

Prepare and deploy Maps Views in Oracle BI

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Senior Consultant



Rovinj, 14.10.2015

About Qubix



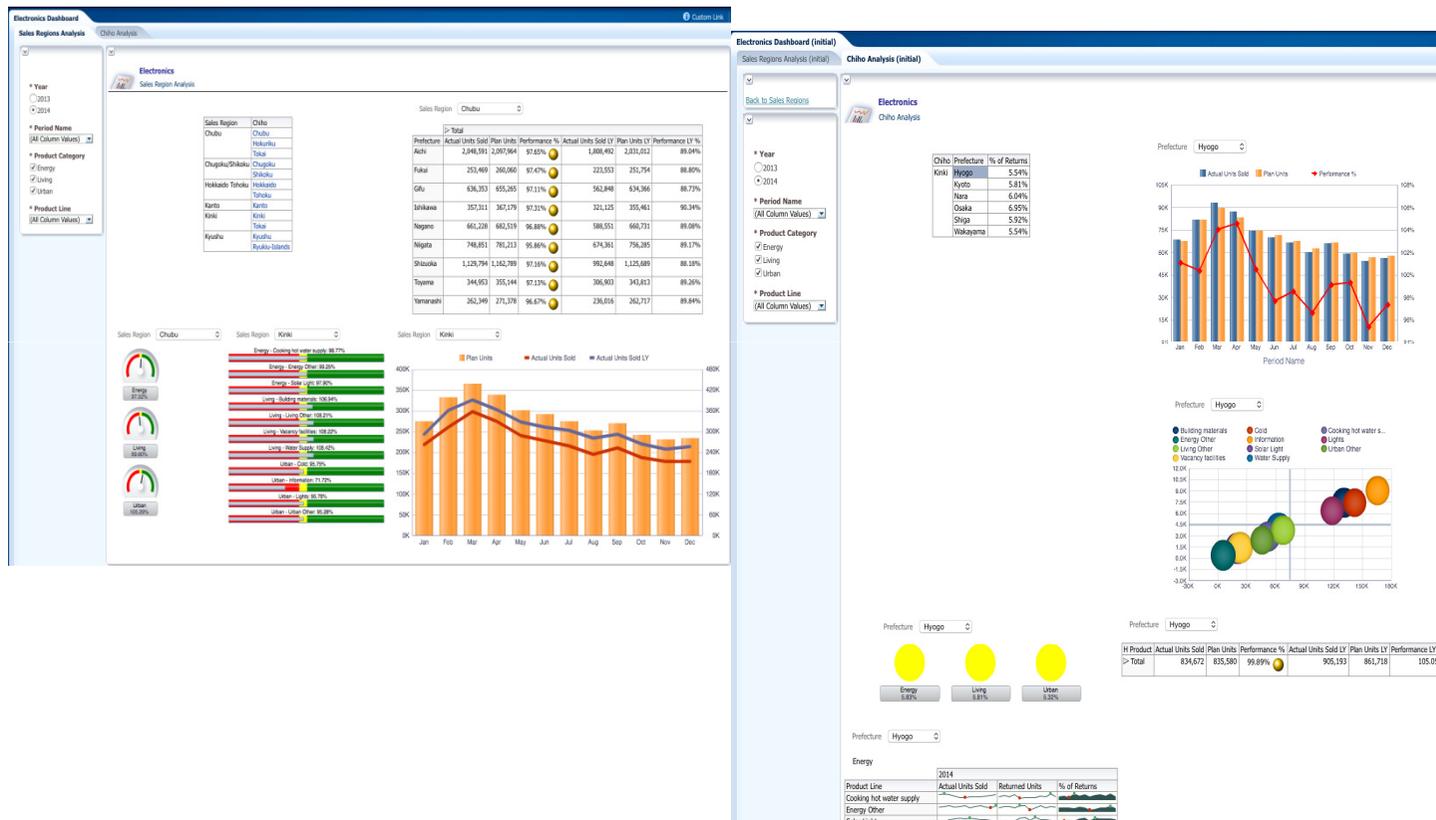
About me

- 20+ Years in IT
- 10 years working for Oracle, 4 years CIO
- MSc. in Economy, BSc. in IT
- Senior Consultant for Business Intelligence solutions
- Major work area today is Business Intelligence, currently investigating BI Cloud Services, and focusing in Data Science and Machine Learning

Qubix @ HROUG 2015

Šta	Tko	Gdje	Kada
Korištenje agregata i kombiniranje izvora podataka u Oracle BI	Žiga Vaupot	Dv 5 Apartmani	srijeda, 14. listopada 2015., 09:00
Priprema i implementacija Karte pogleda u Oracle BI	Žiga Vaupot	Dv 5 Apartmani	srijeda, 14. listopada 2015., 10:00
Planiranje i budžetiranje Cloud usluge!	Andrew Mason	Dv 4 Mali klub	srijeda, 14. listopada 2015., 15:00
Sklad Oracle Cloud za EPM i BI su: Baxters recepti za uspjeh	Andrew Mason	Dv 5 Apartmani	četvrtak, 15. listopada 2015., 12:30

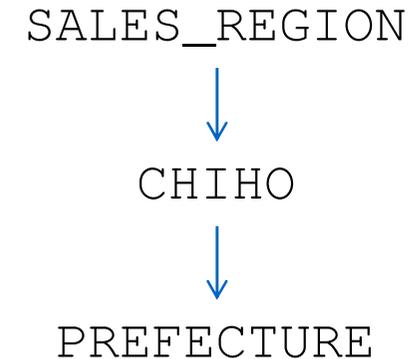
Starting point: Dashboard



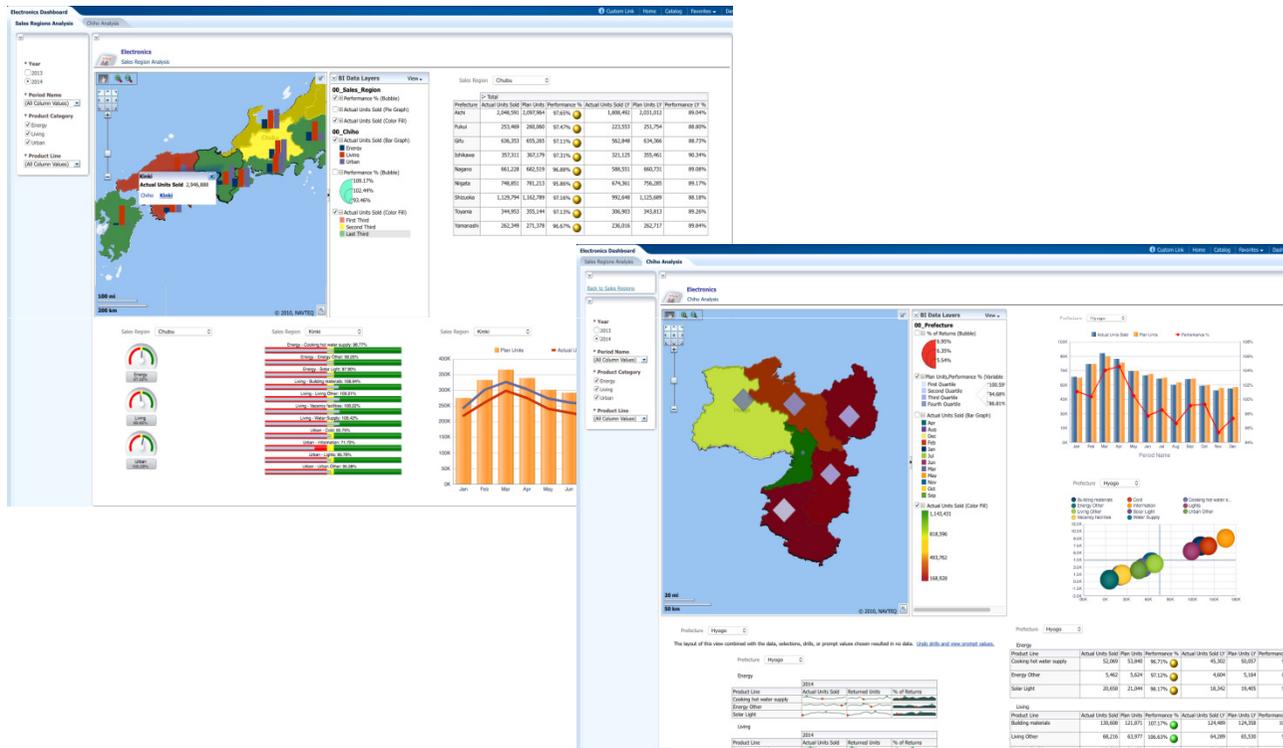
Starting point: MAP_PREFECTURE table

❖	COLUMN_NAME	❖	DATA_TYPE	❖	NULLABLE	DATA_DEFAULT	❖	COLUMN_ID	❖	COMMENTS
1	ADMINID		NUMBER(38,0)		Yes	(null)		1		(null)
2	COUNTRY		VARCHAR2(3 BYTE)		Yes	(null)		2		(null)
3	CHIHO		VARCHAR2(25 BYTE)		Yes	(null)		3		(null)
4	PREFECTURE		VARCHAR2(25 BYTE)		Yes	(null)		4		(null)
5	SALES_REGION		VARCHAR2(25 BYTE)		Yes	(null)		5		(null)
6	POPULATION		NUMBER(38,0)		Yes	(null)		6		(null)
7	GEOMETRY		SDO_GEOMETRY		Yes	(null)		7		(null)

