

White Paper: “Advantages of using postcode regions to aggregate and analyze data in Oracle applications”

This white paper details the benefits of using postcode maps and regions as the primary means for organizing, analyzing and visualizing data in Oracle’s spatially enhanced environment. The paper outlines the reasons why aggregating data at the level of postcode regions offers distinct advantages over the use of a point-based approach.

Contents:

- **Selecting a reporting level for data aggregation**
- **Working with the right level of detail**
- **Postal tessellations under the microscope**
- **Quality requirements of postcode maps**
- **Free Oracle map sample**
- **About GfK GeoMarketing**

GfK GeoMarketing routinely provides consultancy to GIS users on these very issues. The Germany-based geomarketing company has found that using postcode regions as the primary basis for geocoding, analyzing and visualizing data is typically the best option. This white paper examines the concrete reasons why this is the case with the aim of providing Oracle users further guidance on how to take maximum advantage of Oracle's expanded spatial functionality.

Oracle users are faced with the decision of which geocoding approach will allow them to extract the most insight from their data. There are numerous options, each of which offers certain pros and cons. It's essential to consider both the type of data at one's disposal and the types of questions that are to be answered through spatial analyses as well as the subsequent visualization of the results on digital maps. Most users will fare best with a geocoding approach that provides a sufficient level of detail and simultaneously pinpoints trends in the data related to the company's performance, customers, market penetration, competitors and untapped potential.

Selecting a reporting level for data aggregation

➤ *Tessellations are typically superior to point-based approaches*

Oracle users can choose from a variety of ways in which to geocode their data. Some of the most common options involve using points (addresses, city points, business sites), lines (streets, rivers) or administrative areas (counties, census districts, postal codes).

In most cases, the best option is an area-based approach that subdivides larger areas into manageable units that comprehensively cover the active market area without gaps or overlaps. These units – sometimes referred to as “tessellations” – are compact administrative regions that can be used to aggregate point-based data and serve as a basis for both regional and international market analyses. Most importantly, region-based data is easy to accumulate, which allows users to switch between micro- and macro-level analyses and reporting results with just a few clicks.

By contrast, point-referenced data is less attractive in this regard: it’s nearly always too complex to summarize on broader levels, much of the detail is irrelevant to reporting issues and significant work-arounds must be employed in order to be able to aggregate such data at all. Point-based data gives users vast quantities of information, but it’s nearly impossible to extract and analyze common traits from these singular objects, which is a precondition for successful market analysis. For spatial market analyses, it’s therefore recommended that users associate their point data with the broader regions that encompass these points. This preserves the individual point data while providing a better platform from which to sort, aggregate and analyze the information based on its association with broader regions.

Associating data with regions in this way is straightforward: Most data within a company’s database is address-based and each address contains a postal code. By matching this postal code in the address with the postal code information contained in digital maps, the company’s data can be quickly and accurately associated with a region and placed on a digital map.

If desired, it's also possible to associate addresses with postcode regions while simultaneously geocoding them at a more detailed level. This is simply a matter of introducing further place-based matching criteria, such as street names and house numbers. To facilitate this process, the Oracle database must additionally contain street maps with corresponding information and naming conventions that can be matched with the company's addresses.

Working with the right level of detail

➤ *Postal directing systems offer an ideal hierarchical reporting structure*

Unlike overarching administrative boundaries such as counties or states, postal regions are quite granular and thus facilitate a high level of detail. Oracle users can easily associate point-level data with these postal regions in order to carry out interregional comparisons. One key advantage here is that postal code systems are already hierarchically structured to allow for an efficient and error-free distribution of mailing items.

Postal systems contain broad boundary demarcations that are then subdivided into smaller self-contained regions. This means that each postal level contains a collection of more detailed subdivisions. Thanks to this hierarchical structure, data associated with granular postcode regions can be easily aggregated to the next higher regional level. Postal regions thus represent the ideal choice for bringing greater efficiency, speed and transparency to a company's market analyses, controlling and reporting. Also, thanks to their fine level of detail and suitability for fast and error-free aggregation, postcodes are also the perfect basis for most companies' sales territory planning endeavors.

