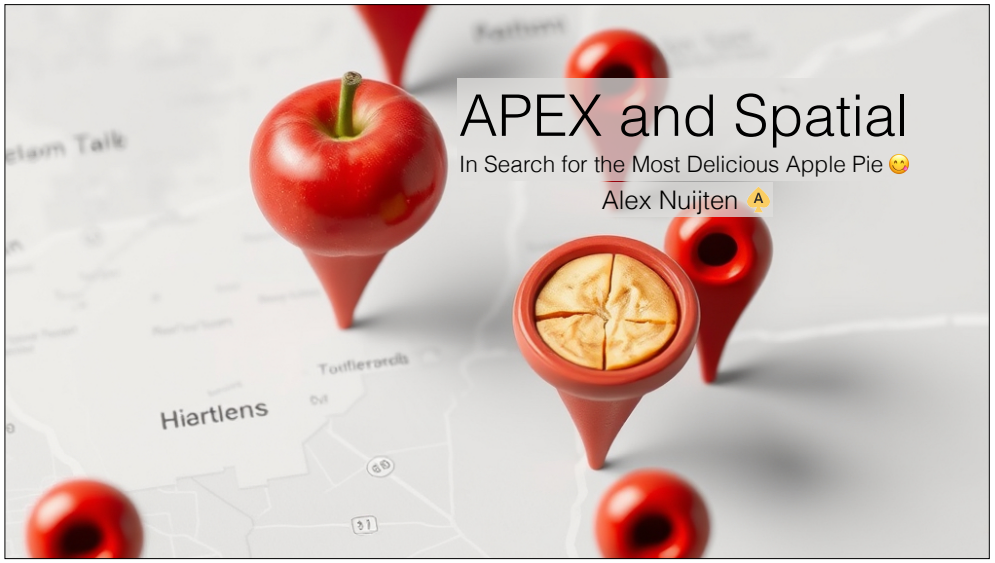
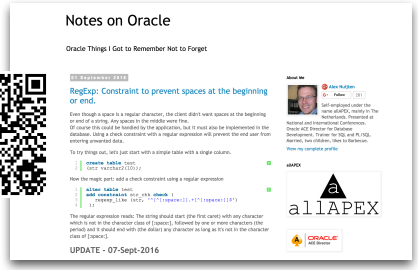


a

@alexnuijten@bsky.social

nuijten.blogspot.com





Oracle ACE

The Oracle ACE Program

400+ technical experts helping peers globally

- The Oracle ACE Program recognizes and rewards community members for their technical and community contributions to the Oracle community
- 3 membership levels: Director, Pro, and Associate
- Nominate yourself or a colleague at ace.oracle.com/nominate
- Learn more at ace.oracle.com

aceprogram_ww@oracle.com Facebook.com/OracleACEs @oracleace Oracle ACE Program Group

Oracle ACE

ACE Member Benefits

Key Benefits

Cool **swag***, Digital awards for social media, Oracle **CloudWorld pass***, & more

Direct Access to Product Management

Multiple **direct communication channels** to product management and fellow ACEs

Exclusive Content

Exclusive **monthly virtual meetings** with product development teams + engaging guest speakers

Networking

In-person & virtual networking opportunities for ACEs to **connect with product development** and each other.

Cloud Account

$5k USD Cloud account*

Travel Support

ACE Directors are eligible for travel support to give presentations or lead workshops at conferences globally

* for Pro and Director levels

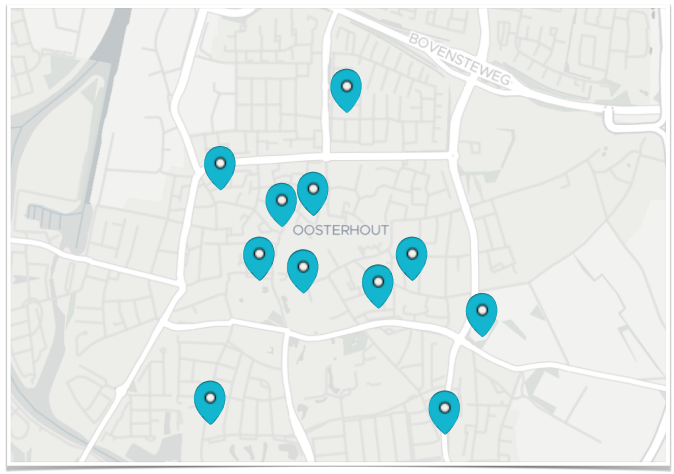
ORACLE 23ai
Database





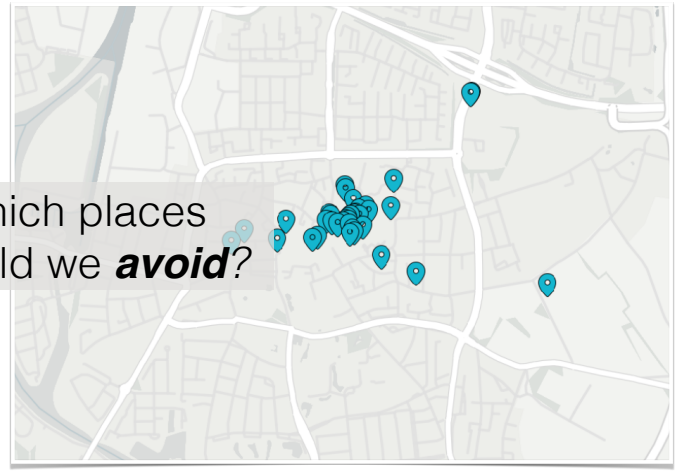


Boris





Where did they have the really ***good*** Apple Pie?



Which places should we ***avoid***?

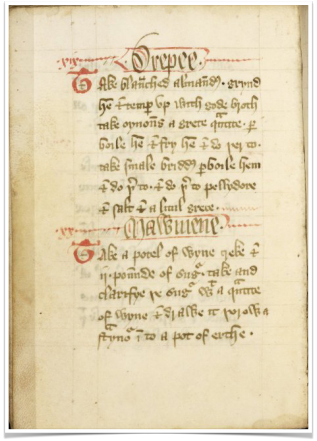


Een notabel boecxken van cokeryen

1514

123 Appeltaerten.

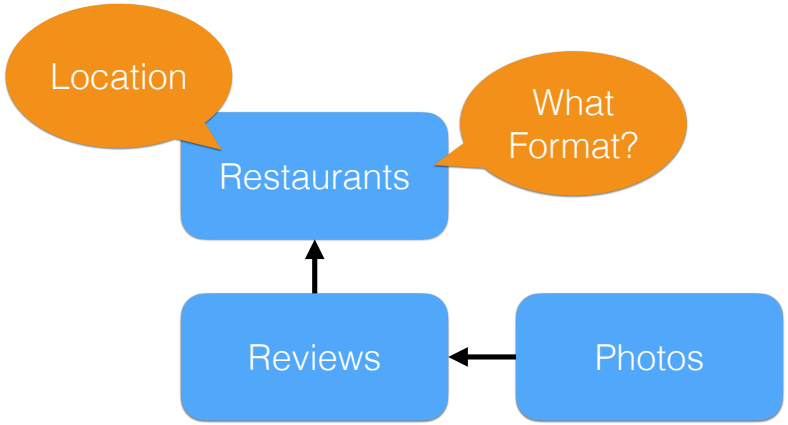
Neemt appelen die alderbest breken [stukkoken]. Die suldy scellen ende wel cleyne sniden. Maer wacht [kijk uit] datter gheen carnen [pitten] ofte sloechuysen [klokkehuizen] in en vallen, want die carnen (fol.E3r) [illegible] bederven. Als dye appelen dus ghesneden sijn met cleynen stucken, so suldi dien rant van der selver taerten vullen tot boven toe al vol. Dan suldi dairop maken eenen scheel [deksel] van den selven deeghe daer die taerte af ghemaect es. Dan steltse in den hoven* ende laetse so backen. Alsse ghebacken is, so suldise uut doen [uit de oven halen] ende snidense boven open in den scheel [snij een gat in het deksel], soedat die scheel maer en behouwe eenen ommerant [zodat bet deksel slechts een rand overhoudt]. Dan suldise rueren met eenen houten lepel, totdat die appel wel ghebroken sijn die in de taerte ligghen. Oft eest [is het] dat men wilt, men machse duer doen [kan men ze door een zeef wrijven]. Dan suldi nemen dese navulghende cruyden [specerijen] ende mingelense dairmede, te weten: greine [kardemom], ghimber, caneel, notenmuscaten, groffelsnagelen [kruidnagel], folie [foelie] ende potsuycker*. Maer die dese selve taerte seer costelijck [voortreffelijk] wilt maken, die nemen daertoe moruwe suyckercoecken* [zachte zandkoekjes] ende ooc suycker daer men de coecken af maect [waarvan men de koeken maakt]. Ende dit sal men temperen [vermengen] wel tegadere met sanen [room]. Dan sal ment in de taerte doen mitten appelen ende latense also staen drooghen in den hoven, totdat si drooghe es.

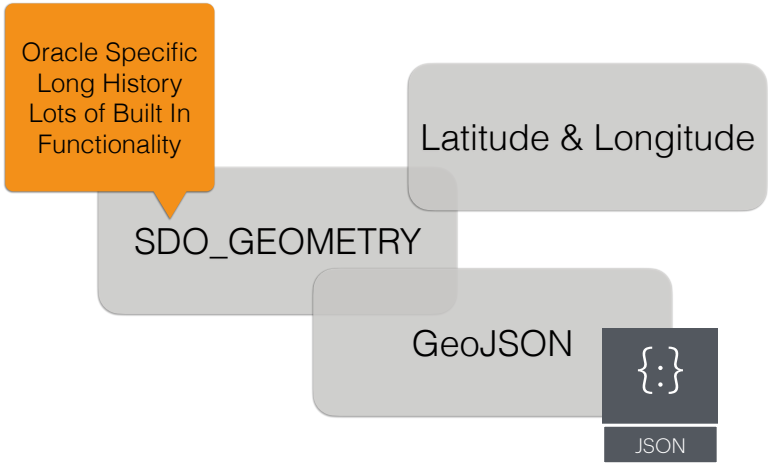


The Forme of Cury

ca. 1390







Represents Feature

```
CREATE TYPE sdo_geometry AS OBJECT (
 SDO_GTYPE     NUMBER,
 SDO_SRID      NUMBER,
 SDO_POINT     SDO_POINT_TYPE,
 SDO_ELEM_INFO SDO_ELEM_INFO_ARRAY,
 SDO_ORDINATES SDO_ORDINATE_ARRAY);
```

SDO_GEOMETRY

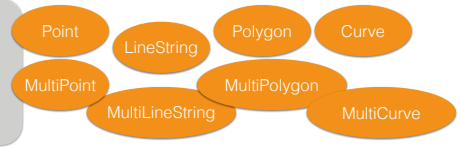
Spatial Data Option

```
CREATE TYPE sdo_point_type AS OBJECT (
   X NUMBER,
   Y NUMBER,
   Z NUMBER);
```

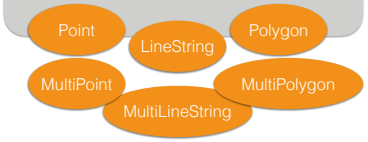
```
CREATE TYPE sdo_elem_info_array
AS VARRAY (1048576) of NUMBER;
```

```
CREATE TYPE sdo_ordinate_array
AS VARRAY (1048576) of NUMBER;
```

SDO_GEOMETRY



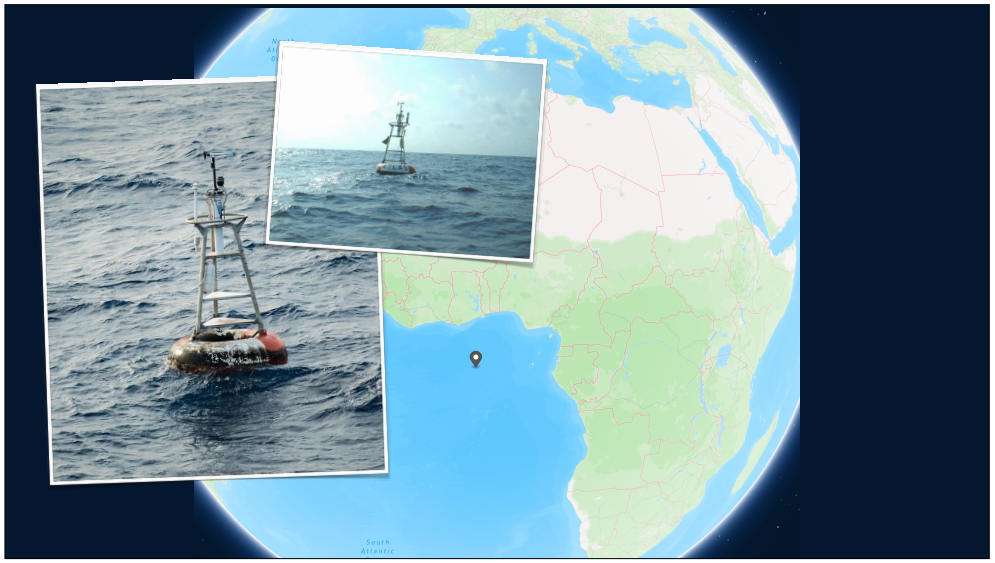
GeoJSON




```
{
   "type": "FeatureCollection",
   "features": [
      {
         "type": "Feature",
         "properties": {"Name":"Oosterhout"},
         "geometry": {
            "type": "Polygon",
            "coordinates": [
               [
                  [
                     4.85777290304344,
                     51.66833826866966
                  ],
                  [
                     4.812094108591111,
                     51.66394193334068
                  ],
                  [
                     4.807998768398875,
                     51.64596136789007
                  ],
                  [
                     4.805951098303069,
                     51.633155639614245
                  ],
                  [
                     4.836508636660255,
                     51.626800309953495
```

GeoJSON

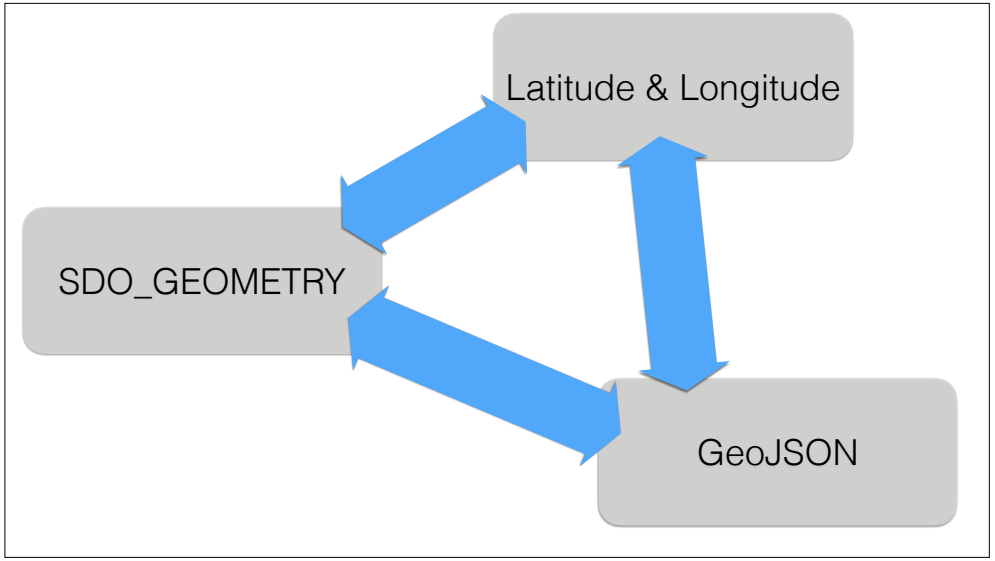
```
{
  "type": "FeatureCollection",
  "features": [
    {
      "type": "Feature",
      "geometry": {
        "type": "Point",
        "coordinates": [
          0,
          0
        ]
      },
      "properties": {
        "name": "Null Island"
      }
    }
  ]
}
```

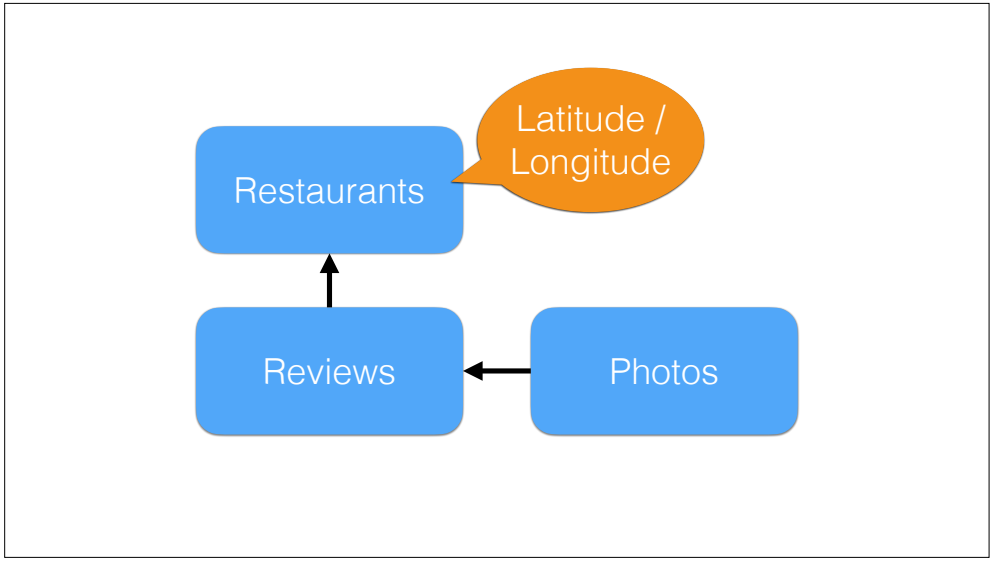


Latitude & Longitude

Point

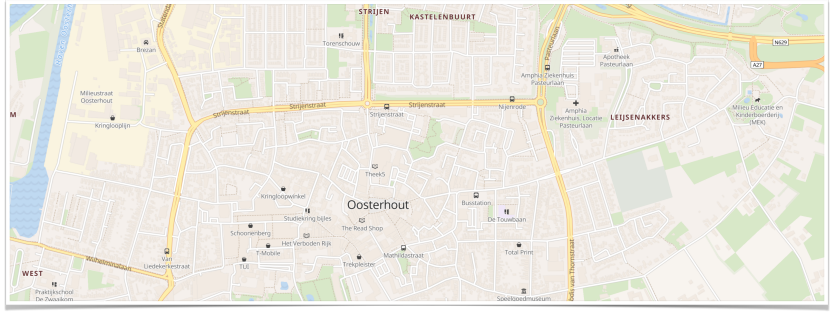
Two Numeric Columns

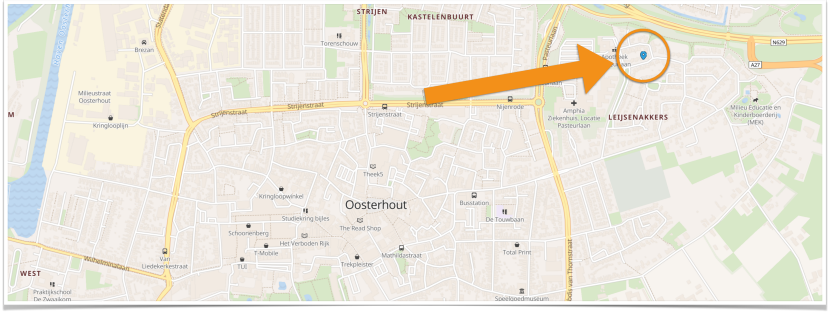





Where am I?

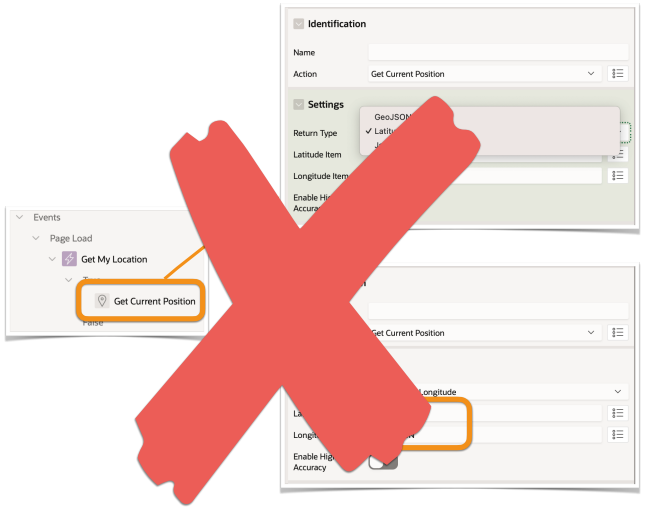

Where am I?

