Ispirer
ECOSYSTEM

Migration of Business Logic from Oracle to Java

Challenges, Approaches, and Tools

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Business logic in PL/SQL: what's wrong?

Why legacy business logic in Oracle is riskier than you think

Traditionally companies utilizing Oracle store business logic in databases. But this method comes with a number of drawbacks that increase costs, reduce agility, and hinder modernization.

High operational costs
Running Oracle systems isn't cheap. Between steep licensing fees, expensive support contracts, and specialized infrastructure, the costs add up quickly. Vendor lock-in makes it hard to switch to more affordable alternatives without major disruption, and routine maintenance – patches, upgrades, and tuning – demands constant attention, driving expenses even higher.

Inflexible by design
PL/SQL embeds business logic directly into the database, creating a rigid system that's tough to modify. Even small changes can trigger lengthy testing cycles and downtime, stifling agility. Unlike Java applications, PL/SQL forces workarounds instead of clean solutions, leaving businesses stuck with compromises rather than innovation.

Scalability challenges
PL/SQL's monolithic approach bundles business logic, data processing, and transactions into the database – which becomes a bottleneck as demand grows. Performance suffers, infrastructure costs rise, and scaling efficiently becomes a struggle.

Shrinking talent pool
Finding skilled PL/SQL developers is getting harder as the industry shifts toward Java, Python, and JavaScript. The scarcity drives up hiring costs and risks, while legacy systems grow harder to maintain. Java's vast talent pool, on the other hand, simplifies recruitment and reduces training overhead.

Painful migrations
When PL/SQL systems hit their limits, companies face a brutal choice: costly full-scale rewrites or stagnation. Java offers a smoother path, enabling incremental modernization – business logic can be updated piece by piece, avoiding the "big bang" approach that drains time and budgets.

Legacy constraints
Legacy Oracle systems often run on outdated tech, making it tough to adopt modern tools like cloud APIs, AI, or real-time analytics. Java's ecosystem integrates these seamlessly, freeing businesses from old constraints and unlocking faster innovation.

Read more: Why move business logic from PL/SQL to Java

7 major benefits of the migration

The real reasons your business should make the shift – even if PL/SQL still works

So, the benefits of moving business logic to an app layer are numerous, check them out:

Preserved business processes

The migration preserves existing workflows and business logic, ensuring continuity and identical operations on the modernized platform.

Full functional retention

All features are recreated accurately, while Java-based data layers optimize database interactions without altering behavior.

Development efficiency gains

While keeping the existing architecture, the migration simplifies debugging and accelerates future changes.

Cost reduction

Organizations immediately cut licensing costs and reduce Oracle dependency. The transition also decreases long-term vendor lock-in risks.

Performance advantages

Java enables significant performance optimization and scalable architecture to handle growing business demands.

Future-proof foundation

The modernized system easily supports cloud deployment and integrates with emerging technologies

Risk-managed transition

Our human-augmented approach ensures uninterrupted business continuity, with zero functionality gaps or disruptions throughout the migration process.

“Migrating business logic from Oracle to Java transforms legacy operations into agile assets. We reduce database licensing costs by 60-80%, accelerate feature delivery by 40% with modern DevOps practices, and future-proof the business for AI/cloud integration - all while keeping risk near-zero through incremental re-platforming.”

