

QUERYING WITH CONFIDENCE

MARKET NEED

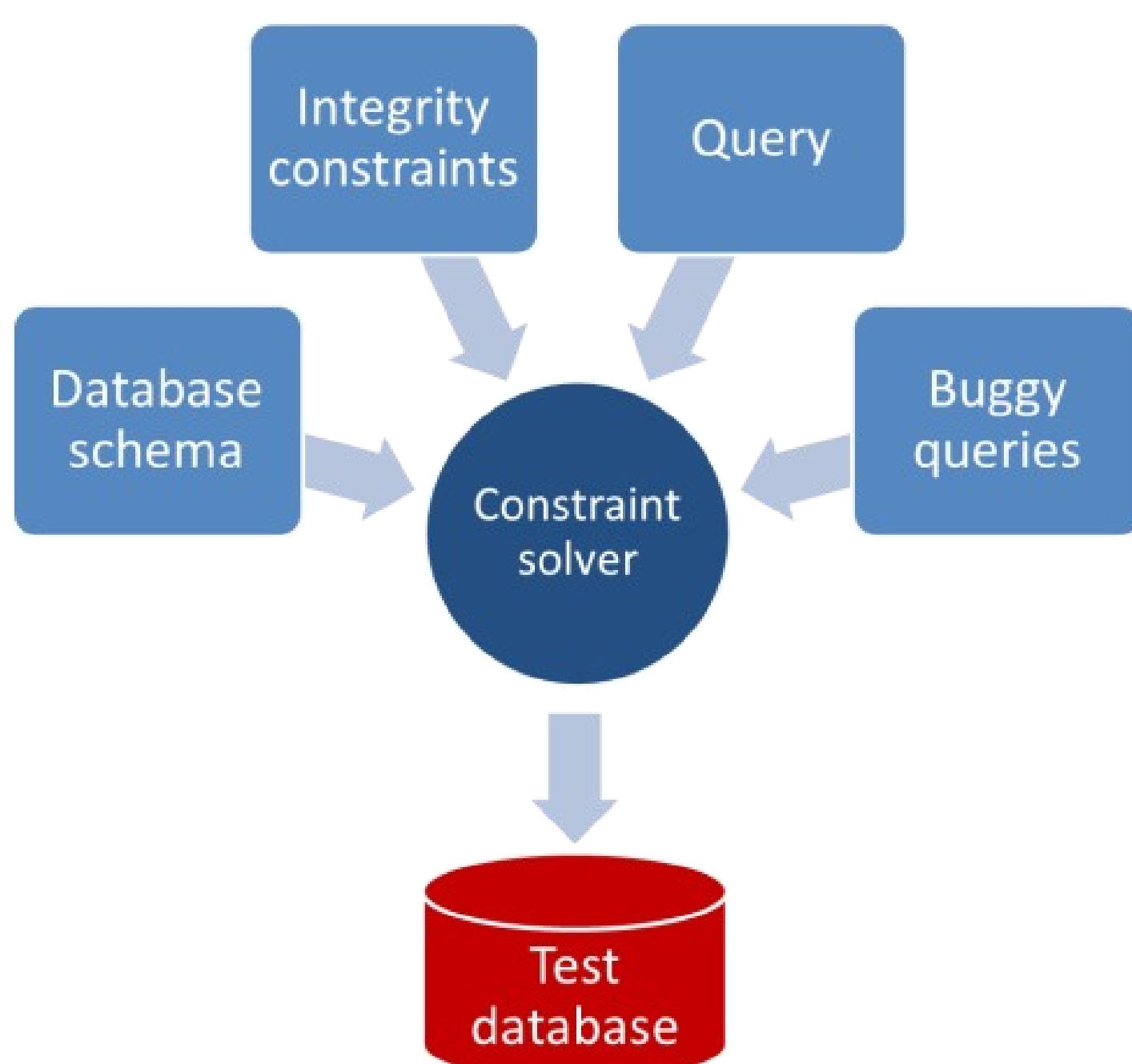
Database queries are often business-critical. But there are few methods for ensuring their *correctness*. Businesses need new methods and tools that increase confidence in the correctness of both standard and ad-hoc queries.

TECHNOLOGY SOLUTION

Process is key to querying with confidence: businesses must use methods that foster query correctness. But, within these methods, technologies can assist the people who write and test queries. We are developing a *query correctness platform*, whose tools will assist programmers in testing and debugging complex SQL queries. The platform comprises a Query-Aware Database Generator and a Query Audit Tool.