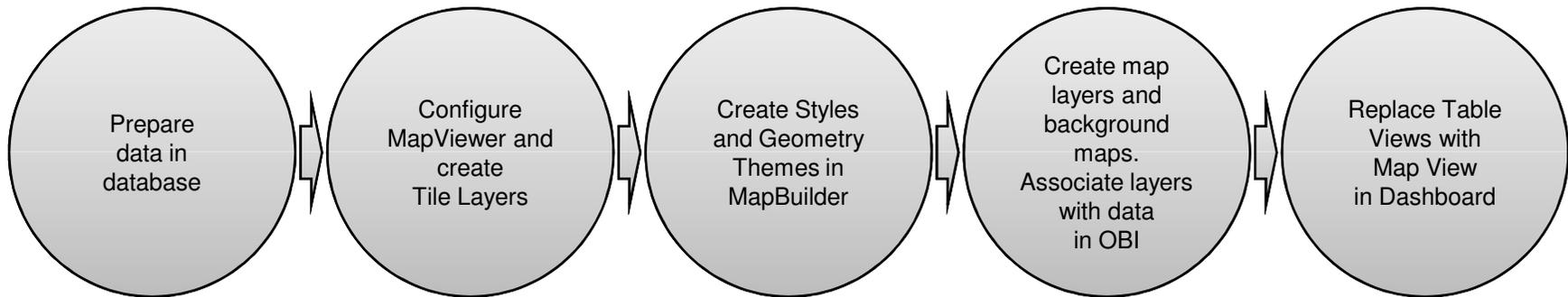
❖	ADMINID	❖	COUNTRY	❖	CHIHO	❖	PREFECTURE	❖	SALES_REGION	❖	POPULATION	❖	GEOMETRY
1	392030200	JPN			Kanto		Tochigi		Kanto		2087003		[MDSYS.SDO_GEOMETRY]
2	392030300	JPN			Kanto		Gunma		Kanto		2076340		[MDSYS.SDO_GEOMETRY]
3	392050200	JPN			Chubu		Nagano		Chubu		2194556		[MDSYS.SDO_GEOMETRY]
4	392040200	JPN			Hokuriku		Toyama		Chubu		1138856		[MDSYS.SDO_GEOMETRY]
5	392030100	JPN			Kanto		Ibaraki		Kanto		3096359		[MDSYS.SDO_GEOMETRY]
6	392050300	JPN			Chubu		Gifu		Chubu		2143327		[MDSYS.SDO_GEOMETRY]
7	392040400	JPN			Hokuriku		Fukui		Chubu		831069		[MDSYS.SDO_GEOMETRY]
8	392030400	JPN			Kanto		Saitama		Kanto		6867677		[MDSYS.SDO_GEOMETRY]
9	392030500	JPN			Kanto		Chiba		Kanto		6192786		[MDSYS.SDO_GEOMETRY]
10	392050100	JPN			Chubu		Yamanashi		Chubu		807671		[MDSYS.SDO_GEOMETRY]



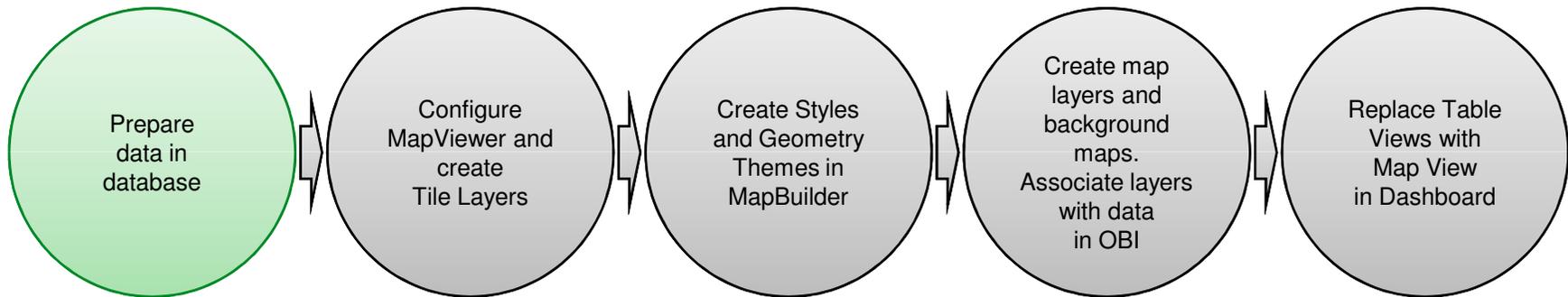
What we want to achieve? Dashboard with interactive map analysis



Process



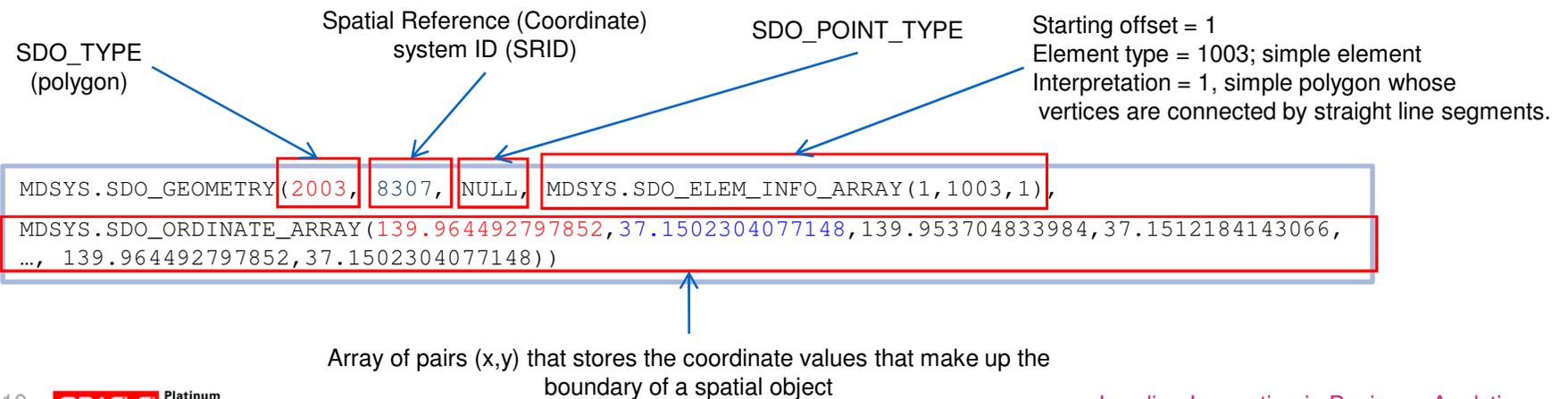
Process



MAP_PREFECTURES table

ADMINID	COUNTRY	CHIHO	PREFECTURE	SALES_REGION	POPULATION	GEOMETRY
1	392030200 JPN	Kanto	Tochigi	Kanto	2087003	[MDSYS.SDO_GEOMETRY]
2	392030300 JPN	Kanto	Gunma	Kanto	2076340	[MDSYS.SDO_GEOMETRY]
3	392050200 JPN	Chubu	Nagano	Chubu	2194556	[MDSYS.SDO_GEOMETRY]
4	392040200 JPN	Hokuriku	Toyama	Chubu	1138856	[MDSYS.SDO_GEOMETRY]
5	392030100 JPN	Kanto	Ibaraki	Kanto	3096359	[MDSYS.SDO_GEOMETRY]
6	392050300 JPN	Chubu	Gifu	Chubu	2143327	[MDSYS.SDO_GEOMETRY]
7	392040400 JPN	Hokuriku	Fukui	Chubu	831069	[MDSYS.SDO_GEOMETRY]
8	392030400 JPN	Kanto	Saitama	Kanto	6867677	[MDSYS.SDO_GEOMETRY]
9	392030500 JPN	Kanto	Chiba	Kanto	6192786	[MDSYS.SDO_GEOMETRY]
10	392050100 JPN	Chubu	Yamanashi	Chubu	807671	[MDSYS.SDO_GEOMETRY]

