

# SAPinsider

BENCHMARK REPORT

## Cloud and SAP S/4HANA DevOps

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October 2022

REPORT SPONSORS



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# Executive Summary

Change is the only constant in life and technology. For SAP customers, change has come at an accelerated pace. SAP has accelerated its product roadmap by releasing new functionality and updates on a near-quarterly basis in response to customer demand and to match the development of born-in-the-cloud business applications. Business users want new functionality to address their needs.

SAP teams that are accustomed to multi-year development projects followed by years of maintenance must now adapt to this rapid, multi-modal development world. Agile and DevOps methodologies and automation may appear to be a panacea, but transforming process, mindsets, and tools to enable these methodologies remains challenging.

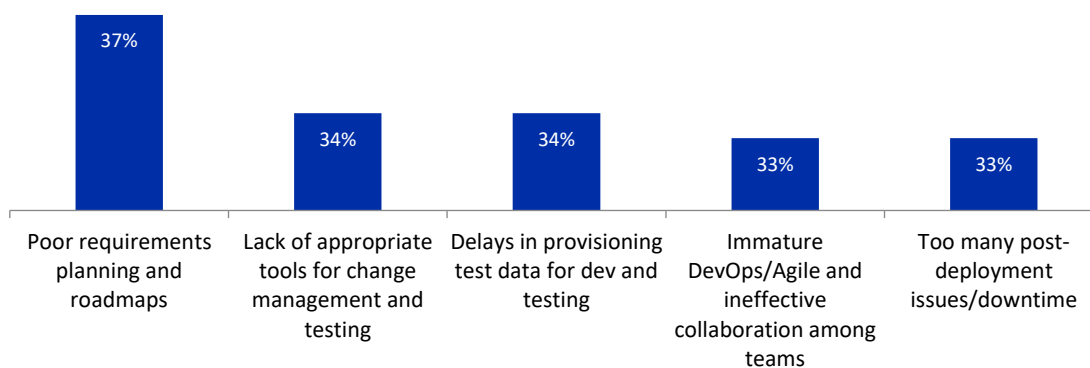
Many organizations complain about limited collaboration, clunky change processes, and poorly planned testing that lead to subpar application quality, suboptimal business value, compliance issues, business disruption, project delays, and budget overruns. Several high-profile deployment failures continue to make the news.

SAPInsider surveyed 154 information technology (IT) professionals around the world during September and October 2022 about their status with respect to DevOps and their change management and testing goals, challenges, and technologies.

We found that approximately 40% of respondents are not satisfied with their change management and testing functions.

This dissatisfaction is apparent in the many challenges organizations face in delivering fast and high-quality applications. Respondents cited poor requirements planning and roadmaps as the biggest challenge (37%), followed by a lack of appropriate tools for change management and testing (34%) and delays in provisioning test data for dev and testing (34%). Immature Agile/DevOps capabilities and ineffective collaboration among teams is another cited challenge (33%). These result in too many post-deployment issues and downtime for 33% of respondents.

**Figure 1: Challenges in delivering high-quality software rapidly**



**Source: SAPInsider, October 2022**

Most organizations are aiming for specific goals and adopting various ways to transform their change management and testing functions in order to meet the new normal of rapid change.

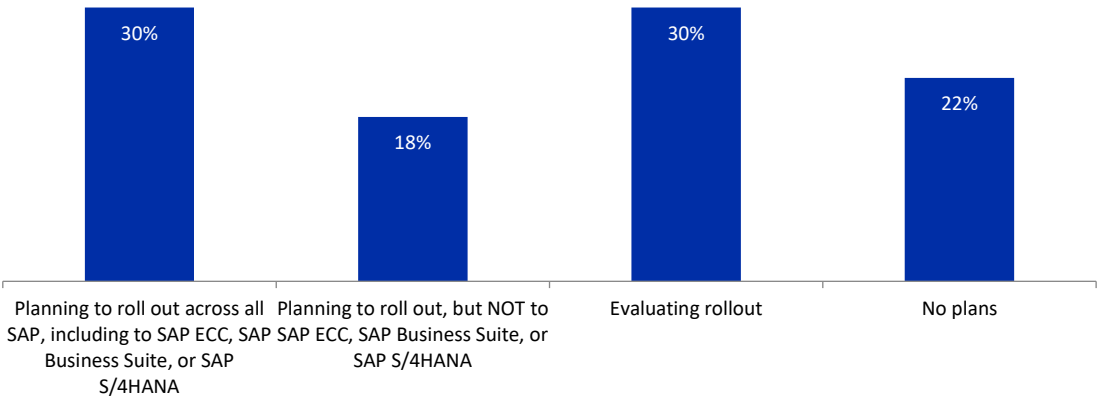
## INSIDER PERSPECTIVE

**It is important to have the broad strategy, stakeholder buy-in and orchestration of automation in the development process to be successful. It is very critical to be able to learn along the way and continuously improve.**

**Sr. Director Data Architecture,  
Global Medical Technology,  
Pharmaceutical Diagnostics  
Provider**

Organizations want to adopt more agile approaches in order to reduce risks and costs while delivering rapid software rollouts. To do so, 30% of respondents are planning to adopt Agile/DevOps frameworks across all SAP applications, while 18% plan to do so only for non-core SAP. Thirty percent are still evaluating the adoption of Agile or DevOps for SAP.

