GenRocket

LIFE CYCLE MANAGEMENT FOR TEST DATA PROVISIONING

In our current software development landscape, managing test data throughout the entire Software Development Life Cycle (SDLC) has become increasingly complex. As enterprises strive to deliver high-quality applications at unprecedented speeds, the need for a more secure, efficient, and scalable approach for how test data is provisioned for dev and test teams has never been more critical.

GenRocket's Test Data Automation (TDA) platform enables an agile and automated Life Cycle Management Solution for the complete test data provisioning process.

The Challenge: Keeping Pace with Dynamic Data Environments

In any enterprise-level software development life cycle, change is constant. Developing new features and greater functionality often starts with modifications to database structures, including:

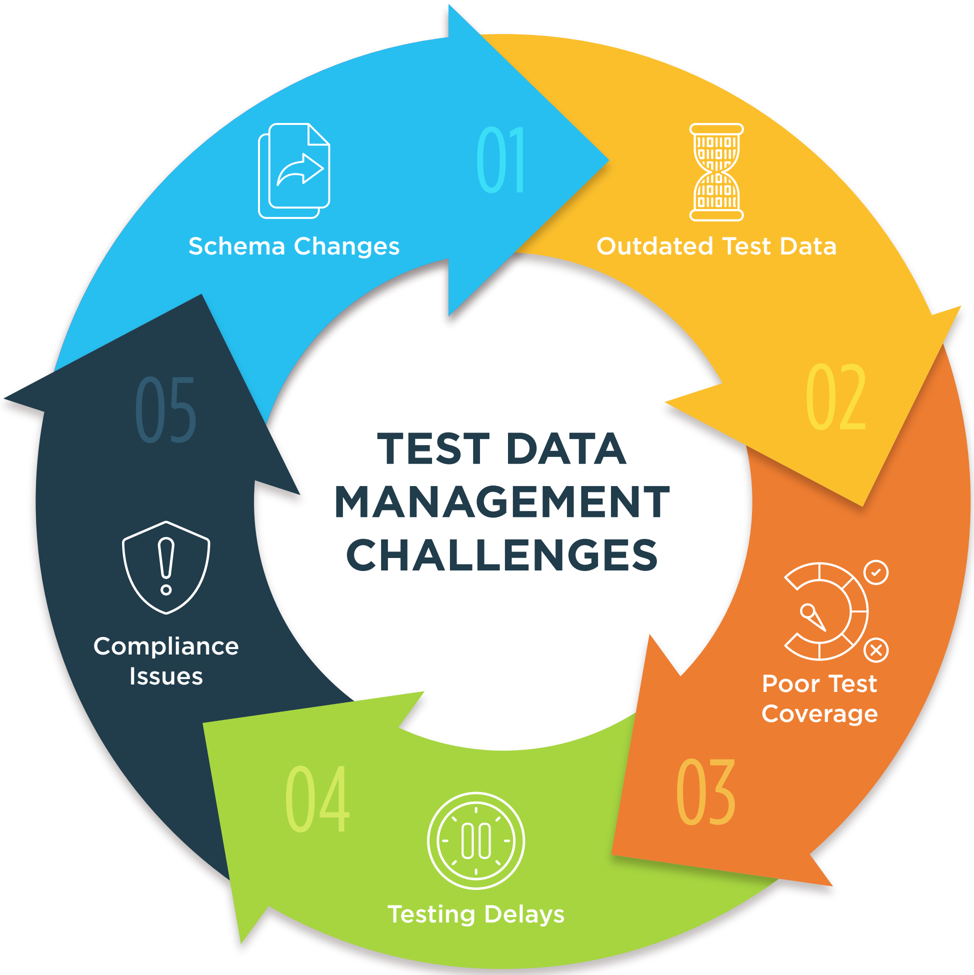
- The addition of new tables and columns
- Restructuring of data relationships
- Changes in data types and constraints
- Integration of new data sources and formats