← SDO_GEOMETRY data type



Enable MAP_PREFECTURES to be used in spatial analysis



- Two steps:
 1. Register MAP_PREFECTURES table with USER_SDO_GEOM_METADATA view
 2. Create SPATIAL INDEX on MAP_PREFECTURES.GEOMETRY

Register table with USER_SDO_GEOM_METADATA view

```
select * from USER_SDO_GEOM_METADATA where table_name = 'MAP_PREFECTURES';

no rows selected
```

```
insert into USER_SDO_GEOM_METADATA(TABLE_NAME, COLUMN_NAME, DIMINFO, SRID)
VALUES ('MAP_PREFECTURES', 'GEOMETRY',
        MDSYS.SDO_DIM_ARRAY(MDSYS.SDO_DIM_ELEMENT('X', -180, 180, 0.05),
        MDSYS.SDO_DIM_ELEMENT('Y', -90, 90, 0.05)), 8307);

commit;
```

```
select * from USER_SDO_GEOM_METADATA where table_name = 'MAP_PREFECTURES';
```

TABLE_NAME	COLUMN_NAME	DIMINFO	SRID
1 MAP_PREFECTURES	GEOMETRY	MDSYS.SDO_DIM_ARRAY([MDSYS.SDO_DIM_ELEMENT] , [MDSYS.SDO_DIM_ELEMENT])	8307

Create SPATIAL index



table MAP_PREFECTURES has no indexes

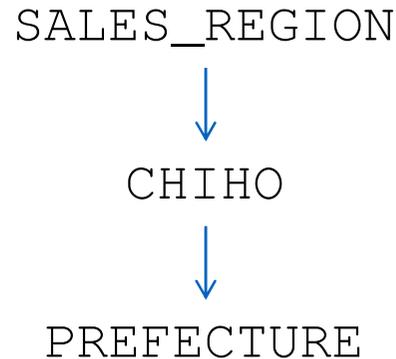
```
create index MAP_PREFECTURES_SPI on MAP_PREFECTURES (GEOMETRY)
indextype is mdsys.spatial_index;

index MAP_PREFECTURES_SPI created.
```

INDEX_OWNER	INDEX_NAME	UNIQUENESS	STATUS	INDEX_TYPE	TEMPORARY	PARTITIONED	FUNCIDX_STATUS	JOIN_INDEX	COLUMNS	COLUMN_EXPRESSION
1 SIOUG	MAP_PREFECTURES_SPI	NONUNIQUE	VALID	DOMAIN	N	NO	(null)	NO	GEOMETRY	(null)

MAP_PREFECTURES is now ready for spatial analysis, but ...

- ... remember the starting point.



- But (another BUT) there is nothing like MAP_CHIHO and MAP_SALES_REGION table in our database schema!

Luckily, we have SDO

- For example, you can “aggregate” (topological union) polygons

```
SDO_AGGR_UNION(  
    AggregateGeometry SDOAGGRTYPE  
) RETURN SDO_GEOMETRY;
```

So, we can now create a new table with spatial data – MAP_CHIHO

```
create table MAP_CHIHOS as (
    select CHIHO, SALES_REGION,
           SDO_AGGR_UNION(MDSYS.SDOAGGRTYPE(geometry, 0.05)) GEOMETRY
    from MAP_PREFECTURES
    group by CHIHO, SALES_REGION);
```

❖ COLUMN_NAME	❖ DATA_TYPE	❖ NULLABLE	DATA_DEFAULT	❖ COLUMN_ID	❖ COMMENTS
1 CHIHO	VARCHAR2(25 BYTE)	Yes	(null)	1 (null)	
2 SALES_REGION	VARCHAR2(25 BYTE)	Yes	(null)	2 (null)	
3 GEOMETRY	SDO_GEOMETRY	Yes	(null)	3 (null)	

❖ CHIHO	❖ SALES_REGION	GEOMETRY
1 Chubu	Chubu	[MDSYS.SDO_GEOMETRY]
2 Kanto	Kanto	[MDSYS.SDO_GEOMETRY]
3 Kinki	Kinki	[MDSYS.SDO_GEOMETRY]
4 Tokai	Chubu	[MDSYS.SDO_GEOMETRY]
5 Kyushu	Kyushu	[MDSYS.SDO_GEOMETRY]
6 Tohoku	Hokkaido Tohoku	[MDSYS.SDO_GEOMETRY]
7 Chugoku	Chugoku/Shikoku	[MDSYS.SDO_GEOMETRY]
8 Shikoku	Chugoku/Shikoku	[MDSYS.SDO_GEOMETRY]
9 Hokkaido	Hokkaido Tohoku	[MDSYS.SDO_GEOMETRY]
10 Hokuriku	Chubu	[MDSYS.SDO_GEOMETRY]
11 Ryukiu-Islands	Kyushu	[MDSYS.SDO_GEOMETRY]

And now?

- Well, repeat the two steps:
 - Register MAP_CHIHO with USER_SDO_GEOM_METADATA

```
insert into USER_SDO_GEOM_METADATA(TABLE_NAME, COLUMN_NAME, DIMINFO, SRID)
VALUES('MAP_CHIHOS', 'GEOMETRY',
      MDSYS.SDO_DIM_ARRAY(MDSYS.SDO_DIM_ELEMENT('X', -180, 180, 0.05),
      MDSYS.SDO_DIM_ELEMENT('Y', -90, 90, 0.05)), 8307);
commit;
```

- Create a new spatial index for MAP_CHIHO

```
create index MAP_CHIHOS_SPI on MAP_CHIHOS(GEOMETRY)
indextype is mdsys.spatial_index;
```

Let's create also MAP_SALES_REGIONS and enable it for spatial analysis



- Create MAP_SALES_REGIONS

```
create table MAP_SALES_REGIONS as (  
  select SALES_REGION,  
         SDO_AGGR_UNION(MDSYS.SDOAGGRTYPE(geometry, 0.05)) GEOMETRY  
  from MAP_CHIHOS  
  group by SALES_REGION);
```

- Register MAP_SALES_REGIONS with USER_SDO_GEOM_METADATA

```
insert into USER_SDO_GEOM_METADATA(TABLE_NAME, COLUMN_NAME, DIMINFO, SRID)  
VALUES('MAP_SALES_REGIONS', 'GEOMETRY',  
       MDSYS.SDO_DIM_ARRAY(MDSYS.SDO_DIM_ELEMENT('X', -180, 180, 0.05),  
                             MDSYS.SDO_DIM_ELEMENT('Y', -90, 90, 0.05)), 8307);  
commit;
```

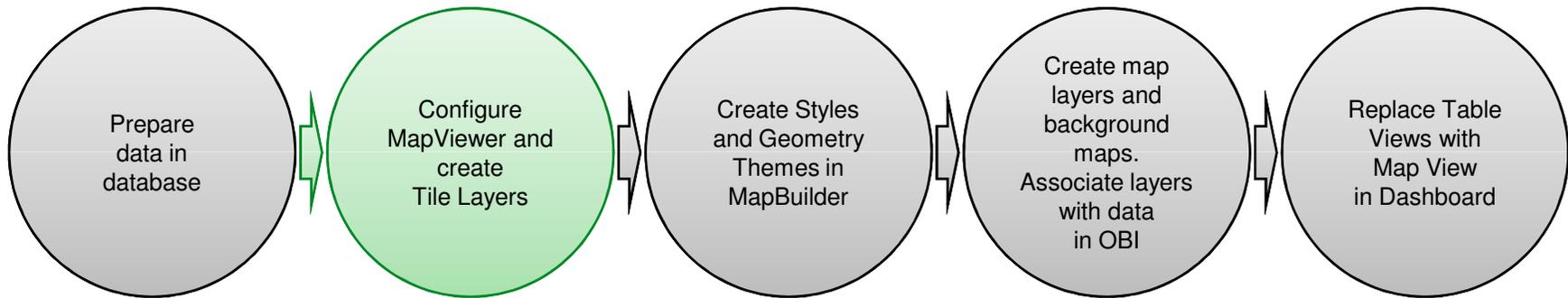
- Create spatial index

```
create index MAP_SALES_REGIONS_SPI on MAP_SALES_REGIONS(GEOMETRY)  
indextype is mdsys.spatial_index;
```

This is it. We have now spatial tables ready to be used.

