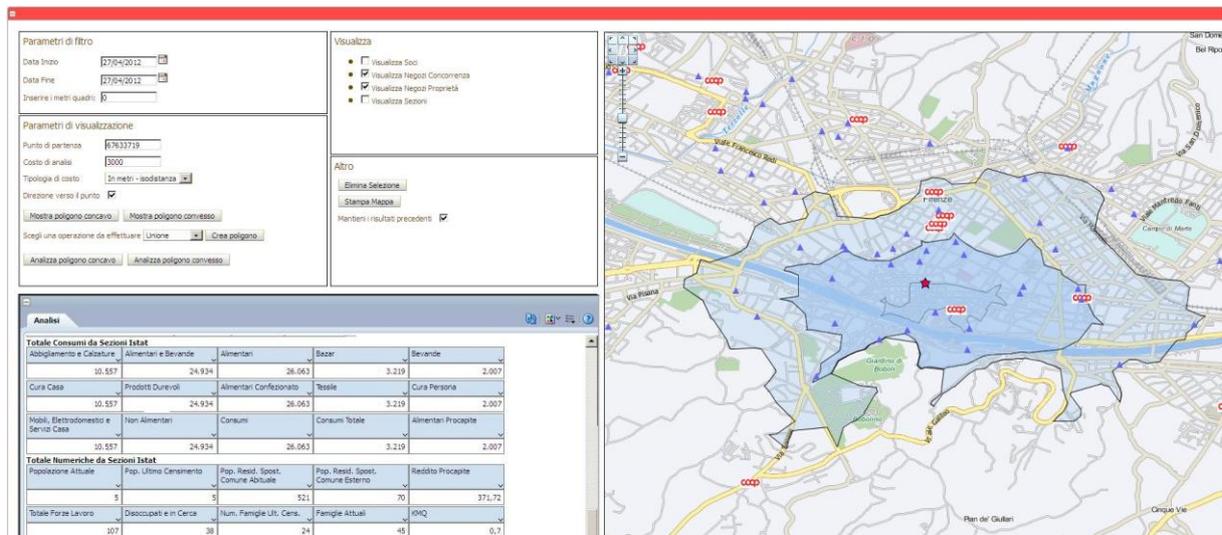


Fig. 1: Geomarketing Isodistance Analysis

Bridge Consulting used the Oracle Spatial Network Data Model to generate trade areas (radial, polygonal, isochrones, isodistances), Oracle Spatial functions (sdo_geom) to refine areas dynamically for deep territorial analysis, as well as the integration of the geomarketing features with OBI Publisher. The Oracle Spatial geocoding capability and NOKIA's NAVTEQ ODF dataset were used in constructing the geo-datawarehouse.

An excellent Return of Investment was realized from adopting an entire Oracle architecture for a scalable, performant system delivering valuable location intelligence insights.

Challenges

- Have a simple to use, standardized, complete and shared solution
- Integrate disparate data sets (statistical & internal)
- Relate more than 1.2 Million records with lat/long coordinates
- Decrease operational time costs
- Improve and maintain the level of competitiveness and market shares of Unicoop Firenze compared to direct competitors

Used Infrastructure

- Oracle Exadata Quarter Rack
- Database EE 11.2.0.2.7
- Spatial Option (NDM, Geocoding, Sdo_Geom Package)
- Partitioning Option
- Obiee 11.1.1.5.0 on Windows 64bit (on Windows Server 2008 R2 Standard)
- Oracle Maps
- Nokia NavTeq Dataset, ODF (Oracle Data Format)

Data Geo-process

The developed Geo-process loads the Navteq data maps and the socio-economical and statistics data from a Data Provider and merges them with the Unicoop Firenze commercial system data (sales, receipts, member customer and stores addresses). The data of the members and the stores are submitted to a Geocoding process (using Sdo_Gcdr.Geocode_Addr function) to standardize the postal address in a consistent and defined format, and then submitted to a custom normalization process to increase the percentage of matching the address location on the territory. Obiee dashboards and Map reports show these data, extracting them from the BI schema, the specific environment where they are stored.

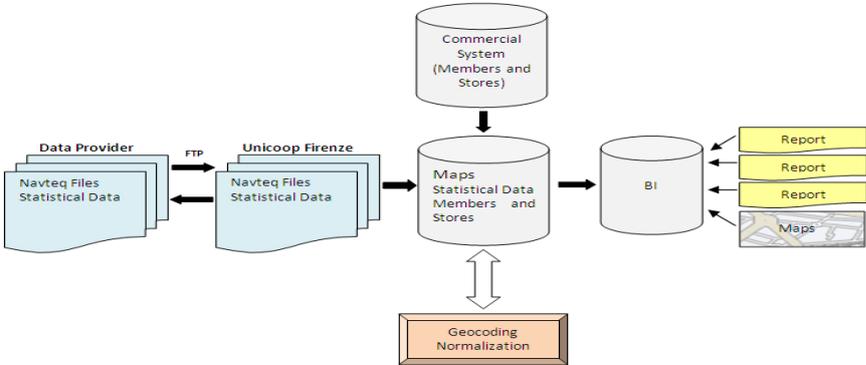


Fig. 2: Geo Process

Data Geocoding and Normalization process

After a Geocoding process, all addresses are identified by a “Matchcode value” and by a “Matchvector value” which indicate if the address and its elements were matched, corrected or not found.

