

EFFICIENT TEST DATA MANAGEMENT

Elevating Software
Testing Through
Intelligent Data Handling

In the realm of software testing, the ultimate pursuit is efficiency, and Test Data Management (TDM) tools stand as the definitive solution for saving time and reducing costs. TDM transforms testing dynamics by seamlessly relocating production-level data to diverse working environments or by generating synthetic data. This dynamic process ensures a seamless influx of top-tier test data, elevating the testing procedures for software applications and propelling the product development lifecycle forward.

TDM stands as the linchpin in addressing the test data requisites of software testing teams. This pivotal process ensures the provision of impeccable test data, tailored in quantity, format, and environment to cater to diverse needs such as development, testing, UAT, and more. TDM seamlessly deploys two distinctive methods to fulfill this mission.

Firstly, should operational data at the production level already be in utilization, TDM expertly orchestrates its transition to the targeted environment. This may encompass full-scale database migration or a strategic subset, optimizing storage efficiency effectively.

Conversely, when production-level data is absent—a common scenario during the developmental phase of applications or unreleased products—TDM emerges as the solution. By harnessing rule-based algorithms and harnessing the prowess of AI & ML models, TDM crafts precise, contextually apt tabular synthetic data from scratch. This innovative process guarantees the availability of tailored data for testing, even in the absence of live production data.

MONITOR, GENERATE, REPORT



Figure 1 TDM Flow

Test Data Management visualizes your generated data statistics with lists and graphs, allows you to create your projects and generate suits and cases for each and execute the data generation process. After generating test data, you can easily follow the track of data by reports and metrics.

TEST DATA MANAGEMENT ARCHITECTURE

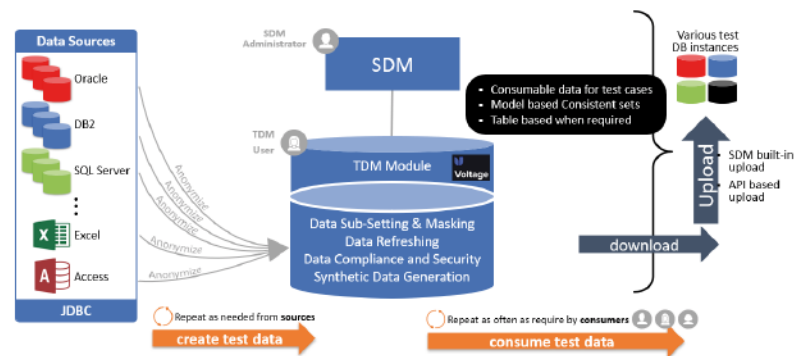
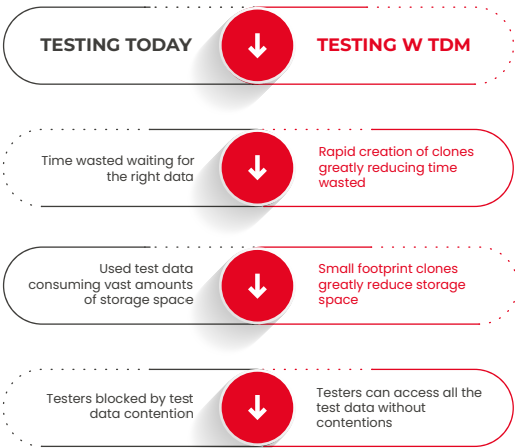
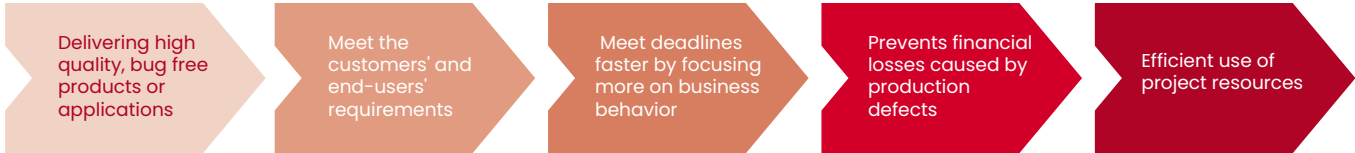


Figure 2 TDM Architecture

Test Data Management tool runs as an add-on to SDM meaning it uses the same user sessions and environments as SDM. Also, TDM runs with the integration with Voltage to ensure masking privacy content data and encryption.



WHY TEST DATA MANAGEMENT?