Traditional Test Data Management struggles to keep pace with these changes, leading to:

- Time-consuming and manual reconciliation of schema changes
- Outdated test data that doesn't reflect the current application state
- Increased risk of defects slipping into production
- Delays in testing cycles and overall software deployment
- Compliance risks due to the use of sensitive production data in testing environments

For software testing teams, these challenges can result in:

- Missed project deadlines and increased costs
- Reduced confidence in automated test results
- Difficulty scaling testing efforts across multiple concurrent projects
- Inability to thoroughly test new features prior to their release



The Solution: Life Cycle Management for Test Data

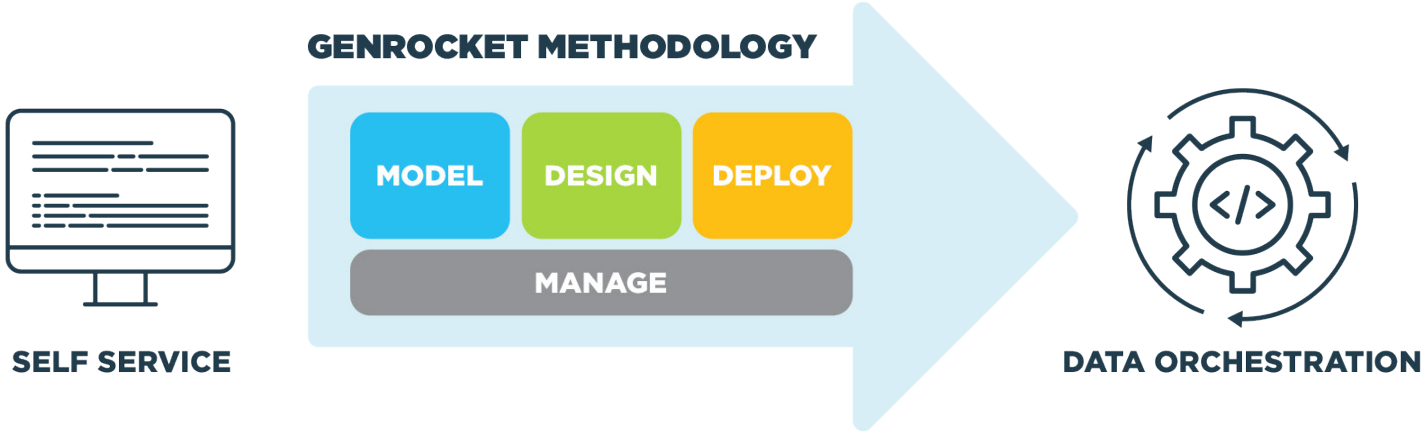
GenRocket's Life Cycle Management Solution improves the way organizations handle test data throughout the SDLC. Our comprehensive suite of tools ensures that your test data always remains in sync with evolving database structures, attributes and relationships, enabling faster, more efficient, and more comprehensive testing.

GenRocket has streamlined the test data provisioning process to enable a more efficient method of data delivery. It enables distributed self-service for requesting and repurposing *Test Data Cases*, the executable instructions for on-demand data generation.

Within the MODEL and DESIGN stages of our "Design-Driven Data" methodology, we have automated the detection, refactoring, and synchronization of changes to the target data environment. The result is a fully up-to-date reflection of the target data environment that is generated for any application under test.

With GenRocket's Life Cycle Management solution, fresh, accurate, and secure synthetic test data is deployed and orchestrated into your CI/CD pipelines resulting is faster testing cycles with higher quality data.

The Test Data Provisioning Life Cycle



Key Components of Life Cycle Management

Several technology components work together at various stages of GenRocket's seamless life cycle management solution. Here are the key components mapped to the full end-to-end test data provisioning process.

SELF SERVICE: A self-service portal, called **G-Portal**, is used by dev and test teams to easily request a new synthetic Test Data Case, or *G-Case*, to meet their testing requirements. Using **G-Questionnaire**, G-Cases can be quickly modified and repurposed by users for related test operations such as performance and regression testing.