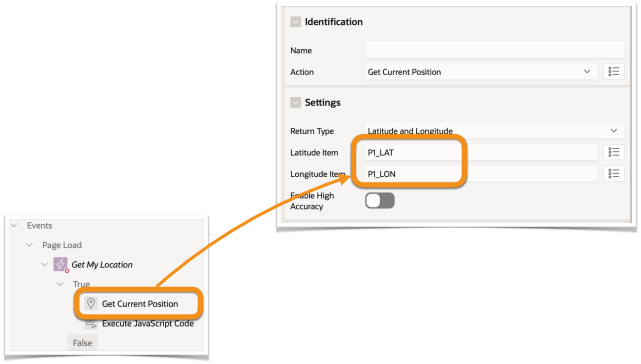

STRIJEN
KASTELENBUURT
LEIJSENAKKERS
Oosterhout
WEST

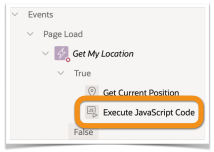

STRIJEN
KASTELENBUURT
LEIJSENAKKERS
Oosterhout
WEST

Application Items

AI_MY_LAT
AI_MY_LON



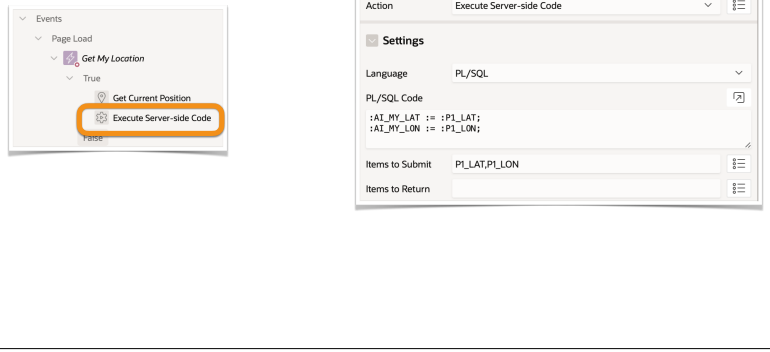


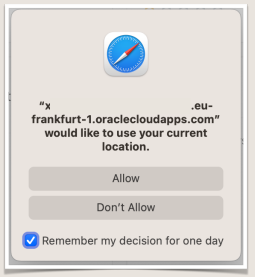


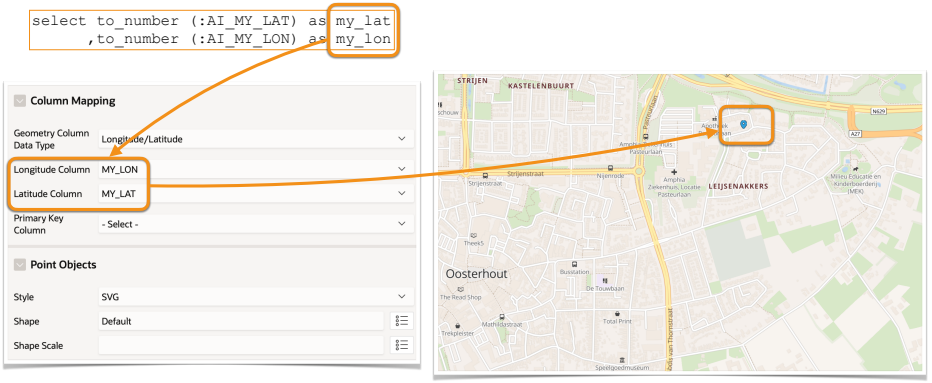

```
var result = apex.server.process( "DUMMY", {
    x01: apex.items.P1_LAT.getValue(),
    x02: apex.items.P1_LON.getValue()
} );
```

```
begin
   apex_util.set_session_state
        (p_name  => 'AI_MY_LAT'
        ,p_value => apex_application.g_x01);
   apex_util.set_session_state
        (p_name => 'AI_MY_LON'
        ,p_value => apex_application.g_x02);
    apex_json.open_object;
    apex_json.write('success', true);
    apex_json.close_object;
exception
    when others then
        apex_json.open_object;
        apex_json.write('success', false);
        apex_json.write('message', sqlerrm);
        apex_json.close_object;
end;
```

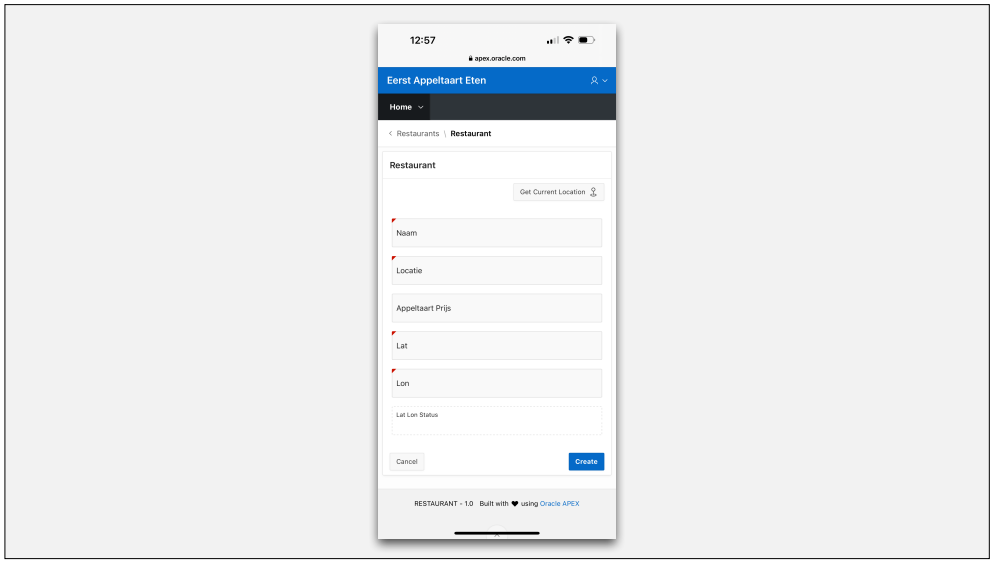


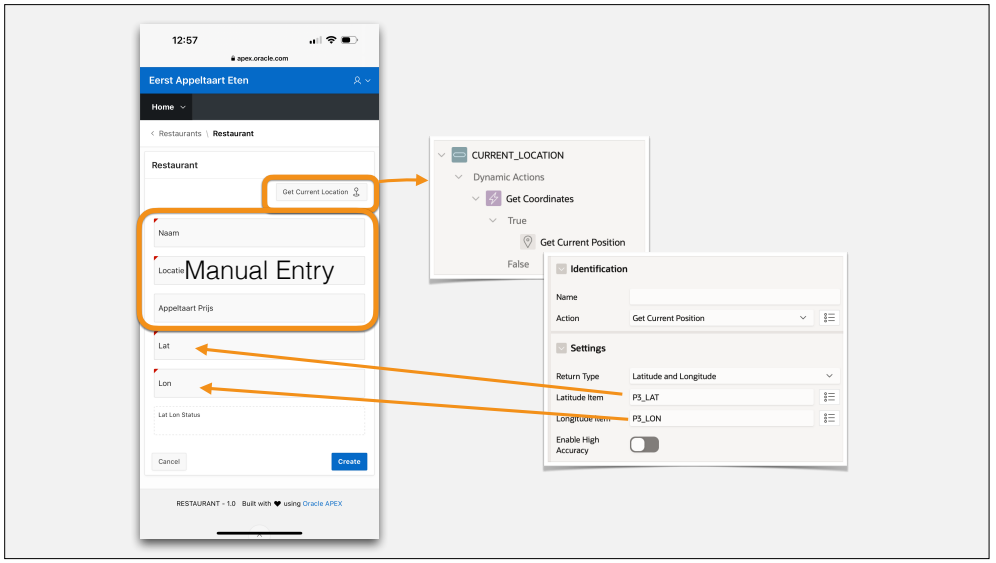

Events
Page Load
Get My Location
True
Get Current Position
Execute Server-side Code
False
Identification
Name
Action
Execute Server-side Code
Settings
Language
PL/SQL
PL/SQL Code
:AI_MY_LAT := :P1_LAT;
:AI_MY_LON := :P1_LON;
Items to Submit
P1_LAT,P1_LON
Items to Return


"x .eu-frankfurt-1.oraclecloudapps.com" would like to use your current location.
Allow
Don't Allow
Remember my decision for one day


select to_number (:AI_MY_LAT) as my_lat
,to_number (:AI_MY_LON) as my_lon
Column Mapping
Geometry Column Data Type
Longitude/Latitude
Longitude Column
MY_LON
Latitude Column
MY_LAT
Primary Key Column
- Select -
Point Objects
Style
SVG
Shape
Default
Shape Scale
STRIJEN
KASTELENBUURT
LEIJSENAKKERS
Oosterhout


Where are the Restaurants?







Tripadvisor®

https://www.tripadvisor.com/developers

Nearby Search

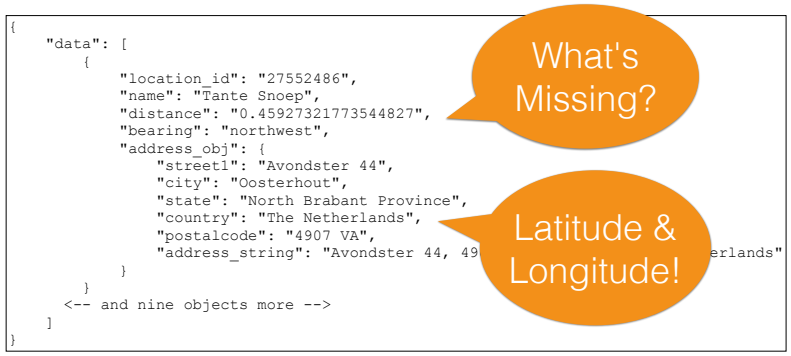
GET https://api.content.tripadvisor.com/api/v1/location/nearby_search

The Nearby Location Search reques returns up to 10 locations found near the given latitude/longtitude.
You can use category ("hotels", "attractions", "restaurants", "geos"), phone number, address to search with more accuracy.

We understand you are requesting to have more than 10 results at a time when using the search.

*Unfortunately, **We do not support pagination** for results from Location Search. The search API is meant for mapping purposes and is not intended for location discovery use cases.*

Tripadvisor Support Team





https://api.content.tripadvisor.com/api/v1/location/**{locationId}**/details


```
{
    "awards": [],
    "subcategory": [],
    "timezone": "Europe/Amsterdam",
    "ancestors": [
        {"level": "City","name": "Oosterhout","location_id": "227921"},
        {"level": "Province","name": "Noord-Brabant","location_id": "188579"},
        {"level": "Country","name": "Nederland","location_id": "188553"}
    ],
    "trip_types": [
        {"name": "business","localized_name": "Zaken","value": "0"},
        {"name": "couples", "localized_name": "Stellen","value": "0"},
        {"name": "solo", "localized_name": "Soloreis","value": "0"},
        {"name": "family", "localized_name": "Gezinnen","value": "0"},
        {"name": "friends", "localized_name": "Vakantie met vrienden","value": "0"}
    ],
    "web_url": "https://www.tripadvisor.nl/Restaurant_Review-g227921-d27552486-Reviews-Tan
    "location_id": "27552486",
    "latitude": "51.654453",
    "longitude": "4.86763",
    "write_review": "https://www.tripadvisor.nl/UserReview-g227921-d27552486-Tante_Snoep-O
    "subratings": {},
    "see_all_photos": "https://www.tripadvisor.nl/Restaurant_Review-g227921-d27552486-m668
    "category": {
        "name": "restaurant",
        "localized_name": "Restaurant"
    },
    "address_obj": {
        "street1": "Avondster 44",
```


```
declare
   l_response blob;
begin
   apex_web_service.g_request_headers(1).name := 'accept';
   apex_web_service.g_request_headers(1).value := 'application/json';
   l_response := apex_web_service.make_rest_request_b (
     p_url         => 'https://api.content.tripadvisor.com/api/v1/location/nearby_search'
    ,p_http_method => 'GET'
    ,p_parm_name   => apex_util.string_to_table
                      ('latLong:key:key:category:radius:radiusUnit:language')
    ,p_parm_value  => apex_util.string_to_table
                      ('51.6446884%2C4.8611959:XXX:YYY:restaurants:1:km:en')
    );

   ...<< process response >>...
   sys.dbms_output.put_line (apex_web_service.g_status_code);
   apex_web_service.clear_request_headers;
end;
```

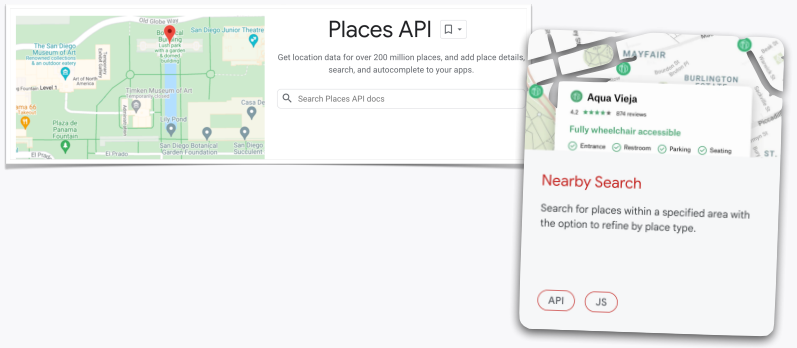
```
declare
   l_response blob;
begin
   apex_web_service.g_request_headers(1).name := 'accept';
   apex_web_service.g_request_headers(1).value := 'application/json';
   l_response := apex_web_service.make_rest_request_b (
     p_url         => 'https://api.content.tripadvisor.com/api/v1/location/nearby_search'
    ,p_http_method => 'GET'
    ,p_parm_name   => apex_util.string_to_table
                      ('latLong:key:key:category:radius:radiusUnit:language')
    ,p_parm_value  => apex_util.string_to_table
                      ('51.6446884%2C4.8611959:XXX:YYY:restaurants:1:km:en')
    );

   ...<< process response >>...
   sys.dbms_output.put_line (apex_web_service.g_status_code);
   apex_web_service.clear_request_headers;
end;
```

Latitude & Longitude

- Only 10 Results
- Not all Restaurants
- 2 Calls to get Lat/Lon
- First 5000 calls Free*

* check https://www.tripadvisor.com/developers for actual prices per service

Google Maps Platform




```
curl -X POST -d '{
  "includedTypes": ["restaurant"],
  "maxResultCount": 10,
  "locationRestriction": {
    "circle": {
      "center": {
        "latitude": 37.7937,
        "longitude": -122.3965},
      "radius": 500.0
    }
  }
}' \
-H 'Content-Type: application/json' -H "X-Goog-Api-Key: API_KEY" \
-H "X-Goog-FieldMask: places.displayName" \
https://places.googleapis.com/v1/places:searchNearby
```

Max 20


```
{
    "places": [
        {
            "id": "ChIJn8eZORSZxkcRY9fHNDFYzZE",
            "types": [
                "restaurant",
                "food",
                "point_of_interest",
                "establishment"
            ],
            "formattedAddress": "Kloosterdreef 3, 4901 PH Oosterhout, Nederland",
            "location": {
                "latitude": 51.6419345,
                "longitude": 4.8743697
            },
            "websiteUri": "http://www.wijnhuisdeblauwecamer.nl/",
            "adrFormatAddress": "<span class=\"street-address\">Kloosterdreef 3</span>, <sp
            "displayName": {
                "text": "Wijnhuis de Blauwe Camer",
                "languageCode": "nl"
            },
            "servesDessert": true,
            "servesCoffee": true
        }
    ]
}
```

```
apex_web_service.clear_request_headers;
apex_web_service.g_request_headers(1).name := 'X-Goog-FieldMask';
apex_web_service.g_request_headers(1).value :=
          'places.name,places.displayName'||
         ',places.formattedAddress'||
         ',places.types,places.websiteUri'||
         ',places.servesCoffee,places.servesDessert';
apex_web_service.g_request_headers(2).name := 'Content-Type';
apex_web_service.g_request_headers(2).value := 'application/json';
apex_web_service.g_request_headers(3).name := 'X-Goog-Api-Key';
apex_web_service.g_request_headers(3).value := 'XXX';
l_response := apex_web_service.make_rest_request_b
   (p_url                  => 'https://places.googleapis.com/v1/places:searchNearby'
   ,p_http_method          => 'POST'
   ,p_body => '{ "includedTypes": ["restaurant"],
                 "rankPreference": "DISTANCE",
                 "maxResultCount": 20,
                 "languageCode":"nl",
                 "locationRestriction": {
                   "circle": {
                     "center": {
                           "latitude": 51.8151268,
                           "longitude": 4.6646143},
                     "radius": 1000.0
                   }
                 }
               }'
);
```

```
apex_web_service.clear_request_headers;
apex_web_service.g_request_headers(1).name := 'X-Goog-FieldMask';
apex_web_service.g_request_headers(1).value :=
          'places.name,places.displayName'||
         ',places.formattedAddress'||
         ',places.types,places.websiteUri'||
         ',places.servesCoffee,places.servesDessert';
apex_web_service.g_request_headers(2).name := 'Content-Type';
apex_web_service.g_request_headers(2).value := 'application/json';
apex_web_service.g_request_headers(3).name := 'X-Goog-Api-Key';
apex_web_service.g_request_headers(3).value := 'XXX';
l_response := apex_web_service.make_rest_request_b
   (p_url                  => 'https://places.googleapis.com/v1/places:searchNearby'
   ,p_http_method          => 'POST'
   ,p_body => '{ "includedTypes": ["restaurant"],
                 "rankPreference": "DISTANCE",
                 "maxResultCount": 20,
                 "languageCode":"nl",
                 "locationRestriction": {
                   "circle": {
                     "center": {
                           "latitude": 51.8151268,
                           "longitude": 4.6646143},
                     "radius": 1000.0
                   }
                 }
               }'
);
```

```
apex_web_service.clear_request_headers;
apex_web_service.g_request_headers(1).name := 'X-Goog-FieldMask';
apex_web_service.g_request_headers(1).value :=
          'places.name,places.displayName'||
         ',places.formattedAddress'||
         ',places.types,places.websiteUri'||
         ',places.servesCoffee,places.servesDessert';
apex_web_service.g_request_headers(2).name := 'Content-Type';
apex_web_service.g_request_headers(2).value := 'application/json';
apex_web_service.g_request_headers(3).name := 'X-Goog-Api-Key';
apex_web_service.g_request_headers(3).value := 'XXX';
l_response := apex_web_service.make_rest_request_b
   (p_url                  => 'https://places.googleapis.com/v1/places:searchNearby'
   ,p_http_method          => 'POST'
   ,p_body => '{ "includedTypes": ["restaurant"],
                 "rankPreference": "DISTANCE",
                 "maxResultCount": 20,
                 "languageCode":"nl",
                 "locationRestriction": {
                   "circle": {
                     "center": {
                           "latitude": 51.8151268,
                           "longitude": 4.6646143},
                     "radius": 1000.0
                   }
                 }
               }'
);
```

```
apex_web_service.clear_request_headers;
apex_web_service.g_request_headers(1).name := 'X-Goog-FieldMask';
apex_web_service.g_request_headers(1).value :=
          'places.name,places.displayName'||
         ',places.formattedAddress'||
         ',places.types,places.websiteUri'||
         ',places.servesCoffee,places.servesDessert';
apex_web_service.g_request_headers(2).name := 'Content-Type';
apex_web_service.g_request_headers(2).value := 'application/json';
apex_web_service.g_request_headers(3).name := 'X-Goog-Api-Key';
apex_web_service.g_request_headers(3).value := 'XXX';
l_response := apex_web_service.make_rest_request_b
   (p_url                  => 'https://places.googleapis.com/v1/places:searchNearby'
   ,p_http_method          => 'POST'
   ,p_body => '{ "includedTypes": ["restaurant"],
                 "rankPreference": "DISTANCE",
                 "maxResultCount": 20,
                 "languageCode":"nl",
                 "locationRestriction": {
                   "circle": {
                     "center": {
                           "latitude": 51.8151268,
                           "longitude": 4.6646143},
                     "radius": 1000.0
                   }
                 }
               }'
);
```

```
apex_web_service.clear_request_headers;
apex_web_service.g_request_headers(1).name := 'X-Goog-FieldMask';
apex_web_service.g_request_headers(1).value :=
          'places.name,places.displayName'||
         ',places.formattedAddress'||
         ',places.types,places.websiteUri'||
         ',places.servesCoffee,places.servesDessert';
apex_web_service.g_request_headers(2).name := 'Content-Type';
apex_web_service.g_request_headers(2).value := 'application/json';
apex_web_service.g_request_headers(3).name := 'X-Goog-Api-Key';
apex_web_service.g_request_headers(3).value := 'XXX';
l_response := apex_web_service.make_rest_request_b
   (p_url                  => 'https://places.googleapis.com/v1/places:searchNearby'
   ,p_http_method          => 'POST'
   ,p_body => '{ "includedTypes": ["restaurant"],
                 "rankPreference": "DISTANCE",
                 "maxResultCount": 20,
                 "languageCode":"nl",
                 "locationRestriction": {
                   "circle": {
                     "center": {
                           "latitude": 51.8151268,
                           "longitude": 4.6646143},
                     "radius": 1000.0
                   }
                 }
               }'
);
```

```
apex_web_service.clear_request_headers;
apex_web_service.g_request_headers(1).name := 'X-Goog-FieldMask';
apex_web_service.g_request_headers(1).value :=
          'places.name,places.displayName'||
         ',places.formattedAddress'||
         ',places.types,places.websiteUri'||
         ',places.servesCoffee,places.servesDessert';
apex_web_service.g_request_headers(2).name := 'Content-Type';
apex_web_service.g_request_headers(2).value := 'application/json';
apex_web_service.g_request_headers(3).name := 'X-Goog-Api-Key';
apex_web_service.g_request_headers(3).value := 'XXX';
l_response := apex_web_service.make_rest_request_b
   (p_url                  => 'https://places.googleapis.com/v1/places:searchNearby'
   ,p_http_method          => 'POST'
   ,p_body => '{ "includedTypes": ["restaurant"],
                 "rankPreference": "DISTANCE",
                 "maxResultCount": 20,
                 "languageCode":"nl",
                 "locationRestriction": {
                   "circle": {
                     "center": {
                           "latitude": 51.8151268,
                           "longitude": 4.6646143},
                     "radius": 1000.0
                   }
                 }
               }'
);
```

