Business Process Validation:
What it is, how to do it, and how to automate it

Automated business process validation is the best way to ensure that your company’s business processes continue to work as intended, even when mission critical enterprise systems change.

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NEW TECHNOLOGIES LIKE SAP HANA® in-memory databases, mobile computing and migration to the cloud are creating huge business potential today for global enterprises. But deploying them can bring enormous change to already complex enterprise system landscapes. Change can have unintended consequences, and that means risk.

“Some companies have a handful of enterprise applications in use. Some have a hundred or more, including SAP® as a significant component,” says Shoeb Javed, CTO of Worksoft Inc. “Companies have to ensure that their business processes work correctly across a much wider variety of systems than ever before. While these technologies create great opportunity for businesses, they also introduce significant risk. If a critical application fails, business processes can come to a grinding halt.”

How can IT organizations ensure that critical business processes continue to work as planned, when system changes are introduced?

SAP HANA, for example, is designed to tackle big data challenges by enabling organizations to match real-time analytics with transactional data. It will allow companies to make more strategic decisions and could fundamentally change the way they do business.

“SAP HANA represents a transformational change for companies that run SAP,” says Javed. “HANA allows companies to use real-time data in new ways—so it will change business processes and drive additional upgrade cycles for companies looking to deploy it.”

Javed notes that many other drivers also increase the level of technology risk. This can come from mergers or splits, internal reorganizations, new regulatory or legal mandates, new software modules or updates of existing apps.

CIOs working in this increasingly complex environment are challenged to reduce the likelihood of unexpected events and project failures. They must be able to ensure that with any change to applications or infrastructure, critical business processes will continue to function. For this to happen, legacy tools and manual testing are not viable options.

Validate business processes with end-to-end automation. Lower risk. Lower expenses.

“You may be able to manually test a business process with 10 variations, but what if you have a business process that works with 10 different mobile devices and operating systems? You now have 100 tests instead of 10 tests,” says Javed. “And if the process spans 10 more enterprise systems, you’ve just multiplied the challenge a thousandfold. You have to automate business process validation just to keep up.”

With end-to-end business process validation, CIOs can identify issues before they become problems, thus reducing risk and lowering the total cost of ownership of managing the enterprise’s business applications. Automated solutions for business process validation enable companies to conduct business with reliability and without disruption, even as they reduce expenses.

Of course, there’s always the option to do nothing or to stay with a piecemeal manual approach—and hope that everything works together as it should. And if it doesn’t?

“The risks can be catastrophic,” warns Javed. “If you have a system failure these days, it can mean that you stop taking orders or that your reputation suffers. And in this 24/7/365-connected world, that can happen instantly. If you are able to verify with the push of a button that 98 percent of your business processes work correctly, that is a huge risk-mitigating factor.”
What Is Business Process Validation?

Business Process Validation (BPV) is a cost and time efficient method for verifying that essential business processes are unaffected by changes. It represents a departure from traditional software testing techniques and thinking by focusing on business imperatives and economic constraints.

Used in conjunction with the Worksoft ®Certify™ solution set, BPV captures application expertise and leverages it to document, automate and verify business processes and the rules that govern them in order to reduce operational risk from changes to technology.

How Is It Different from Quality Assurance?

Traditional testing approaches follow the design and development of software, with emphasis on identifying and removing errors in the code and preventing software failure. These testing techniques are organized around the way the software is built and IT is the primary owner of the process. Quality assurance (QA) is commonly applied to internally developed applications.

BPV, in contrast, focuses on the business processes that are supported by the software, with emphasis on identifying and removing business risks and preventing operational failure. This approach is organized around the way the software is used and the business is the primary owner of the process. BPV is ideal for licensed applications such as SAP® where the vendor is responsible for the QA of the software code but the customer is responsible for validating their unique configuration and implementation of business processes, rules and data.

These differences pervade every aspect of the test process, as described below.

Quality Assurance

Quality assurance is organized around the V-Model, which represents the software development life cycle and how testing fits in. In this approach, testing follows the code from requirements, design, and development from the unit level through integration, system compilation and end user acceptance. Coverage is measured in terms of lines of requirements, code, states and pathways.

Test selection and design is focused around areas most likely to fail due to coding errors such as boundaries, equivalence classes or data types, edits and other edge conditions. The goal is to expose as many defects as possible based on knowledge and experience of how code is developed.

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Defects found during quality assurance are rated by severity according to the system impact. Those that cause the software to crash are rated highest, followed by loss of data, error conditions, incorrect results or failed edits.

**Business Process Validation**

In contrast, business process validation is organized around a pyramid, which represents business processes rated from highest to lowest operational risk. The top of the pyramid contains a representative sample of the most critical of all processes without which the business cannot function, followed by a steady expansion of scope both in terms of processes and rules until optimum coverage is achieved. Coverage is measured in terms of business processes and rules.

BPV test selection and design is focused around processes most likely to have operational impact, such as those that have the highest volume, financial exposure, customer impact and other core risks. Processes that are infrequent or rules that are exceptions are rated lower unless they pose extraordinarily high financial or exposure risk. The goal is to protect operations and reduce as much risk as possible based on knowledge and experience of how the business processes are used.

