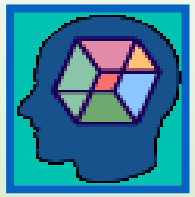
Tuning SQL

Objectives

- After completing this lesson, you should be able to:
  - Describe the SQL tuning methodology
  - Manage optimizer statistics
  - Use SQL Tuning Advisor to identify and tune SQL statements that are using the most resources
  - Use SQL Access Advisor to tune a workload

SQL Tuning Process



ADDM

SQL Tuning Advisor

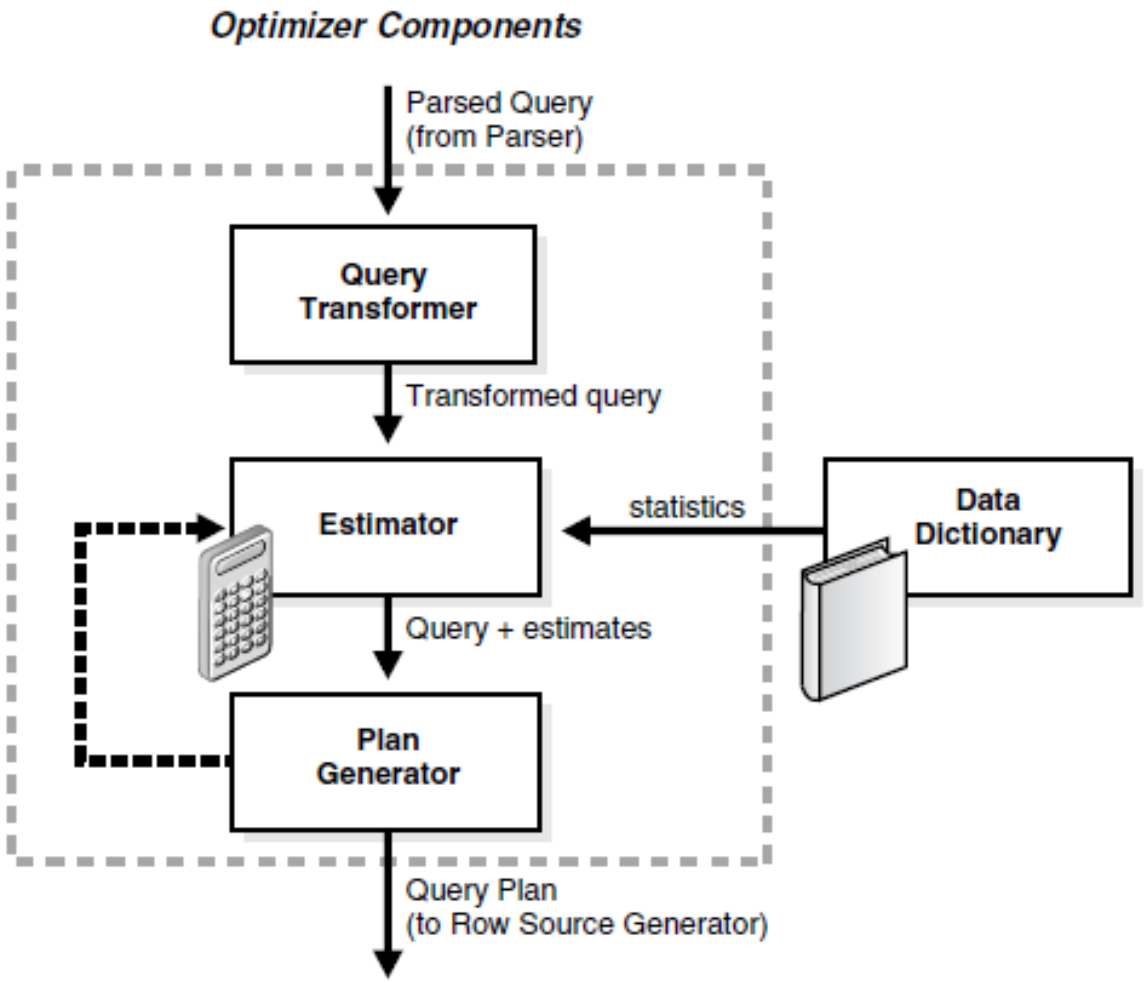
SQL Access Advisor

1. **Identify poorly tuned SQL statements.**

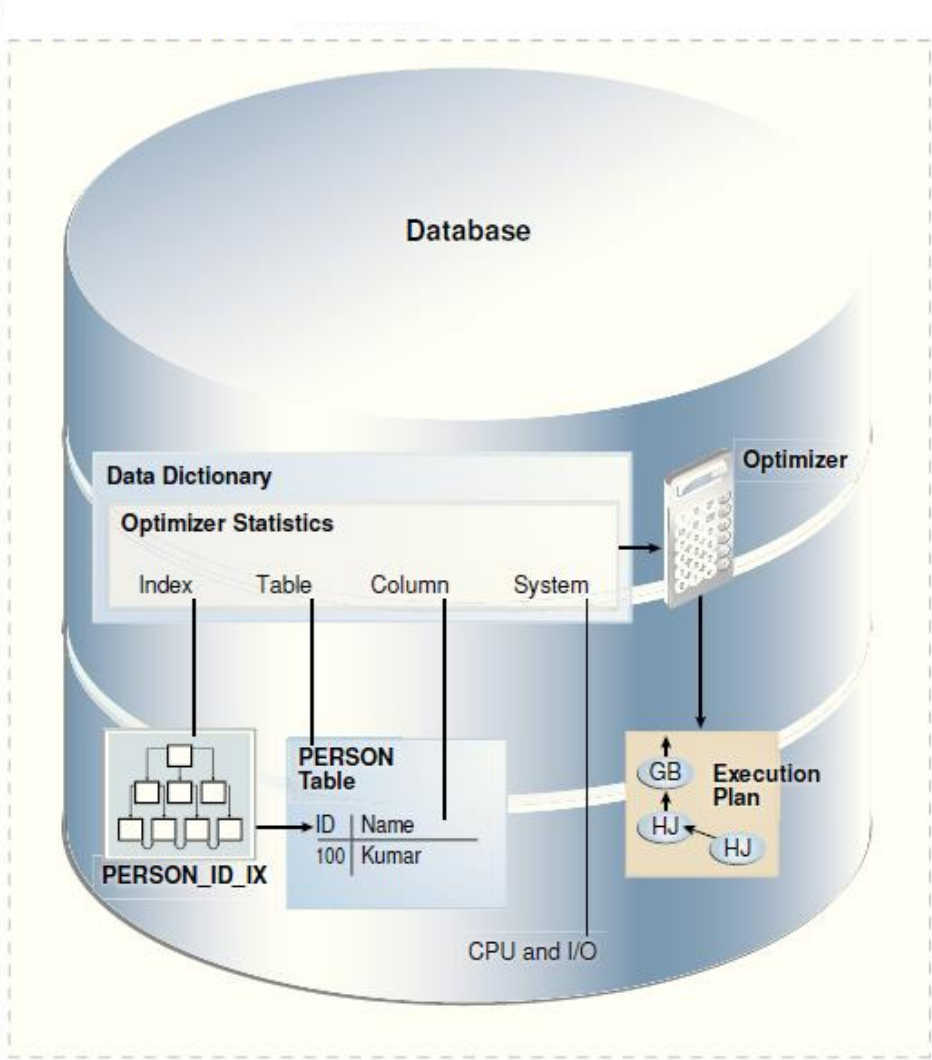
2. **Tune the individual SQL statements.**