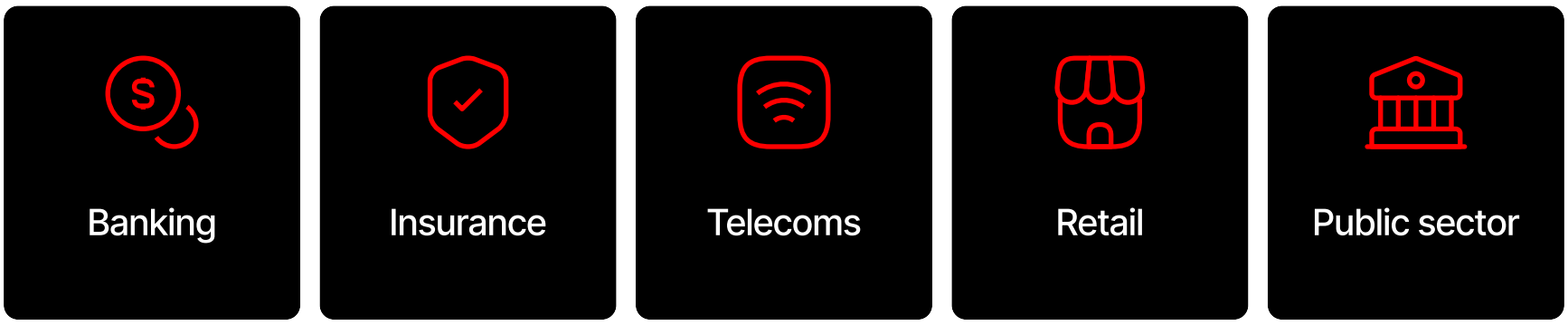
Senior Java developer, Ispirer Systems

Evgeniya Chernyak

Who needs this most? Industries where Java migration pays off

Discover the sectors reaping the biggest rewards

It goes without saying that not every business needs migration of business logic. Here is a full list of industries that can get the most out of such a transition:



- **Banks:** Major banks pioneered Oracle adoption in the 1990s-2000s, relying on PL/SQL and Oracle Forms for secure systems. But these monolithic solutions have grown cumbersome. Now, institutions are shifting to microservices – extracting business logic from databases and rebuilding it in Java. This modernization enables event streaming with Kafka, Kubernetes deployment, and flexible scaling – essential capabilities for digital banking agility.

- **Insurance:** When premium calculations live in databases, even small changes require PL/SQL expertise. Moving this logic to applications with SQLWays lets insurers adapt faster – business users can adjust rules without coding, speeding response to market changes.

- **Public sector:** Many government systems still run on Oracle but are transitioning to PostgreSQL. Moving logic to Java (Spring Boot/Angular) cuts vendor lock-in, lowers costs, and eases maintenance with modern frameworks.

- **Telecommunications:** Telecoms process massive real-time data – billing, monitoring, customer activity – but PL/SQL struggles to scale and integrate with modern CI/CD. Many are shifting to Java for better performance, seamless integrations, and stronger real-time capabilities.

- **Retail & ecommerce:** In e-commerce, agility is critical. When business logic is trapped in database triggers and procedures, even simple changes – like launching promotions or adjusting pricing – become slow and cumbersome. By moving to Java services, retailers gain speed and flexibility: updates happen faster, A/B testing becomes effortless, and AI integrations require no low-level coding.

Read more: Use cases for moving business logic from database to an application

Manual vs. Automated: a full comparison of both approaches

Manual migration offers control but is slow, labor-intensive, and error-prone. **Is automation with expert support more efficient?** Here's the comparison:

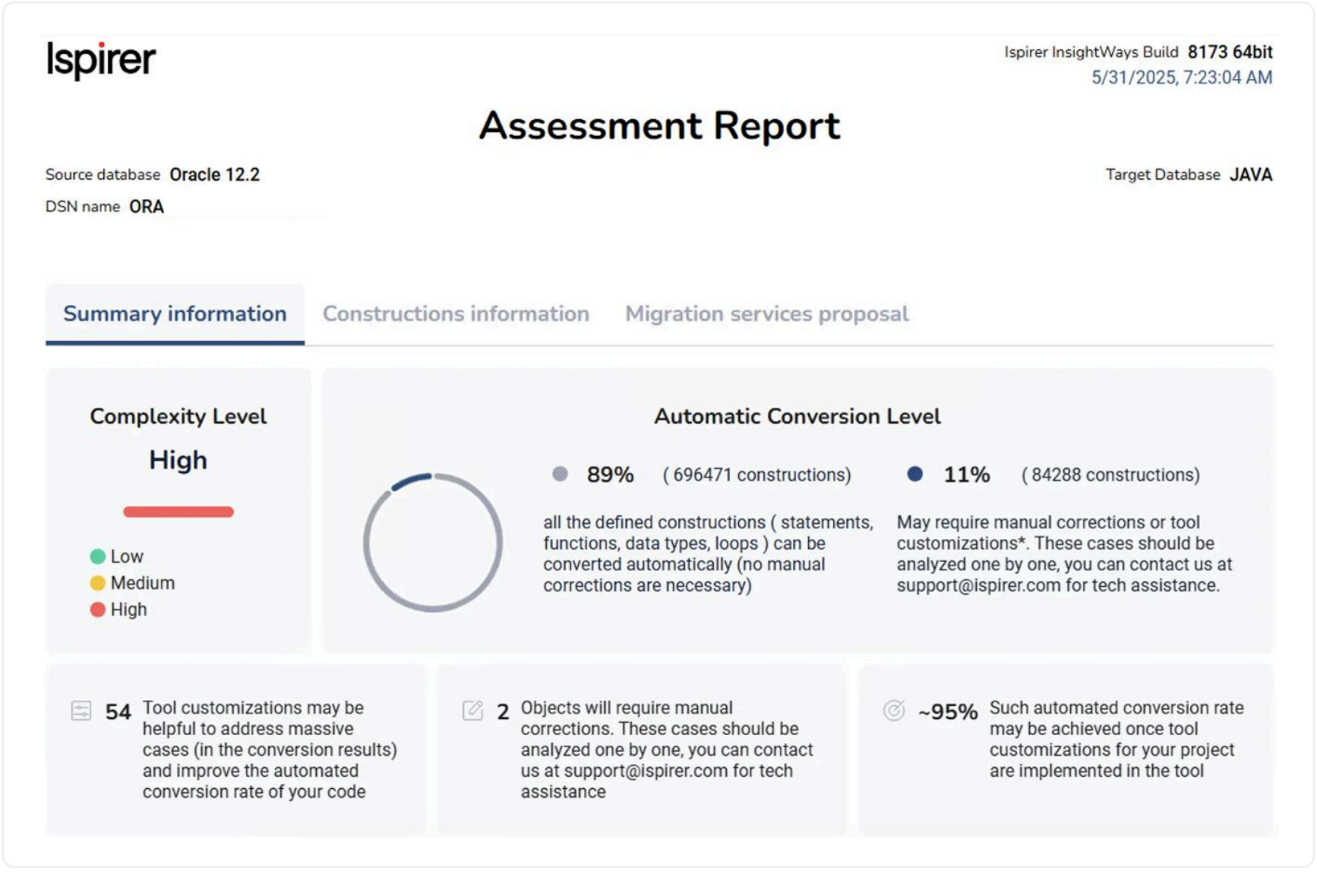
Aspect	Fully manual approach	Fully-managed database & application conversion
Approach	Full redevelopment from scratch	Hybrid automated & manual migration
Business logic preservation	✗ High risk of logic loss, requires deep analysis & reimplementation as 1st phase of the project	✓ Fully preserved, no changes to core business logic, short or no business analyse phase
Time required	✗ 2x times longer	✓ Up to 2-3x time savings
Cost	✗ 3x higher	✓ Up to 2x cost savings
Success rate	✗ 50-70% (depends on dev team, business knowledge retention, long project duration)	✓ 90-99% (proven automated patterns, expert fine-tuning, shorter project duration, simplified management)
Code consistency	✗ 0% code reuse (everything is rewritten)	✓ 60-80% automated conversion, 100% after manual refining
Risk level	✗ High (new bugs, untested logic, full scope of development cycle, dependencies on business analysis completenesses)	✓ Low (business logic preserved)
Architecture	✗ New	✓ Same, but frees up time for refactoring
Code structure, performance	✗ Higher (depends on the team)	✓ Lower (depends on the source code quality)
Business disruption	✗ High (long transition, requires training)	✓ Minimal (fast switch, familiar structure)
Documentation requirement	✗ Mandatory – business analysts need to document all business logic and system workflows before rewriting	✓ Not needed – we extract rules directly from legacy code using automation
Customization	✗ Fully customizable, but expensive & time-consuming	✓ Automated with manual refinements where needed
ROI	✗ Long-term payback (3-5 years before full returns)	✓ Fast ROI (cost savings & efficiency gains within 1-2 years)

InsightWays and SQLWays: optimal migration partners

Know your scope, reduce risk, migrate better

Every migration starts with assessment. At first you can assess the migration scope for free using InsightWays. The tool enables a detailed overview of the database objects required for conversion, providing summary i**nformation about the database**, **conversion complexity level**, and **automatic conversion level**.

InsightWays also collects info about the statements, system packages, procedures, analyzes their complexity and estimates the efficiency of automated conversion.



SQLWays is a proprietary Ispirer tool that automates the entire database migration process. Based on an intelligent core that reserves thousands of conversion rules, the tool can migrate databases with **up to 95% automation**.

The tool enables migration of the **database schema**, including **tables**, **stored procedures**, **functions**, **triggers**, and **views**. It offers a vast array of conversion options, making migration as smooth as possible. Apart from migration between different relational database management systems, SQLWays enables the migration of business logic from a database to an app layer.

Success story: Logistics giant modernizes 700K LoC in 9 months with automation

“When we migrate business logic from Oracle to Java, we unlock speed, scalability, and long-term flexibility. This move lets our customers deliver features faster, simplify maintenance, and ensures their technology stays ahead of tomorrow’s demands.”