Figure 2: Plans to move to Agile/DevOps



Source: SAPinsider, October 2022

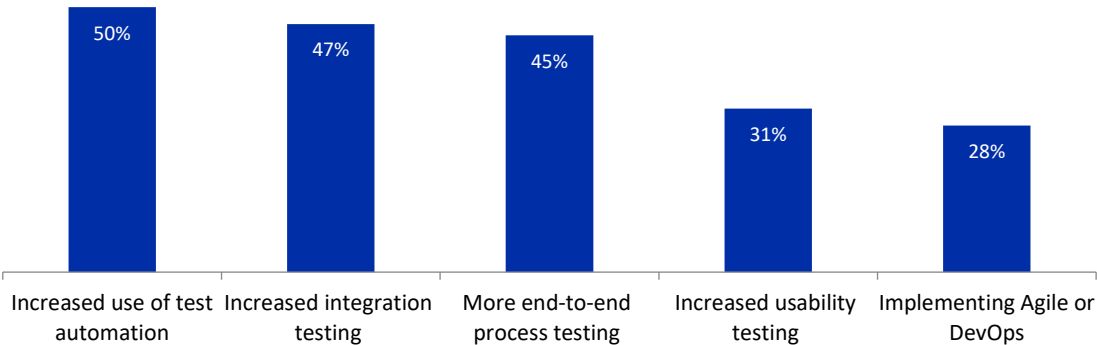
INSIDER PERSPECTIVE

We have been able to implement Agile for non-SAP projects, but there is a general perception that Agile is not compatible or not easy for SAP.

S V Prasad Gandhikota,  
Senior Systems Analyst and  
Delivery Leader, Conagra Brands

SAP S/4HANA plans are having a catalytic effect on change management and testing functions. There is recognition that the value of such an expensive and risky upgrade can be achieved only with more agile change management and a robust testing process. The most common impact that SAP S/4HANA migration is having is in increased use of test automation (50%), integration testing (47%), end-to-end process testing (45%), and usability testing (31%). Twenty-eight percent of respondents are implementing Agile or DevOps before or during the SAP S/4HANA move (Figure 3).

Figure 3: Impact of SAP S/4HANA Move on Change Management and Testing



Source: SAPinsider, October 2022

With the increasing importance of these functions, we also see senior IT employees involved in change management and testing decisions. The Chief Information Officer (CIO) or Chief Technology Officer (CTO) made the decisions in 38% of respondents, while the IT Director or Vice President made the decisions in half of the respondents. Individual project teams made their own change management (13%) and testing (10%) decisions in a small minority of respondents.

## Required Actions

Based on the survey responses, organizations should make the following plans around their DevOps strategies:

- **Develop enterprise-wide Agile/DevOps and testing strategies to deploy applications with high impact and low risk.** The challenges around integration, information technology (IT) costs, and rapid demand for updates are not going away. Organizations need an enterprise-wide approach with the flexibility to be tailored for projects based on complexity and priority.
- **Ensure that integration across applications and data is an early part of implementation planning in order to avoid frustration later in the deployment timeline.** It is too risky for integration discussions to be put off until later. An enterprise architecture team with single-point ownership for integrations can make sure there are no unpleasant surprises later in the development life cycle.
- **Improve collaboration among IT teams and between IT and business with processes and collaboration tools.** Both change management (in the form of continuous integration/continuous delivery [CI/CD], Agile, DevOps) and testing require significant collaboration in order to be effective. Change and project management tools can influence collaboration, but building a collaboration culture is a must.
- **Use SAP S/4HANA implementation as an opportunity to modernize change management and testing functions.** The research showed that SAP S/4HANA plans are impacting change management and testing. Agility and adaptability are part of the value proposition with SAP S/4HANA and other newer SAP and non-SAP applications. IT departments can make the case to modernize to Agile/DevOps or implement newer testing tools during or soon after a move to SAP S/4HANA.

# Chapter One: Cloud and SAP S/4HANA

## DevOps Overview

The demand of businesses for rapid innovation to support digital transformation has increased across all organizations. In addition, more SAP and non-SAP applications involve less coding and more configuration and integration work. All these trends place greater demands on change management and testing.

### Best Practices Model — DART

SAPinsider grounds all its research insights in its proprietary DART model. This research model provides practical insights that connect business **D**rivers and **A**ctions to support **R**equirements and **T**echnologies (DART). Drivers represent internal and external pressures that shape organizational direction. Organizations take Actions to address those Drivers. They need certain people, processes, and capabilities as Requirements in order for those strategies to succeed. Finally, they need enabling Technologies to fulfill their Requirements.

Respondents’ answers to our survey and interview questions revealed clear trends that are summarized in **Table 1** and will be examined throughout this report.

**Table 1: DART model framework for Cloud and SAP S/4HANA DevOps**

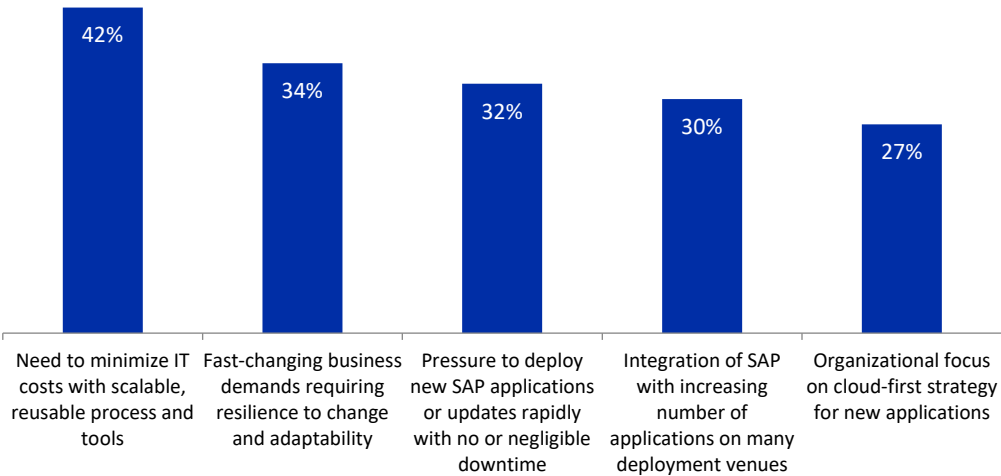
Drivers	Actions	Requirements	Technologies
<ul style="list-style-type: none"> <li>Need to minimize IT costs with scalable, reusable process and tools (42%)</li> <li>Fast changing business demands requiring resilience to change and adaptability (34%)</li> <li>Pressure to deploy new SAP applications or updates rapidly with no or negligible downtime (32%)</li> <li>Integration of SAP with increasing number of applications on many deployment venues (30%)</li> <li>Organizational focus on cloud-first strategy for new applications (27%)</li> </ul>	<ul style="list-style-type: none"> <li>Increasing automation to reduce costs and increase scalability (42%)</li> <li>Implementing a new change management and testing strategy and framework (DevOps, Agile, etc.) for SAP (42%)</li> <li>Enabling early collaboration across SAP and non-SAP IT and business teams (32%)</li> <li>Implementing testing automation company-wide or in a targeted manner (35%)</li> <li>Implementing end-to-end process testing discipline to tackle increased integrations with SAP (33%)</li> <li>Investing in more user experience testing (24%)</li> </ul>	<ul style="list-style-type: none"> <li>Meeting regulatory and legal requirements and documentation (76%)</li> <li>Process understanding for migration and testing outcomes (76%)</li> <li>Support alignment of core SAP systems (76%)</li> <li>Clear stated goals for functional and nonfunctional testing (73%)</li> <li>Access management for SAP and non-SAP applications and data (68%)</li> <li>Comprehensive Project management for deployment and testing (67%)</li> <li>Streamlined deployment and feedback process across IT and business teams (63%)</li> </ul>	<ul style="list-style-type: none"> <li>Change and release management tools (50%)</li> <li>Security testing (49%)</li> <li>Defect trackers (43%)</li> <li>Agile process/backlog management tools (42%)</li> <li>ABAP source/version control tools (42%)</li> <li>Test monitoring (42%)</li> <li>Test automation (40%)</li> <li>Test data creation and management tools (39%)</li> <li>Performance/scalability testing tools (37%)</li> <li>Integration/API testing (32%)</li> </ul>