- 3 tables:
 - MAP_PREFECTURES,
 - MAP_CHIHOS,
 - MAP_SALES_REGIONS
- 3 records in USER_SDO_GEOM_METADATA table, one for each table
- 3 spatial indexes, one on each table.

Process



What is MapViewer?

- Oracle Fusion Middleware MapViewer enables developers to **incorporate highly interactive maps and spatial analysis into business applications**. A component of Oracle Fusion Middleware, it lets you combine application content with maps and data from a **variety of web services and data formats**. It is also fully integrated with Oracle Spatial and Graph. In addition, **it is included in** Oracle products such as **Oracle Business Intelligence**.

Why do we need MapViewer?

- Configure data sources for spatial data
- Create Tile Layer based on Oracle Map, Google Map or similar

Configure data sources

- Specify JDBC connection in mapViewConfig.xml:

```
<map_data_source name="sioug"
    jdbc_host="localhost"
    jdbc_sid="//pdborcl"
    jdbc_port="1521"
    jdbc_user="sioug"
    jdbc_password"!sioug"
    jdbc_mode="thin"
    number_of_mappers="3"
    allow_jdbc_theme_based_foi="true"
    editable="false"
/>
```

- Save & Restart and then check datasources

Manage MapViewer

- Configuration
- **Datasources**
- Geometry Cache
- Create Tile Layer
- Manage Tile Layers
- Monitoring
- View Logs

Refresh

Existing data sources

Edit Delete Purge cached metadata

Previous 1-25 of 31 Next 6

Select	Name	User	Container DS	JDBC Uri	TNS name	Mappers	Max conns
<input type="radio"/>	sioug	sioug		thin:@localhost:1521://pdborcl		3	0

Create Tile Layer

- Tile layer could be understood as a background map, onto which all other layers will be added

- Manage MapViewer**
- Configuration
 - Datasources
 - Geometry Cache
 - **Create Tile Layer**
 - Manage Tile Layers

TIP You must first specify where the map tile images are

Select type of map source: Oracle Maps

Continue



Create a map tile layer for external map source

Name: SIOUG_ELECACTION_MAP

Data Source: sioug

Add Delete

Select	name	value
<input type="radio"/>	tile_layer_name	elocation_mercator.world_map

SRID: 54004

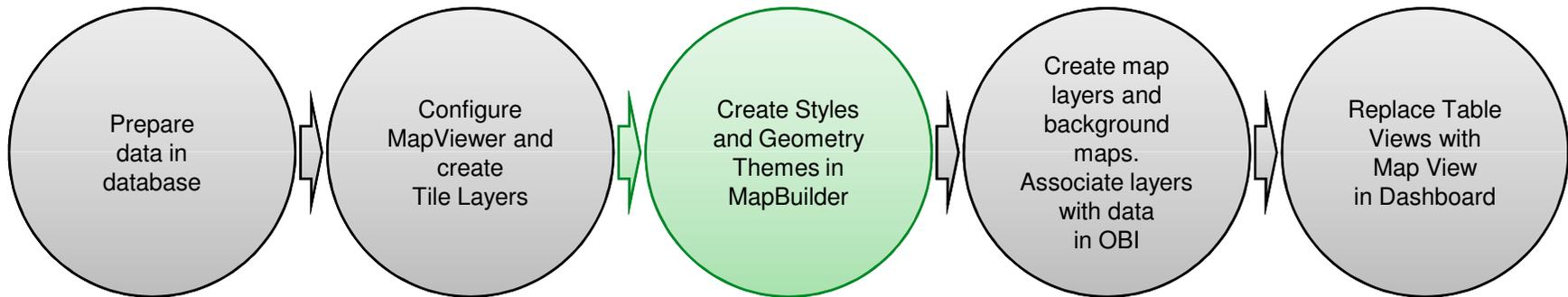
Min X: -2.0037508E7
Max X: 2.0037508E7
Min Y: -2.0037508E7
Max Y: 2.0037508E7

Zoom Levels: 19

Submit Cancel XML mode

***Term of use: Your usage of the map must meet the Terms of Service defined by the service provider [here](#)

Process



Most of the “map” stuff happen in Map Builder*

- Oracle Map Builder is a standalone application that lets you create and manage the mapping metadata (about styles, themes, and base maps) that is stored in the database.
- Whenever possible, you should use Oracle Map Builder instead of directly modifying MapViewer metadata views to create, modify, and delete information about styles, themes, and maps.

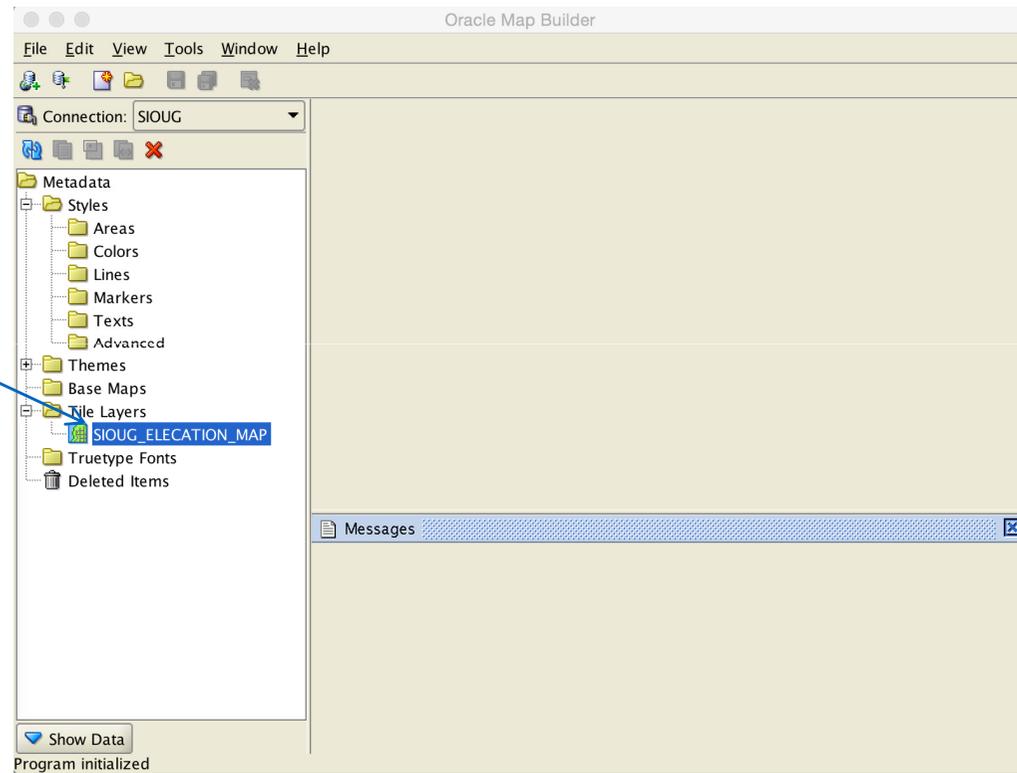
*Oracle® Fusion Middleware User's Guide for Oracle MapViewer

Map Builder UI

Tile Layer we've just created in MapViewer.

Later, this will be called Base or Background map.

Be aware that the terminology used in MapViewer/Map Builder differs from the one used in Oracle Business Intelligence (don't ask why).

