Business School
UNIVERSITY OF COLORADO DENVER

Information Systems Program

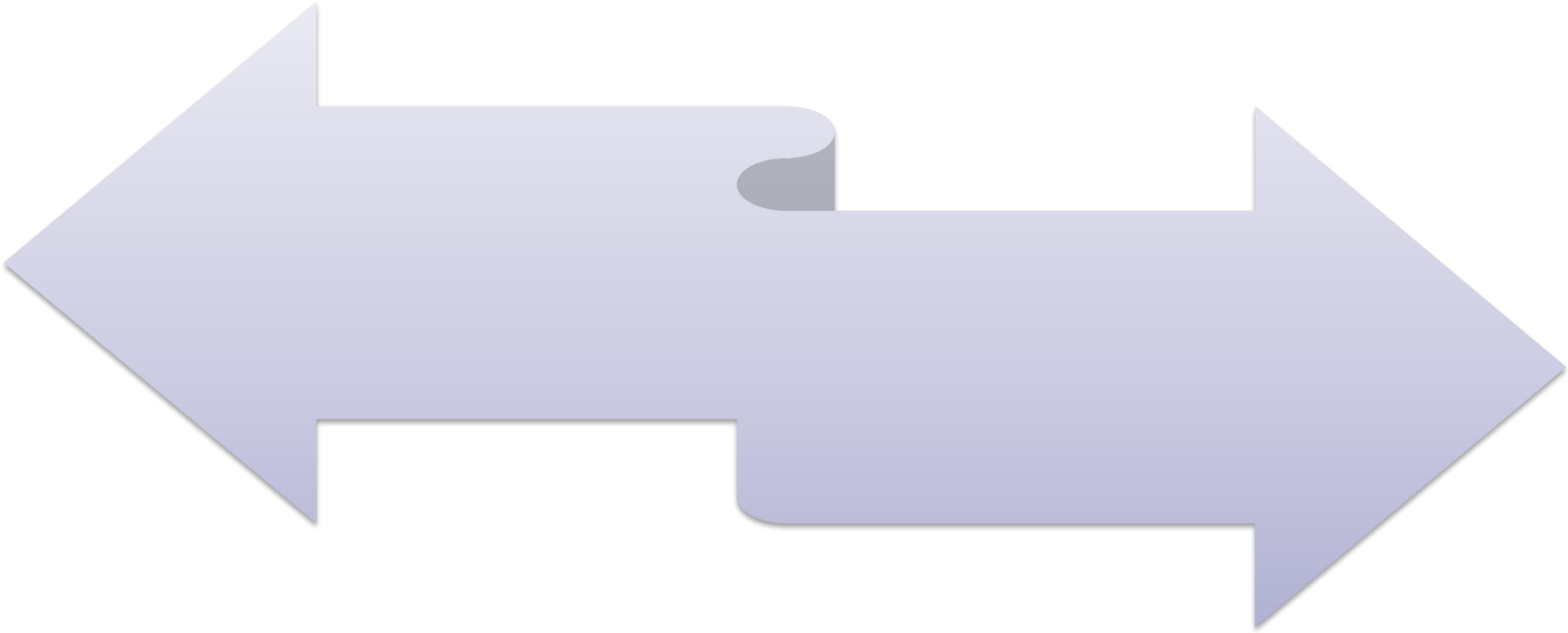
Module 4
Materialized View Processing and Design

Lesson 2: Materialized view definition and processing

Lesson Objectives

- Write statements to create materialized views
- Explain processing requirements for materialized views
- Reflect on the complexity of materialized view processing