- "All" Restaurants
- Lots of Information
- Serves Coffee & Dessert
- 5000 free calls per Month*
- Not only Restaurants

* check https://mapsplatform.google.com/ for actual prices per service


```
{
  "id": "ChIJ48i_DkGZxkcRWN9IyBZF47Y",
  "types": [
      "gas_station",
      "convenience_store",
      "sandwich_shop",
      "restaurant",
      "food",
      "store",
      "point_of_interest",
      "establishment"
  ],
  "formattedAddress": "Pasteurlaan 7, 4901 AA Oosterhout, Nederland",
  "location": {
      "latitude": 51.6494766,
      "longitude": 4.8694695999999995
  },
  "websiteUri": "https://find.shell.com/nl/fuel/10030648-shell-station-pasteurlaan/nl_NL",
  "adrFormatAddress": "<span class=\"street-address\">Pasteurlaan 7</span>, <span class=\"postal-
  "displayName": {
      "text": "Shell",
      "languageCode": "nl"
  }
}
```

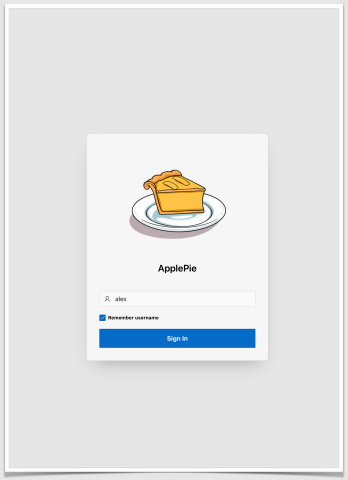
```
{
  "id": "ChIJ48i_DkGZxkcRWN9IyBZF47Y",
  "types": [
      "gas_station",
      "convenience_store",
      "sandwich_shop",
      "restaurant",
      "food",
      "store",
      "point_of_interest",
      "establishment"
  ],
  "formattedAddress": "Pasteurlaan 7, 4901 AA Oosterhout, Nederland",
  "location": {
      "latitude": 51.6494766,
      "longitude": 4.8694695999999995
  },
  "websiteUri": "https://find.shell.com/nl/fuel/10030648-shell-station-pasteurlaan/nl_NL",
  "adrFormatAddress": "<span class=\"street-address\">Pasteurlaan 7</span>, <span class=\"postal-
  "displayName": {
      "text": "Shell",
      "languageCode": "nl"
  }
}
```

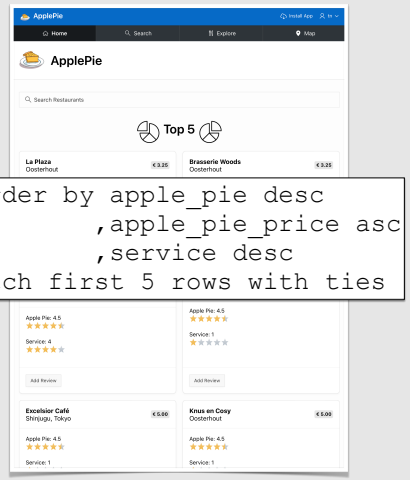


```
{
  "id": "ChIJ48i_DkGZxkcRWN9IyBZF47Y",
  "types": [
      "gas_station",
      "convenience_store",
      "sandwich_shop",
      "restaurant",
      "food",
      "store",
      "point_of_interest",
      "establishment"
  ],
  "formattedAddress": "Pasteurlaan 7, 4901 AA Oosterhout, Nederland",
  "location": {
      "latitude": 51.6494766,
      "longitude": 4.8694695999999995
  },
  "websiteUri": "https://find.shell.com/nl/fuel/10030648-shell-station-pasteurlaan/nl_NL",
  "adrFormatAddress": "<span class=\"street-address\">Pasteurlaan 7</span>, <span class=\"postal-
  "displayName": {
      "text": "Shell",
      "languageCode": "nl"
  }
}
```

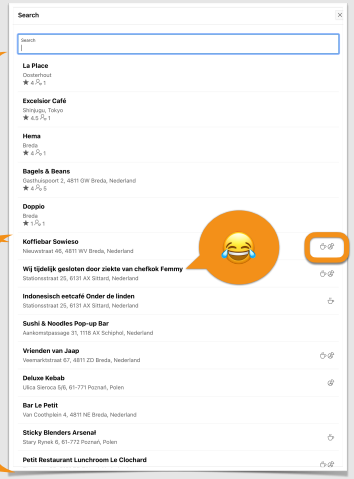


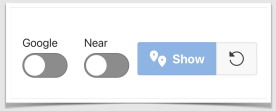

APEX

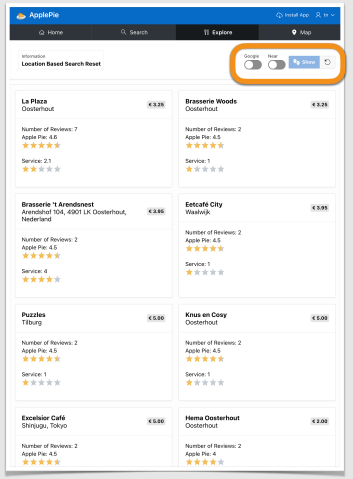





```
order by apple_pie desc
        ,apple_pie_price asc
        ,service desc
fetch first 5 rows with ties
```







```
select rtt.*
  from ee_restaurants rtt
 where sdo_within_distance
          (apex_spatial.point (rtt.lon, rtt.lat)
          ,apex_spatial.point (:P100_NEAR_LON, :P100_NEAR_LAT)
          ,'distance=1 unit=KM') = 'TRUE'
```

```
select rtt.*
  from ee_restaurants rtt
 where sdo_within_distance
          (apex_spatial.point (rtt.lon, rtt.lat)
          ,apex_spatial.point (:P100_NEAR_LON, :P100_NEAR_LAT)
          ,'distance=1 unit=KM') = 'TRUE'
```

```
select rtt.*
  from ee_restaurants rtt
 where sdo_within_distance
          (apex_spatial.point (rtt.lon, rtt.lat)
          ,apex_spatial.point (:P100_NEAR_LON, :P100_NEAR_LAT)
          ,'distance=1 unit=KM') = 'TRUE'
```

```
select rtt.*
  from ee_restaurants rtt
 where sdo_within_distance
          (apex_spatial.point (rtt.lon, rtt.lat)
          ,apex_spatial.point (:P100_NEAR_LON, :P100_NEAR_LAT)
          ,'distance=1 unit=KM') = 'TRUE'
```

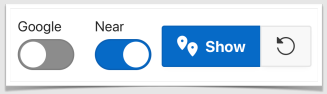
```
select rtt.*
  from ee_restaurants rtt
 where sdo_within_distance
          (apex_spatial.point (rtt.lon, rtt.lat)
          ,apex_spatial.point (:P100_NEAR_LON, :P100_NEAR_LAT)
          ,'distance=1 unit=KM') = 'TRUE'
```

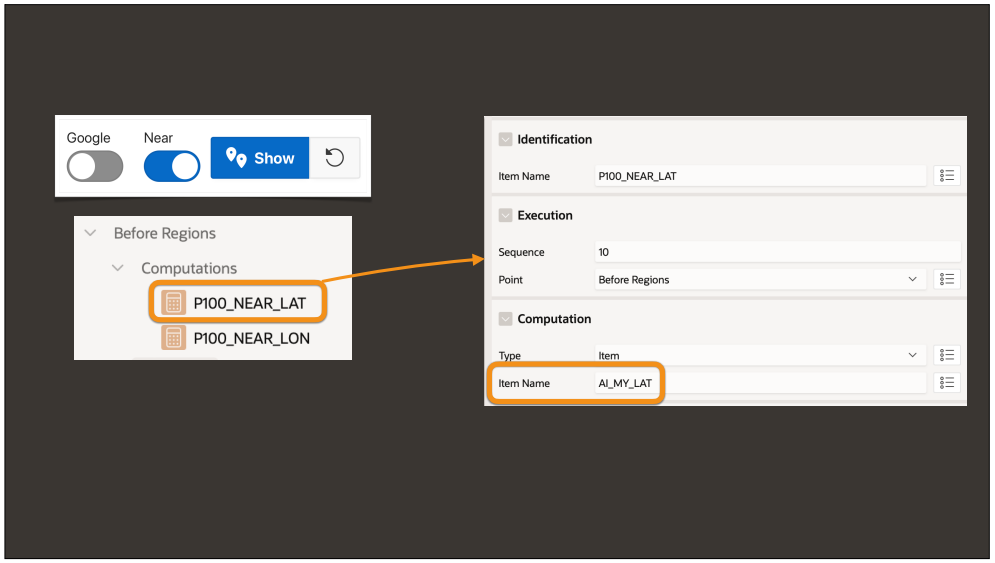
```
select rtt.*
  from ee_restaurants rtt
 where sdo_within_distance
          (apex_spatial.point (rtt.lon, rtt.lat)
          ,apex_spatial.point (:P100_NEAR_LON, :P100_NEAR_LAT)
          ,'distance=1 unit=KM') = 'TRUE'
```

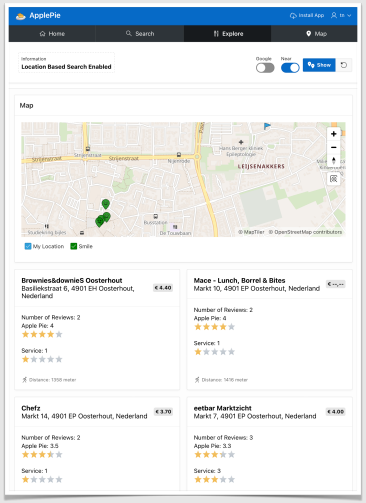
NULL

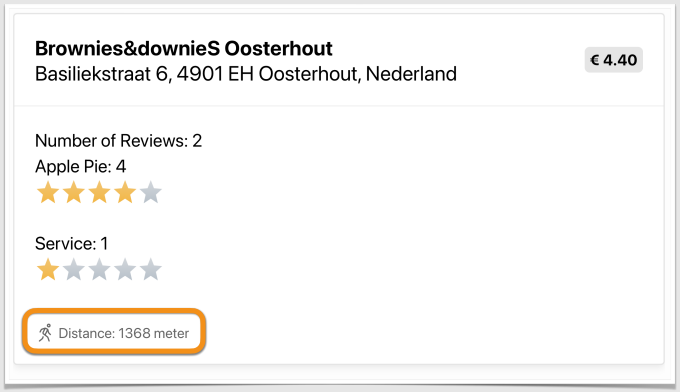
```
ORA-13032: Invalid NULL SDO_GEOMETRY object
ORA-06512: at "MDSYS.SDO_3GL", line 1175
ORA-06512: at "MDSYS.SDO_3GL", line 1325 https://docs.oracle.com/error-help/db/ora-13032/
There are invalid SDO_POINT_TYPE or SDO_ELEM_INFO_ARRAY or SDO_ORDINATE_ARRAY fields in the SDO_GEOMETRY
object
Error at Line: 1 Column: -1
```

```
select rtt.*
  from ee_restaurants rtt
 where (:P100_NEAR_LAT is null and :P100_NEAR_LON is null)
    or (:P100_NEAR_LAT is not null
      and :P100_NEAR_LON is not null
      and sdo_within_distance
            (apex_spatial.point (rtt.lon, rtt.lat)
            ,apex_spatial.point (:P100_NEAR_LON, :P100_NEAR_LAT)
            ,'distance=1 unit=KM') = 'TRUE');
```



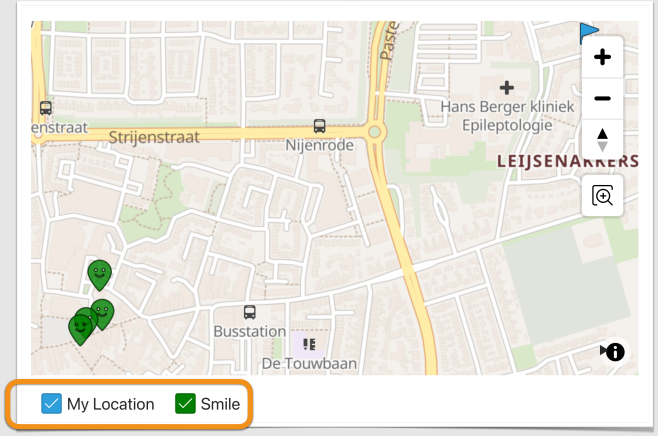


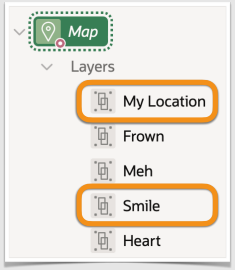




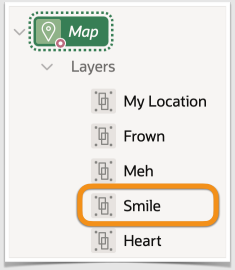

```
round (sdo_geom.sdo_distance (
        apex_spatial.point (:P100_NEAR_LAT,:P100_NEAR_LON)
       ,apex_spatial.point (rtt.lat, rtt.lon)
   ))
```

```
case
when :P100_NEAR_LAT is not null
 and :P100_NEAR_LON is not null
then
   round (sdo_geom.sdo_distance (
           apex_spatial.point (:P100_NEAR_LAT,:P100_NEAR_LON)
          ,apex_spatial.point (rtt.lat, rtt.lon)
       ))
end as distance_m
```

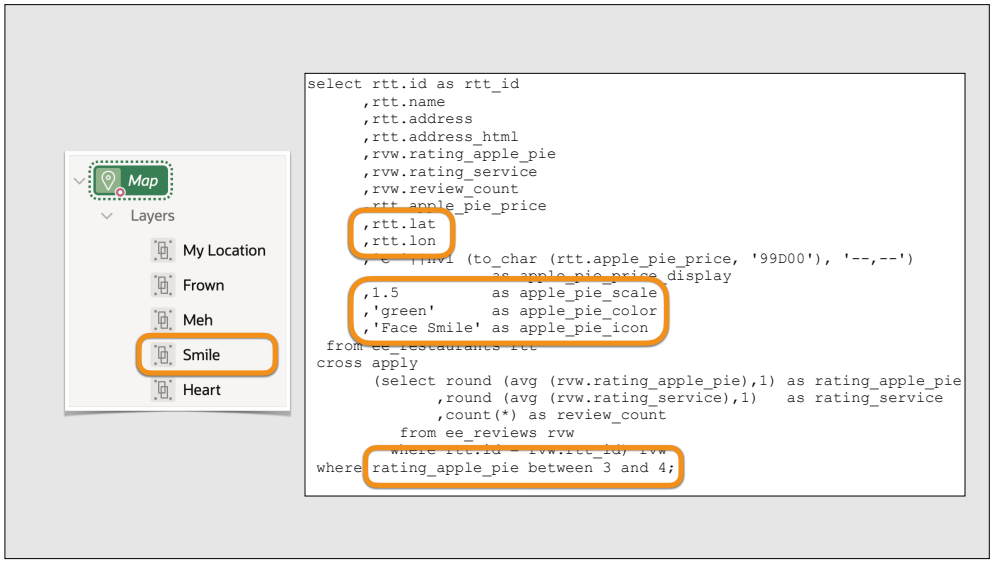


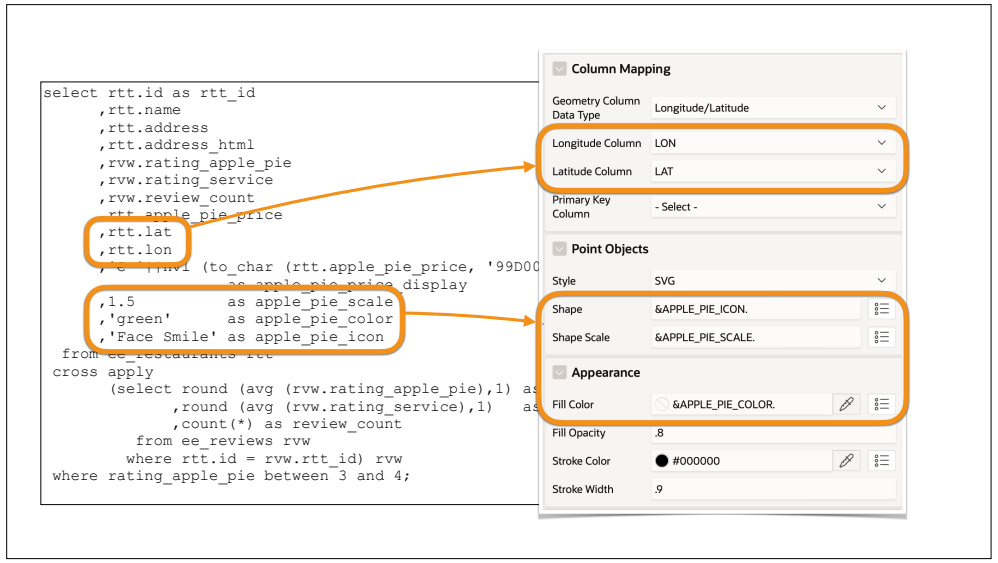


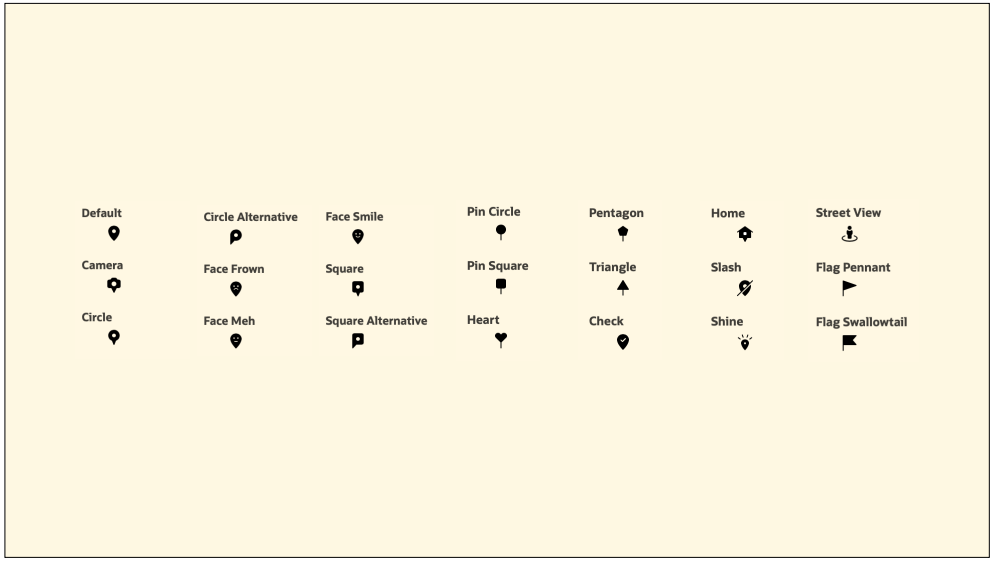

```
select rtt.id as rtt_id
      ,rtt.name
      ,rtt.address
      ,rtt.address_html
      ,rvw.rating_apple_pie
      ,rvw.rating_service
      ,rvw.review_count
      ,rtt.apple_pie_price
      ,rtt.lat
      ,rtt.lon
      ,'€ '||nvl (to_char (rtt.apple_pie_price, '99D00'), '--,--')
                    as apple_pie_price_display
      ,1.5          as apple_pie_scale
      ,'green'      as apple_pie_color
      ,'Face Smile' as apple_pie_icon
  from ee_restaurants rtt
 cross apply
       (select round (avg (rvw.rating_apple_pie),1) as rating_apple_pie
             ,round (avg (rvw.rating_service),1)   as rating_service
             ,count(*) as review_count
          from ee_reviews rvw
         where rtt.id = rvw.rtt_id) rvw
 where rating_apple_pie between 3 and 4;
```