Postal tessellations under the microscope

➤ *Postal regions facilitate international data comparisons*

One of the most compelling arguments for using postal regions as the primary reporting level is the fact that as much as 90% of a company's data typically includes a postal reference. All of this data can thus be quickly and seamlessly integrated into high-quality postcode maps containing boundary data. One of the chief benefits to using postal tessellations is that these units offer comprehensive coverage of the entire market area, without gaps or overlaps. Every point is thus associated with a particular postcode-based polygon, which means that all information related to a company's operations can be successfully aggregated and used as the basis of interregional and international comparisons.

In today's global markets, many companies have operations that span national boundaries. Almost every country in the world has a postal system, which means that there is a ready-made structure that internationally active companies can use to aggregate their point-based data to larger, more manageable regions. Detail also does not have to be compromised thanks to the fact that most countries employ postal subdivisions that extend to a fairly granular level.

Another advantage of using postcode boundaries is that they are maintained by a single organization in the country in question, which ensures a certain degree of unity and parity. Also, there tends to be a certain logic to postal demarcations that corresponds to the structure of the street network and natural boundaries such as rivers, lakes and mountains. This lends postal boundaries a more organic feel that is often less arbitrary than other administrative or census-related subdivisions.

Summary:

Postal boundary data offers Oracle users an ideal foundation for aggregating, analyzing and visualizing their data across their entire market. This approach yields greater transparency, a more reliable and dynamic basis of planning and immediate insight into data trends that would otherwise go unnoticed.

Quality requirements of postcode maps

➤ *Boundaries must be accurate, up-to-date and free of gaps and overlaps*

While aggregating and analyzing data at the level of postal regions is the ideal choice for most Oracle users, significant inaccuracies will result if inferior boundary data is used.

A key point to bear in mind is that postal boundaries undergo constant change due to postal reform. In Europe alone, thousands of changes occurred to postal boundaries last year. It is therefore paramount that companies use up-to-date boundary data in order to ensure that customer addresses and other data are accurately associated with the correct postal region.

It's not sufficient that this data merely be up-to-date – it must also be accurate. Cartographers must often painstakingly research postal code boundaries to create polygons that fit together seamlessly, without gaps or overlaps. Only then can users of these maps seamlessly associate their data with the maps and carry out interregional and international comparisons.

GfK GeoMarketing: worldwide, high-quality maps in the Oracle format





With maps of 240 countries, GfK GeoMarketing is the world's largest supplier of digital postcode and administrative maps. GfK GeoMarketing's digital maps can be used in conjunction with Oracle Business Intelligence 11g and Oracle Fusion Middleware MapViewer, a standard feature of every edition of Oracle WebLogic Application Server, and Oracle MAPS JavaScript library, a feature of MapViewer. The maps can also be integrated in a variety of Business Intelligence (BI) and geographic information system (GIS) tools, many of which can be individually customized and fused with Oracle technology.

Free Oracle map sample

GfK GeoMarketing has created a map of the world's postcode systems in an Oracle-compatible format. The map is available as a free sample and demonstrates the high quality and worldwide coverage of GfK GeoMarketing's maps. The free map can be downloaded at www.gfk-geomarketing.com/oracle-sample.

About GfK GeoMarketing

GfK GeoMarketing offers the world's largest collection of digital administrative and postcode maps, with coverage of 240 countries. The company is one of the largest providers of geomarketing services in Europe for customers and users from all branches of trade. Key business areas include:

-  Consultancy
-  Market data
-  Digital maps
-  Geomarketing software RegioGraph

GfK GeoMarketing is a subsidiary of the globally active GfK Group.

Ranked fourth among the world's market research institutes, the GfK is represented in 100 countries with over 150 subsidiaries and 10,000 employees.

For more information, please visit www.gfk-geomarketing.com/oracle_maps or call +49 (0)7251 9295145.

Published by:

GfK GeoMarketing GmbH
Werner-von-Siemens-Str. 9
76646 Bruchsal, GERMANY
phone: +49 (0)7251 9295100
fax: +49 (0)7251 9295290
info@gfk-geomarketing.com
www.gfk-geomarketing.com

Registered office: Bruchsal
Managing directors: Wolfram Scholz, Dr. Eberhard Stegner
Amtsgericht Mannheim, HRB 250872