Comparison of Traditional and Materialized Views

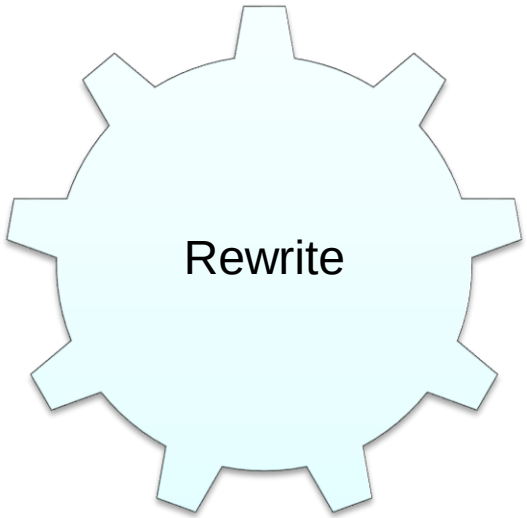


Materialized View Example

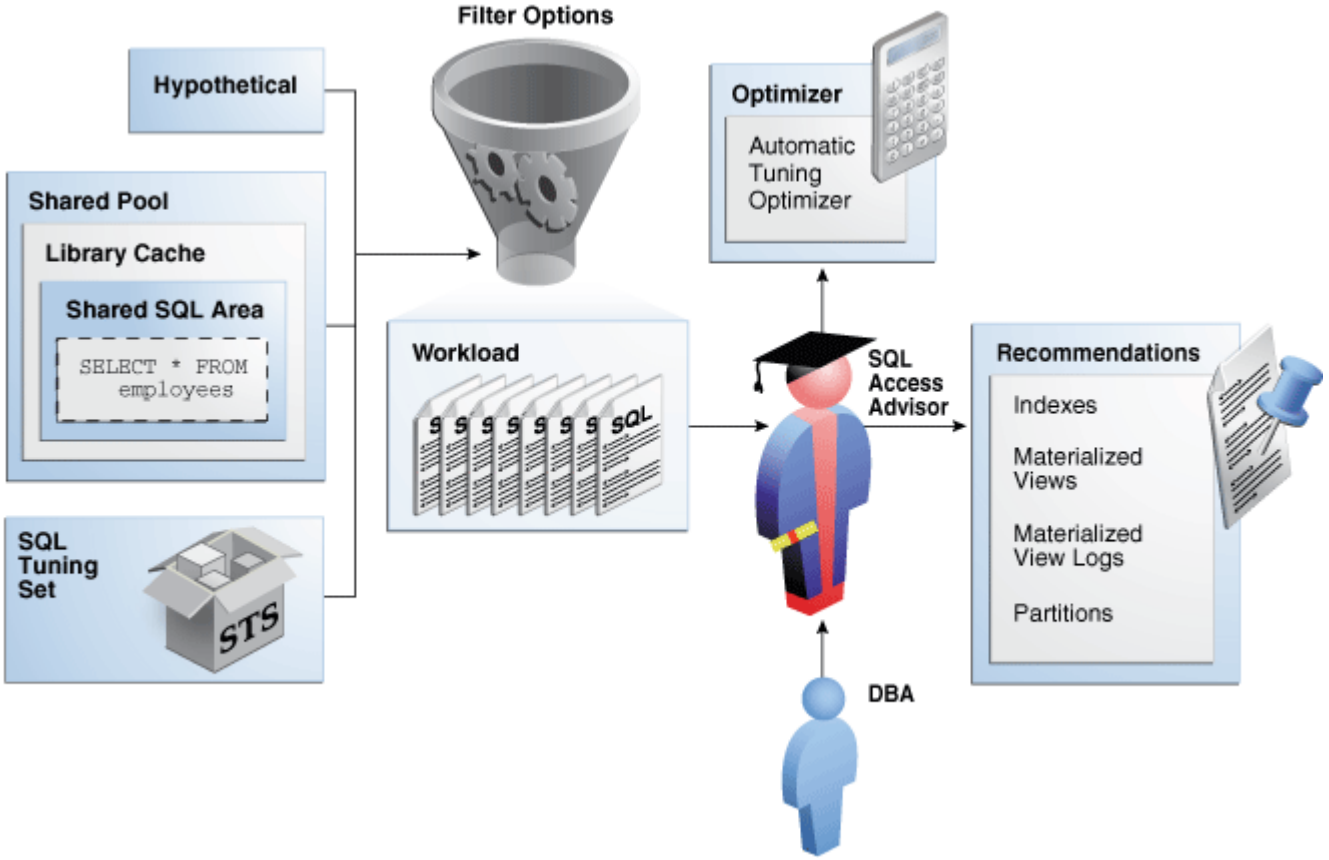
- Sum of dollar sales after 2018 by store state and year
- Mapping with a SELECT statement
- Materialization properties for Oracle not PostgreSQL
- Storage options

```
CREATE MATERIALIZED VIEW MV1
 BUILD IMMEDIATE
 REFRESH COMPLETE ON DEMAND
 ENABLE QUERY REWRITE AS
 SELECT StoreState, TimeYear,
        SUM(SalesDollar) AS SUMDollar1
  FROM SSSales, SSStore, SSTimeDim
  WHERE SSSales.StoreId = SSStore.StoreId
       AND SSSales.TimeNo = SSTimeDim.TimeNo
       AND TimeYear > 2018
  GROUP BY StoreState, TimeYear;
```


Materialized View Processing



Oracle SQL Access Advisor



Usages of the SQL Access Advisor

- Design choices

Workload Specification

- Collected from executed SQL statements using the Automatic Workload Repository
  - SQL statement
  - Number of executions
  - Resource consumption (CPU time, disk reads, and optimizer cost)
  - Rows retrieved
  - Priority
- Filter by resource consumption, priority, users, and columns

Additional Problems

- MV2
  - USA store sales by store state, year, and month
  - Sum of dollar sales
- MV3
  - Canadian store sales before 2019 by store city, year, and month
  - Sum of dollar sales
- Other options
  - Build immediate
  - Refresh complete
  - Enable query rewrite

Summary

- Stored, derived data for improved query performance
- Complex processing
- Major DBMS innovations