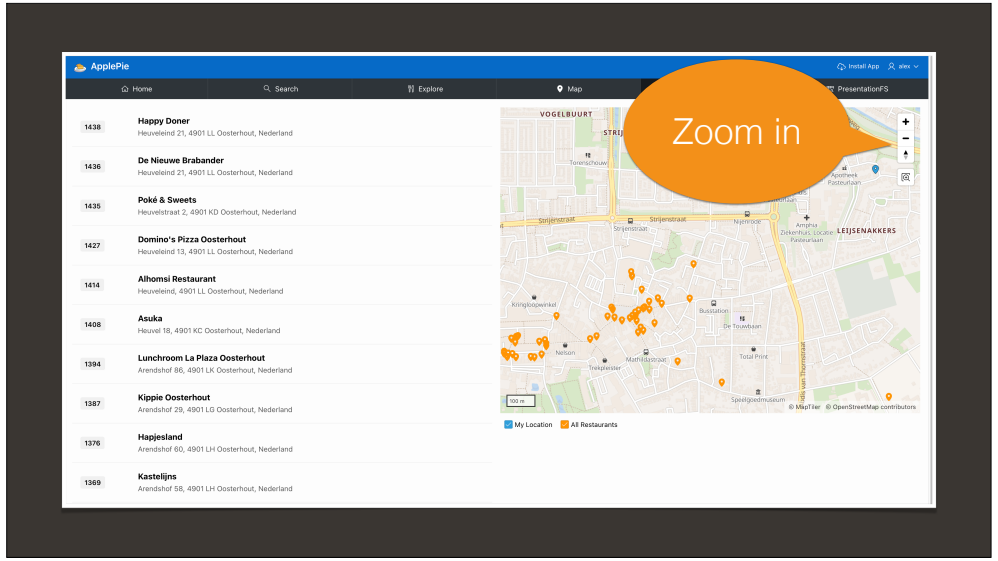


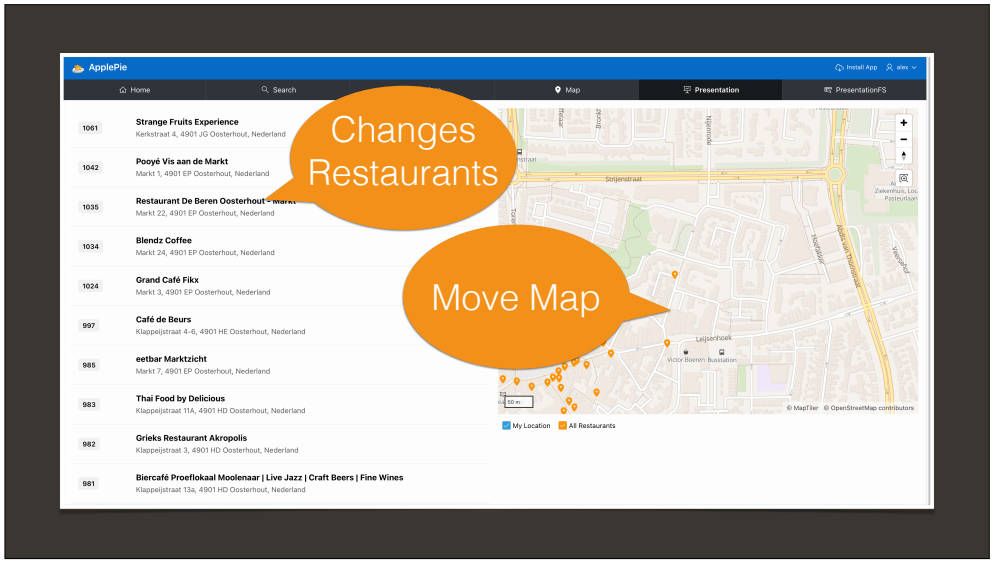

```
select rtt.id as rtt_id
      ,rtt.name
      ,rtt.address
      ,rtt.address_html
      ,rvw.rating_apple_pie
      ,rvw.rating_service
      ,rvw.review_count
      ,rtt.apple_pie_price
      ,rtt.lat
      ,rtt.lon
      ,'€ '||nvl (to_char (rtt.apple_pie_price, '99D00'), '--,--')
                    as apple_pie_price_display
      ,1.5          as apple_pie_scale
      ,'green'      as apple_pie_color
      ,'Face Smile' as apple_pie_icon
  from ee_restaurants rtt
cross apply
       (select round (avg (rvw.rating_apple_pie),1) as rating_apple_pie
             ,round (avg (rvw.rating_service),1)   as rating_service
             ,count(*) as review_count
          from ee_reviews rvw
         where rtt.id = rvw.rtt_id) rvw
 where rating_apple_pie between 3 and 4;
```

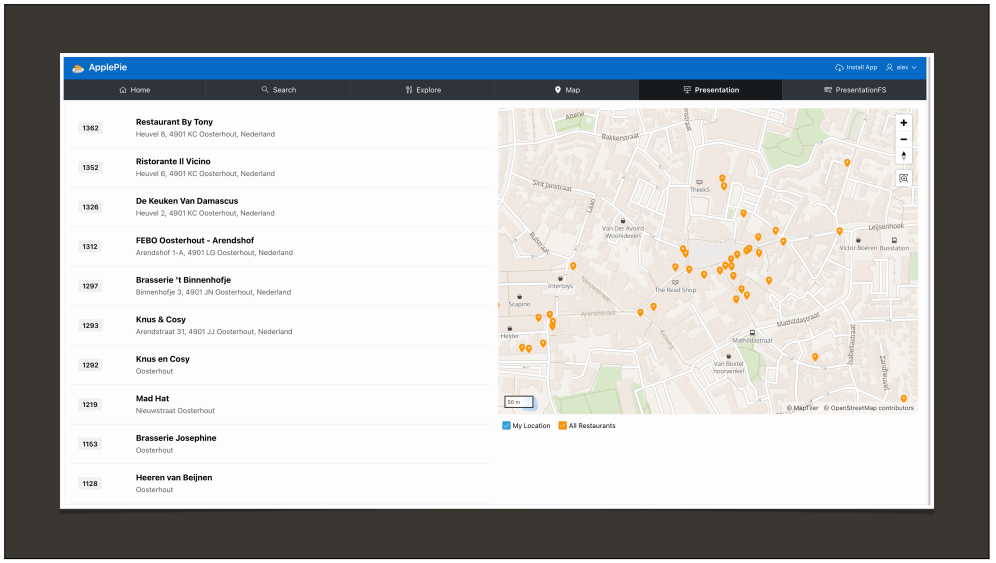

Map
Layers
My Location
Frown
Meh
Smile
Heart
select rtt.id as rtt_id
,rtt.name
,rtt.address
,rtt.address_html
,rvw.rating_apple_pie
,rvw.rating_service
,rvw.review_count
,rtt.apple_pie_price
,rtt.lat
,rtt.lon
,to_char (rtt.apple_pie_price, '99D00'), '--,--')
as apple_pie_price_display
,1.5 as apple_pie_scale
,'green' as apple_pie_color
,'Face Smile' as apple_pie_icon
from ee_restaurants rtt
cross apply
(select round (avg (rvw.rating_apple_pie),1) as rating_apple_pie
,round (avg (rvw.rating_service),1) as rating_service
,count(*) as review_count
from ee_reviews rvw
where rtt.id = rvw.rtt_id) rvw
where rating_apple_pie between 3 and 4;


select rtt.id as rtt_id
,rtt.name
,rtt.address
,rtt.address_html
,rvw.rating_apple_pie
,rvw.rating_service
,rvw.review_count
,rtt.lat
,rtt.lon
,1.5 as apple_pie_scale
,'green' as apple_pie_color
,'Face Smile' as apple_pie_icon
cross apply
where rating_apple_pie between 3 and 4;
Column Mapping
Geometry Column Data Type
Longitude/Latitude
Longitude Column
LON
Latitude Column
LAT
Primary Key Column
- Select -
Point Objects
Style
SVG
Shape
&APPLE_PIE_ICON.
Shape Scale
&APPLE_PIE_SCALE.
Appearance
Fill Color
&APPLE_PIE_COLOR.
Fill Opacity
.8
Stroke Color
#000000
Stroke Width
.9

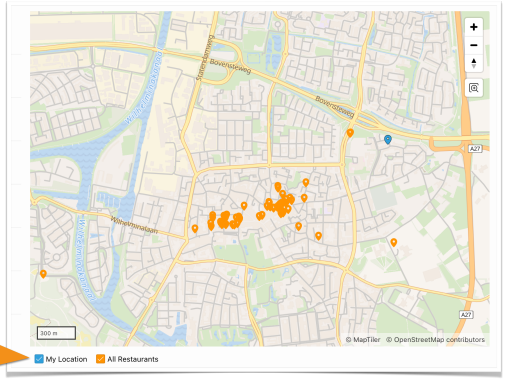

Default
Circle Alternative
Face Smile
Pin Circle
Pentagon
Home
Street View
Camera
Face Frown
Square
Pin Square
Triangle
Slash
Flag Pennant
Circle
Face Meh
Square Alternative
Heart
Check
Shine
Flag Swallowtail


ApplePie
Home
Search
Explore
Map
Happy Doner
De Nieuwe Brabander
Poké & Sweets
Domino's Pizza Oosterhout
Alhomsi Restaurant
Asuka
Lunchroom La Plaza Oosterhout
Kippie Oosterhout
Hapjesland
Kastelijns
Zoom in



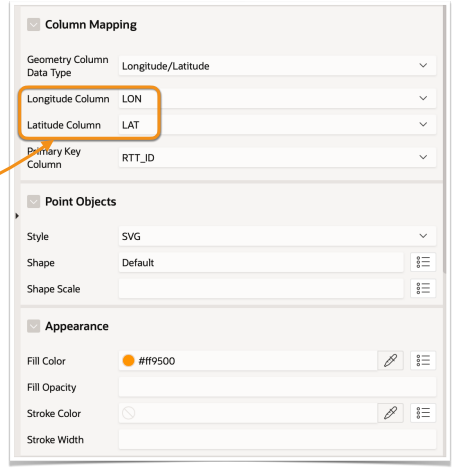



```
select rtt.id as rtt_id
      ,rtt.name
      ,rtt.address_html
      ,rtt.lat
      ,rtt.lon
  from ee_restaurants rtt
```



Two Layers, Two Queries

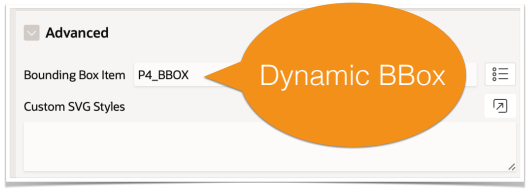
```
select rtt.id as rtt_id
      ,rtt.name
      ,rtt.address_html
      ,rtt.lat
      ,rtt.lon
  from ee_restaurants rtt
```





How to tell which Restaurants are "in View"?

Photo by Pixabay: https://www.pexels.com/photo/coin-operated-telescope-237258/



BBox

{"type":"Polygon","coordinates":[[[4.859346147881325,51.64334787808855],[4.87594662216182,51.64334787808855],[4.87594662216182,51.65085299681448],[4.859346147881325,51.65085299681448],[4.859346147881325,51.64334787808855]]]}

2848	**Brasserie Woods**	Oosterhout
1636	**Me Gusta Oosterhout**	Willemstraat 68, 4901 LC Oosterhout, Nederland
1515	**Vietnamese loempia's**	4901 LK Oosterhout, Nederland
1509	**HEMA Oosterhout**	Winkelcentrum, Arendshof 108, 4901 LK Oosterhout, Nederland
1478	**Hema Oosterhout**	Oosterhout
1469	**Brasserie 't Arendsnest**	Arendshof 104, 4901 LK Oosterhout, Nederland
1438	**Happy Doner**	Heuveleind 21, 4901 LL Oosterhout, Nederland
1436	**De Nieuwe Brabander**	Heuveleind 21, 4901 LL Oosterhout, Nederland
1435	**Poké & Sweets**	Heuvelstraat 2, 4901 KD Oosterhout, Nederland

Brasserie Woods
Oosterhout

Me Gusta Oosterhout
Willemstraat 68, 4901 LC Oosterhout, Nederland

Vietnamese loempia's
4901 LK Oosterhout, Nederland

HEMA Oosterhout
Winkelcentrum, Arendshof 108, 4901 LK Oosterhout, Nederland

Hema Oosterhout
Oosterhout

Brasserie 't Arendsnest
Arendshof 104, 4901 LK Oosterhout, Nederland

Happy Doner
Heuveleind 21, 4901 LL Oosterhout, Nederland

De Nieuwe Brabander
Heuveleind 21, 4901 LL Oosterhout, Nederland

Poké & Sweets
Heuvelstraat 2, 4901 KD Oosterhout, Nederland

```
select rtt.id as rtt_id
      ,rtt.name
      ,rtt.address
      ,rtt.address_html
      ,rtt.lat
      ,rtt.lon
 from ee_restaurants rtt
 where sdo_anyinteract(
           geometry1 => apex_spatial.point (p_lat => rtt.lat
                                           ,p_lon => rtt.lon)
          ,geometry2 => mdsys.sdo_util.from_geojson (:P4_BBOX)
       ) = 'TRUE'
  and :P4_BBOX is not null
```

Brasserie Woods
Oosterhout

Me Gusta Oosterhout
Willemstraat 68, 4901 LC Oosterhout, Nederland

Vietnamese loempia's
4901 LK Oosterhout, Nederland

HEMA Oosterhout
Winkelcentrum, Arendshof 108, 4901 LK Oosterhout, Nederland

Hema Oosterhout
Oosterhout

Brasserie 't Arendsnest
Arendshof 104, 4901 LK Oosterhout, Nederland

Happy Doner
Heuveleind 21, 4901 LL Oosterhout, Nederland

De Nieuwe Brabander
Heuveleind 21, 4901 LL Oosterhout, Nederland

Poké & Sweets
Heuvelstraat 2, 4901 KD Oosterhout, Nederland

```
select rtt.id as rtt_id
      ,rtt.name
      ,rtt.address
      ,rtt.address_html
      ,rtt.lat
      ,rtt.lon
 from ee_restaurants rtt
 where sdo_anyinteract(
           geometry1 => apex_spatial.point (p_lat => rtt.lat
                                           ,p_lon => rtt.lon)
          ,geometry2 => mdsys.sdo_util.from_geojson (:P4_BBOX)
       ) = 'TRUE'
  and :P4_BBOX is not null
```



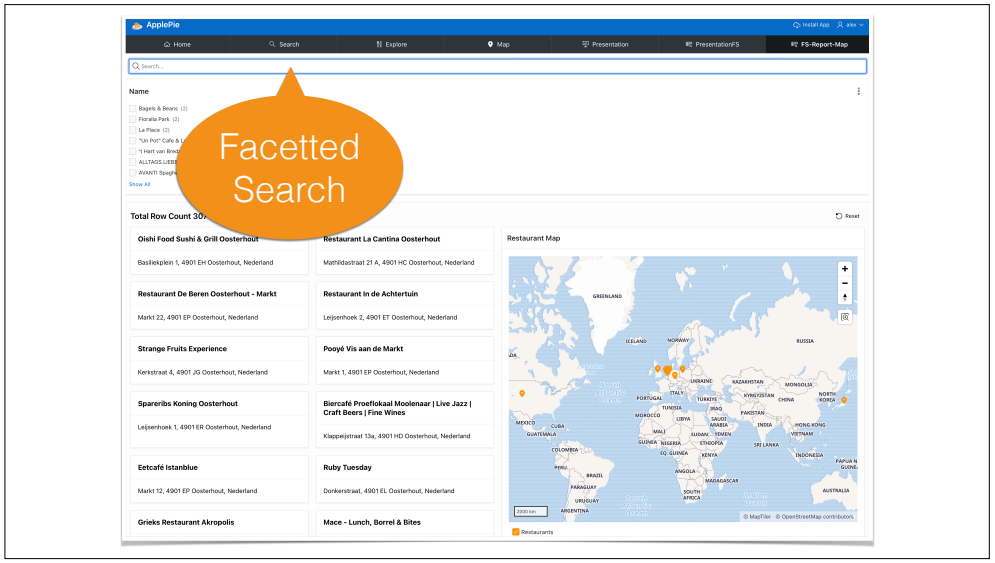
```
round (sdo_geom.sdo_distance (
           geom1 => apex_spatial.point (p_lat => :AI_MY_LAT
                                       ,p_lon => :AI_MY_LON)
          ,geom2 => apex_spatial.point (p_lat => rtt.lat
                                       ,p_lon => rtt.lon)
          ,unit => 'unit=m'
      )) as distance
```

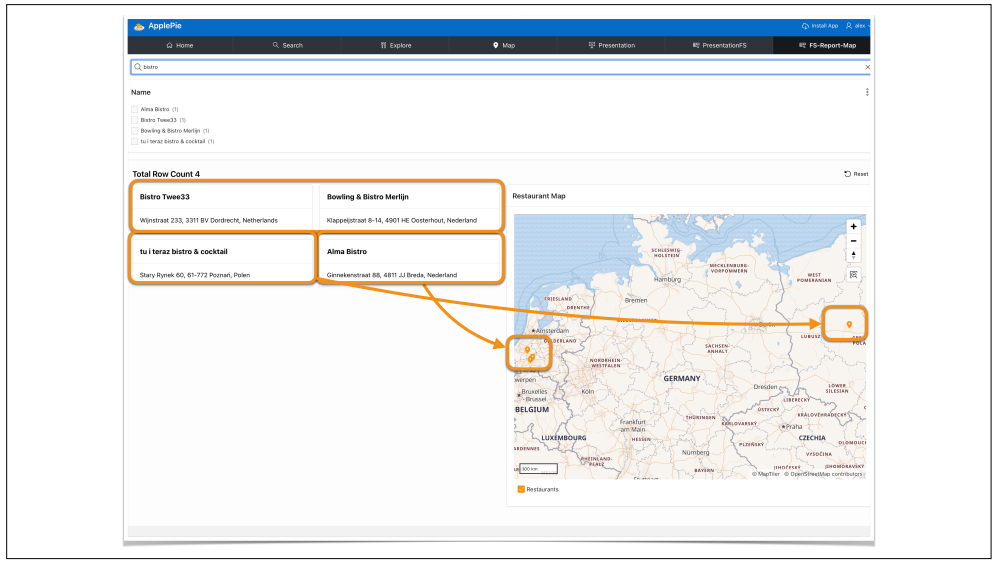
Photo by Anna Shvets: https://www.pexels.com/photo/a-person-holding-a-yellow-farm-tool-5029931/

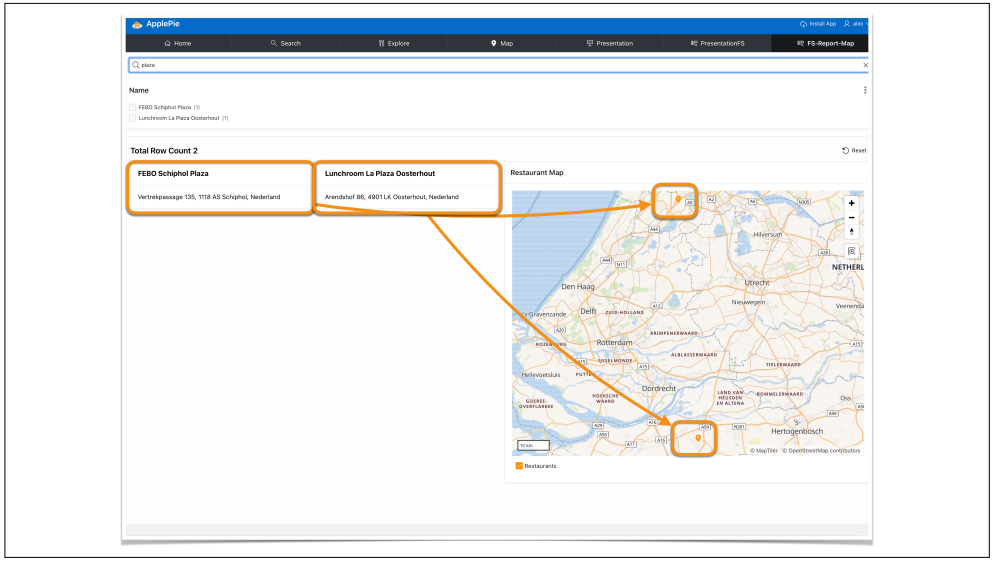


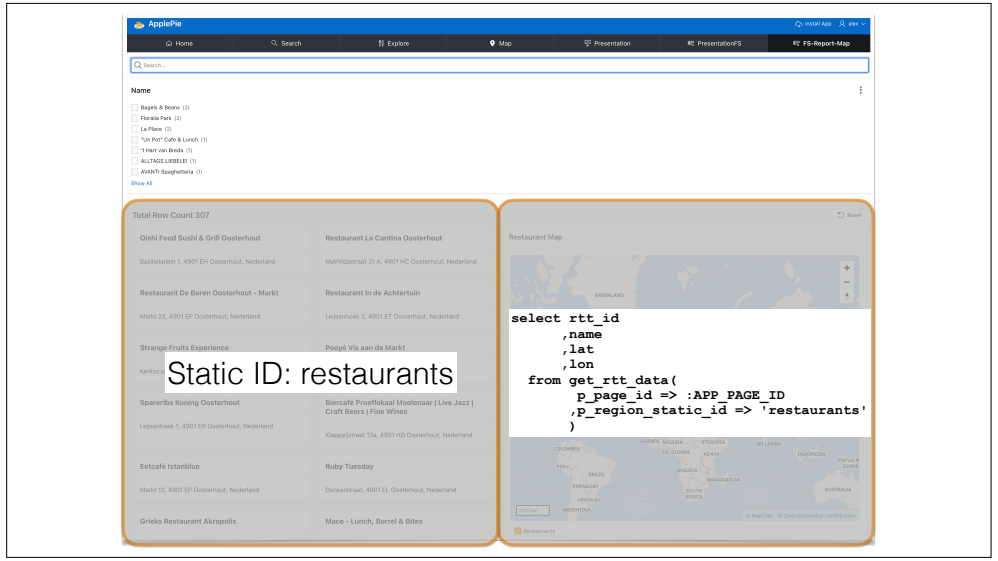
Facetted Search Report Map

Photo by Anna Nekrashevich: https://www.pexels.com/photo/clear-crystal-stones-on-white-surface-8516783/


