



The Definitive Guide to Test Data Management

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Introduction

In this hyper-competitive era, faster time-to-market plays a vital role in the success of an organization. Any lag accounts for the 'Cost of delay,' impacting the value a product could create otherwise. This is the primary reason teams are adopting an agile approach to software development, testing, and release. Unfortunately, teams that don't follow suit find it challenging to deal with this accelerated timeframe.

According to the [World Quality Report](#), 99% of software developers face numerous challenges with test automation in an agile environment. While they have adopted agile and DevOps methodologies in pursuit of delivering high-quality applications, many have significantly underinvested in the test data department. Churning out high-volume compliant test data is one of the most significant pain points.

Responding to this challenge, organizations now realize the importance of test data management (TDM) as a critical catalyst for agile testing.

This ebook will share insights on TDM and its advantages. We'll also discuss the challenges that teams face and strategies to overcome them.

What is Test Data Management?

Test data management is a process that deals with sourcing, managing, and delivering high-quality, compliant test data to teams as and when required.

Today, your app adoption depends on how delightfully a customer interacts with it and how seamlessly he experiences it. Most apps lose 95% of their audience within the first three months. And 67% of users hold application quality responsible for their churn. It becomes the onus of QA teams to ensure that the higher quality standards are met. TDM makes it possible.

Before we delve deeper into TDM, let's first understand what test data is. Simply put – any data earmarked for testing purposes comes under the scope of test data. Broadly, test data is classified as:

Static data

This is the data that doesn't change after being recorded. Data points such as names and addresses are not considered dynamic. Most static data comprise non-sensitive information, but it can also include banking details and other credentials in some cases.

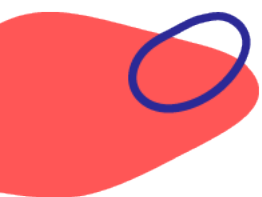
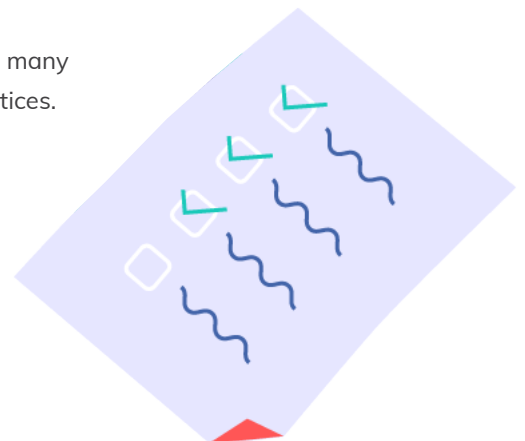
Dynamic data

Test data that is constantly evolving and needs to be updated regularly is called dynamic data. Example: information such as banking and transaction history. Since dynamic data is the most sensitive, ensuring adequate storage and security is essential.

Based on the use cases and type of test, both static and dynamic data are used together. This data needs to be identified, sourced, and brought in from different databases while maintaining its integrity. It also needs to be securely stored and managed to avoid regulatory issues.

This is where test data management helps. TDM is a collection of processes that ensures high-quality data is always available to the right requestor at the right time. It deals with planning, designing, sourcing, storing, securing, and retrieving test data promptly. With TDM, organizations can ensure that testers always have access to quality data in the required formats and the right quantities to fulfill their testing requirements.

Since handling production data can be challenging due to its sensitivity and volume, many companies have also integrated data synthesis and obfuscation into their TDM practices.



Why is Test Data Management Necessary?

Test data management has become a key focus of industries that regularly deal with large amounts of sensitive data. There are several reasons for this rising interest. From production defects to regulatory non-compliance, companies worldwide have faced issues due to a lack of proper test data management.

TDM introduces a structured approach to testing, enabling experts to test across all possible business scenarios. This eventually leads to better application quality and customer satisfaction.

Here are some of the challenges that TDM can help you overcome:

Slow, manual test environment provisioning

Without TDM, software development teams depend on a manual data provisioning process that queues up tickets. Fulfilling each request can take a long time when there is no direct access to ready-made test data. This inadvertently stretches the testing cycle slowing down the pace of delivery.

Lack of high-fidelity data

TDM ensures that quality data is always at hand. Without TDM, testers are forced to work with stale copies of data because refreshing the environment on demand takes up extra time and cost. Working with stale data doesn't just put product quality at risk; it can also lead to cybersecurity issues.

Friction due to necessary data obfuscation

The GDPR has made data obfuscation and masking a compulsory practice for all companies working with EU customers. EU members will likely implement the regulations in other countries where they operate. Such attempts may lead to friction, as without TDM, data masking can become an expensive overhead.