The Normalization process identifies and corrects the missing information, giving to the geocoding process more elements to match correctly the address.

With the simultaneous use of Geocoding and Normalization process, the incidence of acceptable results is about 90% on a dataset of more than 1 million members’ addresses.

<pre> DECLARE addr sdo_geo_addr; BEGIN addr := sdo_geo_addr(); addr.municipality := 'FIRENZE'; addr.settlement := 'PONTE DI MEZZO'; addr.postalcode := '50127'; addr.country := 'ITALIA'; addr.Streettype := 'Via'; addr.StreetName := 'Ippolito Rosellini'; (Right) addr.housenumber := '10'; addr.matchmode := 'default'; SELECT SDO_GCDR.GEOCODE_ADDR('GEO',addr) INTO addr FROM dual; END; ADDRESS MATCHCODE = 1 STREET MATCHVECTOR = 0 </pre>	<pre> DECLARE addr sdo_geo_addr; BEGIN addr := sdo_geo_addr(); addr.municipality := 'FIRENZE'; addr.settlement := 'PONTE DI MEZZO'; addr.postalcode := '50127'; addr.country := 'ITALIA'; addr.Streettype := 'Via'; addr.StreetName := 'I. Rosellini'; (Wrong) addr.housenumber := '10'; addr.matchmode := 'default'; SELECT SDO_GCDR.GEOCODE_ADDR('GEO',addr) INTO addr FROM dual; END; ADDRESS MATCHCODE = 4 STREET MATCHVECTOR = 3 </pre>
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Fig. 3: Addresses normalization: custom function exploiting geocoding matchcode approach to modify the wrong streetname

MapViewer Architecture

Initially the Client application connects to MapViewer and sends XML mapping requests via the HTTP communications protocol. Requests include information about which database to query, and also information about the map to be drawn.

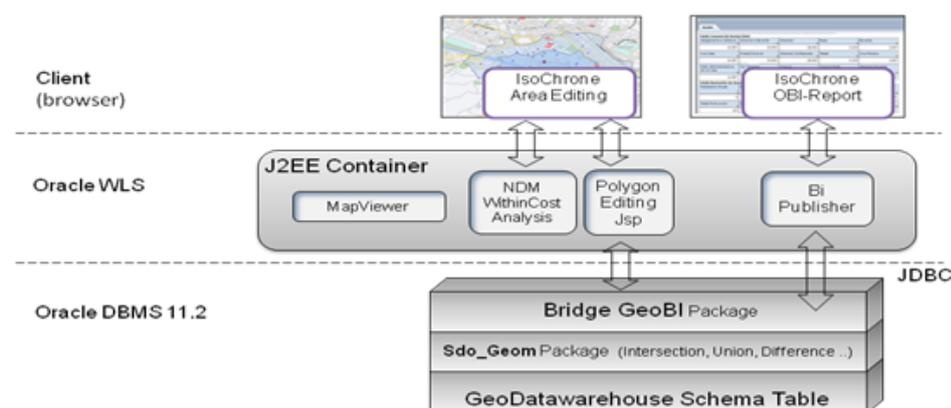


Fig. 4: Geomarketing Analysis Architecture

When a user analyzes a specific area on the map, an apposite "Analysis Java Server Page" connects to the database using JDBC, fetches the necessary information, calculates the area to be drawn from the

network data model and uses a custom GeoBI Package to integrate this area with others polygons if the user included them in the analysis (the user can directly draw them on the map). At this point MapViewer renders the area and at the same time the calculated area is used by a Bi Publisher report to filter the internal and statistical data of the company.

Business benefits

- Consolidation of geo data and network data model
- Standardization of all addresses and coordinates in a consistent and defined format
- The Company now better understands activities in context of location and directs marketing and assortment policies of the stores
- The Company now explains the business events dependent on territorial characteristics
- The Company can now analyze the catchment area of a territory to locate new stores

Tangible benefits

- Unicoop Firenze amortized the solution over three years.
- From the fourth year there is a saving of 75% compared to the previous proprietary application
- The solution allows to save 35% of operational costs of the people involved

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