3. **Tune the application as a whole.**

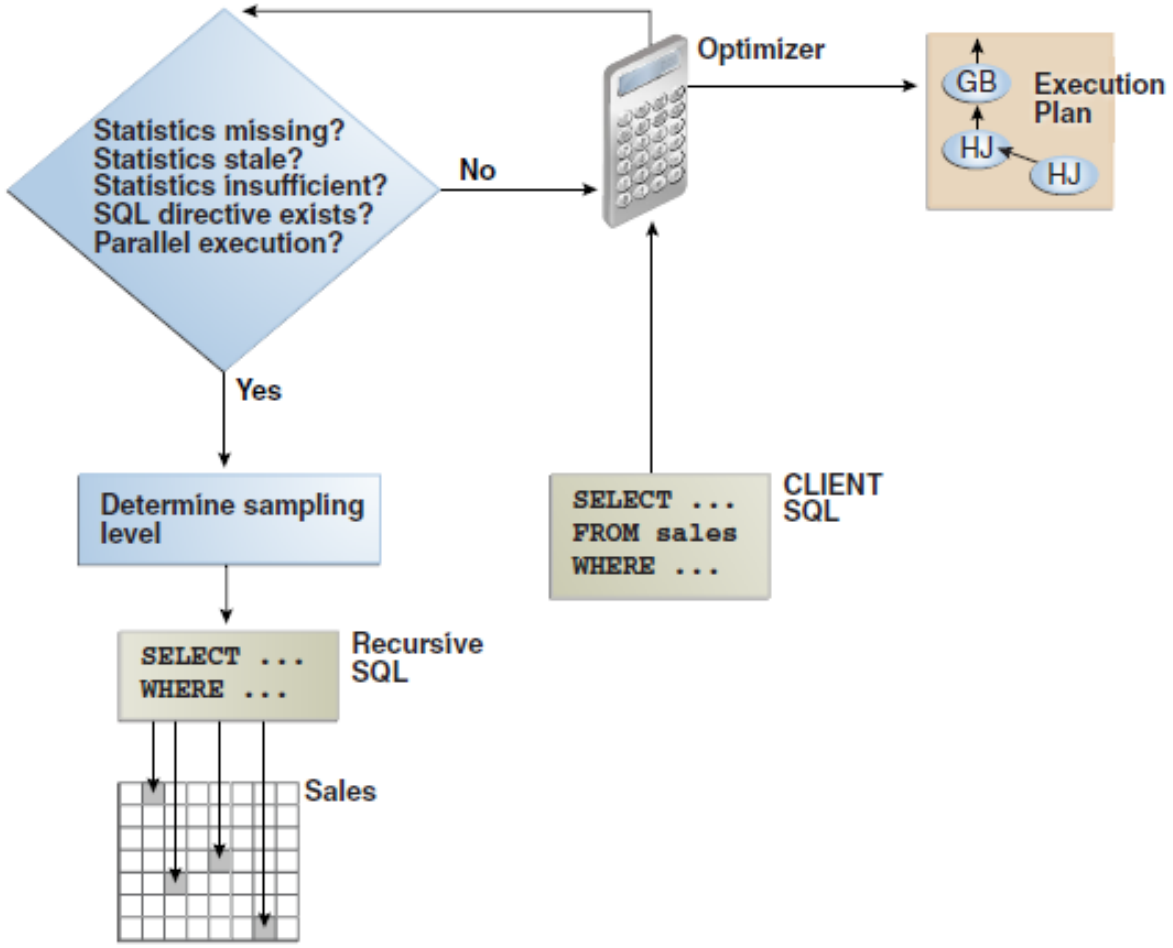
Oracle Optimizer



Optimizer Statistics



Optimizer Statistics Collection



Setting Optimizer Statistics Preferences

`DBMS_STATS.GATHER_*_STATS` procedures: Gather statistics for an entire database or for individual objects using default values

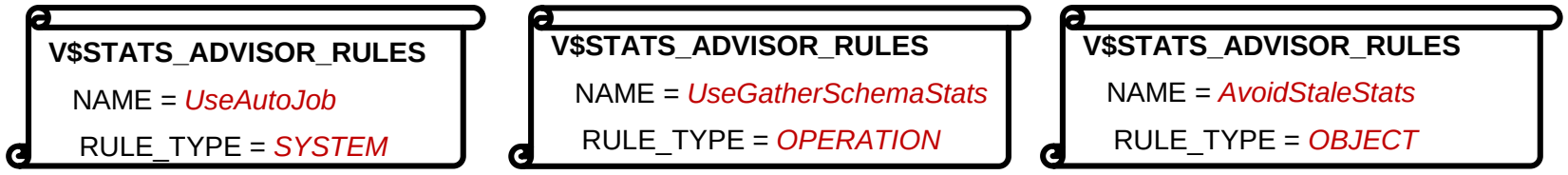
Use the `SET_*_PREFS` procedures to create preference values for any object that is not owned by `SYS` or `SYSTEM`

Query `DBA_TAB_STAT_PREFS` to view object-level preferences

Execute the `DBMS_STATS.GET_PREFS` procedure for each preference to see the global preferences