Defects found during business process validation are rated by severity according to operational impact including customer, supplier, regulatory and internal exposure.

With these differences in mind, let’s look at how you implement business process validation, step by step.

**How To Do It**

As with any project, the key is to start with the right team. For BPV, the team may be led by IT but must be comprised of the best and brightest business process owners from the business. Generally a representative from each operational area or department should be included who has a thorough understanding of how the software serves their needs.

**Inventory Business Processes**

The first task for this team is to identify all of the business processes that their functional areas rely on. These processes are then ranked by risk. As described above, risk is measured by operational impact, and factors include the volume or number of times the process is used, the financial exposure should the process fail, and the potential impact of failure or error on stakeholders including customers, suppliers, regulators and employees. Categorize these processes by critical, high, medium and low risk.
Critical processes are those without which the business cannot conduct daily operations. Obvious candidates are those that generate revenue through taking sales orders, shipping goods and issuing invoices as well as those that purchase the materials and inventory needed to satisfy manufacturing and sales requirements.

High risk processes are those that are essential to ongoing operations such as forecasting inventory, hiring and paying personnel, properly recording the financial results of transactions and other supporting functions. Medium risk processes are those that are important but occur with less frequency, such as terminating employees, issuing credit memos or returning defective goods. Low risk processes are those which are infrequent or which have a manual work-around, such as producing reports.

Understand Business Rules
Once the process inventory is identified and ranked by risk, the next step is to document the rules that govern them. A rule is a condition that affects the transaction flow of a process and is triggered by the data or a decision by a user. Each rule outcome dictates a variation of the business process, whether in the transaction flow, data fields required, or results.

For example, certain types of goods may be manufactured in only select locations or must be shipped only by certain means. Or, a return of goods may entitle the purchaser to a refund or credit depending on the user’s judgment or customer’s request. In each case the detailed steps and data of the process will vary based on the rule and its outcome. A rule may have multiple potential outcomes, and depending on the answer the transaction flow may take one of several pathways as a result.

Each outcome represents a variation of the process, and these variations should also be assessed for risk using the same scale as described above.

Identify Changes
Depending on the event for which validation is being performed, such as a routine transport, service pack, upgrade or new deployment, changes may be introduced that affect business processes or the rules that govern them. This is not only an element of risk but also may affect the transaction flow of a test process or one of its variations.

There may also be changes introduced by the users themselves. It is not uncommon for users to adapt processes to make them more efficient or to accommodate operational changes or new requirements. Thus, the business process procedures previously documented and tested may not reflect the reality of daily usage. For this reason it is important to regularly review the process flows to be sure they are current and, where needed, to augment or modify them.

The more you understand the nature of the change and its impact on your processes, the better you are able to focus your efforts to reduce the maximum level of risk.

Define Test Processes
Once the business processes, rules and variations have been inventoried and ranked by risk, you are ready to define test processes. Because it is a reality that schedule and resource constraints will not permit complete coverage, it is essential to approach validation in risk order, highest to lowest. That way if you run out of time – and most likely you will – you will have covered the highest risks. Develop the critical test processes and variations first and begin using them for every transport. Next, deliver and begin using the high risk test processes, then medium, then low. This approach will yield short term results while building slowly but surely towards comprehensive coverage and risk reduction.
A test process is defined as a linear flow through a business process variation. In other words, create one test process for each combination of rule outcomes. The test process will describe each step including the transaction code, the screen, the field and the data value to be entered or verified. This list of data values will be used to construct the test data strategy.

Acquire Test Data

Test data is the most critical component of repeatable testing whether manual or automated. If the data values cannot be reused, or are constantly changing, then the maintenance burden of any repeatable test process will consume excessive time and resources, thus reducing time and resources available for validation. As a result, coverage declines and risk increases.

Clearly data is a moving target. Transactions can create or consume data, such as inventory. Or, master data can be modified or added. Date fields have to maintain meaningful relationships to the current date and to each other. Because of this complexity, it is essential to define a systematic approach to establishing and maintaining a data environment that is controlled and repeatable.

While it may seem logical to simply copy or extract data from production as it will represent a snapshot of reality, this causes instability because production data is constantly changing. Also, there is no guarantee that all conditions necessary to support test process execution will be present in a single snapshot. The best approach is a blend of extracted and created data. Extract a sufficient subset to populate the test environment, then either condition that data or create new data to satisfy the necessary conditions for the test processes to execute.

Using the list of data fields and values defined for each variation, determine the source of the data. Some will be master data, some will be created by transactions, others will be received from interfaces. Next, create an execution schedule that depicts the relationships between the processes and their sources or uses of data. For example, if a sales order will consume inventory, and an inventory purchase will create it, then the inventory purchase process should be scheduled before the sales order process. Using this technique you can construct valid end to end test process execution cycles that also assist in maintaining the test data environment.

