Spatial Data to Support Business Processes at Munich Airport

Wolfgang Haller, Markus Strauss
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Oracle Locator und Oracle Spatial

- Punkte
- Linien
- Polygone
- Web Services (OGC)
- Geocoding Routing
- Rasterdaten
- Netzwerke
- Topologien
- 3D

Oracle DATABASE 12c
Spatial and Graph
Points

Lines

Polygons

Web Services

Routing

Raster

Networks [line]

3D [dtm]
Oracle Locator und Oracle Spatial

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- 3D
Planning Approval (47 Ring Binders)
The Wide World of Airport GIS

Fauna – Bats

Bats

Source: wikipedia
The Wide World of Airport GIS

Fauna – Breeding birds

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Fauna – Altitude measurement of birds

Grasshoppers
Source: wikipedia
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Oracle DATABASE 12c
Spatial and Graph
Street-light

Sewage Canal

Parcel

ID, feature-class, co-ordinates, attributes, spatial databases

GIS outside

CAD inside

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Street-light

Sewage Canal

Parcel

ID, feature-class, co-ordinates, attributes, spatial databases

Files, dwg, layers, plots

GIS outside

CAD inside

Y

X
Parcel

Street-light

Sewage Canal

ID, feature-class, co-ordinates, attributes, spatial databases

Take GIS inside the building

Fire Detector

Cable

Room

ID, feature-class, co-ordinates, attributes, spatial databases

GIS outside

GIS inside

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GIS elements

- ID, feature-class, co-ordinates, attributes, spatial databases

- 1,093,665 Point-Objects, 40,464 Room-Polygons inside the building

- Examples: Doors, fire-detectors, telephone-outlets, electrical distributions, fire protection flaps
Business Processes / Benefits
Lease Management

- Where are rooms available?
- What area do they have?
- Appendix for Lease Contract

ID, feature-class, co-ordinates, attributes, spatial databases

GIS inside

Fire Detector
Cable
Room
Business Processes / Benefits
Cleaning Management

- Types of cleaning
- Size of rooms to be cleaned
- Boundaries between contractors

GIS inside

ID, feature-class, co-ordinates, attributes, spatial databases

Fire Detector
Cable
Room

Y
X

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Business Processes / Benefits
Maintenance Management

- Reactive Maintenance
- Where is the fire protection flap 112.21-RLT-00.004?

GIS
inside

ID, feature-class, co-ordinates, attributes, spatial databases

Fire Detector
Cable
Room

Reactive Maintenance

112.21-RLT-00.004?
Oracle Environment

Implementation at the Airport
Technical Documentation
CAD, CAFM, Roombook

Software Development (GIS)
Oracle Specialist

For 3 years

Facility Organizing Systems
a Service Provider for CAD and Software Development

Software Development and Administration (GIS & DB)

For 20 years
Early attempts in 1998

- Points [Symbols] in numeric fields in the database only.

- Building Extents in numeric Fields
- Room Extents in numeric Fields
- Additional technical data in the database.

The graphic for thematic areas and (poly)lines still persists in AutoCAD drawing files.
Dual strategy

- Since 2013 Rooms and Floor Areas are mirrored to Oracle SDO geometries with FME
The last step

- Since 2015 points (symbols) are stored as Oracle SDO objects
- Since 2016 thematic areas are stored directly and only as Oracle SDO objects
- Since 2016 thematic (poly)lines are stored directly and only as Oracle SDO objects

```
MDSYS.SDO_GEOMETRY[2003,262148,NULL,MDSYS.SDO_ELEM_INFO_ARRAY(1,1003,1),MDSYS.SDO_ORDINATE_ARRAY(11743.75,4499.5,11743.75,4499.4,11743.7,4499.4,11743.7,4499.4,11748.6,4496.05,11748.6,4499.4,11748.25,4499.4,11748.25,4499.5,11743.75,4499.5)]
```

Performance Boost through Oracle 12c Environment

- Vector Acceleration
- Table Partitioning
VisMan Overview

Desktop
- VisMan Go Sync
- VisMan Acad
- VisMan Core

Browser
- Map
- BBA
- OIS
- KBM
- SIS
- Interfaces
- VisMan Web [R4] mobile
- VisMan Web [R4]
- VisMan Go App
- VisMan Click App

Mobile

WebLogic – Oracle MapViewer

Filesystem
- DWG
- PDF

VisMan Admintool

Oracle Database 12c
VisMan Web is easy

- Easy navigation with the CAFM Navigator
- Easy searching with auto text completion
- Easy printing
VisMan Web - Gallery
VisMan Web - Gallery
VisMan Web – raster & co
Oracle MapBuilder
VisMan Admintool
Thank you
## Facts

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
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<td>Size of Database</td>
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<td>Database instances on the airport</td>
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