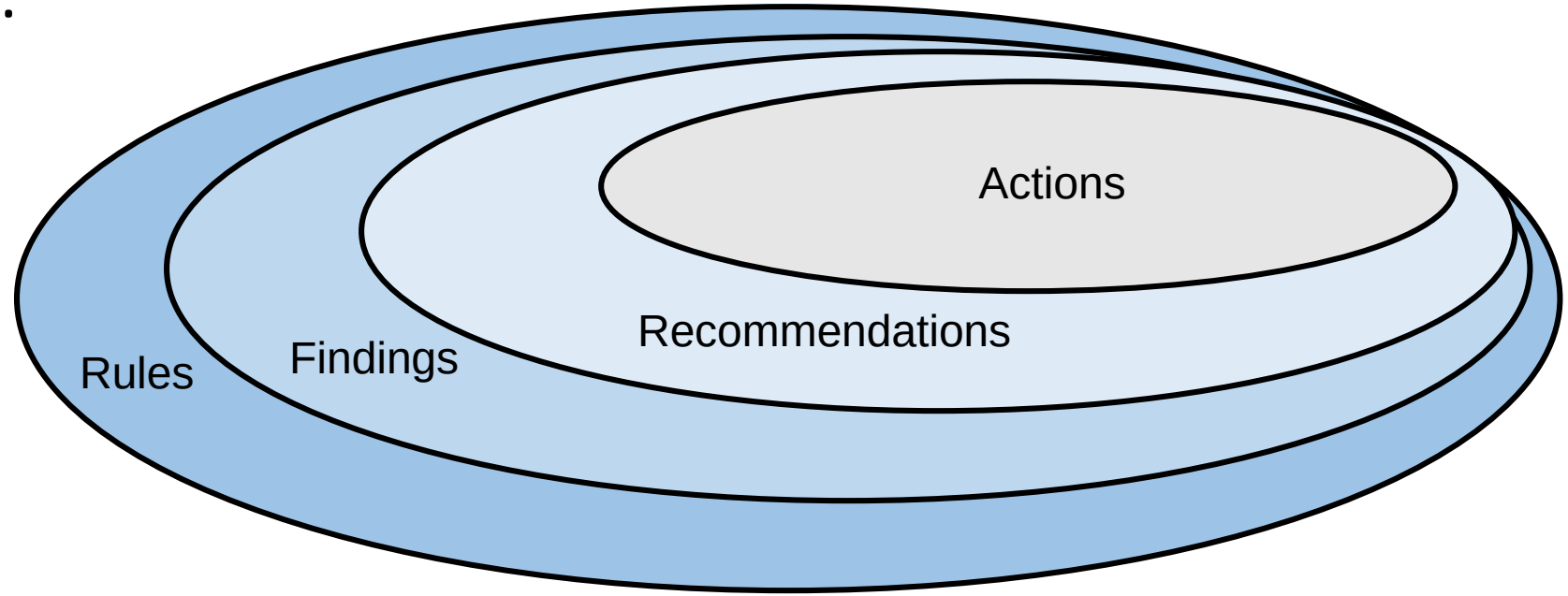
Optimizer Statistics Advisor

- If best practices change in a new release, Optimizer Statistics Advisor encodes these practices in its rules.
- The advisor always provides the most up-to-date recommendations.
- Track and analyze how statistics are collected.
  - Class of findings: System, Operations, Objects
- Scope of findings
  - Problems with gathering of statistics
  - Status of automatic statistic gathering jobs
  - Quality of current statistics
- Suggestion for changes to the statistics collection