Problems of the industry facing

1. Obtaining high-quality data is hard, and generating data manually takes quite a long time and it's not cost-effective, or limited access.
2. Regulations in obtaining data (GDPR, HIPAA, SOX, BRSA, and PCI DSS etc.).
3. Privacy threads and data security
4. Limited storage concerns for the test environments.
5. Need for a fresh data set for each tester or each recurrence of testing process.
6. Need in the same dataset for different purposes of use.
7. Need to evaluate the characteristics of the test data used retrospectively.
8. Each test user has specific test data configuration needs.
9. Affected test data by other test users working on different business rules.

Solutions brought by TDM to each problem

1. Either use production data by migrating them to the test environment or generate synthetic test data that mimics real-world data automatically from scratch.
2. Compliance with data regulations can be ensured.
3. Protection of production data by masking and encryption can be ensured.
4. Data sub-setting of production data can be done safely.
5. Data can be generated/refreshed and used several times.
6. Data cloning can be possible instead of migrating or creating them in case of a need.
7. Follow-up test data changes from creation with reports, metrics, and historical data.
8. User-specific configurations can be done without any conflict.
9. Test data isolation can be possible.

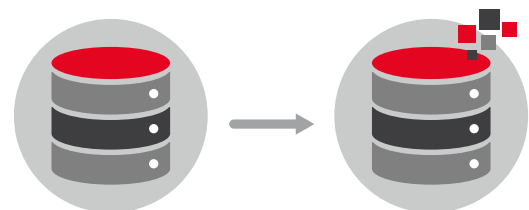
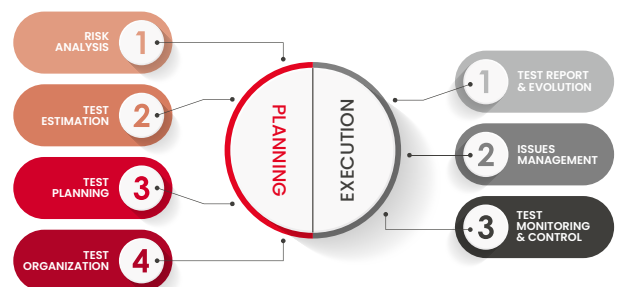
INSIDE TDM

Planning Stage

1. Risk Analysis
2. Test Estimation
3. Test Planning
4. Test Organization Execution Stage

Execution Stage

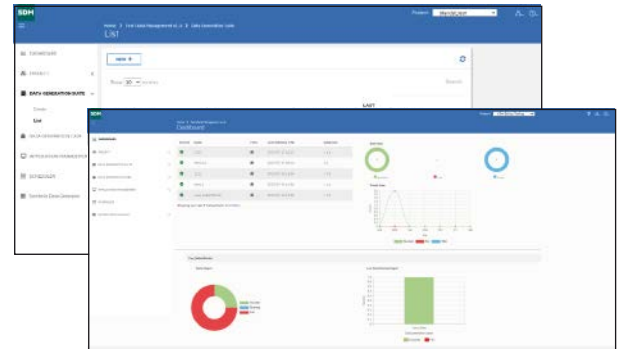
1. Test Report and Evolution
2. Issues Management
3. Test Monitoring and Control



Fully automated process for creating and migrating databases

TDM FEATURES

- Monitoring entire test operation on a user-based, single page
- TDM CLI tool to run TDM cases and suites. These CLI commands can be easily integrated into the CI/CD process and the test data generation process can be automated.
- Viewing the Data Generation Suite & Case study reports
- Viewing success and failure rates, daily and weekly transactions
- Displaying Status Report and Duration Report
- ER Diagram feature for the synthetic flows. When selecting tables to create data, a representative ER diagram of the data will be available.



- Producing test data with the desired flexibility
- Efficiently working the system by giving priorities
- Using all capabilities of SDM
- Data Migration, Masking, and Recovery can be possible
- Web Service Integration
- Ensuring rapid adaptation to changing systems
- High range of built-in synthetic data generator type;

- Name, Surname, ID No, Email, Password Generator
- Credit Card Number, IBAN Generator
- Phone Number, Full Address Generator
- Street, Zip Code, City, Country Generator
- UUID, Text, Date-Time Generator
- Int, Float, Boolean Generator

A screenshot of the 'Edit Rule' dialog box in the TDM application. It has a sidebar with categories like 'PROPERTY', 'SYNTHETIC', and 'ANOMALY'. The main area shows configuration for a rule named 'email'. Fields include 'Column Name' (email), 'Is Unique' (false), 'Is Nullable' (true), 'Type' (EmailGeneratorFromColumn), 'domain' (text), and 'related_column' (select). There are 'Generate' and 'Save' buttons.

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