## What Drives DevOps for SAP?

The major driver for DevOps among the survey respondents is the need to minimize information technology costs with scalable, reusable process and tools (42%). Other top drivers are the fast change business demands requiring resilience to change and adaptability (34%) and the pressure to deploy new SAP applications or updates rapidly with no or negligible downtime (32%). The increased integration of SAP with other applications and across venues (30%) and a focus on being cloud-first for new applications (27%) are also impacting the need to transform change management and testing (**Figure 4**).

In addition, several respondents also cited increasing regulatory requirements (15%). That impacts many processes, including the creation of compliant test data.

**Figure 4: Top drivers for DevOps for SAP**



**Source: SAPinsider, October 2022**

Organizations cite key goals in change management and testing such as reduction of business risk (60%) and costs (45%), higher quality testing using production quality data (49%), and broader stakeholder satisfaction (34%).

Resilience to change and adaptability is emerging as foundational for digital transformation. High-impact business requests can no longer sit in the pipeline for months. Further, while business requirements can be thought through ahead of time, they cannot be frozen in place for long as they were earlier. The changes in product line, the impact of competitive moves, and the availability of new technologies mean that project teams must deal with unpredictable requirements.

### INSIDER PERSPECTIVE

Testing is very critical for all our SAP implementation projects for two reasons—to catch issues and also to involve users in the system during User Acceptance Testing. We utilize change management mainly to prepare the users for the change in business process and to make them think about updating or creating new procedures and work instructions and the training thereof.

**Govind Deep Venkatesan,**  
Manager – Validation and Infrastructure, Aspen Healthcare, EMEA

## How Do SAPinsiders Address Drivers?

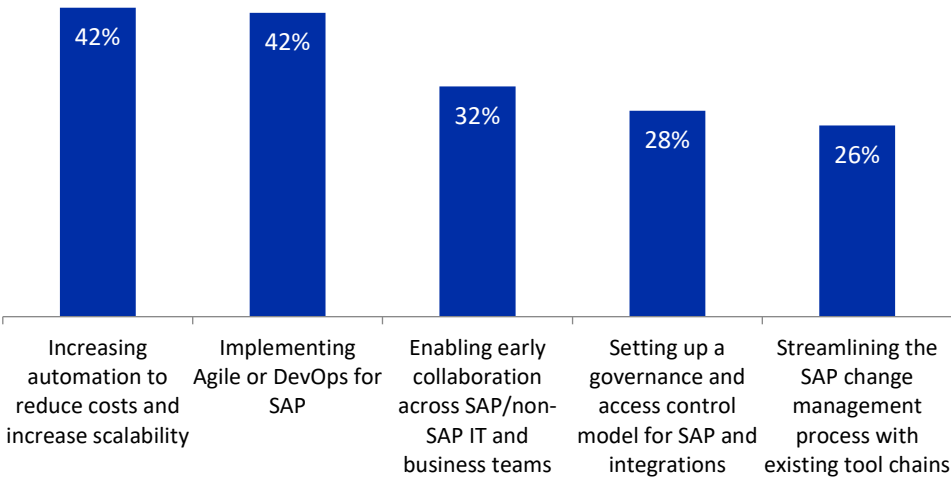
Since the actions to address the drivers vary between the change management and testing functions, we analyzed them separately.

### The DevOps Journey for SAP

Forty-two percent of respondents are increasing automation and implementing an Agile or DevOps strategy for SAP. These are huge changes in the way SAP teams have typically managed their change, not just in a technical way but in the mindset involved in change management.

Thirty-two percent are enabling early collaboration across the board. That may involve setting up a governance model (28%). Instead of investing in new toolsets, 26% of respondents are streamlining the process with existing tool chains such as SAP Solution Manager (Figure 5).

Figure 5: Top actions in change management to address top drivers



Source: SAPinsider, October 2022

In addition, 13% of respondents are implementing process discovery and process mining tools for SAP in order to simplify the process and enable a uniform knowledge base for change.

Clearly, in further discussions with survey respondents, there is recognition that frameworks are only as good as the people who use them. Agile and DevOps are powerful approaches to deliver rapid, high-quality implementations and updates; however, they require a new mindset backed by processes and tools.

There is a wide variety of how agile/DevOps are being applied across SAP. Experimentation of Agile and DevOps often starts in cloud-based, non-SAP applications but slowly percolate into the SAP world. Within the SAP world, there is also variation.