MODEL: Database structures are continuously compared to the current data model and changes are automatically detected by **G-Delta**. The developer or test data engineer responsible for any G-Cases using that data model is immediately notified.

DESIGN: Once detected by G-Delta, all affected data tables referenced by executable G-Cases are dynamically updated by **G-Refactor**.

DEPLOY: These automation components ensure that fresh, accurate, and secure synthetic data is always deployed into your test environment during test execution.

MANAGE: GenRocket combines distributed self-service with powerful centralized management. Administrators manage a library of **Test Data Projects** that contain the various G-Cases used during the SDLC, such as unit, functional, integration, performance and regression testing. Projects are **categorized** and **version controlled** with any modifications synchronized across distributed test environments by **G-Repository**.

DATA ORCHESTRATION: Using GenRocket's life cycle management solution, any type of test data, whether it's generated synthetic data or production data subsets, can be orchestrated to one or many test environments in parallel and on-demand.

Empowering Teams with Self-Service Data Creation

G-Portal makes it easy for any developer or tester to request the precise data volume, variety and format needed for a given test case. Using GenRocket's *Design-Driven Data* methodology, a trained test data engineer can quickly deliver an executable G-Case for direct integration into any testing tool or framework.

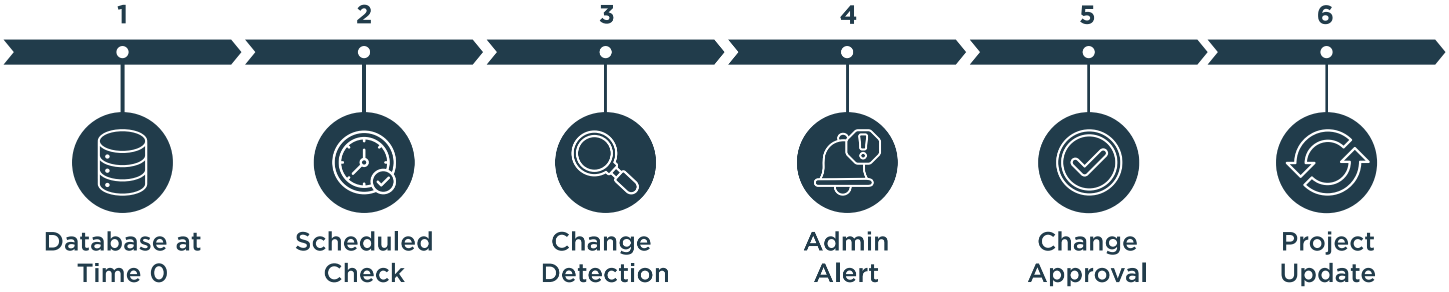
G-Questionnaire puts the power of test data creation directly in the hands of your developers and testers. This intuitive tool allows team members to easily modify existing G-Cases for additional test requirements and reduces their dependance on a central provisioning team.

G-Delta: Staying Ahead of Schema Changes

G-Delta is the cornerstone of GenRocket's Life Cycle Management Solution, automatically detecting schema changes in your databases on a configurable schedule, alerting developers and test data engineers to:

- Tables added or removed
- Columns added, removed, or modified
- Changes in data types or constraints
- Modifications to relationships between tables

The following diagram illustrates the G-Delta process flow.



