Spatial Data Management Using Oracle 9i

David Lapp,
Farallon Geographics, Inc.
Agenda

- Oracle Spatial overview
- When is it the appropriate technology?
- Demo
- Q&A
Capability Overview

- Native spatial data type
- Seamless indexed spatial data storage
- Robust spatial API
- Cross-platform access with centralized spatial “business rules”
- Traditional Oracle advantages available for spatial data
The Context For Spatial

- Concurrent multi-user transactions
- Direct interoperability across GIS products
- Existing Oracle investment (systems/expertise)
- Scalability (> 500M)
- Database-centric philosophy
  - Data outlives GIS apps
  - Centralized constraints, security…
  - Fully leverage RDBMS (best practice)
Case study: CA DOC

- Business rules
- Automatic synch of location fields
- Automatic management of zone fields
Derive geometry from tabular input

```
SQL> insert into sample_location (official_name,top_easting,top_northing)
    2     values ('DEMOLOC1',1573922.30, 352583.90);
1 row created.
SQL> select geometry from sample_location WHERE OFFICIAL_NAME='DEMOLOC1';
GEOMETRY(SDO_GTYPE, SDO_SRID, SDO_POINT(X, Y, Z), SDO_ELEM_INFO, SDO_ORDINATES)
SDO_GEOMETRY(3001, 40976, NULL, SDO_ELEM_INFO_ARRAY(1, 1, 1), SDO_ORDINATE_ARRAY
(1573922.3, 352583.9, 0))
SQL> COMMIT;
Commit complete.
SQL> _
```
Business rules prevent corruption
Again, derive geometry from tabular input (regardless of application)
Again, business rules enforced (regardless of application)
Update geometry based on tabular coordinate update

SQL> update sample_location
2  set top_northing=top_northing+2000
3  where official_name='DEMOLOC1';
1 row updated.
SQL> commit;
Commit complete.
SQL>
Business rules enforced

```
Command Prompt - sqlplus doc_admin/doc_admin@oradb02

SQL> update sample_location
    2    set top_easting=top_northing+2000
    3    where official_name='DEMOLOC1';
  update sample_location
ERROR at line 1:
ORA-20000: Demo business rule: sample location must be overlay COUNTY coverage
ORA-06512: at "DOC_ADMIN.SAMP_LOC_TRIG", line 129
ORA-04088: error during execution of trigger 'DOC_ADMIN.SAMP_LOC_TRIG'

SQL>
```
Update geometry based on tabular coordinate update (regardless of application)
Business rule preventing inconsistent location updates

```
SQL> update sample_location
2  set top_northing=top_northing+2000,
3  top_latitude=top_latitude+.000001
4  where official_name='DEMOLOC1';
update sample_location
* 
ERROR at line 1:
ORA-20000: Only update 1 of geometry, e/n, lat/lon
ORA-06512: at "DOC_ADMIN.SAMP_LOC_TRIG", line 66
ORA-04088: error during execution of trigger 'DOC_ADMIN.SAMP_LOC_TRIG'
SQL> 
```
…is synchronized in coordinate fields
Case study: San Mateo CO

☑ Automatic feature management
Leverage parcel maintenance…
…for ROWBLOCK maintenance
Leverage centerline maintenance...
...for STNODE maintenance
9i Enhancements

- Spatial capability in every Oracle database
- “Spatial” product for high end functions
- “Locator” for basic functions
- Many performance and stability improvements
- Many new functions (i.e. utility functions, aggregate functions…)

www.fargeo.com
10g Enhancements

- Topology
- GeoRaster
- Network
- Simplified spatial SQL
- Performance improvements
- Many utility subprograms
  (i.e., SDO_UTIL.TO_GMLGEOMETRY)
Thank you for attending.

David Lapp
Farallon Geographics
www.fargeo.com