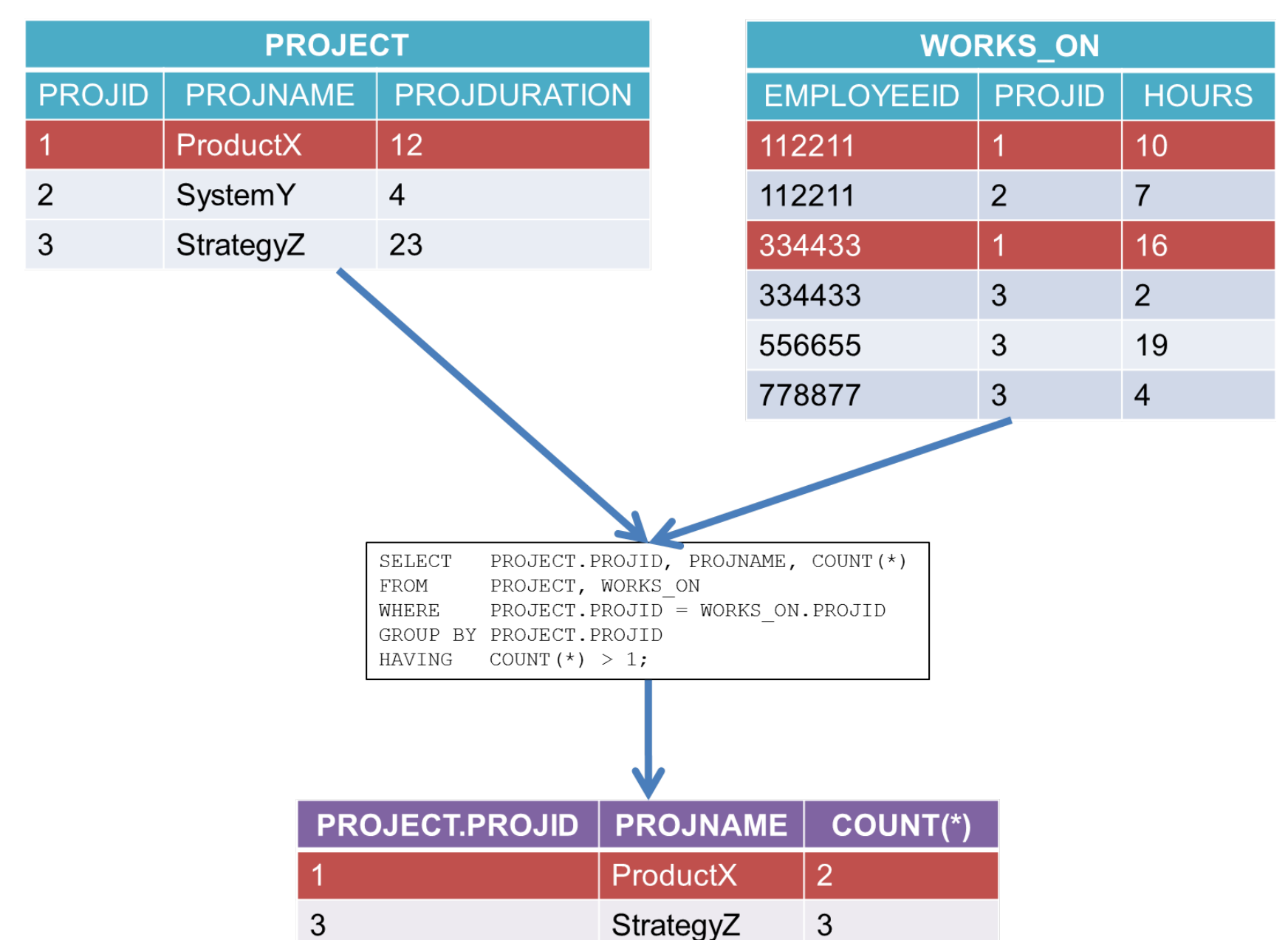
Query-Aware Database Generator

The Database Generator populates a database with test data. The tool chooses the data by analyzing the programmer's query. It keeps the amount of data small, for ease of comprehension. But it chooses data that 'exercises' different conditions within the query and query variants to reveal likely errors.



Query Audit Tool

With the Query Audit Tool, programmers can visualize result *provenance*: it shows which records in base tables contribute to each record in a query's result table. With this tool, programmers and auditors can determine why a record appears in a query's result table. A demonstration of the tool can be found at the address <https://ceadar.ucd.ie/video/> under 'Data Validation'.



APPLICABILITY

This work is not restricted to particular market sectors. Any organization in which complex SQL is written will benefit from tools to improve query correctness.

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