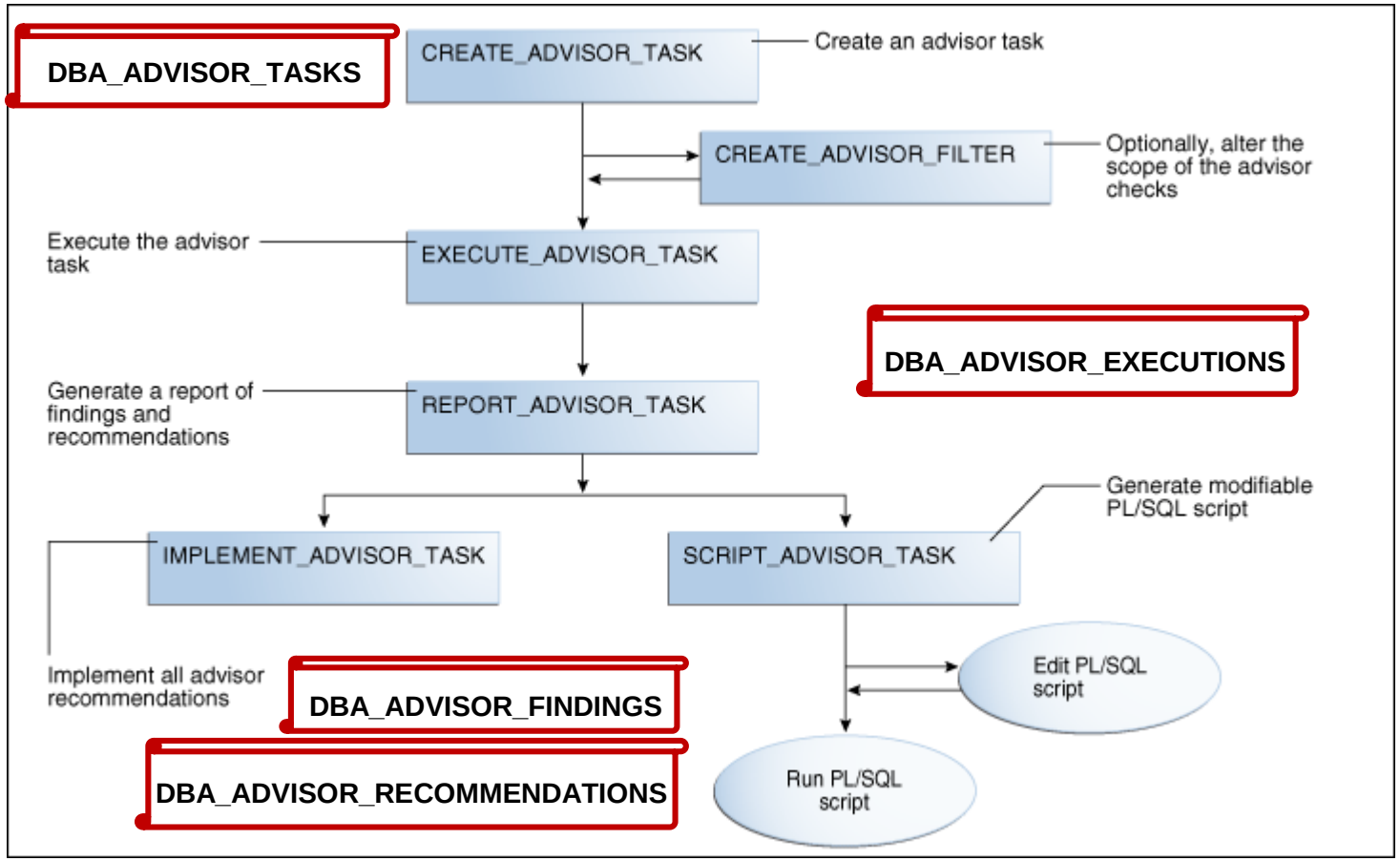


Optimizer Statistics Advisor Report