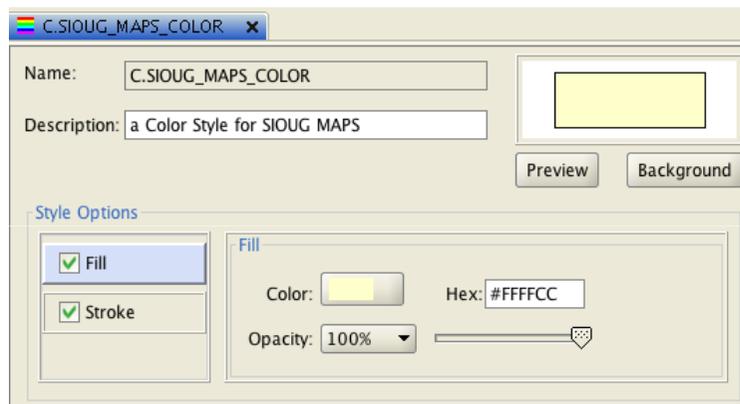


Tasks in Map Builder

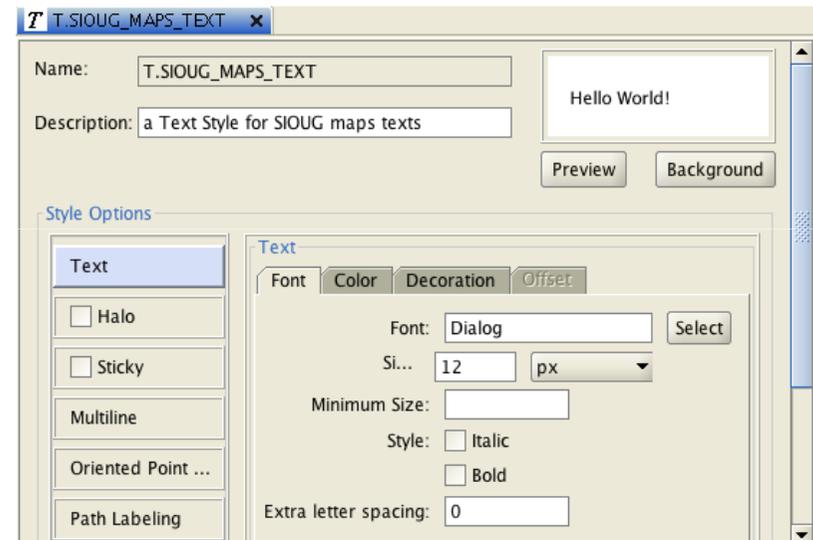
- Create Styles for Colors, Texts, Areas, ... and other spatial objects used in maps
- Create Geometry Themes, which are called call these Layers (☺) in OBI people

Create Styles

■ Color



■ Text



Create Geometry Themes

- Create Geometry Theme For each MAP_XXX table in our database schema:
 - MAP_SALES_REGION
 - MAP_CHIHO
 - MAP_PREFECTURE
- Geometry Theme Wizard takes you through 4 steps in defining a new Geometry Theme

Geometry Theme Wizard steps

Name: SIOUG_PREFECTURE
 Description:
 Table Owner: SIOUG
 Base Table: MAP_PREFECTURES
 Spatial Column: GEOMETRY

Style Type: Color
 Render style: C.SIOUG_MAPS_COLOR Select

Label Style

Style Type: Text
 Style Name: T.SIOUG_MAPS_TEXT Select
 Label Function: 1

Style	Attribute
T.SIOUG_MAPS_TEXT	PREFECTURE

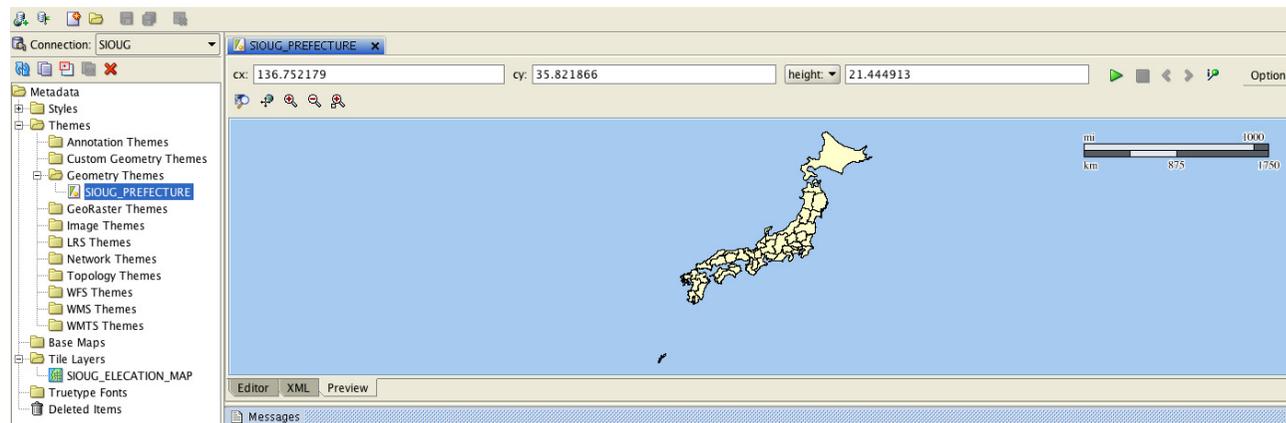
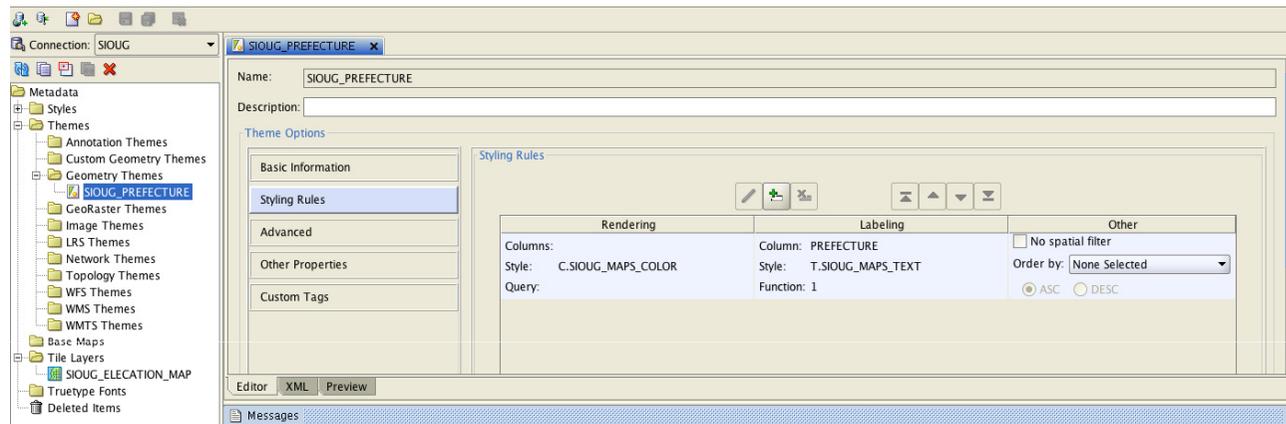
Summary