While waterfall models dominate SAP BusinessOne/Business ByDesign (60%) and SAP ECC or Business Suite (34%), many respondents claim they are starting to apply Agile in many

### INSIDER PERSPECTIVE

We have started using Agile in every IT implementation. Adoption of right toolset and training of IT staff is critical for its success.

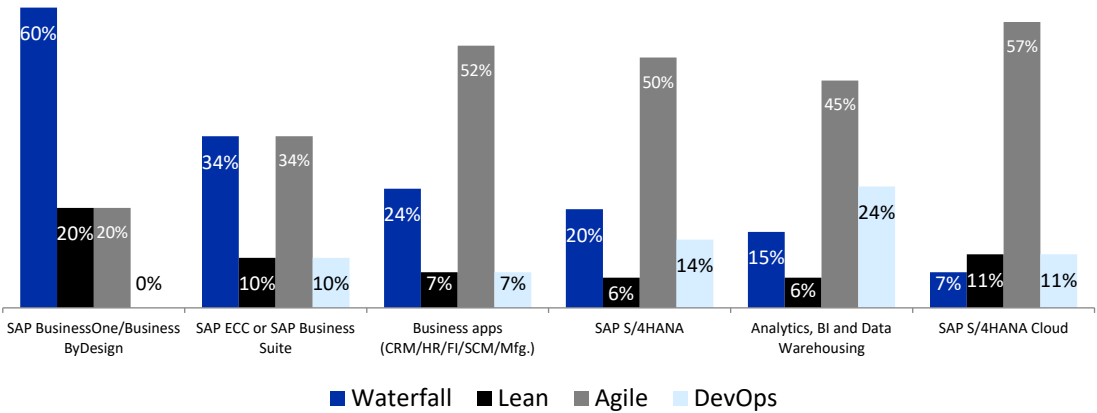
Sanjay Davar,  
Head, Enterprise Architecture,  
Electronics Manufacturer, APJ



SAP solutions. Agile frameworks are being used across SAP, the highest being in SAP S/4HANA Cloud (57%), followed by business apps (52%), SAP S/4HANA (50%), analytics, business intelligence and data platforms (45%), and SAP Fiori/SAP UI5 (42%).

Respondents also cite their use of DevOps in SAP Business Technology Platform (SAP BTP) and analytics and business intelligence and data platforms (24%).

Figure 6: Change management approach by SAP solution



Source: SAPinsider, October 2022

INSIDER PERSPECTIVE

While I have seen successful Agile projects in our company, I am a bit skeptical about DevOps. I feel like DevOps has not reached SAP 100%. Can we easily containerize SAP PO, for example?

Solutions Architect, Chocolate Manufacturer, NA

Based on interviews with experts, this does not necessarily mean that Agile or DevOps are the common approaches. It may only mean that there is some experimentation or pockets of using Agile or DevOps as the development approach.

As seen earlier, 28% of respondents are planning to move to Agile/DevOps, triggered by their SAP S/4HANA migration.

The Testing Journey for SAP

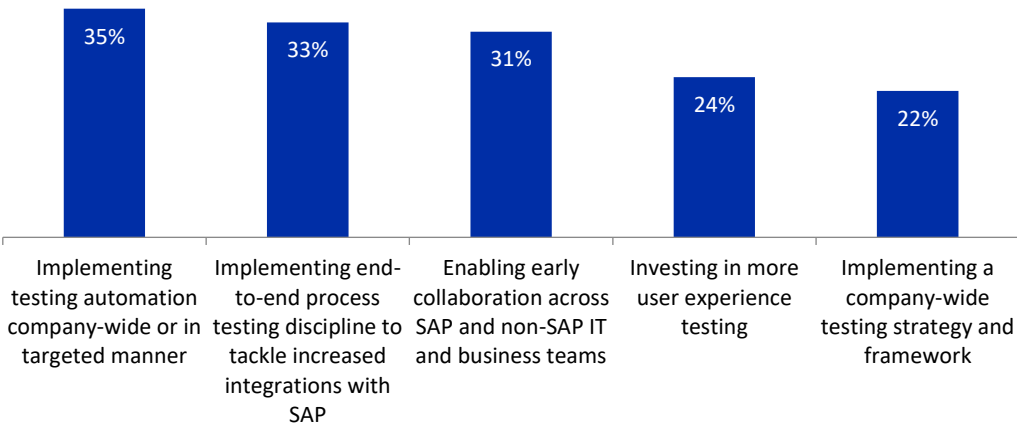
We analyzed the actions that organizations are taking with respect to testing.

Thirty-five percent of respondents are implementing testing automation either across the company or in a targeted manner. This is expected to bring big gains in testing outcomes and also reduce costs over time.

The increased integration has led to 33% of respondents claiming to be implementing end-to-end process testing discipline in order to tackle increased integrations with SAP. Just like with change management, collaboration across SAP and non-SAP IT and business teams (31%) comes as the third most popular action.

Often, testing is left to the discretion of individual project teams. Twenty-two percent of respondents claim to be implementing a company-wide testing strategy and framework. In addition, 20% are using strategies to generate higher-quality test data (Figure 7).

**Figure 7: Top actions in testing to address top drivers**



**Source: SAPinsider, October 2022**

Use of AI/ML for testing is still experimental with only 13% of respondents claiming to try it.

There is also a steady adoption of more sophisticated testing practices to support the complexity, integration, and need for rapid testing. Adoption of test automation as well as end-to-end testing, performance testing, usability testing, and artificial intelligence/machine learning to support testing is steadily increasing but varies by the SAP solution.

Below are some of the key adoption trends across SAP solutions (**Figure 8**).

- Test automation is most popular with SAP S/4HANA Cloud (42%), SAP ECC or Business Suite (40%), and SAP S/4HANA (34%).
- End-to-end process testing leads in business apps (55%), SAP S/4HANA (46%), SAP ECC or Business Suite (43%), SAP Fiori/SAP UI5 (40%), and SAP S/4HANA Cloud (38%).
- User experience testing is most popular in SAP e-commerce solutions (64%), SAP Fiori/SAP UI5 (45%), analytics, business intelligence, and data (39%).
- Performance testing leads in SAP e-commerce solutions (50%), analytics, business intelligence, and data (39%), and SAP ECC or Business Suite (35%).