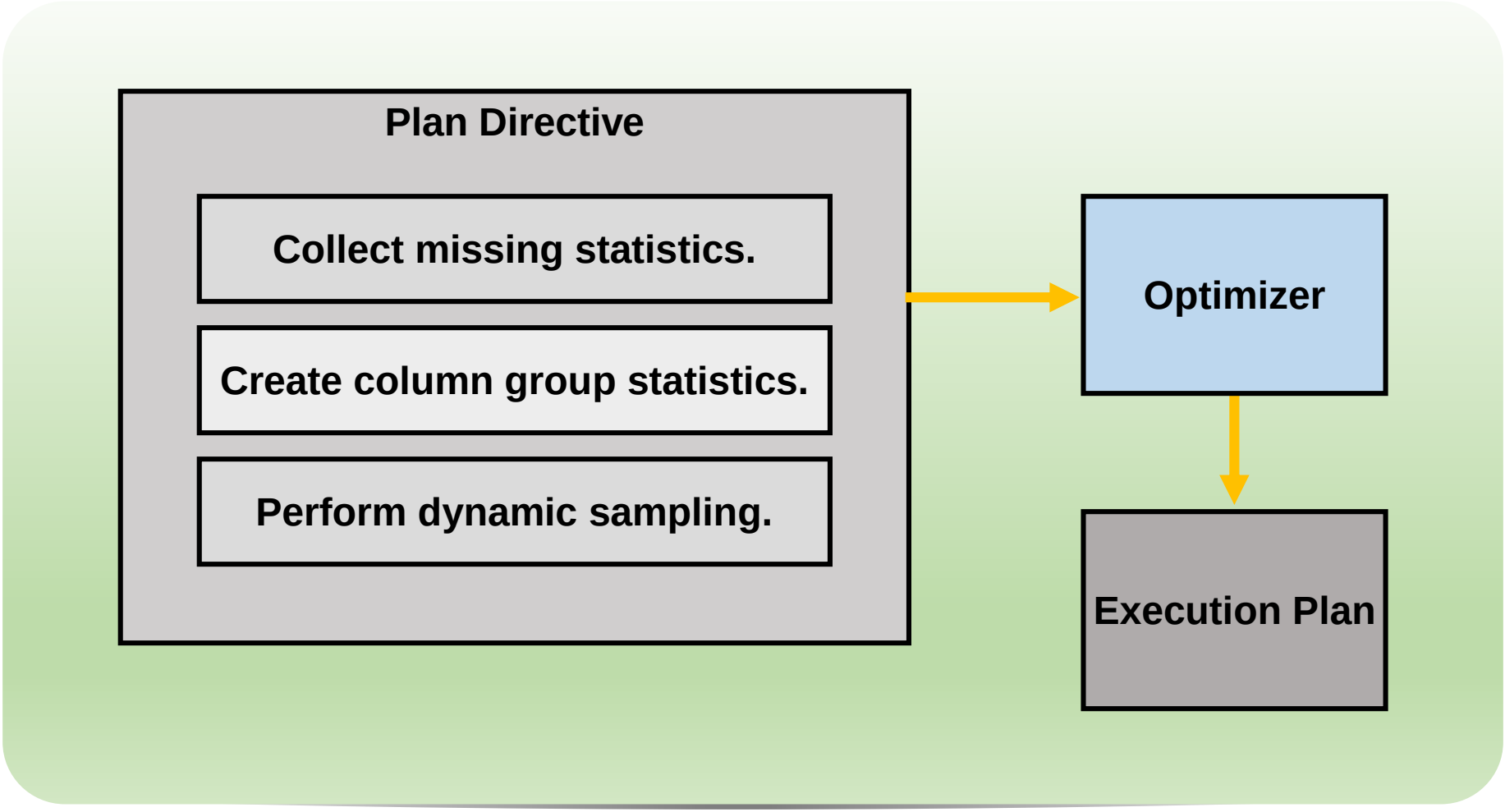
- Report sections:
  - Header
  - Summary
  - Errors
  - Findings