Record contents to be stored into USER_SDO_THEMES

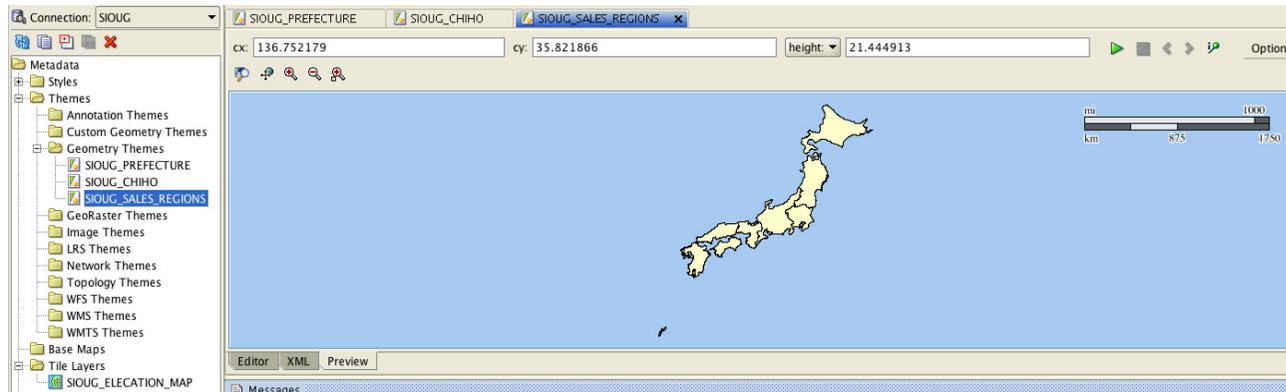
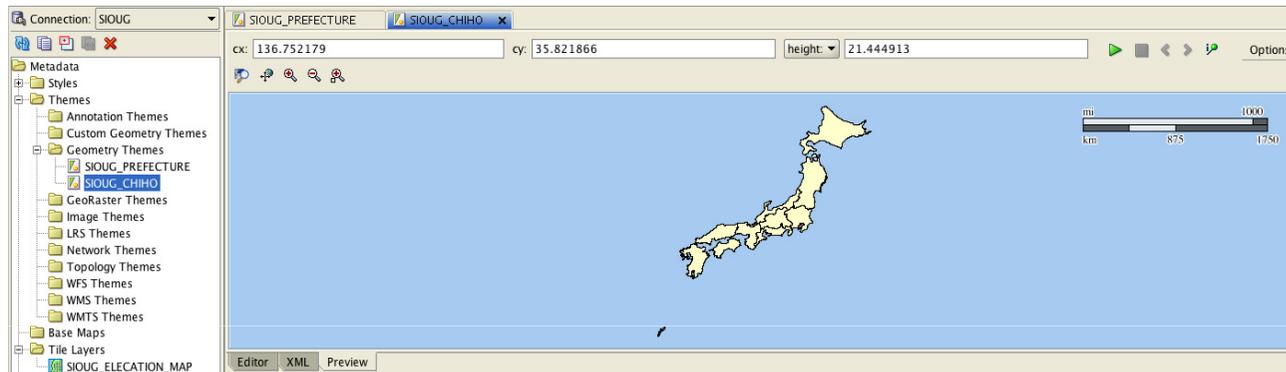
```

NAME: SIOUG_PREFECTURE
DESCRIPTION:
BASE_TABLE: MAP_PREFECTURES
GEOMETRY_COLUMN: GEOMETRY
STYLING_RULES:
<?xml version="1.0" standalone="yes"?>
<styling_rules>
  <rule>
    <features style="C.SIOUG_MAPS_COLOR"> </features>
    <label column="PREFECTURE" style="T.SIOUG_MAPS_TEXT"> 1 </label>
  </rule>
</styling_rules>
  
```

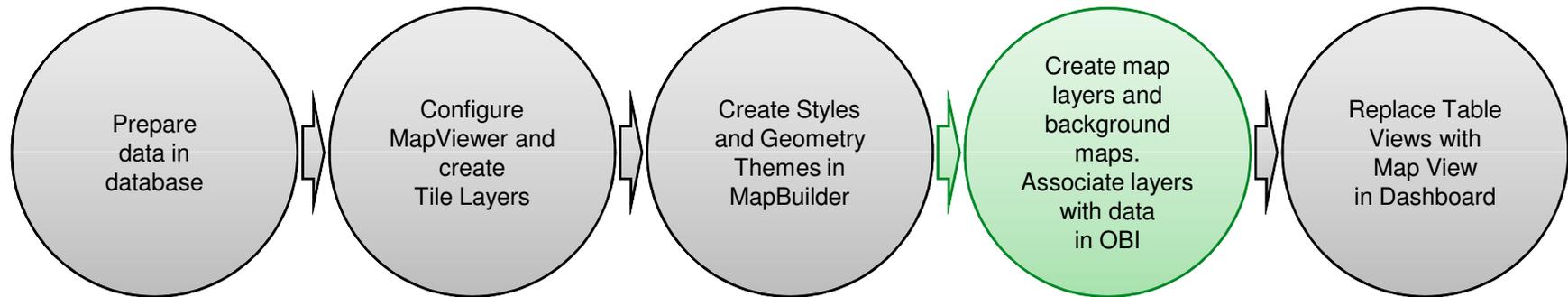
More properties and Preview



Repeat Geometry Theme creation steps for the two remaining layers



Process



Let's bring it all together now!

Security

Manage Catalog Groups

Create, edit and delete Catalog Groups.

Manage Privileges

Manage privileges and rights given to users and groups.

Session Management

Manage Sessions

View Oracle Business Intelligence session information including active users and queries.

Manage Agent Sessions

View Agent session information including Agent state and recipients.

Maintenance and Troubleshooting

Manage Device Types

Create, edit, view or delete Device Types.

Toggle Maintenance Mode

Maintenance Mode is currently off.

Reload Files and Metadata

Reload XML message files, refresh server metadata, and clear caches.

Reload Log Configuration

Reload the logging configuration after update.

Issue SQL

Issue SQL directly to Oracle BI Server.

Scan and Update Catalog Objects That Require Updates

Scan the catalog and update any objects that were saved with earlier versions of Oracle Business Intelligence.

Map Data Management

Manage Map Data

Manage layers, background maps and images.

Marketing

Manage Marketing Jobs

View background marketing jobs and database cache result sets.

Manage Marketing Defaults

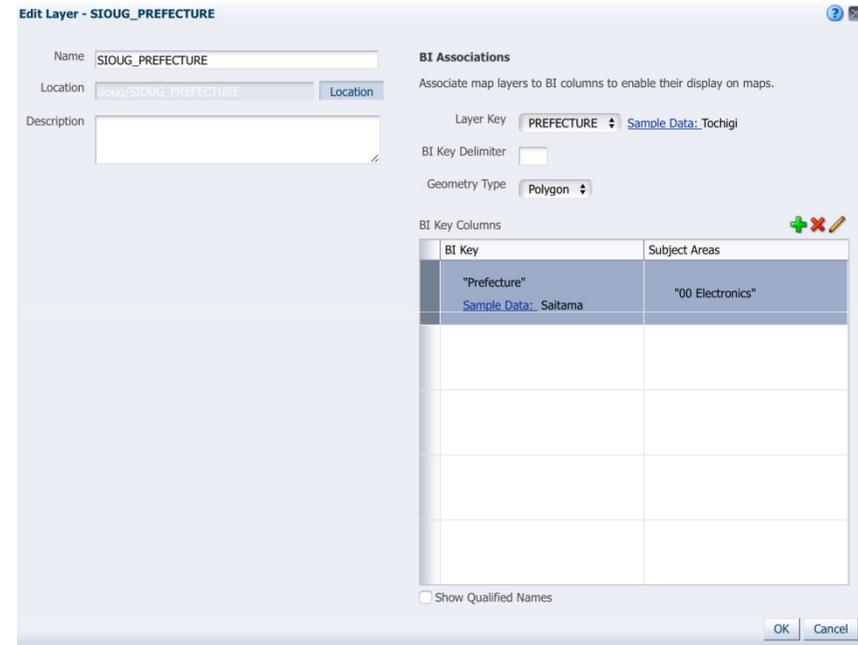
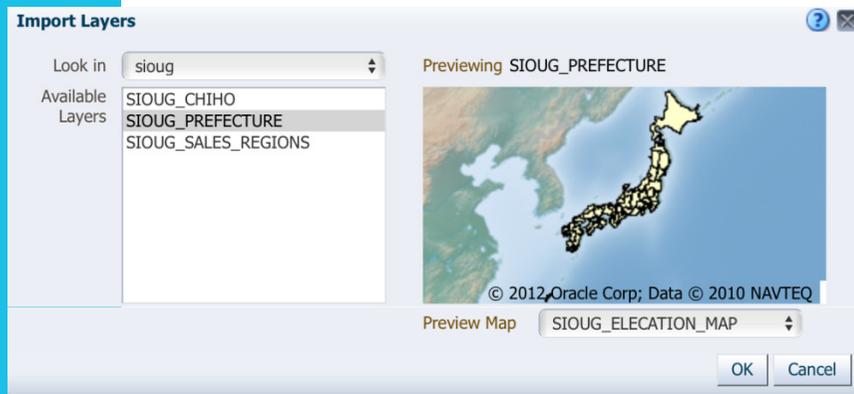
Manage the default settings such as Default Campaign Load Format and Default Global Audience for Marketing.

BI Publisher

Manage BI Publisher

Manage BI Publisher data sources, scheduler configuration, delivery destinations, and runtime properties.

Import Layers first, then link Layer key with BI Key Column



Import layer for all three Layers*
you've created with Map Builder

SIOUG_CHIHO	sioug/SIOUG_CHIHO
SIOUG_PREFECTURE	sioug/SIOUG_PREFECTURE
SIOUG_SALES_REGIONS	sioug/SIOUG_SALES_REGIONS

Import Background Map and associate imported Layers with it

Import Background Maps

Look in:

Available Maps:

Previewing SIOUG_ELECAION_MAP

© 2012 Oracle Corp; Data © 2010 NA

OK

Edit Background Map - SIOUG_ELECAION_MAP

Name:

Location: Location

Description:

Interactive BI Layers and Feature Layers
For each layer, select the zoom levels at which it can be displayed.

