

"Due to the lack of widely-accepted guidelines for database development best practices, it is exceedingly difficult for many IT organizations to construct highly optimized and maintainable software. Let's be clear: It is not enough to create applications that seem 'good enough for now.' Instead, we need to figure out how to build applications that will work well today, but also be maintainable ten years from now."

— Steven Feuerstein
Oracle PL/SQL Expert and Author

Develop

- Outline project plan and share project assets across the team
- Access version control transparently to maintain code integrity
- Define functional test cases for code units
- Apply user-defined formatting
- Perform unit testing
- Debug code

Optimize

- Perform automated PL/SQL review against industry best practices
- Execute SQL review and performance audit through automated SQL scanning
- Standardize SQL performance across development with automated SQL rewrite and optimization

Validate

- Simulate user and transaction load levels to validate SQL and PL/SQL scalability
- Perform workload replay to validate code for production requirements before going live
- Generate PL/SQL scorecard management report with code review results from multiple programs
- Integrate SQL performance audit into code scorecard management report

Toad[®] DEVELOPMENT SUITE for Oracle

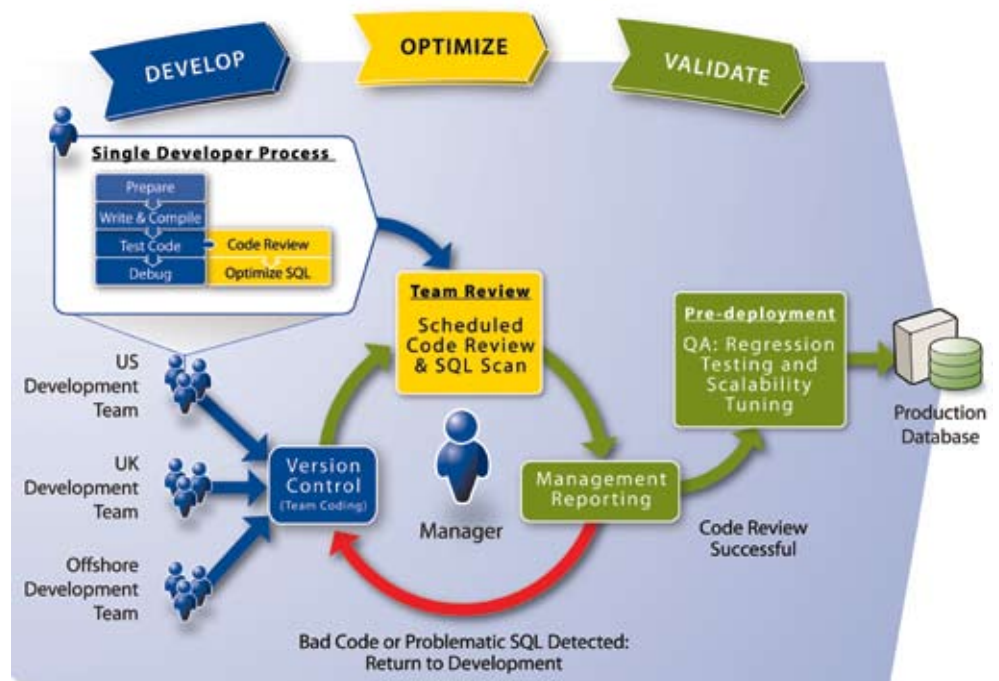
Enabling Database Development Best Practices

Executive Summary

Oracle database professionals rarely have total control over their development environments because it is constantly changing. These changes typically result from new development projects or modifications to existing code, and when they are deployed to production, they do not always produce the intended result. Depending on the severity of the problems, the consequences can range from additional development cycles that hamper productivity to downtime that negatively impacts the bottom line.

Quest Software understands the challenges that enterprise development teams face. Often, project teams are dispersed across many locations – some throughout the world – and comprise technologists whose skills and experience can vary a great deal. As development projects evolve, they become nearly impossible to manage effectively. This often leads to code inconsistencies, performance problems and bugs in production. These issues are significantly more expensive to fix in this stage, than they would be in development.

For organizations to better manage development projects and the teams that develop code, Quest Software offers a set of guiding principles based on a best practices methodology. Quest's Oracle domain expert, Steven Feuerstein, and Toad[®] for Oracle's loyal customer base were instrumental in developing the methodology. It provides a consistent, repeatable and measurable process that even novices can use to manage the database development process, ensuring that the best possible code is deployed to production.



The development best practices process for project teams.

Step 1: Develop

The approach begins with developers on a project team, each accessing code from a central version control system (VCS). Through best practices, each developer can build code faster and cleaner, with fewer bugs, by employing the following steps:

- **Prepare** – Define the test and other criteria by which code will fully meet functional requirements
- **Write and Compile** – Build the code units according to pre-defined project coding standards
- **Test Code** – Use unit testing to identify gaps between code and functional requirements
- **Debug** – Use an advanced source code debugger to quickly identify and fix problematic code
- **Optimize SQL Statements** – Scan code for problematic SQL statements that may cause serious bottlenecks in performance and with one click, find the most efficient SQL alternative

Step 2: Optimize

Delivering efficient and easy-to-maintain code partly depends on optimization of the SQL statements themselves. According to industry analysts¹, at least 60 percent of database performance issues are SQL-related.

The optimization process combines a quality review of all source code in the VCS repository and a code scan to identify potential SQL performance issues. Once identified, problematic SQL statements are then rewritten in every possible way with the best one being returned to the source code.

Development managers and team leaders can schedule this entire process and produce a report, presented as a Code Review dashboard, which allows them to visualize code metrics and potential SQL performance problems for multiple programs. This Web-based report allows key stakeholders to identify all project code that either performs well and is ready for validation, or needs to be returned to development and fixed.

Step 3: Validate

Before deploying applications into production, it is essential for quality assurance teams to perform testing that validates code for functionality using automated regression testing, and for performance under production-like conditions using scalability testing, which includes applying multiple concurrent user load levels.

Quest's Toad Development Suite for Oracle provides an easy and automated way to streamline development, establish standards, and produce higher-quality code for production that results in better performing applications – regardless of developer skill set. Toad Development Suite's development and code review capabilities are provided by the Toad for Oracle Xpert Edition, SQL optimization is provided by the Toad for Oracle Xpert Edition's SQL Optimizer, unit testing is powered by Quest Code Tester for Oracle (a product designed by Oracle expert Steven Feuerstein), and database scalability validation is made available through Benchmark Factory® for Databases. Development organizations that implement Quest's Database Development Best Practices through the Toad® Development Suite for Oracle will reduce the impact of inefficient code on productivity, future development cycles and the bottom line.

About Quest Software, Inc.

Quest Software, Inc. delivers innovative products that help organizations get more performance and productivity from their applications, databases and Windows infrastructure. Through a deep expertise in IT operations and a continued focus on what works best, Quest helps more than 50,000 customers worldwide meet higher expectations for enterprise IT. Quest Software can be found in offices around the globe and at www.quest.com.



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¹ Refer to: http://www.nist.gov/public_affairs/releases/n02-10.htm