Facetted Search



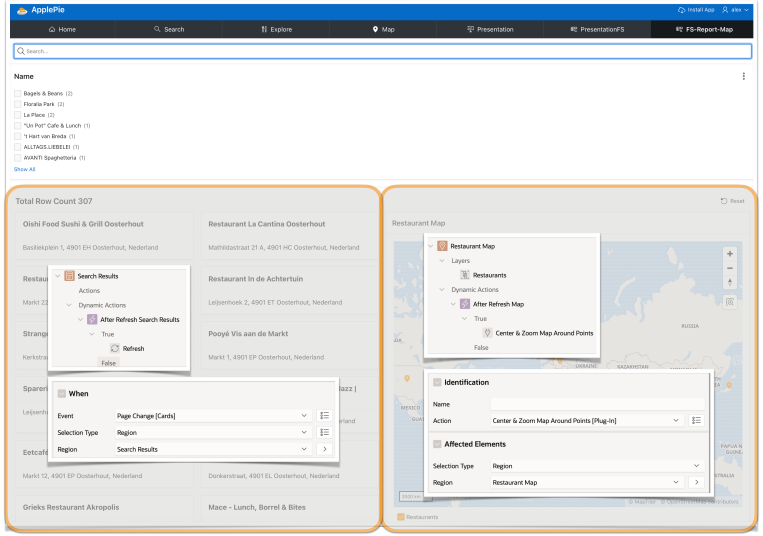



Static ID: restaurants
select rtt_id
,name
,lat
,lon
from get_rtt_data(
p_page_id => :APP_PAGE_ID
,p_region_static_id => 'restaurants'
)

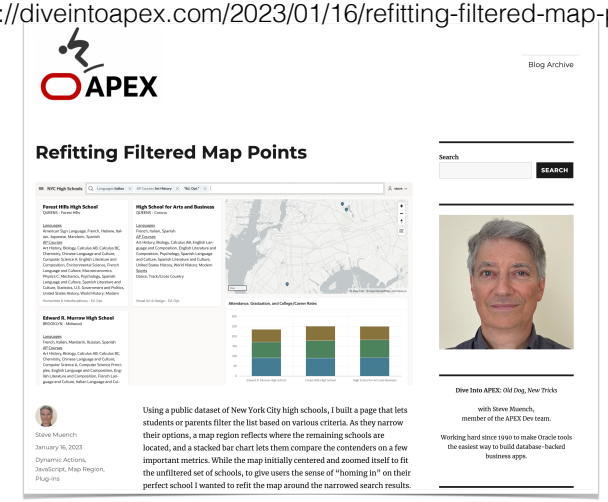
```
create or replace type t_rtt_row as object(
      rtt_id        number
     ,name          varchar2 (255)
     ,address_html  varchar2 (255)
     ,lat           number
     ,lon           number
     );

create or replace type t_rtt_table as table of t_rtt_row;
```

```
create or replace function get_rtt_data(
    p_page_id          in number,
    p_region_static_id in varchar2 )
    return t_rtt_table pipelined
is
    l_region_id   number;
    l_context     apex_exec.t_context;
    type t_col_index is table of pls_integer index by varchar2(255);
    l_col_index t_col_index;
    procedure get_column_indexes( p_columns in wwv_flow_t_varchar2 ) is
    begin
        for i in 1 .. p_columns.count loop
            l_col_index( p_columns( i ) ) := apex_exec.get_column_position(
                                                 p_context => l_context,
                                                 p_column_name => p_columns( i ) );
        end loop;
    end get_column_indexes;
begin
    -- 1. get the region ID of the Faceted Search region
    select region_id
      into l_region_id
      from apex_application_page_regions
     where application_id = v('APP_ID')
       and page_id        = p_page_id
       and static_id      = p_region_static_id;
```

```
   -- 2. Get a cursor (apex_exec.t_context) for the current region data
    l_context := apex_region.open_query_context(
                   p_page_id      => p_page_id,
                   p_region_id    => l_region_id );
    get_column_indexes( wwv_flow_t_varchar2( 'RTT_ID', 'NAME', 'ADDRESS_HTML', 'LAT', 'LON' ) );
    while apex_exec.next_row( p_context => l_context ) loop
        pipe row( t_rtt_row(
           apex_exec.get_number    (p_context => l_context, p_column_idx => l_col_index ('RTT_ID'))
          ,apex_exec.get_varchar2 (p_context => l_context, p_column_idx => l_col_index ('NAME'))
          ,apex_exec.get_varchar2 (p_context => l_context, p_column_idx => l_col_index ('ADDRESS_HTML'))
          ,apex_exec.get_number    (p_context => l_context, p_column_idx => l_col_index ('LAT'))
          ,apex_exec.get_number    (p_context => l_context, p_column_idx => l_col_index ('LON'))) );
    end loop;
    apex_exec.close( l_context );
    return;
exception
    when no_data_needed then
        apex_exec.close( l_context );
        return;
    when others then
        apex_exec.close( l_context );
        raise;
end get_rtt_data;
```



https://diveintoapex.com/2023/01/16/refitting-filtered-map-points/

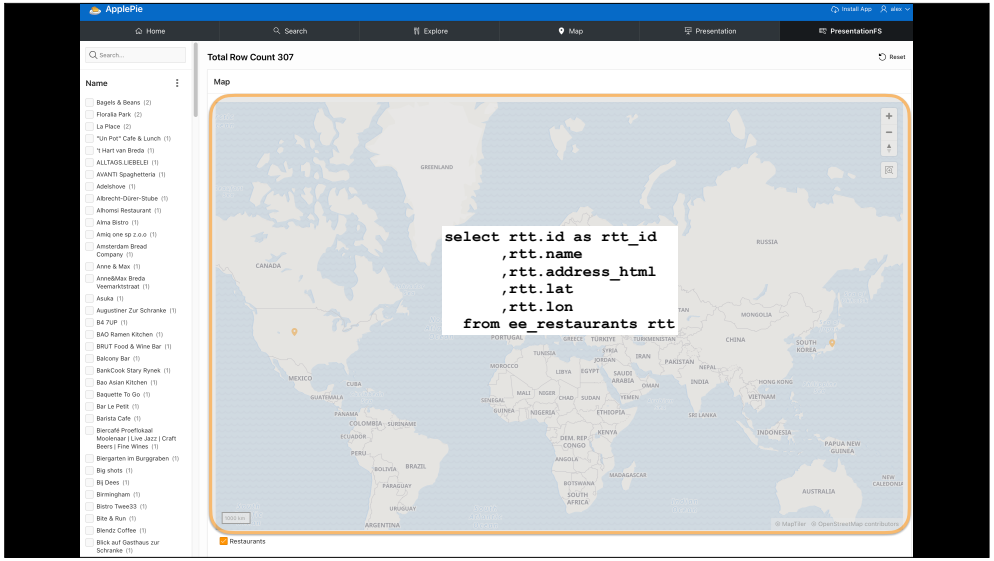


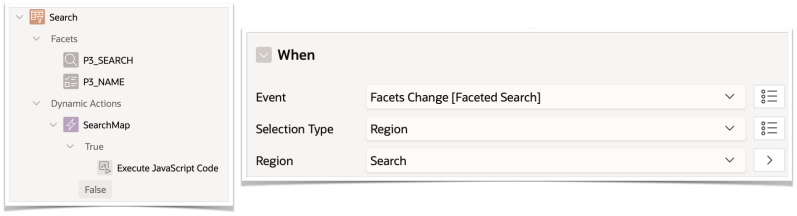


Facetted Search Report Map

Photo by Anna Nekrashevich: https://www.pexels.com/photo/clear-crystal-stones-on-white-surface-8516783/








```
var result = apex.server.process( "GET_NEW_MBR", {
    pageItems: ["P3_NAME","P3_SEARCH"]
} );
result.done( function( data ) {
    region = apex.region( 'facet-map-region' );
    const mbr = JSON.parse (data.x01);
    const center = JSON.parse (data.x02);
    let bounds;
    if(mbr.type=="Polygon"){
       bounds = mbr.coordinates[0];
       region.getMapObject().fitBounds(bounds,
                   {padding: {
                           top: 150,
                           bottom: 150,
                           left: 150,
                           right: 150
                       },
                   maxZoom:9,
                   center: center.coordinates
                   }
       );
    }
     else if (mbr.type =="Point"){
        bounds = mbr.coordinates;
        region.call ("getMapObject").flyTo(
            {center: bounds,
            screenSpeed: 0.8,
            zoom: 11});
    }
} );
```

```
declare
   l_bbox   varchar2(4000);
   l_center varchar2(4000);
begin
   select sdo_util.to_geojson (bbox) as bbox
        ,sdo_util.to_geojson (sdo_geom.sdo_centroid(bbox)) as center
     into l_bbox
        ,l_center
     from (select sdo_aggr_mbr(geom) as bbox
             from (select apex_spatial.point (p_lon => lon
                                             ,p_lat => lat) as geom
                     from table (get_rtt_data
                                 (p_page_id          => :APP_PAGE_ID
                                 ,p_region_static_id => 'facet-map-region'
                                ))));
    apex_json.open_object;
    apex_json.write('success', true);
    apex_json.write ('x01', l_bbox);
    apex_json.write ('x02', l_center);
    apex_json.close_object;
exception
    when others
    then
        apex_json.open_object;
        apex_json.write('success', false);
        apex_json.write('message', sqlerrm);
        apex_json.close_object;
end;
```

```
declare
   l_bbox   varchar2(4000);
   l_center varchar2(4000);
begin
   select sdo_util.to_geojson (bbox) as bbox
        ,sdo_util.to_geojson (sdo_geom.sdo_centroid(bbox)) as center
     into l_bbox
        ,l_center
     from (select sdo_aggr_mbr(geom) as bbox
             from (select apex_spatial.point (p_lon => lon
                                             ,p_lat => lat) as geom
                     from table (get_rtt_data
                                 (p_page_id          => :APP_PAGE_ID
                                 ,p_region_static_id => 'facet-map-region'
                                ))));
    apex_json.open_object;
    apex_json.write('success', true);
    apex_json.write ('x01', l_bbox);
    apex_json.write ('x02', l_center);
    apex_json.close_object;
exception
    when others
    then
        apex_json.open_object;
        apex_json.write('success', false);
        apex_json.write('message', sqlerrm);
        apex_json.close_object;
end;
```

```
var result = apex.server.process( "GET_NEW_MBR", {
    pageItems: ["P3_NAME","P3_SEARCH"]
} );
result.done( function( data ) {
    region = apex.region( 'facet-map-region' );
    const mbr = JSON.parse (data.x01);
    const center = JSON.parse (data.x02);
    let bounds;
    if(mbr.type=="Polygon"){
       bounds = mbr.coordinates[0];
       region.getMapObject().fitBounds(bounds,
                    {padding: {
                            top: 150,
                            bottom: 150,
                            left: 150,
                            right: 150
                        },
                    maxZoom:9,
                    center: center.coordinates
                    }
       );
    }
     else if (mbr.type =="Point"){
        bounds = mbr.coordinates;
        region.call ("getMapObject").flyTo(
            {center: bounds,
            screenSpeed: 0.8,
            zoom: 11});
    }
} );
```

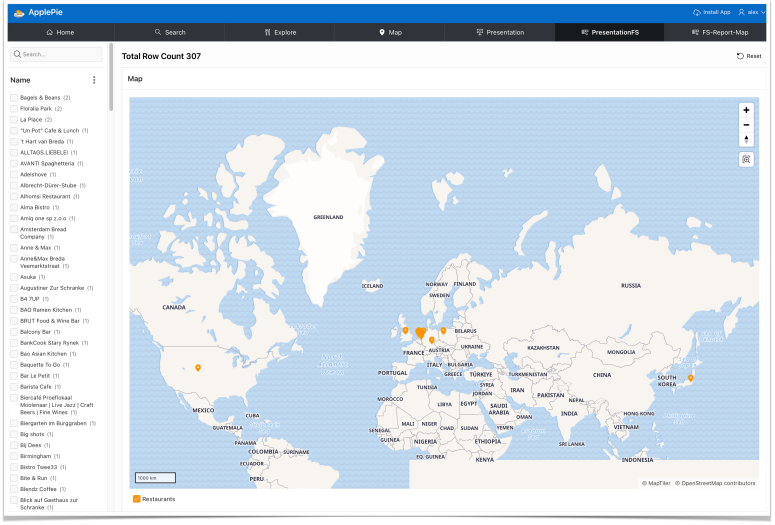
```
var result = apex.server.process( "GET_NEW_MBR", {
    pageItems: ["P3_NAME","P3_SEARCH"]
} );
result.done( function( data ) {
    region = apex.region( 'facet-map-region' );
    const mbr = JSON.parse (data.x01);
    const center = JSON.parse (data.x02);
    let bounds;
    if(mbr.type=="Polygon"){
       bounds = mbr.coordinates[0];
       region.getMapObject().fitBounds(bounds,
                    {padding: {
                            top: 150,
                            bottom: 150,
                            left: 150,
                            right: 150
                        },
                    maxZoom:9,
                    center: center.coordinates
                    }
       );
    }
     else if (mbr.type =="Point"){
        bounds = mbr.coordinates;
        region.call ("getMapObject").flyTo(
            {center: bounds,
            screenSpeed: 0.8,
            zoom: 11});
    }
} );
```

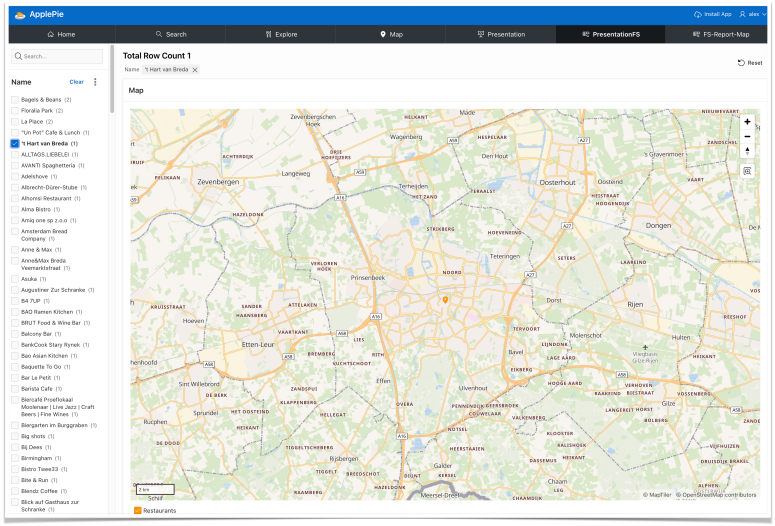
```
var result = apex.server.process( "GET_NEW_MBR", {
    pageItems: ["P3_NAME","P3_SEARCH"]
} );
result.done( function( data ) {
    region = apex.region( 'facet-map-region' );
    const mbr = JSON.parse (data.x01);
    const center = JSON.parse (data.x02);
    let bounds;
    if(mbr.type=="Polygon"){
       bounds = mbr.coordinates[0];
       region.getMapObject().fitBounds(bounds,
                    {padding: {
                            top: 150,
                            bottom: 150,
                            left: 150,
                            right: 150
                        },
                    maxZoom:9,
                    center: center.coordinates
                    }
       );
    }
     else if (mbr.type =="Point"){
        bounds = mbr.coordinates;
        region.call ("getMapObject").flyTo(
            {center: bounds,
            screenSpeed: 0.8,
            zoom: 11});
    }
} );
```

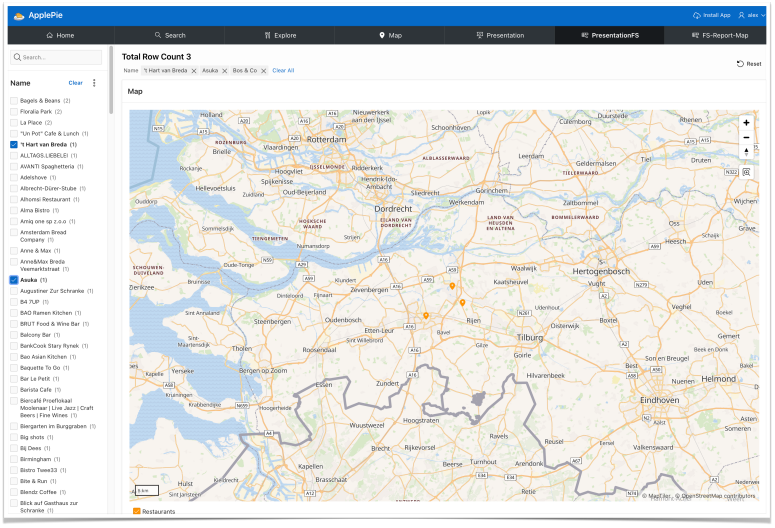
```
var result = apex.server.process( "GET_NEW_MBR", {
    pageItems: ["P3_NAME","P3_SEARCH"]
} );
result.done( function( data ) {
    region = apex.region( 'facet-map-region' );
    const mbr = JSON.parse (data.x01);
    const center = JSON.parse (data.x02);
    let bounds;
    if(mbr.type=="Polygon"){
       bounds = mbr.coordinates[0];
       region.getMapObject().fitBounds(bounds,
                    {padding: {
                            top: 150,
                            bottom: 150,
                            left: 150,
                            right: 150
                        },
                    maxZoom:9,
                    center: center.coordinates
                    }
       );
    }
     else if (mbr.type =="Point"){
        bounds = mbr.coordinates;
        region.call ("getMapObject").flyTo(
            {center: bounds,
            screenSpeed: 0.8,
            zoom: 11});
    }
} );
```

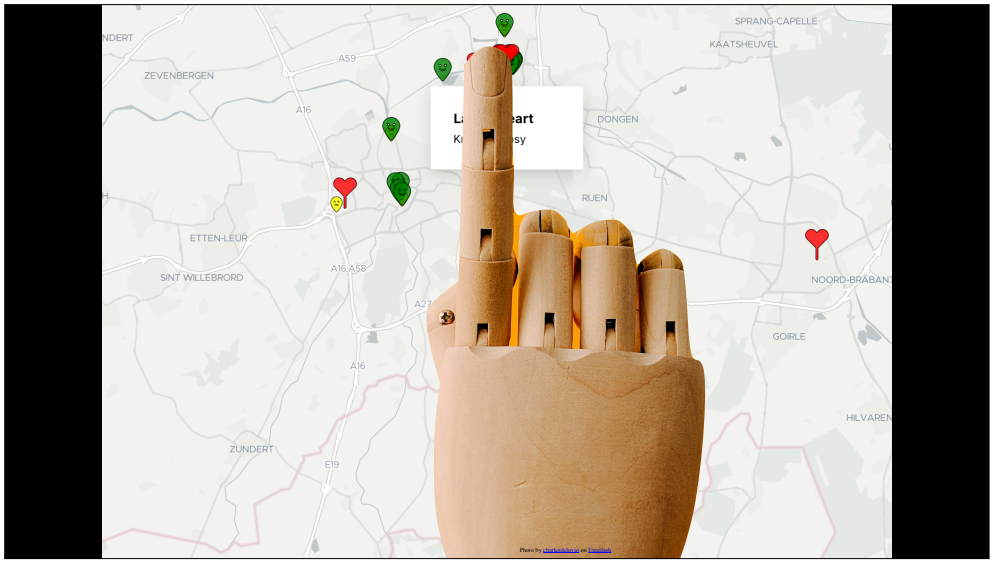
```
var result = apex.server.process( "GET_NEW_MBR", {
    pageItems: ["P3_NAME","P3_SEARCH"]
} );
result.done( function( data ) {
    region = apex.region( 'facet-map-region' );
    const mbr = JSON.parse (data.x01);
    const center = JSON.parse (data.x02);
    let bounds;
    if(mbr.type=="Polygon"){
       bounds = mbr.coordinates[0];
       region.getMapObject().fitBounds(bounds,
                    {padding: {
                            top: 150,
                            bottom: 150,
                            left: 150,
                            right: 150
                        },
                    maxZoom:9,
                    center: center.coordinates
                    }
       );
    }
     else if (mbr.type =="Point"){
        bounds = mbr.coordinates;
        region.call ("getMapObject").flyTo(
            {center: bounds,
            screenSpeed: 0.8,
            zoom: 11});
    }
} );
```

