



# 920,844 Lines of Business-Critical Code. All but Two Modernized Automatically.

## CLIENT

Educational Testing Service (ETS)

## SOFTWARE

ECT and Praxis Applications

## LANGUAGE PAIRING

IBM COBOL, JCL to Java, Python on AWS

## COMPLETION TIME

6 months

### SITUATION: A TEST FOR MODERNIZATION

Educational Testing Service (ETS) is the world's largest private educational testing and measurement organization developing, administering, and scoring more than 50 million tests a year. They turned to TSRI to transform their ECT and Praxis applications and databases from IBM COBOL and JCL with DB2 and VSAM to modern Java with PostgreSQL, on the AWS cloud. To do this, they used a Spring Boot type application to implement web services invoked by Python. As you'll see outlined below, TSRI achieved a 99.9996% automation rate (that's just one or two lines of code requiring patches out of over half a million total.)

### HIGHLIGHTS



**99.9996% Automation Rate**



**Reusable Process for Economies of Scale**



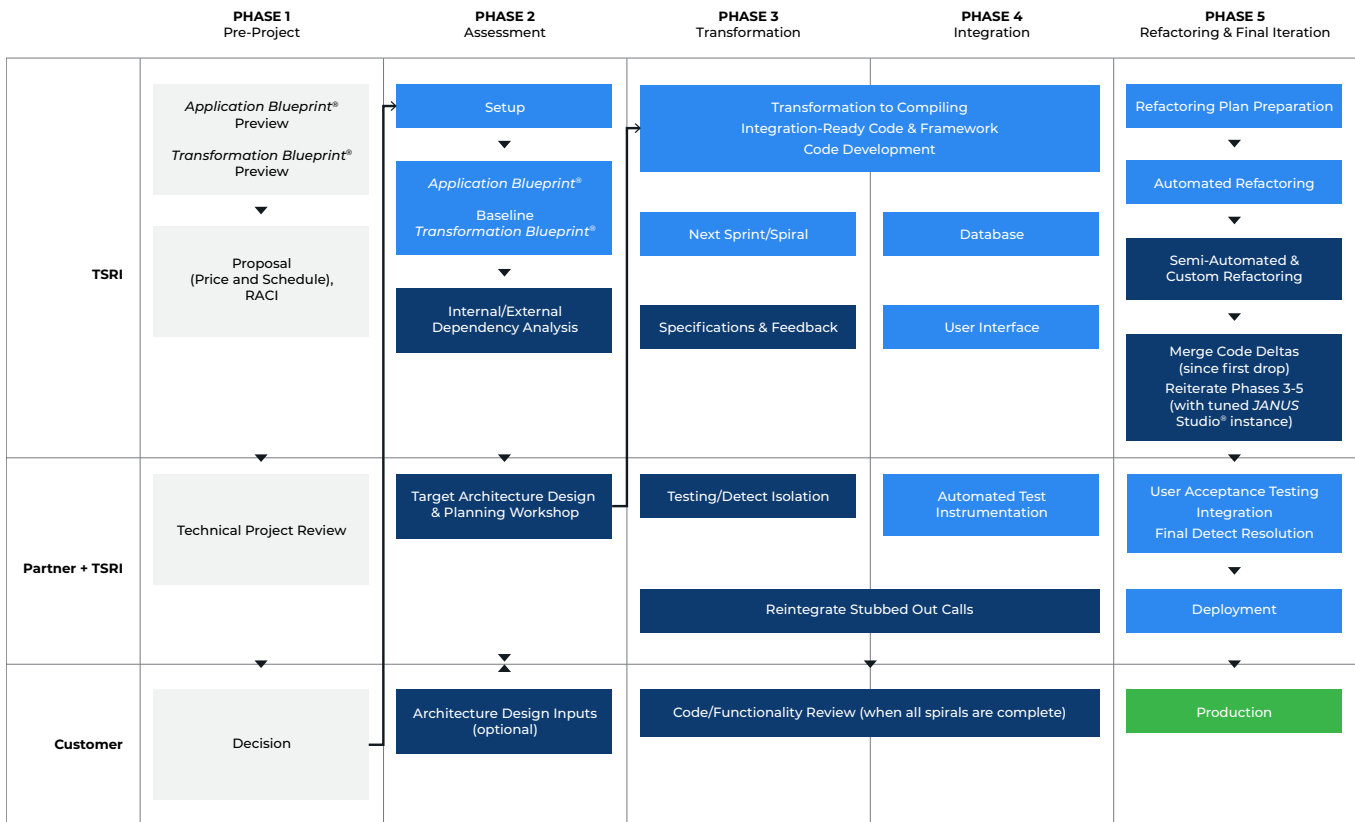
**Extended SQL Transformation Rules**



**Rearchitected the Application for Cloud**

### SOLUTION: A BUNCH OF BATCH CONTROL

TSRI conducted the ETS application modernization project using JANUS Studio®, TSRI's proprietary framework and toolset for Architecture-Driven Modernization (ADM). JANUS Studio® is a proven, model - based, rule - driven technology that uses AI to support a large - scale, automated, factory process for software transformation, refactoring, and documentation which is adaptable to a broad array of legacy and target software languages and systems. (See the JANUS Studio® process on reverse.) To address the advanced date - type processing queries within the system, the TSRI team extended the SQL transformation rules to cover transforming the day/time syntax from IBM Db2 Database to Postgres. In addition, with respect to Batch Control there were a very large number of sort cards with a lot of variations to what the sort operations needed, requiring new additions to the TSRI batch sort capability.



The **JANUS Studio®** process achieves near-100% automation through TSRI's proven 5-phase process

**RESULT: FULL AUTOMATION WITH ONLY TWO LINES OF CODE TO BE PATCHED**

Through the **JANUS Studio®** process, TSRI achieved an automation rate of 99.9996%, meaning only one or two lines of code needed to be patched out of 556,228 lines transformed. In most other cases, any post-automation adjustments are carefully implemented in framework code.

Now that the ETS transformation project has been completed, the architecture-driven TSRI approach can continue to reuse proven conversion rules to ensure the accuracy and uniformity of the modernized code. By reusing proven rules and continuously refining them, TSRI reduces errors and improves accuracy.

**WHY MODERNIZE WITH TSRI?**

- **Migrate to the AWS cloud** with TSRI's automated transformation and refactoring solution.
- **Preserve business logic** through a model-based approach.
- **Reduce code freeze to little or none.** Automation allows baselines to be automatically changed at any time.
- **Improve code quality and maintainability** while reducing technical debt and security flaws inherent in legacy code through pattern-based refactoring.
- **Save time and money**, reducing years-long timelines to months or weeks with near-100% automation.