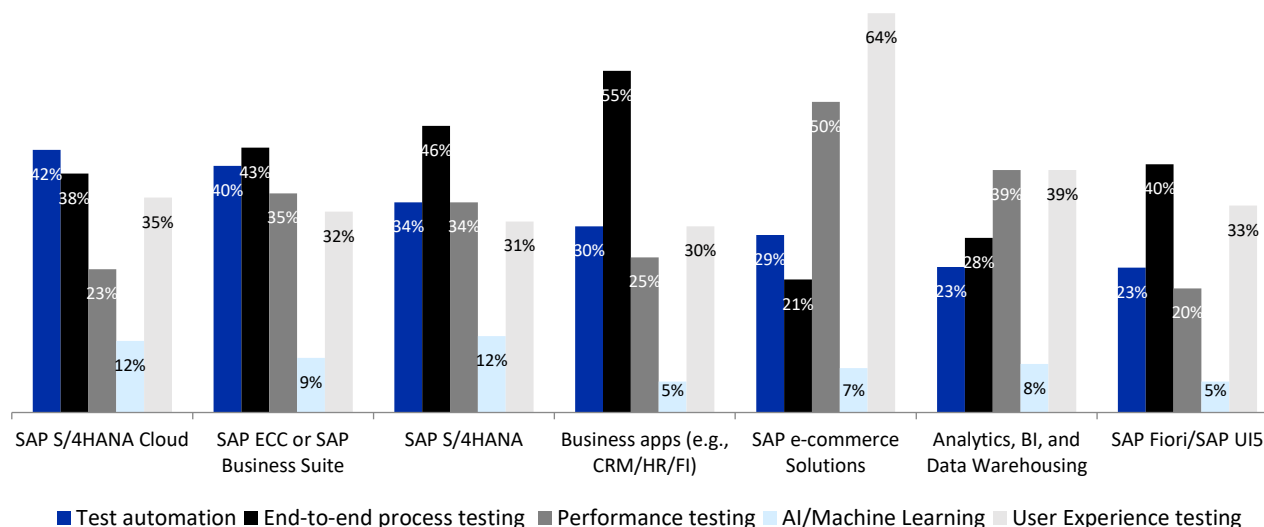
Artificial intelligence/machine learning tools are taking initial steps but are not significantly adopted yet.

**INSIDER  
PERSPECTIVE**

Performance testing, security testing, seamless integration, and user acceptance testing are equally important and critical for the project success. These are defined at the time of project definition/project scope and are subject to modification as we proceed along the SecDevOps journey.

**Sr. Director Data Architecture,  
Global Medical Technology,  
Pharmaceutical Diagnostics  
Provider**

**Figure 8: Testing approaches by SAP solution**



The success of these methodologies and tools varies. Some organizations have been able to adapt to the mindset while others deploy tools without the accompanying organizational change management. Often these methodologies are driven from the bottom up with individual project teams piloting them and then sharing them across IT departments. They require substantial time commitment from business users as well.

## Key Takeaways

Based on our research, the following takeaways are clear:

- **Develop a comprehensive enterprise-wide change management and testing strategy but with the flexibility to be adapted for individual projects.** For the next phase of modernization, it is important to invest in evaluating, formulating, and training the company on an enterprise-wide change management and testing strategy, processes, and technologies. Ideally, this should be a joint exercise between IT and business stakeholders.
- **Use SAP S/4HANA implementation as an opportunity to modernize change management and testing discipline.** The research shows that SAP S/4HANA plans are impacting change management and testing. Value from SAP S/4HANA and other newer SAP and non-SAP applications can come from agility and adaptation. IT departments can make the case to modernize to Agile/DevOps or implement newer testing tools during or soon after a move to SAP S/4HANA.
- **Deploy Agile/DevOps models that enable collaboration within IT and with business.** Organizing teams to achieve specific outcomes and develop skills needed to achieve those outcomes can help deliver impact as opposed to siloed teams working on a linear model. Agile/DevOps models can achieve continuous integration, continuous delivery, continuous deployment, and continuous improvement—important ingredients of success today. Investing in organizational change, change management, and release tools can ease this modernization.

# Chapter Two: How Do SAPinsiders Approach DevOps for SAP?

As discussed, mostly due to the business impetus and partly due to the SAP S/4HANA move, many respondents are launching modernization efforts for their change management and testing function. However, such modernization cannot happen in a vacuum. It is also important for these organizations to meet critical requirements from both a business perspective and a technology perspective.

In this chapter, we will assess those requirements and inquire into the various technologies that respondents are using to address the requirements while also meeting their goals.

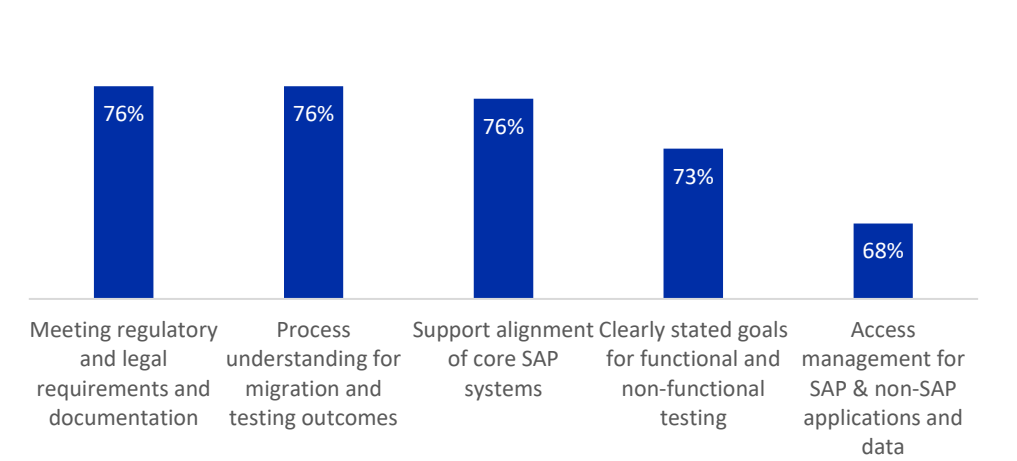
## Top Change Management and Testing Requirements

Compliance—meeting regulatory and legal requirements and documentation—is a vital demand from change management and testing teams cited by 76% of respondents. The documentation requirements alone can be daunting.