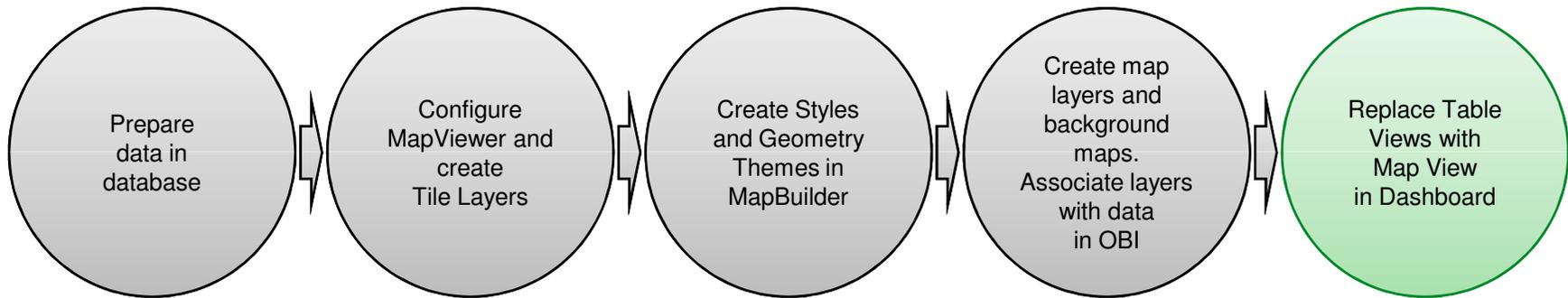
	Zoom Level																		
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
SIOUG_SALES_REGIONS																			
SIOUG_CHIHO																			
SIOUG_PREFECTURE																			

BI Layer Feature Layer

© 2012 Oracle Corp; Data © 2010 NAVTEQ

OK Cancel

Process



We are almost there.



sioug_f_Electronics Dashboard

sioug_f_Chiho Analysis

Electronics
Sales Region Analysis

* Year
 2013
 2014

* Period Name
 (All Column Values)

* Product Category
 Energy
 Living
 Urban

* Product Line
 (All Column Values)

Sales Region	Chiho
Chubu	Chubu
	Hokuriku
	Tokai
Chugoku/Shikoku	Chugoku
	Shikoku
Hokkaido Tohoku	Hokkaido
	Tohoku
Kanto	Kanto
Kinki	Kinki
Kyushu	Kyushu
	Ryukyu-Islands

Let's replace this simple table with a new Map View

Sales Region Chubu

Prefecture	Actual Units Sold	Plan Units	Performance %	Actual Units Sold LY	Plan Units LY	Performance LY %
> Total						
Aichi	2,048,591	2,097,964	97.65%	1,808,492	2,031,012	89.04%
Fukui	253,469	260,060	97.47%	223,553	251,754	88.80%
Gifu	636,353	655,265	97.11%	562,848	634,366	88.73%
Ishikawa	357,311	367,179	97.31%	321,125	355,461	90.34%
Mie	277,632	277,614	100.01%	302,300	286,300	105.59%
Nagano	661,228	682,519	96.88%	588,551	660,731	89.08%
Niigata	748,851	781,213	95.86%	674,361	756,285	89.17%
Shizuoka	1,129,794	1,162,789	97.16%	992,648	1,125,689	88.18%
Toyama	344,953	355,144	97.13%	306,903	343,813	89.26%
Yamanashi	262,349	271,378	96.67%	236,016	262,717	89.84%