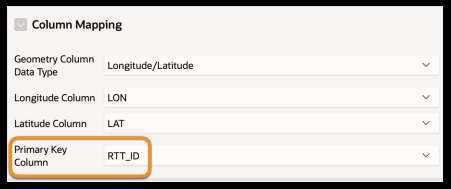
```
var result = apex.server.process( "GET_NEW_MBR", {
    pageItems: ["P3_NAME","P3_SEARCH"]
} );
result.done( function( data ) {
    region = apex.region( 'facet-map-region' );
    const mbr = JSON.parse (data.x01);
    const center = JSON.parse (data.x02);
    let bounds;
    if(mbr.type=="Polygon"){
       bounds = mbr.coordinates[0];
       region.getMapObject().fitBounds(bounds,
                    {padding: {
                            top: 150,
                            bottom: 150,
                            left: 150,
                            right: 150
                        },
                    maxZoom:9,
                    center: center.coordinates
                    }
       );
    }
     else if (mbr.type =="Point"){
        bounds = mbr.coordinates;
        region.call ("getMapObject").flyTo(
            {center: bounds,
            screenSpeed: 0.8,
            zoom: 11});
    }
} );
```

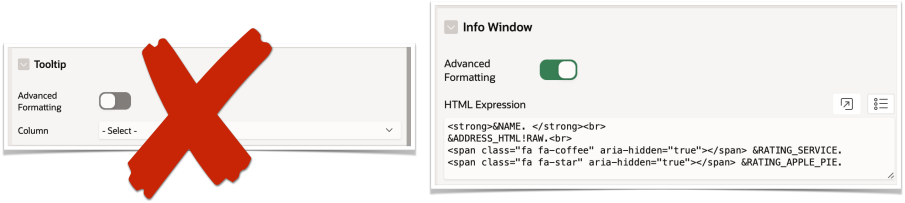


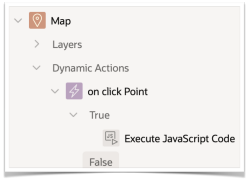


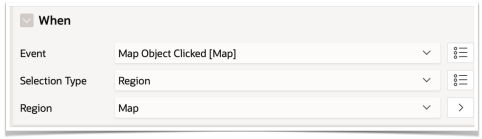

ApplePie
Home
Search
Explore
Map
Presentation
PresentationFS
FS-Report-Map
Total Row Count 3
Map
Name
Clear
Rotterdam
Dordrecht
Hertogenbosch
Tilburg
Eindhoven
Helmond
Restaurants


SPRANG-CAPELLE
KAATSHEUVEL
ZEVENBERGEN
DONGEN
RIJEN
ETTEN-LEUR
SINT WILLEBRORD
NOORD-BRABANT
GOIRLE
HILVARENBEEK
ZUNDERT


Column Mapping
Geometry Column Data Type
Longitude/Latitude
Longitude Column
LON
Latitude Column
LAT
Primary Key Column
RTT_ID


Tooltip
Advanced Formatting
Column
- Select -
Info Window
Advanced Formatting
HTML Expression
&NAME.
&ADDRESS_HTML!RAW.
 &RATING_SERVICE.
 &RATING_APPLE_PIE.






```
showFeature (this.data.id, false, null, this.data.layer);
```

```
// globals to memorize the previously clicked restaurant; important to be able to reset the highlight
var gPrevFeature, gPrevLayerId;

function showFeature(pId, pFromReport, pLayerName, pLayerId) {
    // if the same restaurant is clicked twice, exit early without doing anything
    if (gPrevFeature && gPrevFeature.id === pId) {
        return false;
    }
    // get Map Region and Zoom Level
    var lMapRegion = apex.region("explore-map");
    var setZoom = Math.max(lMapRegion.getMapStatus().zoom,11);
    var lLayerId = pLayerId ? parseInt (pLayerId, 10) : lMapRegion.call("getLayerIdByName", pLayerName);

    var lFeature = lMapRegion.call("getFeature", lLayerId, pId.toString());
    // if there is no coordinate, don't do anything
    if (lFeature && lFeature.geometry) {
        // reinstate previously selected feature on the map (remove highlight)
        if (gPrevFeature) {
            lMapRegion.call("updateFeature", gPrevLayerId, gPrevFeature);
        }
        // center the map to the clicked object
        lMapRegion.call("getMapObject").flyTo({
            center: lFeature.geometry.coordinates,
            screenSpeed: 0.8,
            zoom: setZoom
        });
        // save the feature before changing to the "highlight" style; do a "deep copy".
        gPrevFeature = JSON.parse(JSON.stringify(lFeature));
        gPrevLayerId = lLayerId;
        // set highlight styles and update map
       lFeature.pointSvgShapeSize = 3.5;
       lMapRegion.call("updateFeature", lLayerId, lFeature);
       if (pFromReport) {
            lMapRegion.call("closeAllInfoWindows");
            lMapRegion.call("displayPopup", "infoWindow", lLayerId, pId.toString(), false);
        }
    }

}
```

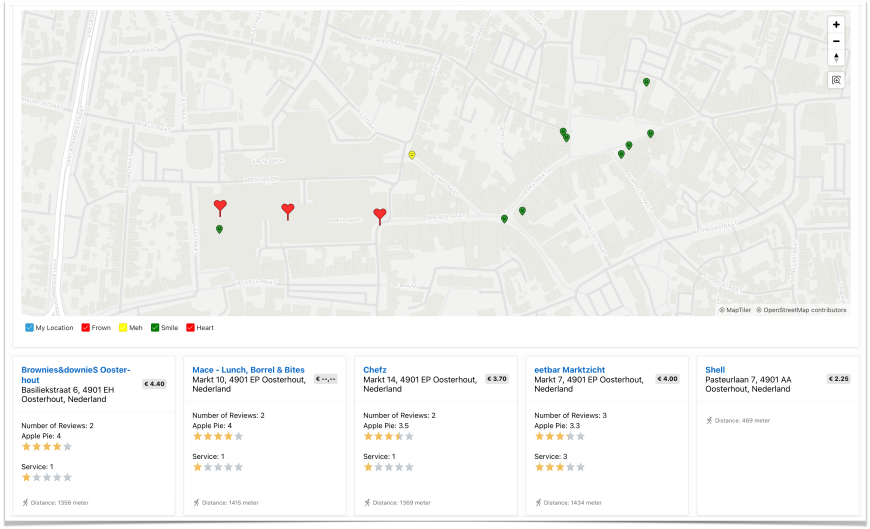

```
// globals to memorize the previously clicked restaurant; important to be able to reset the highlight
var gPrevFeature, gPrevLayerId;

function showFeature(pId, pFromReport, pLayerName, pLayerId) {
    // if the same restaurant is clicked twice, exit early without doing anything
    if (gPrevFeature && gPrevFeature.id === pId) {
        return false;
    }
    // get Map Region and Zoom Level
    var lMapRegion = apex.region("explore-map");
    var setZoom = Math.max(lMapRegion.getMapStatus().zoom,11);
    var lLayerId = pLayerId ? parseInt (pLayerId, 10) : lMapRegion.call("getLayerIdByName", pLayerName);

    var lFeature = lMapRegion.call("getFeature", lLayerId, pId.toString());
    // if there is no coordinate, don't do anything
    if (lFeature && lFeature.geometry) {
        // reinstate previously selected feature on the map (remove highlight)
        if (gPrevFeature) {
            lMapRegion.call("updateFeature", gPrevLayerId, gPrevFeature);
        }
        // center the map to the clicked object
        lMapRegion.call("getMapObject").flyTo({
            center: lFeature.geometry.coordinates,
            screenSpeed: 0.8,
            zoom: setZoom
        });
        // save the feature before changing to the "highlight" style; do a "deep copy".
        gPrevFeature = JSON.parse(JSON.stringify(lFeature));
        gPrevLayerId = lLayerId;
        // set highlight styles and update map
       lFeature.pointSvgShapeSize = 3.5;
       lMapRegion.call("updateFeature", lLayerId, lFeature);
       if (pFromReport) {
            lMapRegion.call("closeAllInfoWindows");
            lMapRegion.call("displayPopup", "infoWindow", lLayerId, pId.toString(), false);
        }
    }

}
```



```
// globals to memorize the previously clicked restaurant; important to be able to reset the highlight
var gPrevFeature, gPrevLayerId;

function showFeature(pId, pFromReport, pLayerName, pLayerId) {
    // if the same restaurant is clicked twice, exit early without doing anything
    if (gPrevFeature && gPrevFeature.id === pId) {
        return false;
    }
    // get Map Region and Zoom Level
    var lMapRegion = apex.region("explore-map");
    var setZoom = Math.max(lMapRegion.getMapStatus().zoom,11);
    var lLayerId = pLayerId ? parseInt (pLayerId, 10) : lMapRegion.call("getLayerIdByName", pLayerName);

    var lFeature = lMapRegion.call("getFeature", lLayerId, pId.toString());
    // if there is no coordinate, don't do anything
    if (lFeature && lFeature.geometry) {
        // reinstate previously selected feature on the map (remove highlight)
        if (gPrevFeature) {
            lMapRegion.call("updateFeature", gPrevLayerId, gPrevFeature);
        }
        // center the map to the clicked object
        lMapRegion.call("getMapObject").flyTo({
            center: lFeature.geometry.coordinates,
            screenSpeed: 0.8,
            zoom: setZoom
        });
        // save the feature before changing to the "highlight" style; do a "deep copy".
        gPrevFeature = JSON.parse(JSON.stringify(lFeature));
        gPrevLayerId = lLayerId;
        // set highlight styles and update map
       lFeature.pointSvgShapeSize = 3.5;
       lMapRegion.call("updateFeature", lLayerId, lFeature);
       if (pFromReport) {
            lMapRegion.call("closeAllInfoWindows");
            lMapRegion.call("displayPopup", "infoWindow", lLayerId, pId.toString(), false);
        }
    }

}
```

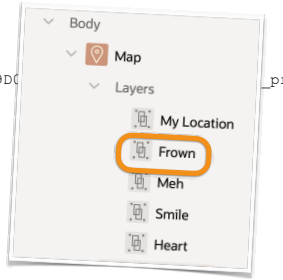
```
// globals to memorize the previously clicked restaurant; important to be able to reset the highlight
var gPrevFeature, gPrevLayerId;

function showFeature(pId, pFromReport, pLayerName, pLayerId) {
    // if the same restaurant is clicked twice, exit early without doing anything
    if (gPrevFeature && gPrevFeature.id === pId) {
        return false;
    }
    // get Map Region and Zoom Level
    var lMapRegion = apex.region("explore-map");
    var setZoom = Math.max(lMapRegion.getMapStatus().zoom,11);
    var lLayerId = pLayerId ? parseInt (pLayerId, 10) : lMapRegion.call("getLayerIdByName", pLayerName);

    var lFeature = lMapRegion.call("getFeature", lLayerId, pId.toString());
    // if there is no coordinate, don't do anything
    if (lFeature && lFeature.geometry) {
        // reinstate previously selected feature on the map (remove highlight)
        if (gPrevFeature) {
            lMapRegion.call("updateFeature", gPrevLayerId, gPrevFeature);
        }
        // center the map to the clicked object
        lMapRegion.call("getMapObject").flyTo({
            center: lFeature.geometry.coordinates,
            screenSpeed: 0.8,
            zoom: setZoom
        });
        // save the feature before changing to the "highlight" style; do a "deep copy".
        gPrevFeature = JSON.parse(JSON.stringify(lFeature));
        gPrevLayerId = lLayerId;
        // set highlight styles and update map
       lFeature.pointSvgShapeSize = 3.5;
       lMapRegion.call("updateFeature", lLayerId, lFeature);
       if (pFromReport) {
            lMapRegion.call("closeAllInfoWindows");
            lMapRegion.call("displayPopup", "infoWindow", lLayerId, pId.toString(), false);
        }
    }

}
```

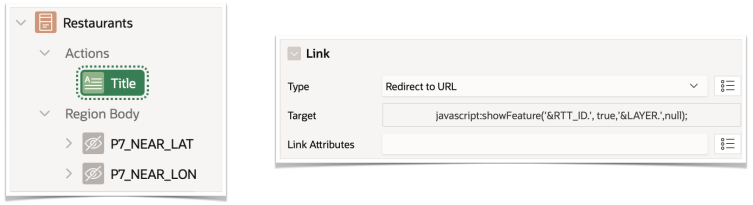
```
// globals to memorize the previously clicked restaurant; important to be able to reset the highlight
var gPrevFeature, gPrevLayerId;

function showFeature(pId, pFromReport, pLayerName, pLayerId) {
    // if the same restaurant is clicked twice, exit early without doing anything
    if (gPrevFeature && gPrevFeature.id === pId) {
        return false;
    }
    // get Map Region and Zoom Level
    var lMapRegion = apex.region("explore-map");
    var setZoom = Math.max(lMapRegion.getMapStatus().zoom,11);
    var lLayerId = pLayerId ? parseInt (pLayerId, 10) : lMapRegion.call("getLayerIdByName", pLayerName);

    var lFeature = lMapRegion.call("getFeature", lLayerId, pId.toString());
    // if there is no coordinate, don't do anything
    if (lFeature && lFeature.geometry) {
        // reinstate previously selected feature on the map (remove highlight)
        if (gPrevFeature) {
            lMapRegion.call("updateFeature", gPrevLayerId, gPrevFeature);
        }
        // center the map to the clicked object
        lMapRegion.call("getMapObject").flyTo({
            center: lFeature.geometry.coordinates,
            screenSpeed: 0.8,
            zoom: setZoom
        });
        // save the feature before changing to the "highlight" style; do a "deep copy".
        gPrevFeature = JSON.parse(JSON.stringify(lFeature));
        gPrevLayerId = lLayerId;
        // set highlight styles and update map
       lFeature.pointSvgShapeSize = 3.5;
       lMapRegion.call("updateFeature", lLayerId, lFeature);
       if (pFromReport) {
            lMapRegion.call("closeAllInfoWindows");
            lMapRegion.call("displayPopup", "infoWindow", lLayerId, pId.toString(), false);
        }
    }

}
```



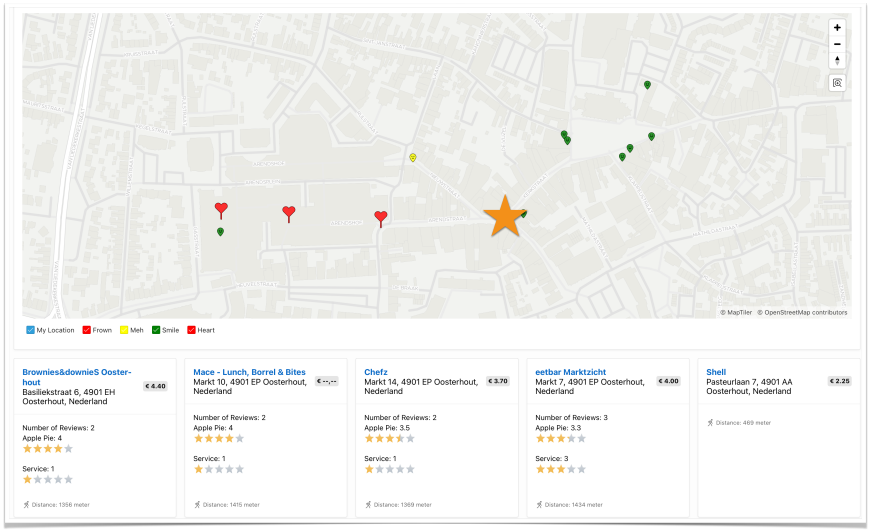

```
select rtt.id as rtt_id
      ,rtt.name
      ,rtt.address
      ,rtt.address_html
      ,rvw.rating_apple_pie
      ,rvw.rating_service
      ,rvw.review_count
      ,rtt.apple_pie_price
      ,rtt.lat
      ,rtt.lon
      ,'€ '||nvl (to_char (rtt.apple_pie_price, '99D                    _price_display
      ,case
       when rating_apple_pie between 0 and 1.99
       then 'Frown'
       when rating_apple_pie between 2 and 2.99
       then 'Meh'
       when rating_apple_pie between 3 and 4
       then 'Smile'
       when rating_apple_pie > 4
       then 'Heart'
       end as layer
  from ee_restaurants rtt
 cross apply
       (select round (avg (rvw.rating_apple_pie),1) as rating_apple_pie
             ,round (avg (rvw.rating_service),1)   as rating_service
             ,count(*) as review_count
        from ee_reviews rvw
       where rtt.id = rvw.rtt_id) rvw
```

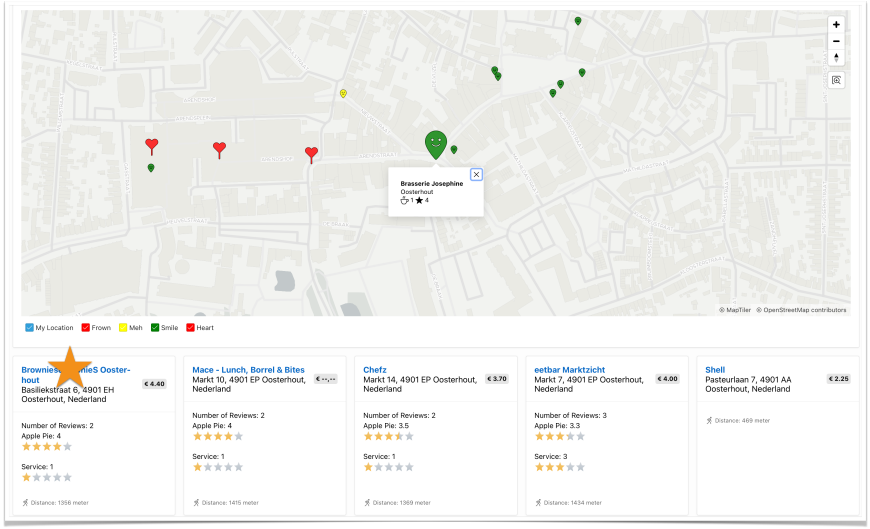
Cards Region

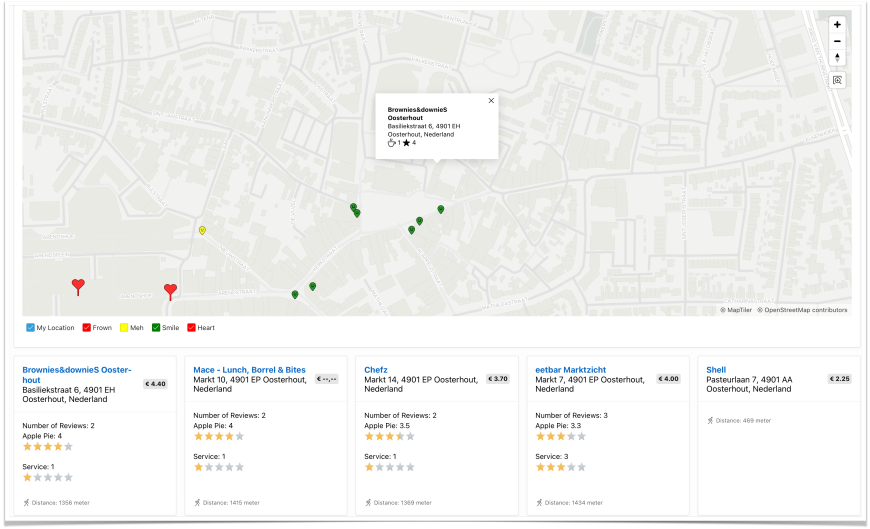





```
javascript:showFeature('&RTT_ID.', true,'&LAYER.',null);
```









Database / Oracle / Oracle Database / Release 23

Spatial Developer's Guide

14 Routing Engine
14.1 Routing
14.2 Deploying the Routing Engine
14.3 Routing Engine XML API
14.4 Location-Based Query Using the WSServlet XML API
14.5 Data Structures Used by the Routing Engine
14.6 User Data Structures Used by the Routing Engine

```
mdsys.sdo_gcdr.eloc_route(
       route_preference => 'fastest'
      ,distance_unit    => 'km'
      ,time_unit        => 'minute'
      ,start_longitude  => 4.8706267
      ,start_latitude   => 51.649398
      ,end_longitude    => 4.8626089
      ,end_latitude     => 51.6442244
      ,vehicle_type     => 'auto'
      )
```