With the complexity of SAP systems already at high levels, migration is a risky project. Hence, 76% of respondents also require all IT and business resources to have a solid understanding of processes for migration and testing.

Other requirements include aligning core SAP systems with other SAP and non-SAP applications (76%) and clearly stated goals for testing (73%). Access management for applications and data (68%) is also critical for a smooth rollout of projects while also managing security and compliance. (Figure 9)

Figure 9: Top requirements for change management and testing for SAP



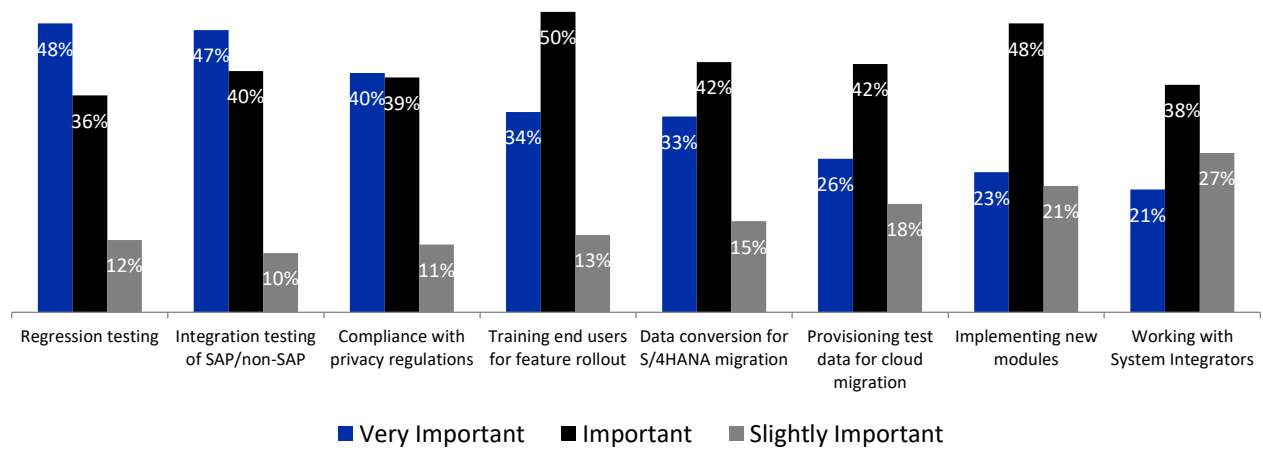
Source: SAPinsider, October 2022

More and earlier streamlined collaboration across IT and business teams is vital for both documenting clear goals for testing and gaining a better understanding of processes to support smooth deployments and better testing outcomes.

Earlier, we saw that delivering high-quality testing with production quality test data was important for almost half of the respondents (49%). Yet 32% of respondents claim to find it challenging to mask and scramble production data in order to create test data that is secure and compliant. Hence, generating and maintaining test data is an important imperative for most organizations.

The projects where high-quality test data is very important or important are integration testing (87%), regression testing (84%), training end users (84%), compliance (79%), and data conversion for SAP S/4HANA migration (75%) (**Figure 10**).

**Figure 10: Importance of test data for various projects**



**Source: SAPinsider, October 2022**

Generating test data is increasingly challenging due to the increased compliance requirements and the increasing integration of SAP with non-SAP software on a hybrid infrastructure. Test data automation solutions sync with SAP and other databases, create virtual copies of the data, and allow for data refresh, cleanup, versioning, and masking.

Automating the creation and management of test data can move the needle on rapid and high-quality testing.

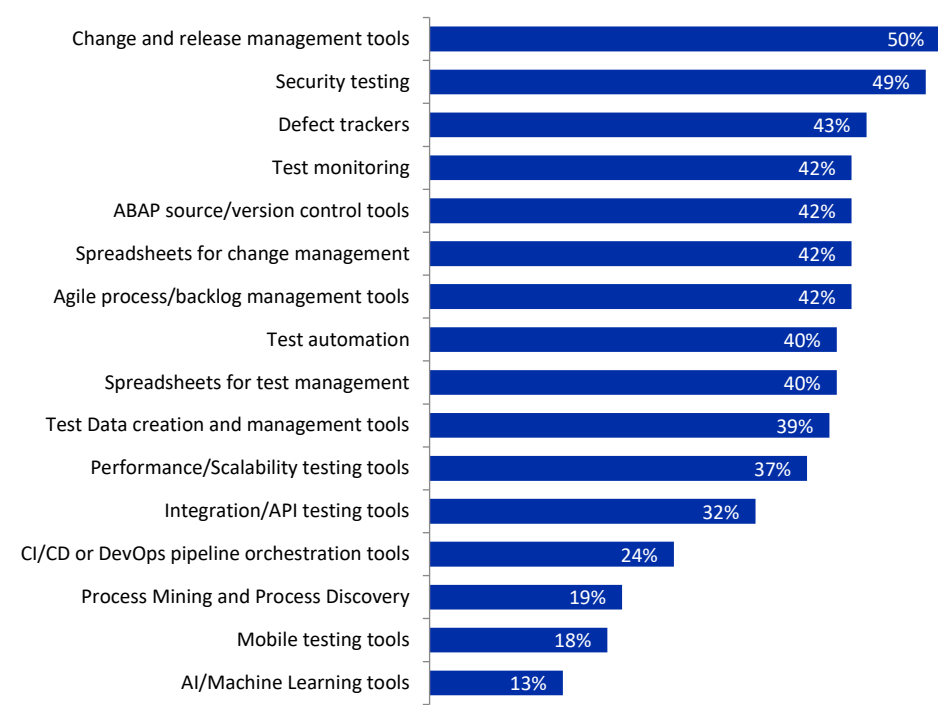
### Which Technologies Do Respondents Use for Change Management and Testing?