Sales Region Chubu

Energy - Cooking hot water supply: 98.71%

Energy - Energy Other: 99.50%

Energy - Solar Light: 97.75%

Living - Building materials: 106.73%

Living - Living Other: 107.88%

Living - Vacancy facilities: 107.99%

Living - Water Supply: 108.43%

Urban - Cold: 95.63%

Urban - Information: 69.72%

Urban - Lights: 96.03%

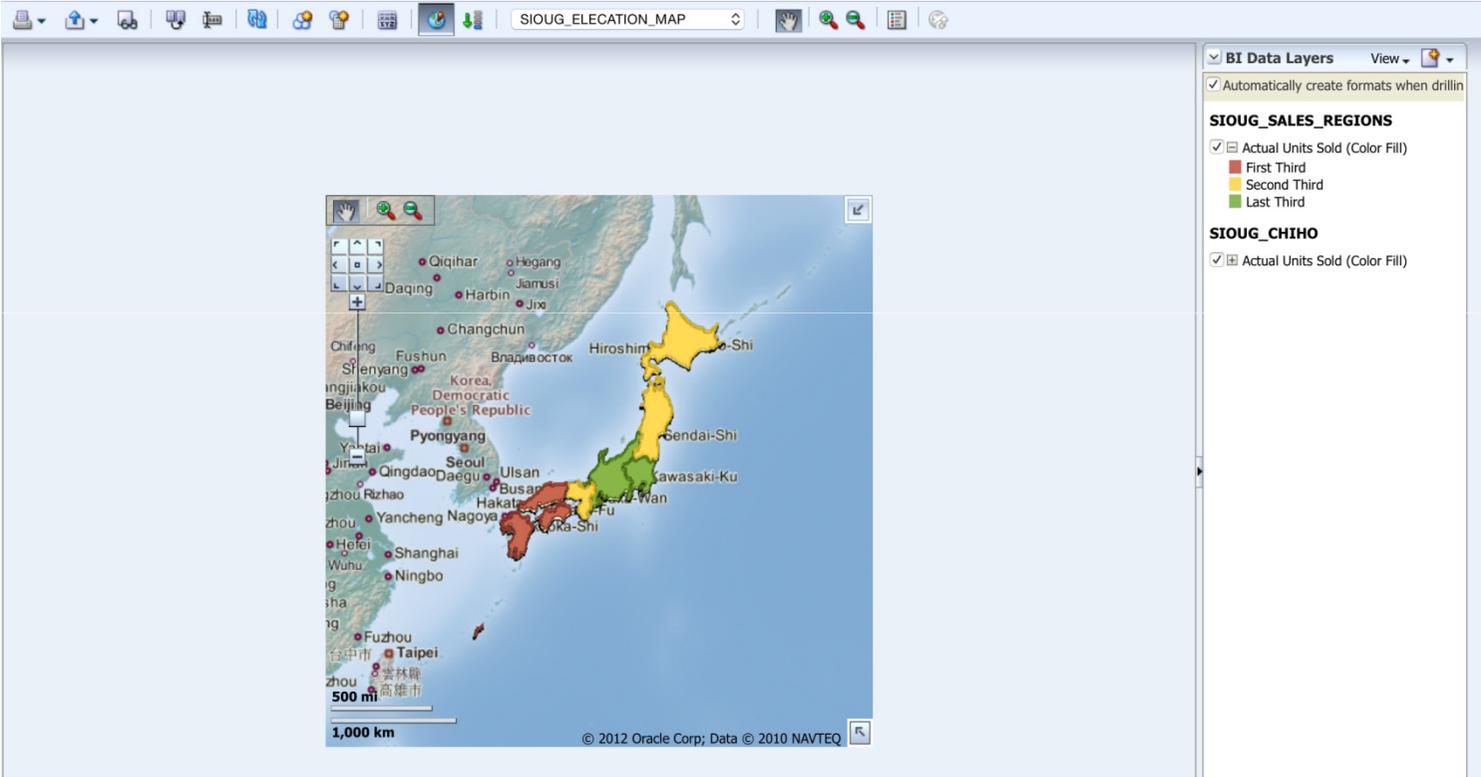
Sales Region Kinki

Plan Units

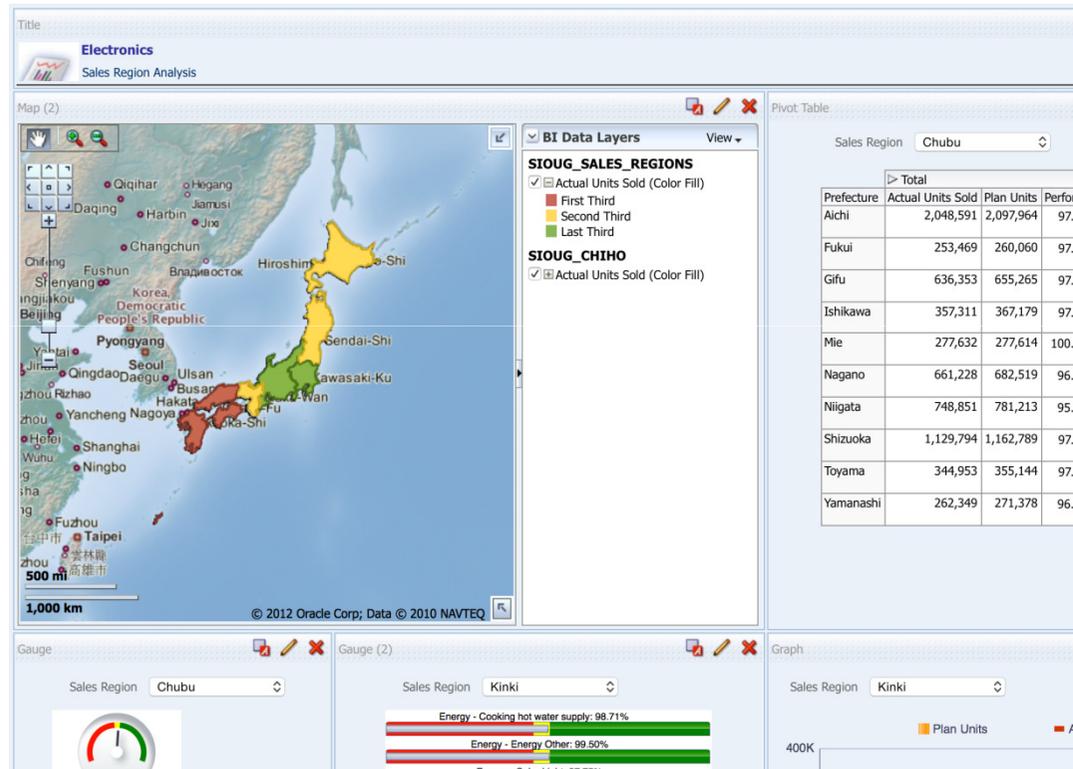
Actual Units Sold

Actual Units Sold LY

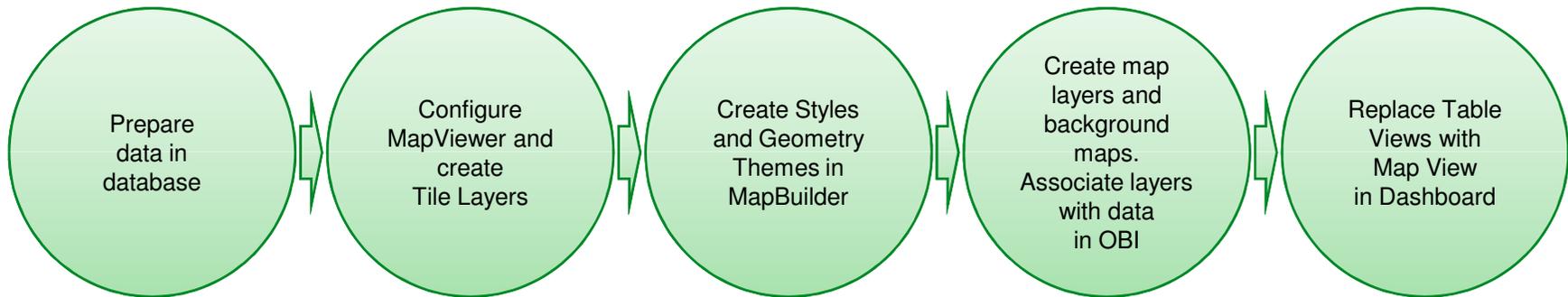
Create a new Map View



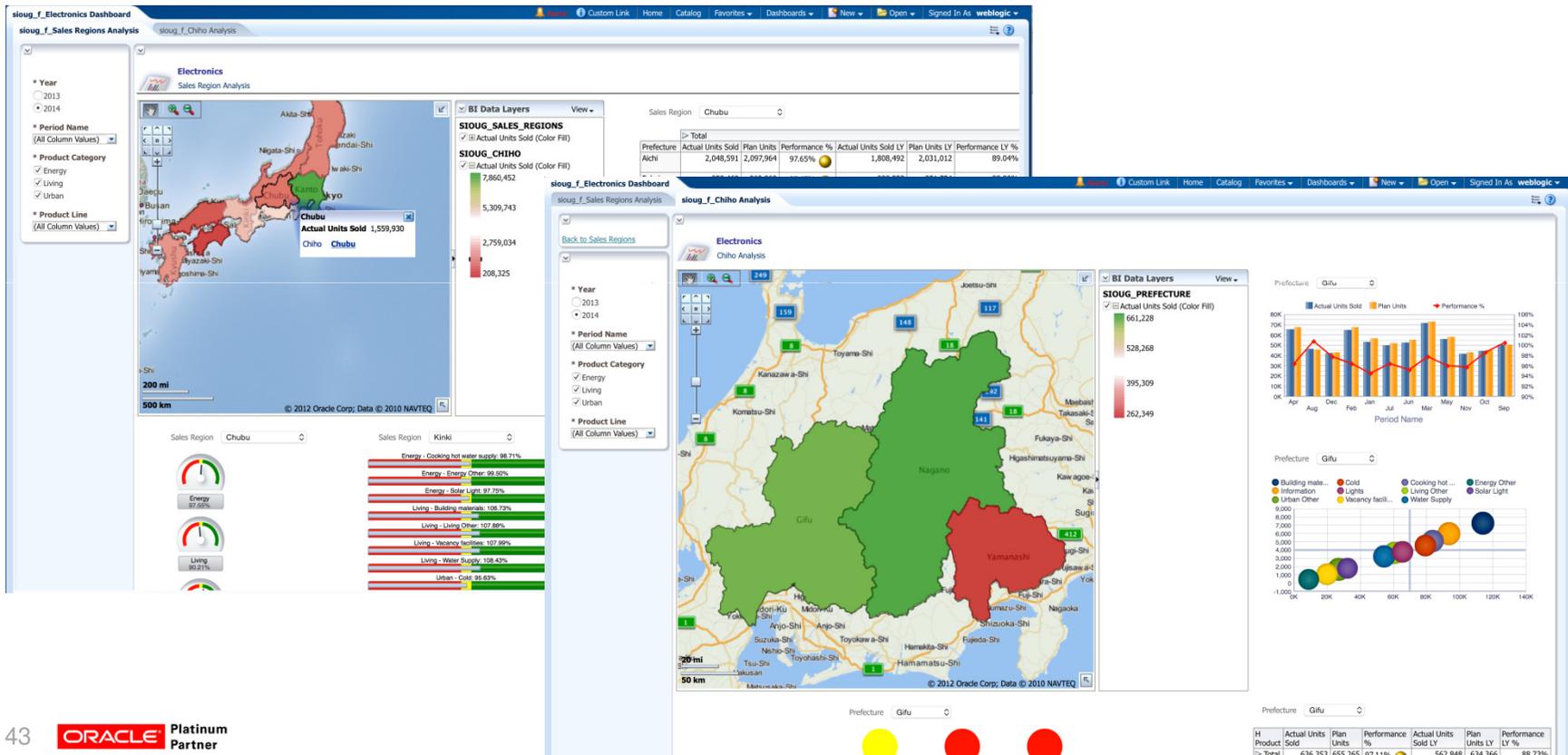
Add it to the existing compound view instead of simple table



Process



We have nice working dashboard with interactive spatial analysis included



The image features a central graphic consisting of several concentric circles. The innermost circle is a dark, almost black blue. This is surrounded by a ring of bright red, followed by a ring of a slightly darker red, and then a final ring of a very dark red. The entire graphic is set against a solid dark red background. Overlaid on this graphic is the text "That's all Folks!" written in a white, elegant cursive font. The text is positioned diagonally across the center of the circles, starting from the left side and ending with an exclamation point on the right side.

That's all Folks!

Qubix after SIOUG 2015/HROUG 2015

What	Where	When
Oracle Planning and Budgeting Cloud Service FREE TRAINING	Zagreb	12. – 13. studeni 2015
More information: http://www2.qubix.com/training/cee/zagreb/pbcs		
Oracle Planning and Budgeting Cloud Service FREE TRAINING	Ljubljana	19. – 20. studeni 2015
More information: http://www2.qubix.com/training/cee/ljubljana/pbcs		

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