Content Writer, Ispirer Systems

Alina Svidunovich

Up to 2x
cost savings

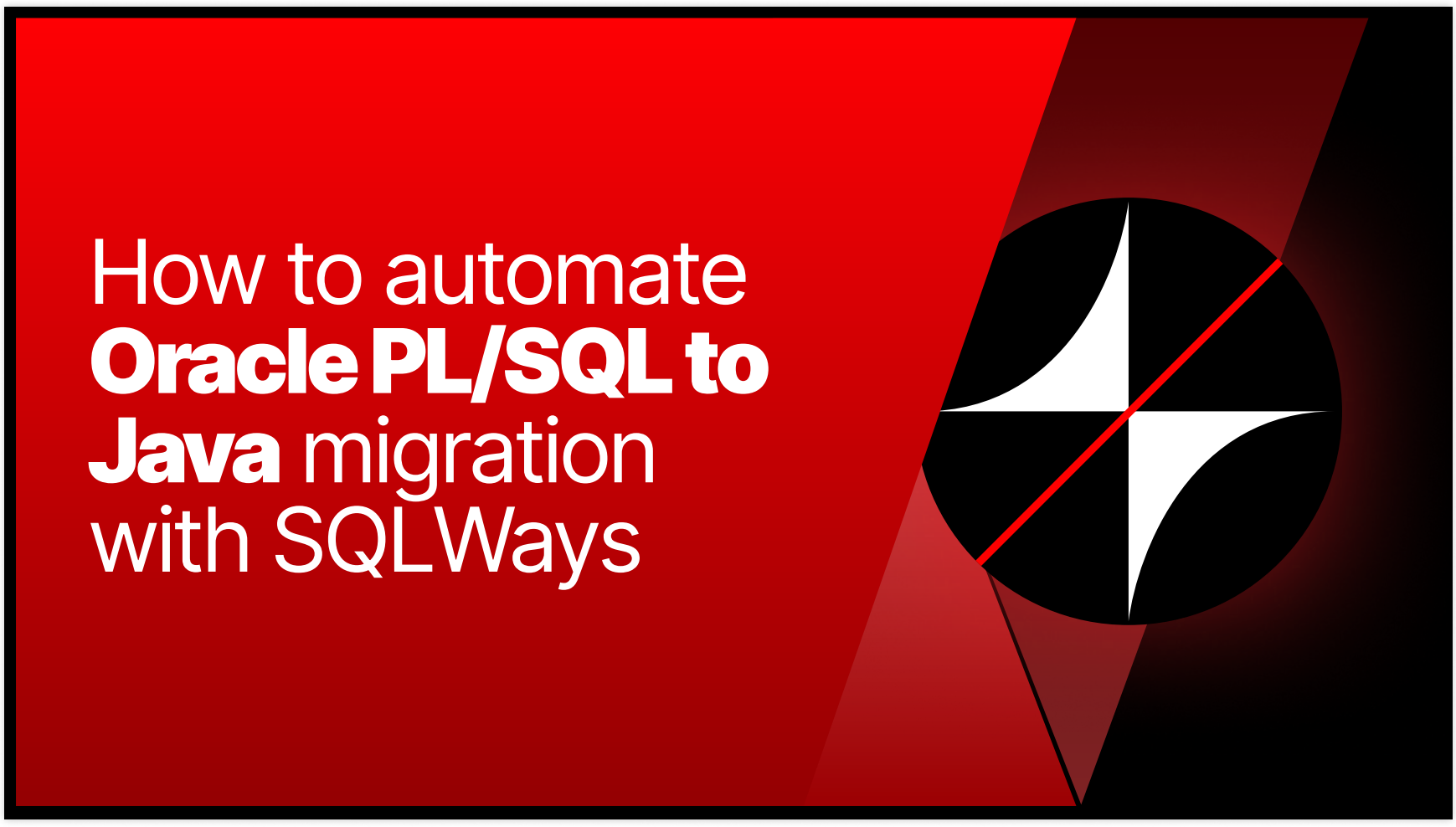
90-99% success rate
due to proven automated patterns, expert fine-tuning, shorter project duration, and simplified management

2-3x faster
migration comparing to manual effort

1-2 years faster
Return on Investment (ROI) compared to ROI from manual migration*

**Depends on the migration scope and code complexity*

Watch & learn: a live demo of Oracle-to-Java migration



Contact us

Let’s make it happen together! Open up new opportunities moving business logic to application.

Migration doesn’t have to be a headache, automate the process and save your time.

Take a trial of SQLWays and convert 1500 Lines of code for free!

Get the trial →

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Designed by Ispirer for the success of your business logic migration project!

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