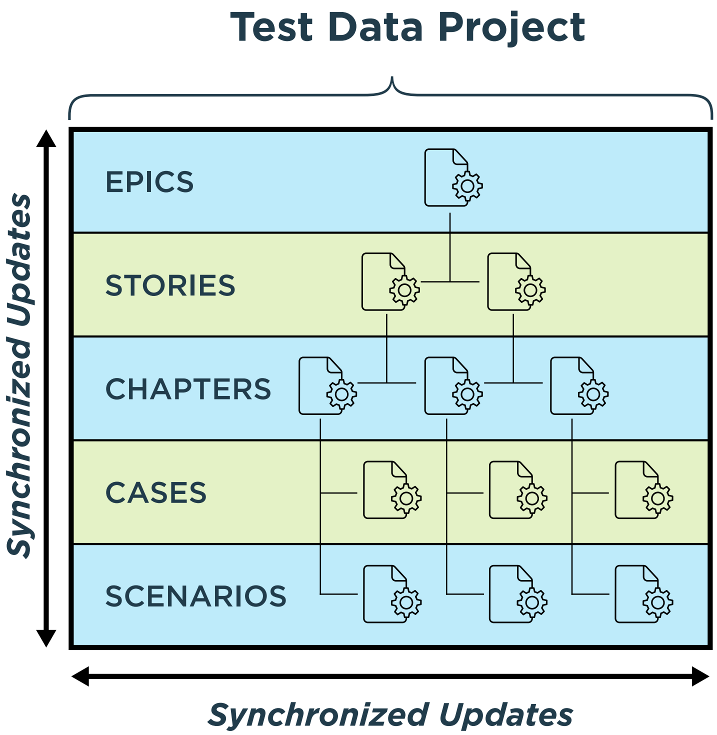
For organizations managing multiple projects, G-Delta offers real-time visibility into database changes. With proactive management of test data cases, the risk of test failures due to outdated data structures is eliminated.

G-Delta's automated schema change detection can reduce the time required for manual reconciliation of database changes from days to just hours. This dramatic timesaving allows testing teams to keep pace with rapid development cycles and frequent database updates.

G-Delta supports all common SQL databases, including MySQL, MS SQL, Oracle, and PostgreSQL. It can be configured to include or exclude specific tables, allowing for targeted schema change detection based on your testing needs.

G-Refactor: Automating Project Updates

G-Refactor not only updates domains and attributes but also maintains referential integrity across your entire test data ecosystem. It automatically adjusts GenRocket's executable test data cases including *Scenarios* and *Cases* that are organized into *Chapters*, *Stories* and *Epics*. G-Refactor ensures they will always reflect the most current data model, ensuring comprehensive and accurate test coverage.