Increased Storage Cost

When organizations use full-size copies of production data for testing purposes, test data storage costs are high. The costs increase exponentially when the production environments grow, leading to high storage and license costs.

What are the six Crucial Aspects of Test Data Management?

The six crucial aspects of TDM are as follows.



1. Analysis of test data requirements

Before sourcing or generating data, you need to document the exact type and format of data required. Then perform an end-to-end analysis of the application, the platform, the software, and the test cases to zero in on the exact data requirements.



2. Obfuscation and masking of data

Regulatory laws like [GDPR](#) require organizations to securely hide sensitive information from malicious actors. Obfuscation techniques such as masking and encryption are used to secure sensitive data that can potentially be misused. This includes banking details, medical history, and more.



3. Subsetting of data

Testers slice the test data into usable subsets to reduce the amount of data that needs to be stored. This helps control storage and security costs during the data cloning process.



4. Generation of required data

Handling production data can be an expensive affair. Most organizations now prefer generating representative or mock data that mimics the production values. The test data should get you as close to the original user environment as possible.



5. Delivery of data

In complex test environments, including CI/CD, obfuscated and subsetting synthesized data must be delivered to the testing and QA teams in a reliable, fast, and seamless manner. Successful test data delivery guarantees timely and more accurate tests, resulting in better quality applications.



6. Storage and maintenance of data

All the test data should be stored in a single repository for easy access and maintenance. Proper data refreshing is a significant part of its upkeep to keep redundancy and obsolescence at bay. Lastly, if the data is maintained correctly, it can be reused for more tests down the line, bringing down overall costs further.

What are the Advantages of Test Data Management?

An [IBM case study](#) stated that a major US insurance company was spending \$3 million on data management for every \$14 million worth of software delivery. After implementing an evaluative test data management process, the company saved more than \$400,000 annually.

The benefits of test data management are more far-reaching than just cost benefits. It condenses the entire development cycle, improves testing results, and helps put out a better product.

Here are some of the most significant advantages that companies can benefit from.

Better test coverage

With TDM, you can test all the possible scenarios in testing at a faster rate. This provides unmatched visibility across the entire testing process with better defect detection.

Increased cost savings

Testers can identify and correct defects much earlier in the cycle with better quality data on demand. Bug-fixing later in the cycle, especially after release, can cost up to 640x more. Additionally, a rigorous TDM process reduces the amount of test data stored, bringing down storage charges.

Improved customer satisfaction

Your customers want a bug-free application that works as expected and meets all business requirements. Better test data coverage and the ability to find more bugs faster leads to a product that runs smoothly.

Faster time-to-market

First-to-market is critical in deciding which companies win in today's business. Test automation and intelligent test data management can make testing much faster and more efficient, expediting your time-to-market.



How to Build a Test Data Management Strategy?

The successful implementation of TDM in your organization can erase the gap between data requirements and the availability of data at hand. You must devise a clear strategy to ensure your testers can access the correct data on demand, which will form the groundwork on which you can build your TDM processes.

1. Define the system

Testing teams should map all the data assets and connect them via information supply chains, and these scenarios should cover all possible situations. Since the data needs no defined parameters in TDM, only the system parameters must be determined.

2. Integrate all the data silos

The required data might not be in one single repository in the beginning. When there are several different data silos, systems, and sources, teams need to integrate them using a management tool.

3. Refresh and sync test data

The test data will be reused in many cases - when bugs are found and corrected, during regression testing, etc. For that to happen seamlessly, your system must be adaptable, easy to sync, and capable of refreshing data whenever needed.

4. Protect all the test data

Data privacy and security are at the top of all data management concerns. No company wants to be caught in a regulatory impasse. Your strategy must account for all compliance and security requirements.

5. Synthesize data when required

Often, using production values isn't viable. In this case, your system must be able to generate mock data based on real values while maintaining referential integrity across all systems.