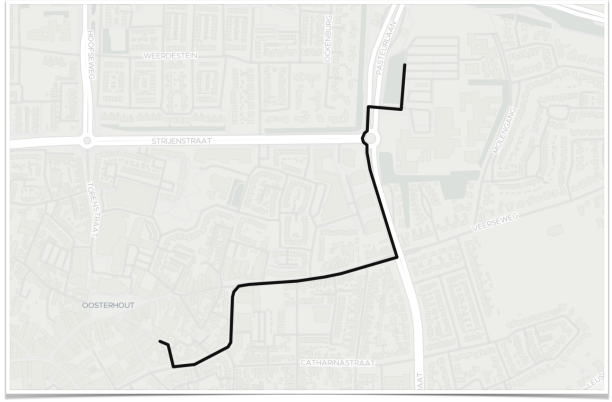
```
mdsys.sdo_gcdr.eloc_route(
       route_preference => 'fastest'
      ,distance_unit    => 'km'
      ,time_unit        => 'minute'
      ,start_longitude  => 4.8706267
      ,start_latitude   => 51.649398
      ,end_longitude    => 4.8626089
      ,end_latitude     => 51.6442244
      ,vehicle_type     => 'auto'
      )
```

auto or truck

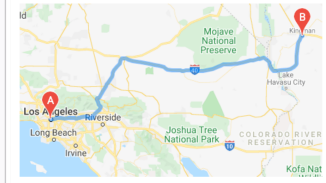
```
{
   "routeResponse": {
      "route": {
         "id": "1",
         "distance": 1.09,
         "distanceUnit": "km",
         "time": 2.86,
         "timeUnit": "minute",
         "geometry": {
            "type": "LineString",
            "coordinates": [
               [4.86957,51.64901],[4.86949,51.64835],[4.86947,51.64822],[4.86877,51.64825],[4.8685
              ,[4.8685,51.64784],[4.86847,51.64783],[4.86842,51.6478],[4.86839,51.64777],[4.86837,
              ,[4.86837,51.64767],[4.86839,51.64764],[4.86842,51.64762],[4.86846,51.6476],[4.86849
              ,[4.86849,51.64746],[4.86853,51.6473],[4.86858,51.64715],[4.86873,51.64683],[4.86914
              ,[4.86862,51.64546],[4.86817,51.64539],[4.86775,51.64531],[4.86728,51.64525],[4.8668
              ,[4.86552,51.64514],[4.86513,51.64512],[4.86483,51.64509],[4.86469,51.64499],[4.8646
              ,[4.8646,51.64409],[4.86452,51.64401],[4.86442,51.64398],[4.86424,51.64391],[4.86398
              ,[4.86334,51.64368],[4.86296,51.64366],[4.86285,51.64395],[4.86281,51.64405],[4.8625
            ]
         }
      }
   }
}
```



```
{
   "routeResponse": {
      "route": {
         "id": "1",
         "distance": 1.09,
         "distanceUnit": "km",
         "time": 2.86,
         "timeUnit": "minute",
         "geometry": {
            "type": "LineString",
            "coordinates": [
               [4.86957,51.64901],[4.86949,51.64835],[4.86947,51.64822],[4.86877,51.64825],[4.8685
              ,[4.8685,51.64784],[4.86847,51.64783],[4.86842,51.6478],[4.86839,51.64777],[4.86837,
              ,[4.86837,51.64767],[4.86839,51.64764],[4.86842,51.64762],[4.86846,51.6476],[4.86849
              ,[4.86849,51.64746],[4.86853,51.6473],[4.86858,51.64715],[4.86873,51.64683],[4.86914
              ,[4.86862,51.64546],[4.86817,51.64539],[4.86775,51.64531],[4.86728,51.64525],[4.8668
              ,[4.86552,51.64514],[4.86513,51.64512],[4.86483,51.64509],[4.86469,51.64499],[4.8646
              ,[4.8646,51.64409],[4.86452,51.64401],[4.86442,51.64398],[4.86424,51.64391],[4.86398
              ,[4.86334,51.64368],[4.86296,51.64366],[4.86285,51.64395],[4.86281,51.64405],[4.8625
            ]
         }
      }
   }
}
```

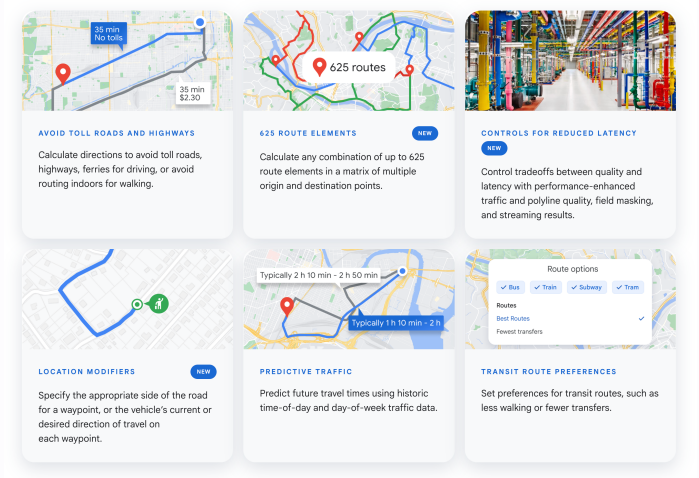
Google Maps Platform

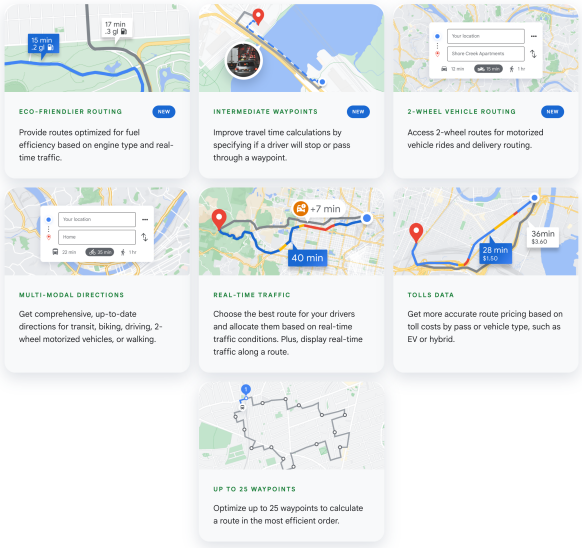


Routes API

Routes API is the next generation, performance optimized version of the existing Directions API and Distance Matrix API. It helps you find the ideal route from A to Z, calculates ETAs and distances for matrices of origin and destination locations, and also offers new features.

Search Maps Routes API docs





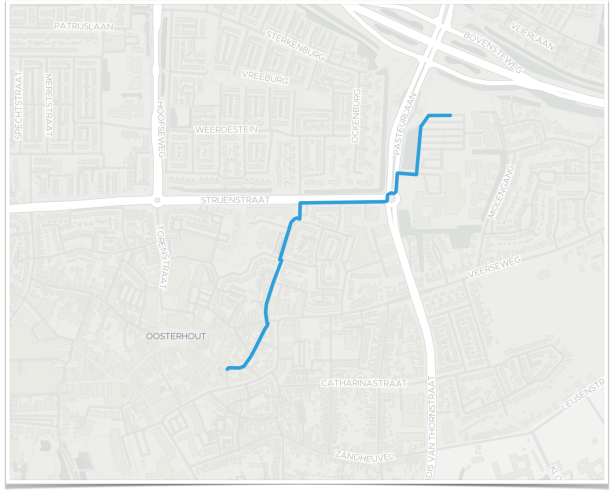

```
apex_web_service.clear_request_headers;
apex_web_service.g_request_headers(1).name  := 'X-Goog-FieldMask';
apex_web_service.g_request_headers(1).value := 'routes.duration,routes.distanceMeters,routes.polyline';
apex_web_service.g_request_headers(2).name  := 'Content-Type';
apex_web_service.g_request_headers(2).value := 'application/json';
apex_web_service.g_request_headers(3).name  := 'X-Goog-Api-Key';
apex_web_service.g_request_headers(3).value := g_auth_key;
l_route := apex_web_service.make_rest_request_b
          (p_url         => 'https://routes.googleapis.com/directions/v2:computeRoutes'
          ,p_http_method => 'POST'
          ,p_body => '{'||
                     '  "origin":{'||
                     '    "location":{'||
                     '      "latLng":{'||
                     '        "latitude": '||p_from_lat||','||
                     '        "longitude":'||p_from_lon||''||
                     '      }'||
                     '    }'||
                     '  },'||
                     '  "destination":{'||
                     '    "location":{'||
                     '      "latLng":{'||
                     '        "latitude": '||p_to_lat||','||
                     '        "longitude": '||p_to_lon||''||
                     '      }'||
                     '    }'||
                     '  },'||
                     '  "travelMode": "WALK",'||
                     '  "polylineEncoding": "GEO_JSON_LINESTRING",'||
                     '  "languageCode": "nl",'||
                     '  "units": "METRIC"'||
                     '}'
          );
```

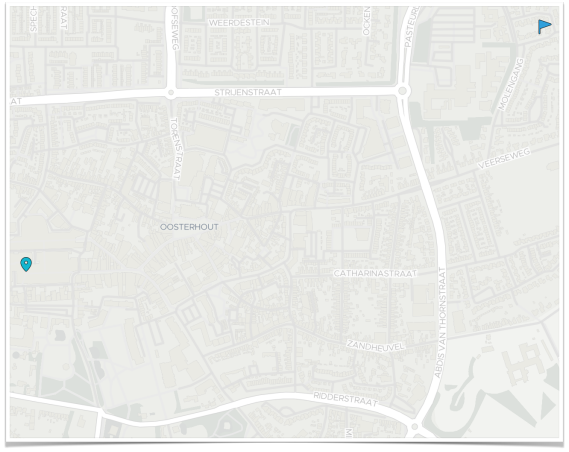
```
apex_web_service.clear_request_headers;
apex_web_service.g_request_headers(1).name  := 'X-Goog-FieldMask';
apex_web_service.g_request_headers(1).value := 'routes.duration,routes.distanceMeters,routes.polyline';
apex_web_service.g_request_headers(2).name  := 'Content-Type';
apex_web_service.g_request_headers(2).value := 'application/json';
apex_web_service.g_request_headers(3).name  := 'X-Goog-Api-Key';
apex_web_service.g_request_headers(3).value := g_auth_key;
l_route := apex_web_service.make_rest_request_b
          (p_url         => 'https://routes.googleapis.com/directions/v2:computeRoutes'
          ,p_http_method => 'POST'
          ,p_body => '{'||
                     '  "origin":{'||
                     '    "location":{'||
                     '      "latLng":{'||
                     '        "latitude": '||p_from_lat||','||
                     '        "longitude":'||p_from_lon||''||
                     '      }'||
                     '    }'||
                     '  },'||
                     '  "destination":{'||
                     '    "location":{'||
                     '      "latLng":{'||
                     '        "latitude": '||p_to_lat||','||
                     '        "longitude": '||p_to_lon||''||
                     '      }'||
                     '    }'||
                     '  },'||
                     '  "travelMode": "WALK",'||
                     '  "polylineEncoding": "GEO_JSON_LINESTRING",'||
                     '  "languageCode": "nl",'||
                     '  "units": "METRIC"'||
                     '}'
          );
```

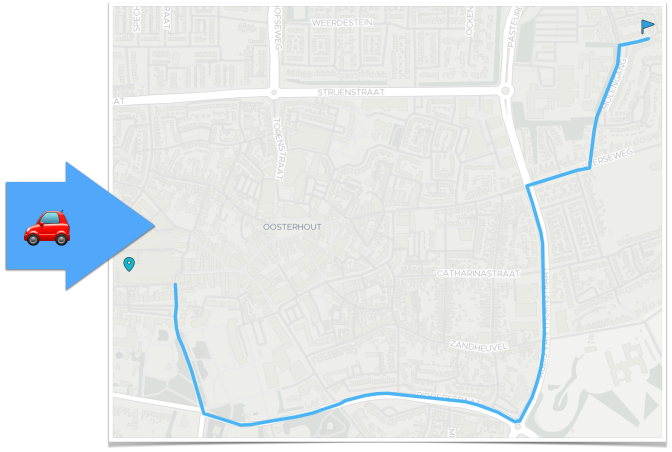
```
apex_web_service.clear_request_headers;
apex_web_service.g_request_headers(1).name  := 'X-Goog-FieldMask';
apex_web_service.g_request_headers(1).value := 'routes.duration,routes.distanceMeters,routes.polyline';
apex_web_service.g_request_headers(2).name  := 'Content-Type';
apex_web_service.g_request_headers(2).value := 'application/json';
apex_web_service.g_request_headers(3).name  := 'X-Goog-Api-Key';
apex_web_service.g_request_headers(3).value := g_auth_key;
l_route := apex_web_service.make_rest_request_b
          (p_url         => 'https://routes.googleapis.com/directions/v2:computeRoutes'
          ,p_http_method => 'POST'
          ,p_body => '{'||
                     '  "origin":{'||
                     '    "location":{'||
                     '      "latLng":{'||
                     '        "latitude": '||p_from_lat||','||
                     '        "longitude":'||p_from_lon||''||
                     '      }'||
                     '    }'||
                     '  },'||
                     '  "destination":{'||
                     '    "location":{'||
                     '      "latLng":{'||
                     '        "latitude": '||p_to_lat
                     '        "longitude": '||p_to_lo
                     '      }'||
                     '    }'||
                     '  },'||
                     '  "travelMode": "WALK",'||
                     '  "polylineEncoding": "GEO_JS
                     '  "languageCode": "nl",'||
                     '  "units": "METRIC"'||
                     '}'
          );
```

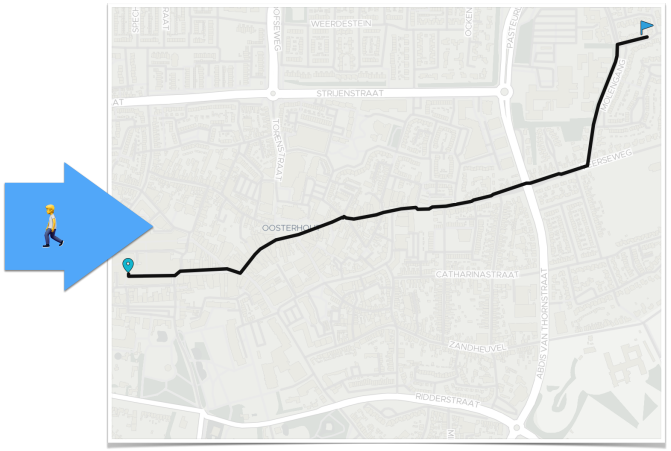
Walk
Drive
Bicycle
Two Wheeler
Transit

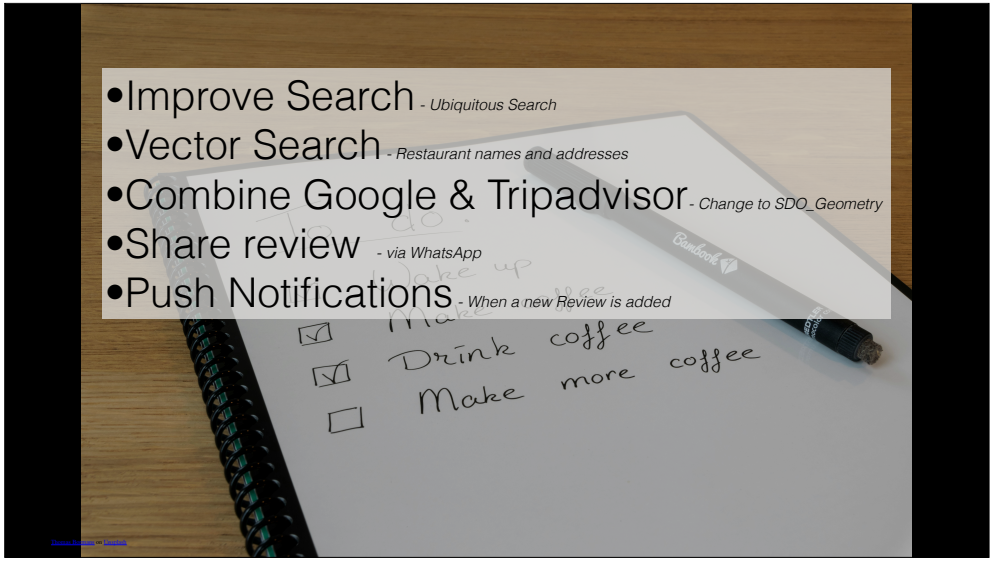

```
{
   "routes": [
       {
           "distanceMeters": 1003,
           "duration": "843s",
           "polyline": {
               "geoJsonLinestring": {
                   "type": "LineString",
                   "coordinates": [
                       [4.8706257,51.6494886],[4.8698789,51.649485500000004],[4.869607999999999
                       [4.8685767,51.647825499999996],[4.8684544,51.647781599999995],[4.868442
                       [4.865245,51.6472695],[4.8651206,51.6471922],[4.864726999999999,51.6463
                       [4.8642936,51.6450186],[4.8643236,51.645022399999995],[4.8642927,51.644
                       [4.8634884,51.6441036],[4.863328699999999,51.644068100000005],[4.863154
                   ]
               }
           }
       }
   ]
}
```


WEERDESTEIN
STRIJENSTRAAT
OOSTERHOUT
CATHARINASTRAAT
ZANDHEUVEL
RIDDERSTRAAT


WEERDESTEIN
STRIJENSTRAAT
OOSTERHOUT
CATHARINASTRAAT
ZANDHEUVEL


WEERDESTEIN
STRIJENSTRAAT
OOSTERHOUT
CATHARINASTRAAT
ZANDHEUVEL
RIDDERSTRAAT


•Improve Search - Ubiquitous Search
•Vector Search - Restaurant names and addresses
•Combine Google & Tripadvisor - Change to SDO_Geometry
•Share review - via WhatsApp
•Push Notifications - When a new Review is added
Drink coffee
Make more coffee

"Ubiquitous database search enables full-text and range-based search across multiple objects within an entire schema."

–Application Developer's Guide

```
begin
    dbms_search.create_index
       (index_name => 'EE_SEARCH_INDEX');
    dbms_search.add_source
       (index_name => 'EE_SEARCH_INDEX'
       ,source_name => 'EE_RESTAURANTS'
       );
end;
/
```

```
begin
    dbms_search.create_index
       (index_name => 'EE_SEARCH_INDEX');
    dbms_search.add_source
       (index_name => 'EE_SEARCH_INDEX'
       ,source_name => 'EE_RESTAURANTS'
       );
end;
/
```

```
begin
    dbms_search.create_index
       (index_name => 'EE_SEARCH_INDEX');
    dbms_search.add_source
       (index_name => 'EE_SEARCH_INDEX'
       ,source_name => 'EE_RESTAURANTS'
       );
end;
/
```

```
SQL> select name
  2        ,address
  3    from ee_restaurants
  4   where id in (
  5           select json_value (key, '$.ID.number()')
  6             from ee_search_index
  7            where source = 'EE_RESTAURANTS'
  8*             and contains (data, 'brasserie') > 0);

NAME                               ADDRESS
---------------------------------- ------------------------------------------------------------
Brasserie Woods                    Oosterhout
Brasserie Josephine                Oosterhout
Zomerlust Brasserie & Restaurant   Zomerlust 9, 3332 BX Zwijndrecht, Netherlands
Brasserie deli by shell            Pasteurlaan 7, 4901 DH Oosterhout, Nederland
Brasserie 't Arendsnest            Arendshof 104, 4901 LK Oosterhout, Nederland
Brasserie 't Binnenhofje           Binnenhofje 3, 4901 JN Oosterhout, Nederland
Brasserie Bardot Breda             Van Coothplein 10, 4811 NE Breda, Nederland

7 rows selected.
```

```
SQL> select name
  2        ,address
  3    from ee_restaurants
  4   where id in (
  5           select json_value (key, '$.ID.number()')
  6             from ee_search_index
  7            where source = 'EE_RESTAURANTS'
  8*             and contains (data, 'dordrecht') > 0);

NAME                               ADDRESS
---------------------------------- ------------------------------------------------------------
Bistro Twee33                      Wijnstraat 233, 3311 BV Dordrecht, Netherlands
Strada del Vino                    Wijnstraat 170, 3311 BZ Dordrecht, Netherlands
Otto e Mezzo Pizzeria              Vismarkt 1, 3311 BS Dordrecht, Netherlands
Osteria-bar Luca                   Voorstraat 256 B, 3311 ET Dordrecht, Netherlands
Centre Ville Dordrecht             Voorstraat 345-347, 3311 EP Dordrecht, Netherlands
Restaurant Lef Dordrecht           Blauwpoortsplein 15, 3311 AC Dordrecht, Netherlands
Het Magazijn                       Voorstraat 180, 1e etage, 3311 ES Dordrecht, Netherlands
Post                               Johan de Wittstraat 128, 3311 KJ Dordrecht, Netherlands
Café Restaurant Merz Dordrecht     Korte Kalkhaven 3, 3311 JM Dordrecht, Netherlands
Bregje Dordrecht                   Houttuinen 32D, 3311 CE Dordrecht, Netherlands
BRUT Food & Wine Bar               Groenmarkt 121, 3311 BD Dordrecht, Netherlands
Eetcafé Exodus                     Nieuwstraat 5, 3311 XR Dordrecht, Netherlands
Den Witten Haen                    Groenmarkt 19-B, 3311 BD Dordrecht, Netherlands
Olympiada                          Visbrug 2, 3311 KW Dordrecht, Netherlands
Knollen & Citroenen                Groenmarkt 8, 3311 BE Dordrecht, Netherlands
Ristorante Da nina                 Lange Breestraat 3, 3311 VK Dordrecht, Netherlands
Restaurant De Beren Dordrecht      Wijnstraat 241, 3311 BV Dordrecht, Netherlands
Dordts Genoegen                    Voorstraat 256, 3311 ET Dordrecht, Netherlands
```

```
SQL> select name
  2        ,address
  3    from ee_restaurants
  4   where id in (
  5           select json_value (key, '$.ID.number()')
  6             from ee_search_index
  7            where source = 'EE_RESTAURANTS'
  8*             and contains (data, 'fuzzy(eetcafe)') > 0);

NAME                               ADDRESS
---------------------------------- ------------------------------------------------
Eetcafé City                       Waalwijk
Eetcafé Exodus                     Nieuwstraat 5, 3311 XR Dordrecht, Netherlands
Eetcafé nieuwe Oosterhout          Leijsenhoek 26, 4901 EV Oosterhout, Nederland
Eetcafé Istanblue                  Markt 12, 4901 EP Oosterhout, Nederland
Indonesisch eetcafé Onder de linden Stationsstraat 25, 6131 AX Sittard, Nederland
```