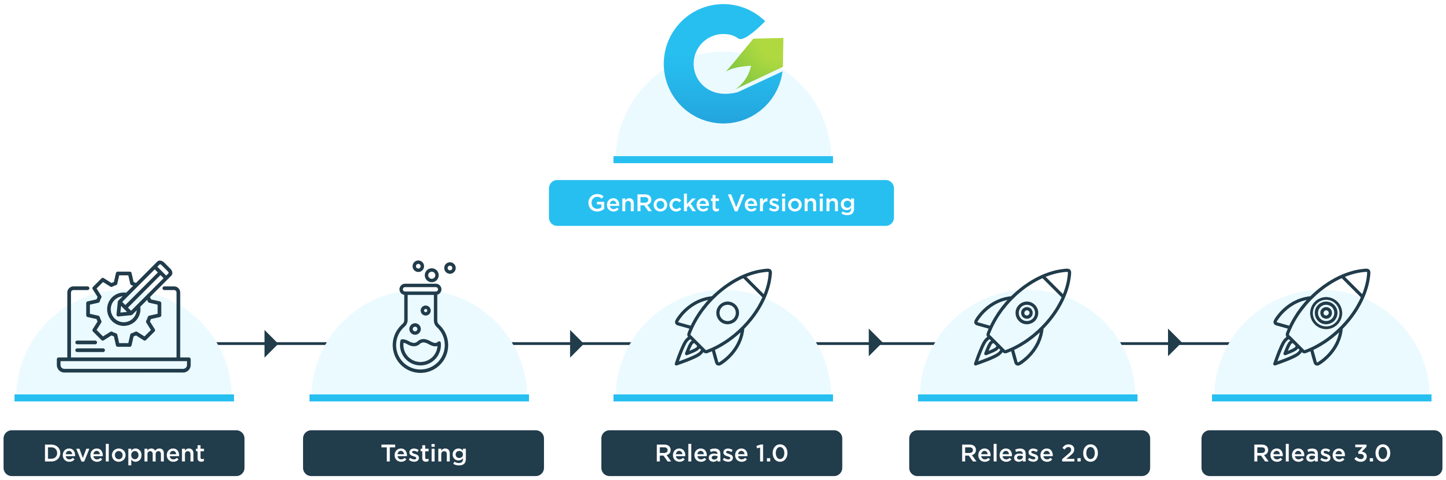


G-Refactor delivers key benefits to enterprise Quality Assurance teams:

- Dramatic reduction in manual effort required to update test data
- Ensured accuracy and consistency across all test environments
- Ability to quickly adapt to new feature requirements and data structures

Project Categorization and Versioning

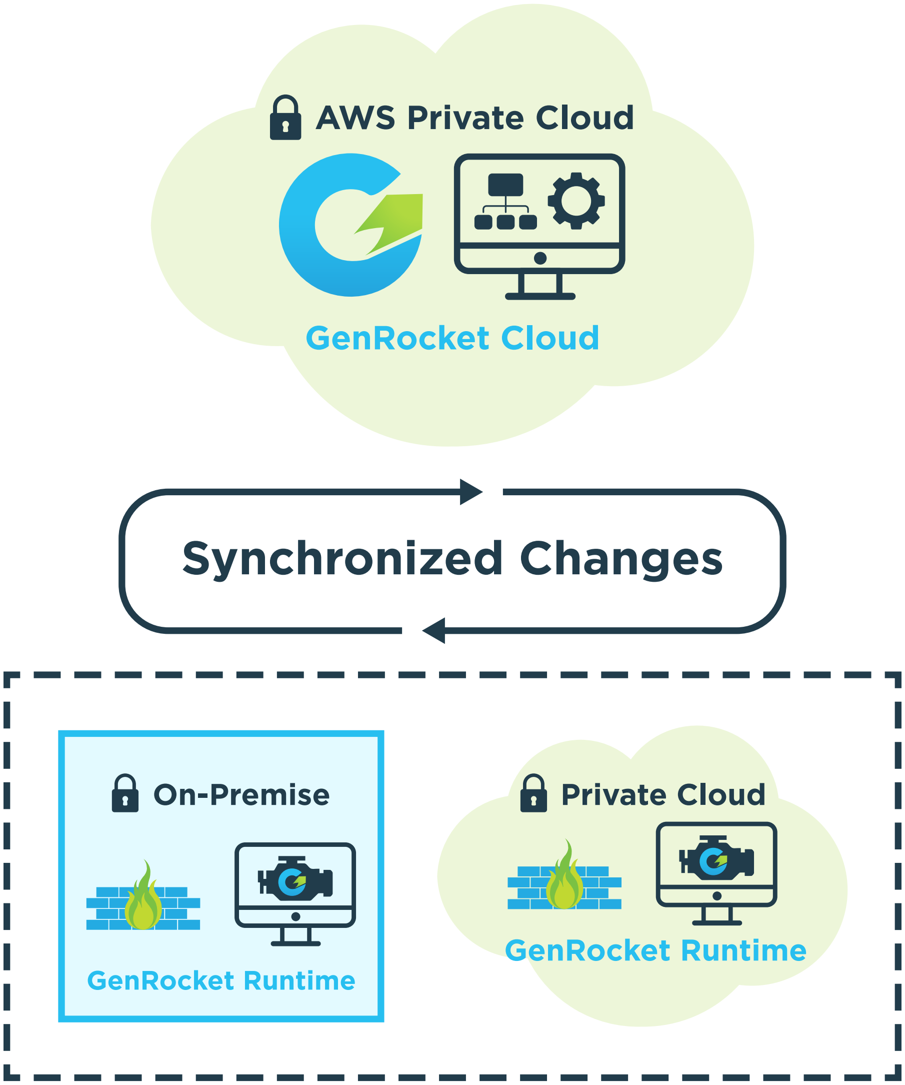
Project Categorization allows administrators to organize their *Test Data Projects* into distinct categories, improving findability, scalability, reusability and efficiency in test data provisioning. It allows teams to better manage multiple test data projects by grouping them into related testing categories, data environments, and value streams. It simplifies the navigation and retrieval of Test Data Projects, making it easier to maintain consistency and accelerate test cycles.