While tools and technologies proliferate in the change management and testing space, some are more prevalent than others within SAP organizations (**Figure 11**).

With respect to testing, use of security testing (49%), defect trackers (43%), test monitoring (42%), and test automation (40%) are the most popular. Currently, integration/API testing tools (32%) and mobile testing (18%) are not substantially used, although they are very much needed as noted above.

With respect to change management, change and release management tools (50%), ABAP source/version control tools (42%), and Agile process/backlog management tools (42%) are most used.

Figure 11: Change management and testing tools currently in use



INSIDER PERSPECTIVE

We have been utilizing SAP Activate successfully in our projects. We have already successfully gone live with a lot of projects that ran on SAP Activate. We find that the key is to have a tight link with project management and have proper quality gates for the various sprints and sign-offs. We do not use DevOps yet. We are still analyzing it.

Govind Deep Venkatesan,  
Manager – Validation and Infrastructure, Aspen Healthcare, EMEA

Source: SAPinsider, October 2022

Spreadsheets are still in significant use for 42% of respondents for change management and 40% of respondents for testing.

A very small percentage has started using process mining and process discovery (19%) and artificial intelligence/machine learning tools (13%).

However, the future of tools and technologies for change management and testing is bound to look very differently. It is interesting to note that a large percentage of respondents are investing in many of the technologies to modernize their functions.

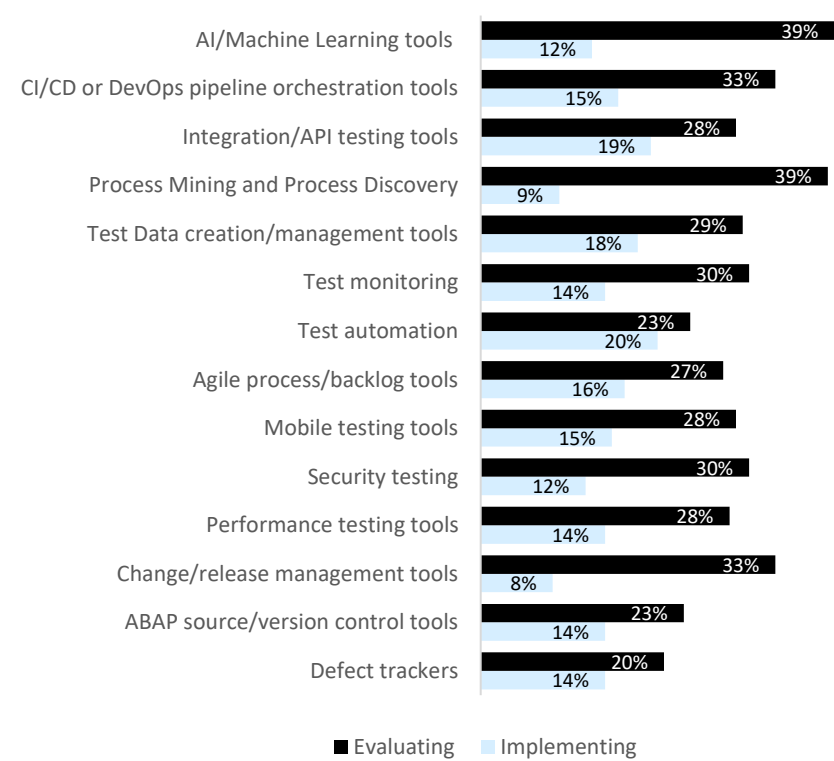
Over half of respondents are implementing or evaluating artificial intelligence/machine learning tools, especially for testing.

For change management, the next more popular tool being implemented or evaluated is CI/CD or pipeline orchestration tools (48%), which sets the foundation for DevOps. Other popular tools are Agile process/backlog tools (43%), change/release management tools (41%), and ABAP source/version control tools (37%).

A lot of tool investments are happening in the testing function. Forty-seven percent of respondents are implementing integration/API testing, clearly showing the criticality of

testing the burgeoning number of integrations in the SAP space. Other popular testing tools include test data creation/management (47%), test monitoring (44%), test automation (43%), security testing (43%), and performance testing (42%) (**Figure 12**).

**Figure 12: Change management and testing tools being implemented or evaluated**



Source: SAPinsider, October 2022

INSIDER PERSPECTIVE

“For SAP, integration and user acceptance testing have become more critical than in the past. We also do performance testing for most projects.”

S V Prasad Gandhikota,  
Senior Systems Analyst & Delivery  
leader-Manufacturing, Conagra  
Brands

Forty-eight percent of respondents are also implementing or evaluating process mining and process discovery tools.

However, accounts of experts tell different stories behind the data. For instance, artificial intelligence and machine learning are quite often niche projects being attempted on a slice of a non-SAP system. In most organizations, it is not gaining traction due to lack of expertise, limited bandwidth for such pilot projects, and, hence, a difficulty to build a business case.

All these technologies can make a dramatic change in the processes and create a seamless collaboration among both SAP and non-SAP teams, as well as with business stakeholders. A collaborative, notification-based system can keep the communication channels open and enable reacting to change faster.

### Key Takeaways

When it comes to modernizing capabilities and technologies related to change management and testing, consider the following:

- **Set up processes to clarify goals for change management and testing.**  
Documented goals for each project, including compliance requirements, testing outcomes, timelines, and budget, can help plan delivery and prevent frustrations. Tools for collaboration can be used to document them and make them available as a point of reference so all stakeholders work toward the common goal.
- **Set up service level agreements (SLAs) for change management and testing.**  
Project management functions can use SLAs to develop project plans so adequate time is allocated for change management and testing. Best-in-class organizations set clear expectations and meet them. Collaboration tools can set up rules and enable close communication so there is a coordinated effort to deliver to preset goals.
- **Move away from manual, inflexible tools that limit your ability to stay compliant and deliver rapid testing and change management.** Make a deliberate push to retire old tools (including spreadsheets) that can no longer meet the demand for rapid, high-quality deployments. It is better to replace them than blame them for poor, delayed outcomes. However, new tools often suffer from poor setup, ineffective training, and high expectations that do not pan out. Setting up a champion team to set up, train, and roll out can be a big step for broad adoption.
- **Evaluate/pilot new tools for integration testing, testing automation, AI/ML, and process mining to speed deployments and manage budgets.** A specialized council made up of business and IT users can be assigned to come up with tools that make sense for the enterprise. Such tools can be piloted in smaller projects before being propagated through the enterprise.