Combine Google and Tripadvisor

SDO_GEOMETRY

Nearest Neighbour

SDO_NN

```
select r.id
      ,r.name
  from ee_restaurants r
 where sdo_nn (apex_spatial.point (
                    p_lon => r.lon
                   ,p_lat => r.lat)
               ,apex_spatial.point (
                    p_lon => 4.86058977
                   ,p_lat => 51.6443595)
               ,'distance=30 unit=m'
               ) = 'TRUE';
```

Which Restaurants are within 30 Meters?


```
select r.id
      ,r.name
  from ee_restaurants r
 where sdo_nn (apex_spatial.point (
                    p_lon => r.lon
                   ,p_lat => r.lat)
               ,apex_spatial.point (
                    p_lon => 4.86058977
                   ,p_lat => 51.6443595)
               ,'distance=30 unit=m'
               ) = 'TRUE';
```


```
Error report -
ORA-13249: SDO_NN cannot be evaluated without using index
ORA-06512: at "MDSYS.MD", line 1723
ORA-06512: at "MDSYS.MDERR", line 17
ORA-06512: at "MDSYS.PRVT_IDX", line 12

https://docs.oracle.com/error-help/db/ora-13249/

More Details :
https://docs.oracle.com/error-help/db/ora-13249/
https://docs.oracle.com/error-help/db/ora-06512/
```

```
SQL> create index restaurant_lat_lon_idx on ee_restaurants (lat,lon)
  2*    indextype is mdsys.spatial_index_v2;
```

```
SQL> create index restaurant_lat_lon_idx on ee_restaurants (lat,lon)
  2*    indextype is mdsys.spatial_index_v2;

Error starting at line : 1 in command -
create index restaurant_lat_lon_idx on ee_restaurants (lat,lon)
   indextype is mdsys.spatial_index_v2
Error report -
ORA-29851: cannot build a domain index on more than one column

https://docs.oracle.com/error-help/db/ora-29851/29851. 00000 -  "cannot build
a domain index on more than one column"
*Cause:    User attempted to build a domain index on more than one column.
*Action:   Build the domain index only on a single column.
```

```
SQL> create index restaurant_lat_lon_idx on ee_restaurants (apex_spatial.point (
  2                    p_lon => lon
  3                   ,p_lat => lat))
  4*    indextype is mdsys.spatial_index_v2;
```

```
SQL> create index restaurant_lat_lon_idx on ee_restaurants (apex_spatial.point (
  2                    p_lon => lon
  3                   ,p_lat => lat))
  4*    indextype is mdsys.spatial_index_v2;

Error starting at line : 1 in command -
create index restaurant_lat_lon_idx on ee_restaurants (apex_spatial.point (
                  p_lon => lon
                 ,p_lat => lat))
   indextype is mdsys.spatial_index_v2
Error report -
ORA-30553: The function is not deterministic.

https://docs.oracle.com/error-help/db/ora-30553/30553. 00000 -  "The function is
not deterministic."
*Cause:    The function on which the index was defined was not deterministic.
*Action:   If the function is deterministic, mark it DETERMINISTIC. If it
           is not deterministic (it depends on package state, database state,
           current time, or anything other than the function inputs), then
           do not create the index. The values returned by a deterministic
           function should not change even when the function is rewritten or
           recompiled.
```

Which Restaurants are within 30 Meters?

```
SQL> select r.id
  2        ,r.name
  3    from ee_rest_sdo r
  4   where sdo_nn (r.geo
  5                ,apex_spatial.point (
  6                     p_lon => 4.86058977
  7                    ,p_lat => 51.6443595)
  8*               ,'distance=30 unit=m') = 'TRUE';
```

SDO_GEOMETRY

```
SQL> select r.id
  2        ,r.name
  3    from ee_rest_sdo r
  4   where sdo_nn (r.geo
  5                ,apex_spatial.point (
  6                     p_lon => 4.86058977
  7                    ,p_lat => 51.6443595)
  8*               ,'distance=30 unit=m') = 'TRUE';
```

```
SQL> select r.id
  2        ,r.name
  3    from ee_rest_sdo r
  4   where sdo_nn (r.geo
  5                ,apex_spatial.point (
  6                     p_lon => 4.86058977
  7                    ,p_lat => 51.6443595)
  8*               ,'distance=30 unit=m') = 'TRUE';

Error report -
ORA-13249: SDO_NN cannot be evaluated without using index
ORA-06512: at "MDSYS.MD", line 1723
ORA-06512: at "MDSYS.MDERR", line 17
ORA-06512: at "MDSYS.PRVT_IDX", line 12

https://docs.oracle.com/error-help/db/ora-13249/

More Details :
https://docs.oracle.com/error-help/db/ora-13249/
https://docs.oracle.com/error-help/db/ora-06512/
```

```
SQL> select r.id
  2        ,r.name
  3    from ee_rest_sdo r
  4   where sdo_nn (r.geo
  5                ,apex_spatial.point (
  6                     p_lon => 4.86058977
  7                    ,p_lat => 51.6443595)
  8*               ,'distance=30 unit=m') = 'TRUE';

Error report -
ORA-13249: SDO_NN cannot be evaluated without using index
ORA-06512: at "MDSYS.MD", line 1723
ORA-06512: at "MDSYS.MDERR", line 17
ORA-06512: at "MDSYS.PRVT_IDX", line 12

https://docs.oracle.com/error-help/db/ora-13249/

More Details :
https://docs.oracle.com/error-help/db/ora-13249/
https://docs.oracle.com/error-help/db/ora-06512/
```

```
create index restaurant_geo_idx on ee_rest_sdo (geo)
   indextype is mdsys.spatial_index_v2;
```

```
SQL> select r.id
  2        ,r.name
  3     from ee_rest_sdo r
  4    where sdo_nn (r.geo
  5                 ,apex_spatial.point (
  6                      p_lon => 4.86058977
  7                     ,p_lat => 51.6443595)
  8*                ,'distance=30 unit=m') = 'TRUE';

        ID NAME
---------- ------------------------------
       386 Pooyé Vis aan de Markt
       385 Strange Fruits Experience
       405 Grand Café Fikx
```

```
SQL> select r.id
  2        ,r.name
  3        ,r.geo.sdo_point.x  as lon
  4        ,r.geo.sdo_point.y  as lat
  5        ,sdo_nn_distance(1) as distance
  6     from ee_rest_sdo r
  7    where sdo_nn (r.geo
  8                 ,apex_spatial.point (
  9                      p_lon => 4.86058977
 10                     ,p_lat => 51.6443595)
 11                ,'distance=30 unit=m'
 12*               ,1) = 'TRUE';

        ID NAME                                          LON        LAT   DISTANCE
---------- ------------------------------------- ---------- ---------- ----------
       386 Pooyé Vis aan de Markt                 4.8606052  51.644398 4.41481299
       385 Strange Fruits Experience              4.8602573 51.6444346 24.4836842
       405 Grand Café Fikx                        4.8609778 51.6443178 27.2575428
```

How Far are they?

```
SQL> select r.id
  2        ,r.name
  3        ,r.geo.sdo_point.x as lon
  4        ,r.geo.sdo_point.y as lat
  5     from ee_rest_sdo r
  6    where sdo_within_distance
  7                (r.geo
  8                ,apex_spatial.point (
  9                     p_lon => 4.860647
 10                    ,p_lat => 51.644753
 11                )
 12                ,'distance=15 unit=m'
 13* ) = 'TRUE';

        ID NAME                                                 LON        LAT
---------- ------------------------------------------------- ---------- ----------
       383 Restaurant De Beren Oosterhout - Markt            4.8604504 51.6447108
```

Which one is within 15 meters?

Which geometry is exactly the same?

```
SQL> select r.id
  2        ,r.name
  3    from ee_rest_sdo r
  4   where sdo_equal (r.geo
  5                   ,apex_spatial.point (
  6                        p_lon => 4.8604503999999995
  7                       ,p_lat => 51.6447108
  8                   )
  9   ) = 'TRUE'
 10* /

        ID NAME
---------- --------------------------------------------------
       383 Restaurant De Beren Oosterhout - Markt
```

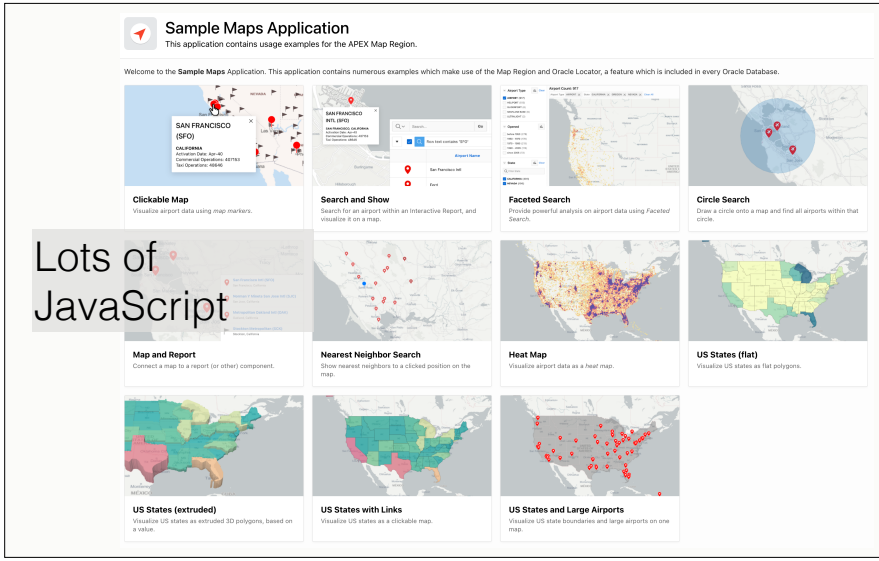


Sample Maps
Oracle

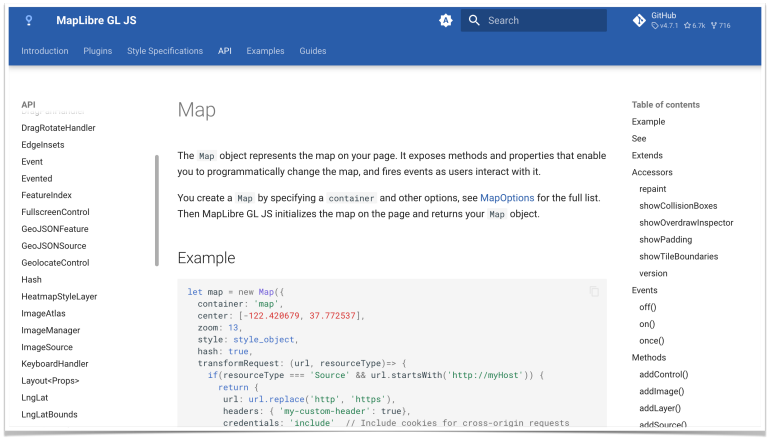
This application contains numerous examples of visualizing coordinate data on a map. Use Map Markers, Lines or Polygons, or the Heat Map feature. The APEX Map Region can easily be combined with Oracle Spatial functionality (which is included in every Oracle Database) to perform a 'Within Distance Search', 'Nearest Neighbor Search', or other spatial analysis.

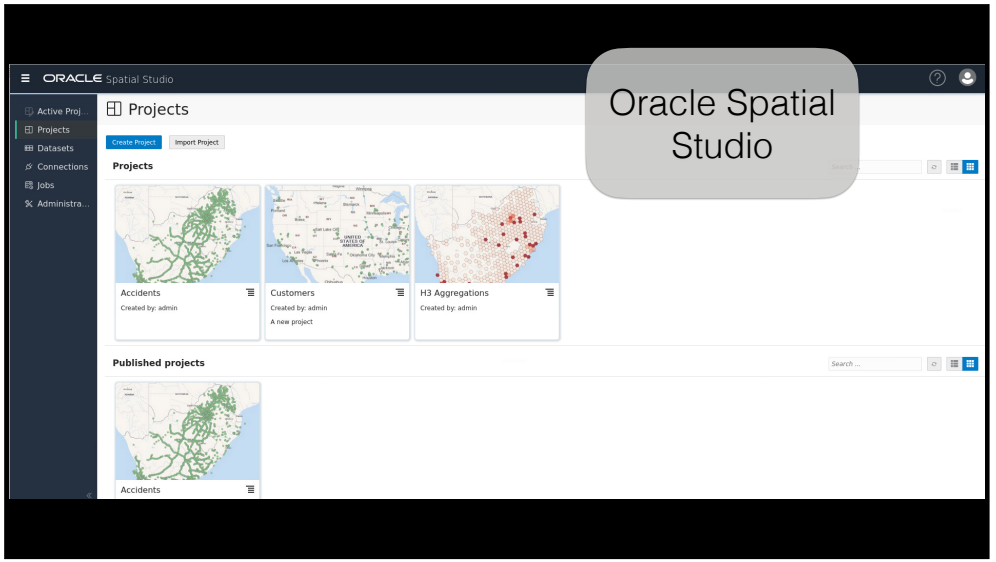
24.1.0

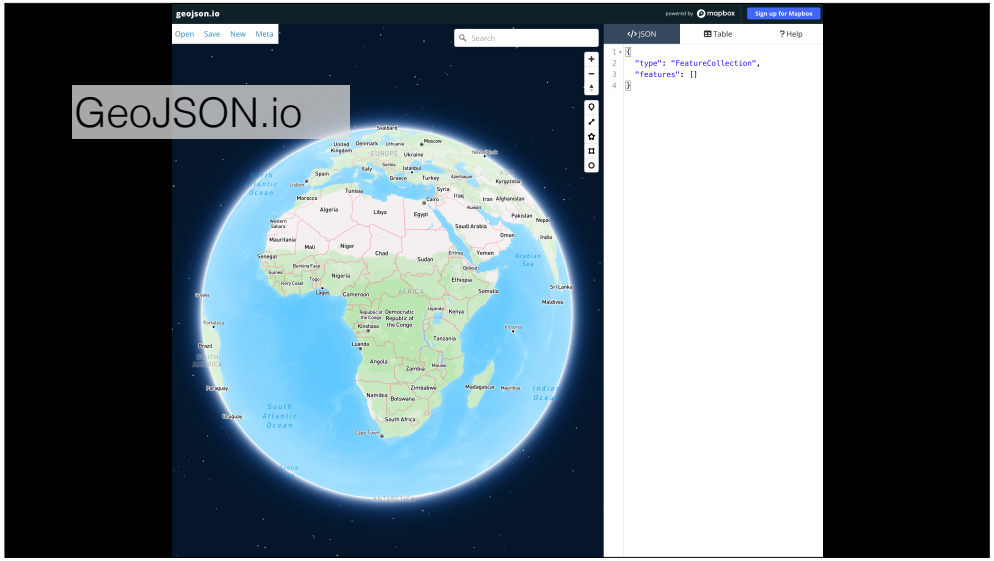
Install



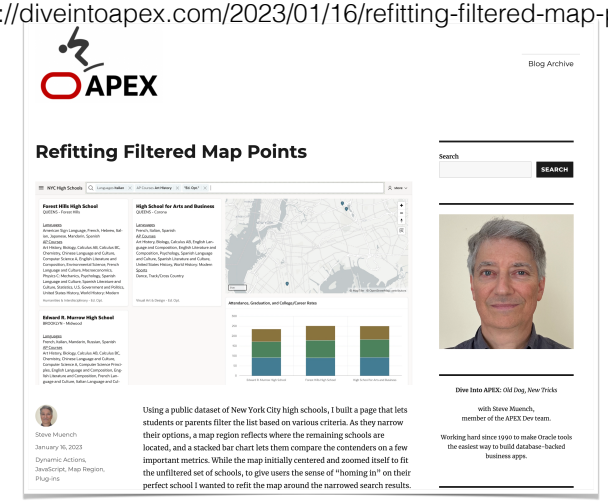
Lots of JavaScript

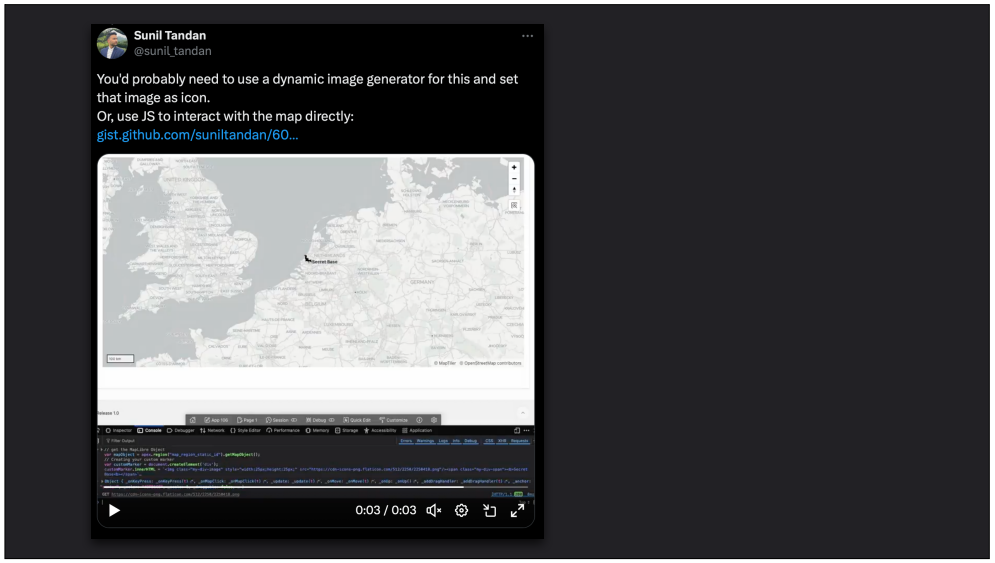


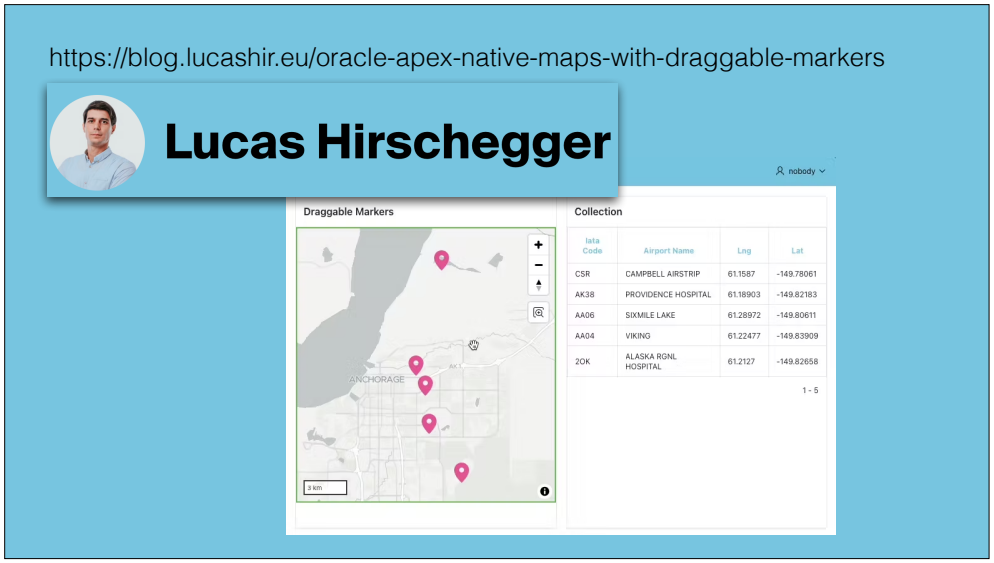




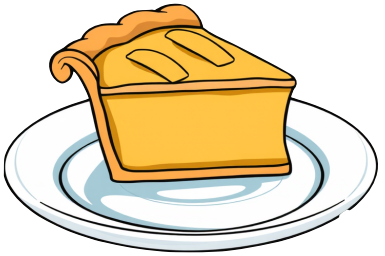
https://diveintoapex.com/2023/01/16/refitting-filtered-map-points/











Contact me if you're in Oosterhout and we'll go for Coffee and Apple Pie.

all·APEX

Alex Nuijten

www.allAPEX.nl alex@allAPEX.nl @alexnuijten nuijten.blogspot.com

all·APEX

What Questions do You Have?

Alex Nuijten

www.allAPEX.nl alex@allAPEX.nl @alexnuijten nuijten.blogspot.com