With GenRocket's **Project Versioning** capability, teams can efficiently manage different versions of test data for different software releases. You can create versions that align with each code release, enabling accurate testing with relevant data. Developers can use new versions to test updated data structures without disrupting ongoing projects. For regression testing, versioning helps maintain historical test data, ensuring consistency when testing prior releases. Overall, it supports seamless collaboration, simplifies testing of new and old code, and enhances software quality in CI/CD environments.

G-Repository: Centralizing Test Data Case Management

G-Repository uses intelligent automation to ensure that changes made in the GenRocket environment are synchronized across all *Test Data Projects*. This guarantees that generated test data is always accurate and current. Synchronization happens behind the scenes, allowing testers to focus on data design and deployment. The repository continuously detects data model and configuration changes, updates impacted components, refactors projects, and synchronizes data across teams. Additionally, it logs system usage for analytics, enabling collaboration among testers, developers, and data architects while ensuring efficiency.



G-Delta leverages GenRocket's G-Repository to automate the entire schema change detection and update process. G-Repository facilitates the communication between your database environment and GenRocket's cloud platform, ensuring that schema changes are quickly identified, uploaded, and applied to your Test Data Projects.

Test Data Provisioning with Full Life Cycle Management

GenRocket's Life Cycle Management Solution offers several key advantages over traditional TDM approaches and other synthetic data tools:

Unparalleled Flexibility

- Support for both SQL and NoSQL databases
- Ability to work with various data structures and formats
- Seamless handling of complex schema changes
- Adaptability to diverse environments and requirements

Enhanced Security and Compliance

- No need to access or store production data
- All data generation occurs within your secure environment
- Compliance with data privacy regulations (GDPR, CCPA, etc.)
- Role-based access control for multiple teams across the enterprise

Increased Efficiency and Productivity

- Dramatic reduction in time spent on manual data reconciliation
- Faster test cycles with always up-to-date test data
- Improved test coverage through comprehensive data scenarios
- Streamlined collaboration between development and testing teams
- Automated schema change detection reduces database reconciliation time from days to hours
- Scheduled or on-demand audits of database changes to keep test data projects current

Cost-Effective Scalability

- Eliminate the need for multiple copies of masked production data
- Reduce storage costs associated with large test datasets
- Scale test data generation to meet the needs of enterprise-level testing
- Support for multiple value streams without exponential cost increases

GenRocket: A New Paradigm in Test Data Management

In an era of rapid digital transformation and AI-driven development, traditional approaches to test data management are no longer sufficient. GenRocket's Life Cycle Management Solution for Test Data Provisioning offers a revolutionary approach that keeps pace with the dynamic nature of modern software development.

By automating the detection and management of schema changes, empowering teams with self-service data creation, and ensuring always up-to-date test data, GenRocket enables organizations to:

- Accelerate software delivery cycles
- Improve overall product quality
- Reduce costs associated with test data management
- Ensure compliance with data privacy regulations
- Improve overall organizational efficiency

GenRocket's solution provides the tools needed to tackle the most complex testing challenges in today's fast-paced development environments. By offering unparalleled flexibility, security, and efficiency, GenRocket empowers quality engineering leaders to deliver superior software quality at speed and scale.

Ready to revolutionize your test data management and deliver unparalleled value?

Visit our website to learn more about our solutions and schedule your personalized demonstration.