Define these execution cycles using a virtual day/week/month/year in the life of the company. For each change event that must be validated, update the schedule to actual dates and make any necessary adjustments to the test environment or process data. Once you have your test processes defined and ordered into execution cycles, with all supporting test data available, you are ready to execute the BPV process.

How To Automate It

Each of the steps for BPV can be performed manually, using automation or a combination of the two. In this section we will detail specific recommendations for employing technology to accelerate and streamline BPV.

Process Inventory

The inventory of processes, known in SAP as the Blueprint, should be stored in Solution Manager. Test cases can then be linked and the execution results tracked and reported. This provides a central project management repository that tracks the coverage of your blueprint and status of your validation process.

Developing the detailed steps is more complex. Although most companies carefully documented their business process procedures for the initial go-live project, the odds are that these have
not been kept current. Business process knowledge is most likely stored in the brains of business process experts. This information needs to be extracted efficiently so as to minimize intrusion on the experts, and stored in a structured form so that it can be easily maintained and reused.

Worksoft technology provides a friendly interface that enables experts to identify and/or define their business processes and rules in a graphical, hierarchical structure. Users can drill down through each process, transaction, screen and field and perform animated walkthroughs to verify rules and flows. The Worksoft Platform can also review production to identify common business processes in use. All processes captured can be used to populate Solution Manager.

Test Prioritization
As described above, test processes are prioritized by risk, which can be inherent or can be driven by change. Time and resource constraints often prevent comprehensive coverage, so it is essential to focus available efforts to maximize risk reduction. Reducing inherent risk – assuring that existing critical processes are not changed unexpectedly – requires validating a repeatable base of critical processes. Reducing change risk – the risk that a known change has an unexpected impact – requires validating targeted areas with a focus on what should be different.

To properly assess the risk associated with change, you must know what changed and the impact. Simply reading through OSS release notes or other documents is a very tedious process, and it is difficult to understand them at a detailed level or grasp their implications.

Worksoft speeds and simplifies the identification of changes and their impact at every level of detail, all the way from the metadata to business processes to lines of code. Any two instances can be overlaid to identify what they have in common as well as what is different. This powerful capability can save days or weeks of analysis and reduce risk significantly.

Test Processes
Test processes must also be defined and stored in a structured form that is maintainable and reusable – and, most importantly – automated. Over time the inventory of test processes will continually increase as the use and functionality of SAP expands. Without automation, the time and resources needed to perform BPV will continuously increase, driving up costs and delaying time to market.

Worksoft Certify offers the leading-edge solution in test automation. It provides a repository of reusable content and a friendly interface that requires no coding or technical skills to implement, resulting in accelerated delivery of comprehensive coverage and efficient use of resources.

Its powerful data model also enables highly automated maintenance. Each and every application change to any business process, transaction, screen or field can be automatically identified as to its nature and impact on the test process repository. Expected changes can be implemented on a global basis automatically. This capability assures that your test processes are kept in synchronization with the application with minimal effort.

Worksoft Certify not only organizes, maintains and executes test processes automatically, it also produces detailed documentation of every step of every process, supporting regulatory compliance as well as assuring that BPPs are also kept current.

Data Acquisition
Acquiring test data is a challenging task. If copying all of production is not time or cost effective – and most likely it isn’t – then a meaningful subset must be chosen. This subset must have relational integrity and coherence, so that all related test data is available and makes sense.
Worksoft incorporates the SAP metadata model to provide users with a friendly interface for defining and extracting meaningful data subsets quickly and easily. These extracts can be stored and reused and applied to multiple instances and purposes such as testing, training, or even production.

Worksoft technology can also replenish or refresh test data, assuring that all conditions necessary for successful validation are available.

**Execution**

Worksoft delivers effective and efficient automated execution not just for SAP but for any application on any platform whether licensed or internally developed. Worksoft automation can be and has been applied to hundreds of different applications on multiple platforms.

This capability enables true end to end validation. Few companies rely solely on SAP and often critical processes span other applications or platforms. Thus, comprehensive business process validation requires Worksoft's seamless automated execution across both SAP and non-SAP applications.

**Summary**

Business Process Validation, when supported by the Worksoft solution set, is a time and cost effective approach for reducing the operational risk of implementing new or modified software applications. Unlike traditional quality assurance processes and manual techniques, it is laser-focused on reducing business risk by maximizing coverage through efficient use of time, resources and technology.

If you are interested in understanding how this radical new approach can accelerate your delivery of reliable software applications that support essential business processes, visit www.worksoft.com.

For a more detailed review of Worksoft Certify for SAP, view the accompanying presentation on The Next Generation of SAP Test Automation and Business Process Validation.
About Worksoft Inc.

Worksoft® is a leading global provider of automation software for high-velocity business process testing and discovery. Enterprises worldwide use Worksoft intelligent automation to innovate faster, lower technology risk, reduce costs, improve quality, and deeply understand their real end-to-end business processes. Global 5000 companies across all industries choose Worksoft for high speed process discovery and functional testing of digital, web, cloud, mobile, big data, and dozens of enterprise applications, including SAP®, Oracle, and Salesforce.com.

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