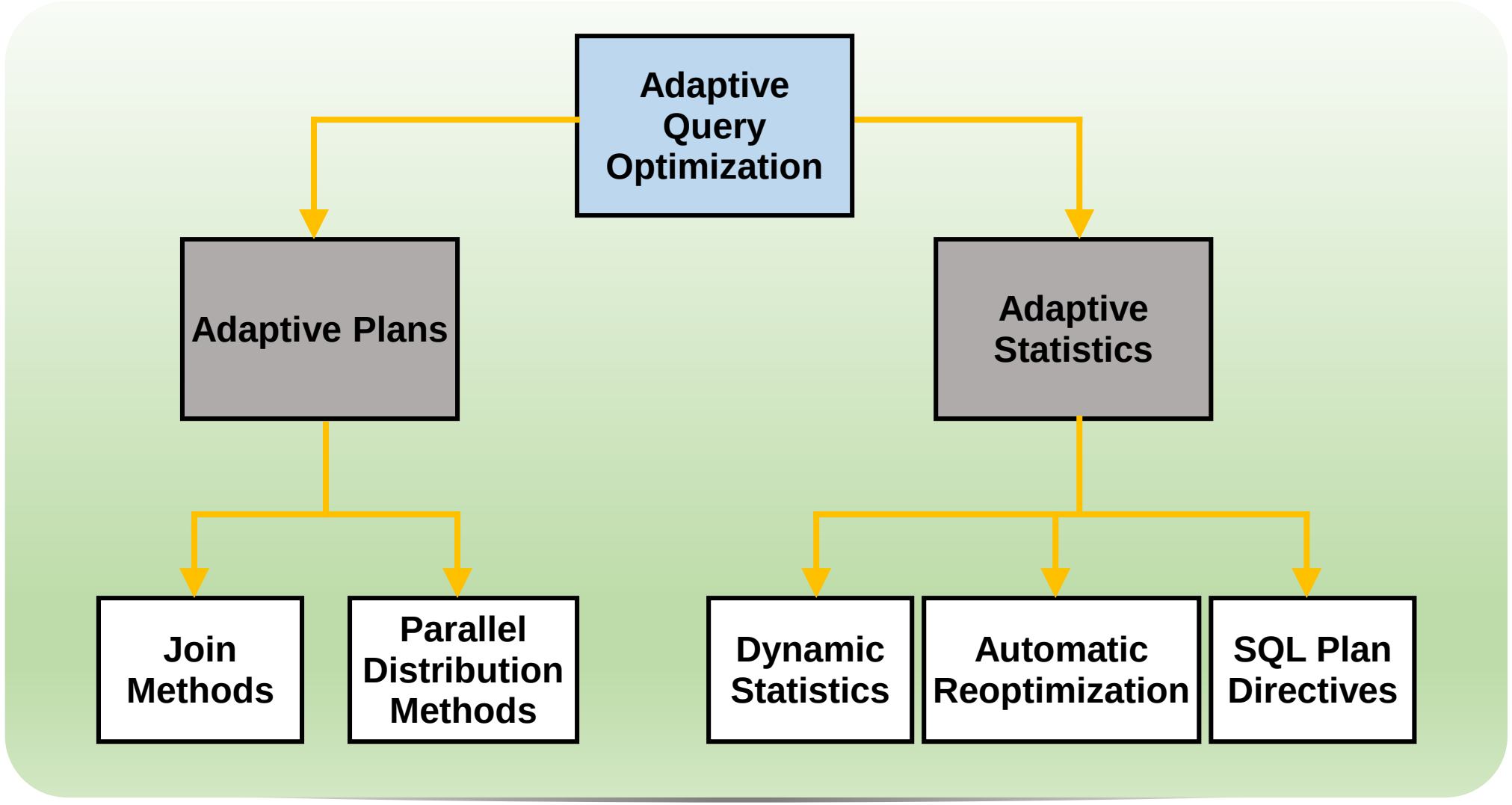
Executing Optimizer Statistics Advisor Tasks