6. Provision data to all the systems and environments

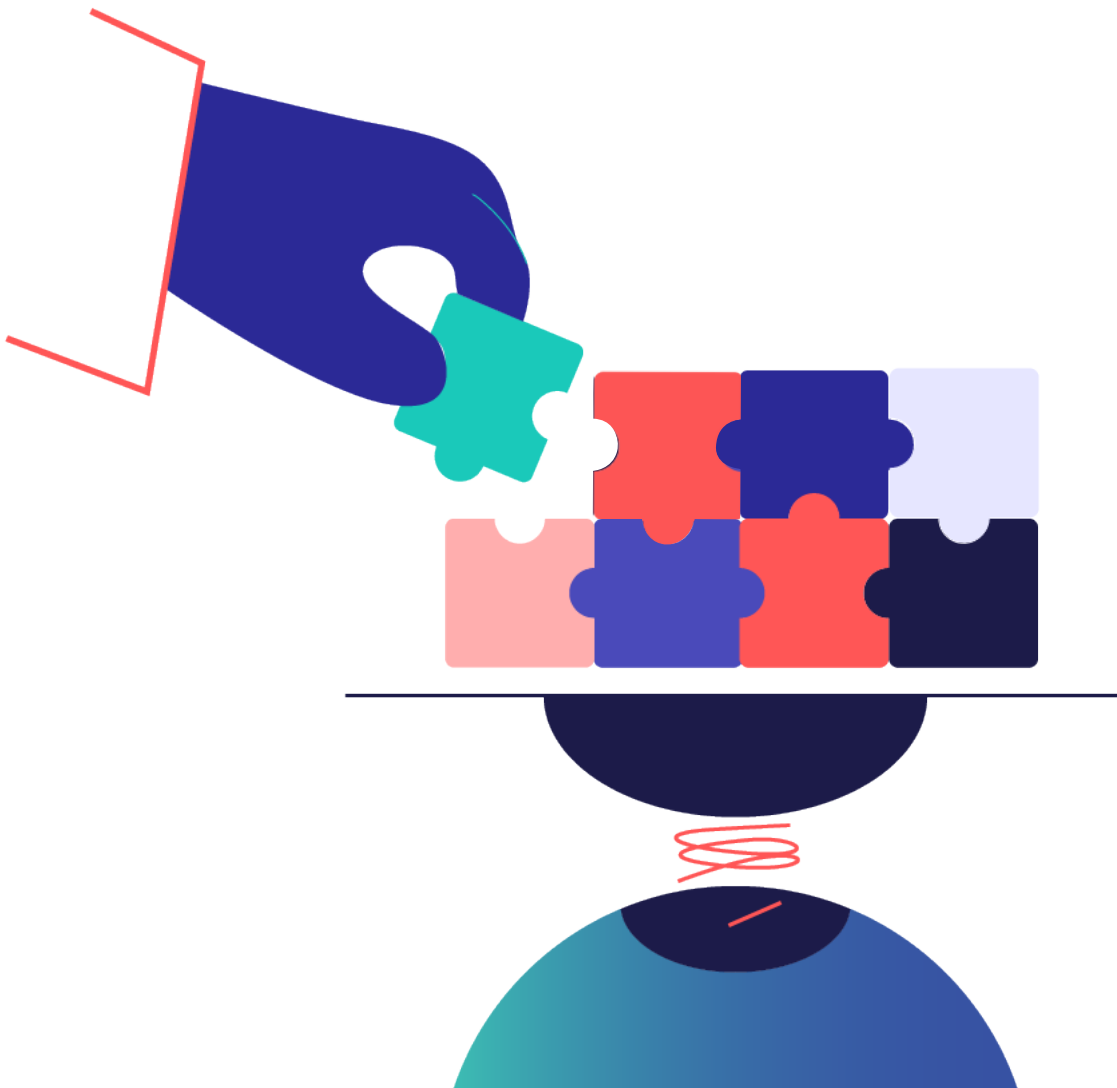
This is the last part of your strategy. Once you generate, mask, and secure the data, you should move it to the test environments. Most organizations work with multiple platforms and systems - test data should be able to move from one environment to the next seamlessly.

How Does Avo's Intelligent Test Data Management (iTDM) Solution Improve Your Testing?

Software development companies face a tough choice – either continue paying the rising costs of poor data management practices or adopt a more proactive solution. [Avo's Intelligent Test Data Management solution](#) helps make the entire process more cost-efficient by providing reliable representative data that mimics your production environment.

iTDM empowers QA teams with synthetic data that is easily accessible and compliant with the strictest norms. Besides fast-forwarding the time-to-market by streamlining and expediting application delivery, iTDM identifies non-compliant data in non-production environments. iTDM helps comply with on-demand and continually evolving configurable data privacy regulations.

Avo's iTDM helps you build high-quality applications at a faster pace and with confidence.





Want to know how Avo can help you ride the automation wave?
Reach out to us, and we will schedule a demo for you with our experts.

Schedule a demo

You could also opt for a free 14-day trial to test a scenario of your
choice. [Click here.](#)