## Chapter Three: Required Actions

SAPInsider's earlier research this year on topics such as application development, enterprise cloud deployment, integration, and data management have confirmed the dramatically different models SAP customers are deploying to meet their digital transformation needs. Whether it is rewriting, retiring, or replacing ABAP custom code with new applications; moving to SAP S/4HANA; or deploying new cloud applications, rapid change management and scalable, high-quality testing are critical.

SAP development teams will have to quickly adapt to this new pace of change and deliver high-quality software rollouts in a nimble manner.

In this scenario, it behooves change management and testing teams to adapt themselves in parallel to this new deployment normal and modernize their processes and tools.

### Steps to Success

Our research reveals that SAP customers should apply the following key steps to build a successful change management and testing function:

- **Make change management and testing a vital part of overall IT strategy and ensure that their criticality for transformation is well-known and communicated.** IT leaders should assess if they are making change management and testing an important part of IT strategy. Are change management and testing leaders involved in the IT strategy discussion? Is there sufficient budget allocated? Are all IT and business stakeholders aware of the needs? Are SLAs being created and communicated? Affirmative answers to these questions will ensure better outcomes.
- **Upskill teams in Agile/DevOps, AI/ML, testing automation, process mining, and more enable bottom-up modernization for maximum adoption across SAP and non-SAP teams.** Introduce learning sessions to expose stakeholders to these models with case studies to create enthusiasm. Identify champions in project teams who have the vision and passion to drive the change. Demand must percolate through teams before it is made into an enterprise-wide strategy.
- **Engage business users early to be critical collaborators for user experience and end-to-end process testing.** The biggest change that will have the most impact is the engagement of business users in the process, especially around process and user-experience testing. It may be necessary to add these responsibilities to their job descriptions and performance goals.
- **IT budgets are not going to be generous for change management and testing; identify ways to do more with less with concepts such as testing artefact reuse, automation, and AI/ML.** All these modernization approaches will be welcome, but it is unlikely that IT budgets will be increased to meet the needs. Identifying ways to do more with less is essential. IT departments can present a business case by swapping out existing cost buckets for new ones and showing the higher impact possible with just an incremental budget increase.

A modernized, agile, and collaborative change management and testing function is an asset to organizations and should be treated as such.

### INSIDER PERSPECTIVE

**"In our company, we still mostly work in *silos*, every team on their own. All we have is some collaboration. It doesn't seem like IT management is very open to DevOps."**

**Solutions Architect, Chocolate Manufacturer, NA**

# Methodology

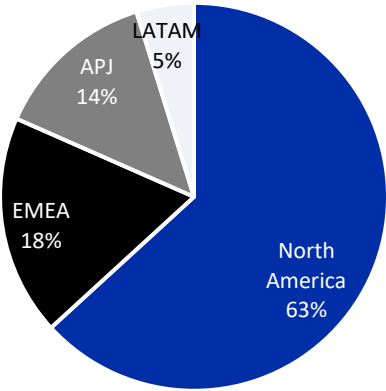
In September and October 2022, SAPinsider examined the experiences of business and technology professionals about how they are approaching change management and testing. Our survey was administered to 154 members of the SAPinsider community, and we generated responses from across a wide range of geographies, industries, and company sizes. Respondents completed an online survey and provided feedback in customer interviews that questioned them on topics such as the following:

- Where is your organization with respect to DevOps?
- What are your primary goals with respect to change management and testing?
- What are your organization's challenges regarding change management and testing?
- What tools and technologies are you using or considering for change management and testing?
- What is the impact of your SAP S/4HANA plans on your change management and testing functions?

The demographics of the respondents included the following:

- **Job function:** Functional areas reported by respondents included Information Technology (44%); IT Operations (12%); Application Development (11%); SAP Platform (11%); Change Management (5%); and Testing and QA (2%).
- **Market sector:** The survey respondents came from every major economic sector, including Software and Technology (34%); Industrial (28%); Public Sector (17%); Retail and Distribution (10%); Financial Services and Insurance (6%); Hospitality, Transportation, and Travel (2%); and Media and Entertainment (2%).
- **Geography:** Of our survey respondents, 63% were from North America; 18% were from Europe, the Middle East, and Africa (EMEA); 14% were from Asia-Pacific, Japan, and Australia (APJ); and 5% were from Latin America (LATAM).

## PARTICIPANT PROFILE



## Appendix A

### The DART Methodology

SAPinsider has rewritten the rules of research to provide actionable deliverables from its fact-based approach. The DART methodology serves as the foundation on which SAPinsider educates end users to act, creates market awareness, drives demand, empowers sales forces, and validates returns on investment. It's no wonder that organizations worldwide turn to SAPinsider for research with results.

The DART methodology provides practical insights, including the following:

- **Drivers:** These are macro-level events that affect an organization. They can be both external and internal and require the implementation of strategic plans, people, processes, and systems.
- **Actions:** These are strategies that companies can implement to address the effects of drivers on the business. They are the integration of people, processes, and technology. They should be business-based actions first, but they should fully leverage technology-enabled solutions to be relevant for our focus.
- **Requirements:** These are business and process-level requirements that support the strategies. They tend to be end-to-end for a business process.
- **Technology:** These are technology and systems-related requirements that enable the business requirements and support the company's overall strategies. The requirements must consider the current technology architecture and provide for the adoption of new and innovative technology-enabled capabilities.

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