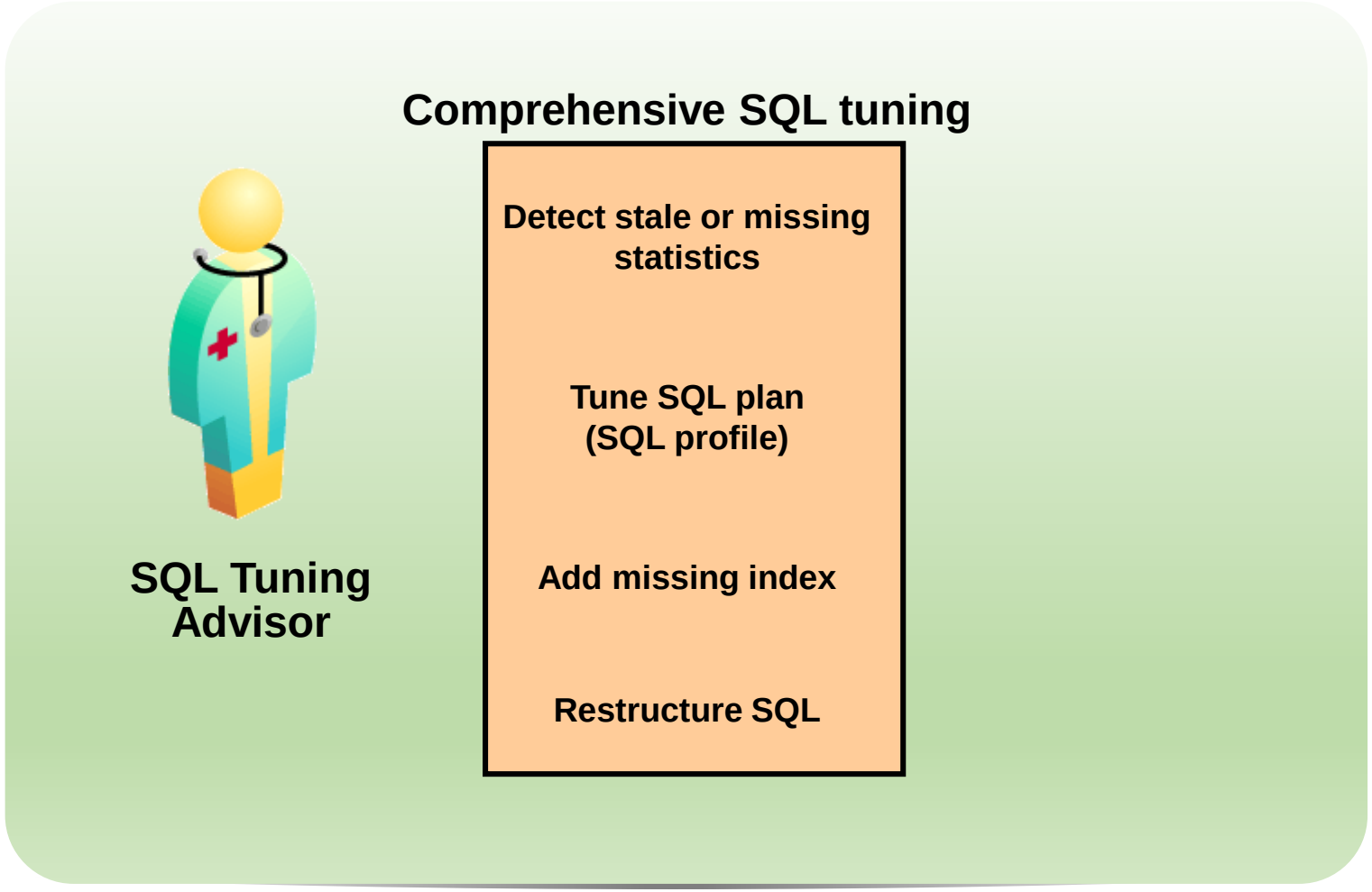
SQL Plan Directives



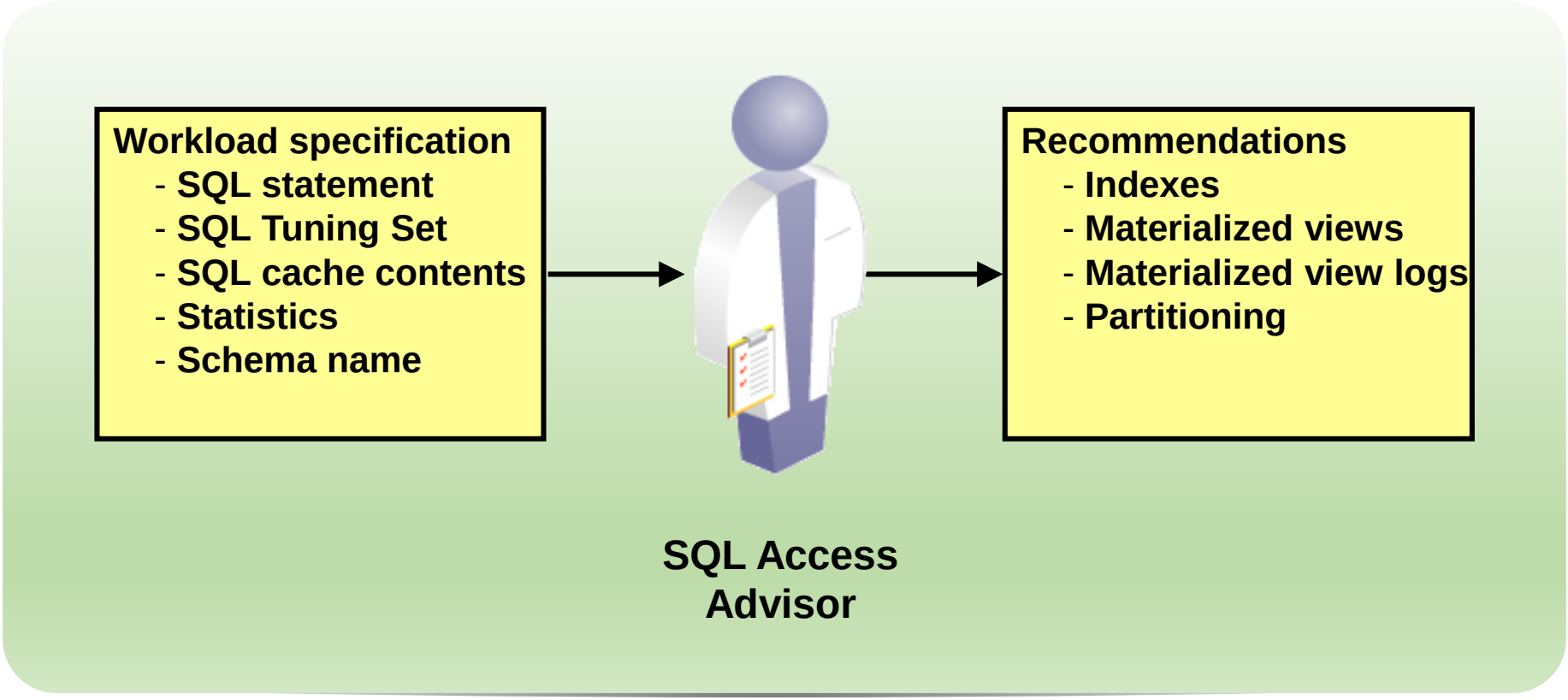
Adaptive Execution Plans



SQL Tuning Advisor: Overview



SQL Access Advisor: Overview



SQL Performance Analyzer: Overview

Predicts the impact of system changes

SQL Performance Analyzer

- **Builds different versions of SQL workload performance**
- **Executes SQL serially**
- **Analyzes performance differences**
- **Offers fine-grained performance analysis on individual SQL**

Summary

- In this lesson, you should have learned how to:
  - Describe the SQL tuning methodology
  - Manage optimizer statistics
  - Use SQL Tuning Advisor to identify and tune SQL statements that are using the most resources
  - Use SQL Access Advisor to tune a workload

Practice 21: Overview

- 21-1: Using SQL Tuning Advisor
- 21-2: Using Optimizer Statistics Advisor