White Paper:  
**Service Transition: Service Validation and Testing**

As defined in ITIL® Service Transition, the goal of Service Validation and Testing is to ensure that a service will provide value to customers and their business. This is seemingly a very simple goal. However, the tasks within this practice show that the underpinning activities are not nearly so simple.

**Benefits**

The objective of the Service Validation and Testing phase is to verify that business requirements have been met and confirm the quality and production readiness of changed services and services components (applications, infrastructure, etc.). This set of processes should be integrated into the larger Project and Service Lifecycle. Many companies do not formally integrate the testing processes at all let alone to the maturity level comparable to that of the associated service development or enhancement processes. A lack of Service Validation and Testing maturity results in a much higher service failure risk level and generally a higher level of incidents related to the rollout of a new or changed service including:

- Loss of productivity for end-users and IT staff
- Increased downtime for the Service
- Service may not perform to user expectations for response time, functionality, or both
- Service may not scale.

The above issues also drive much more important losses:

- Potential loss of revenue
- Loss of credibility for both IT and the business.

In addition, testing early in the process to discover any issues and variances will allow more focused development and is generally less expensive to resolve in contrast to resolve costs post service release.

**Inputs**

The service and components as defined in the Service Design Package (SDP) will include the Business Requirements, Service Level Requirements (SLRs), Pattern of Business Activity (PBA), Service Assets (Capability or Resource that contributes to a Service), and application architecture. The Service Validation and Testing team digests the information in the Service Design Package and builds the test model and test requirements.

**Test Models and Testing**

Test models define the test objectives, the test conditions, and the deliverables - for both the development teams and Service Knowledge Management System (SKMS). Some test models, such as a Deployment
Release test model, which tests the deployment of the service, also interface to other ITIL® practice areas, such as Release Management. Service Validation and Testing also has linkages to:

- Change Management – changes to the service or underpinning Service Assets
- Capacity Management – capacity and performance of the Service and Service Assets
- Event Management – testing methods and key performance indicators (KPIs) drive some event management policies.

The tests are executed once the test models have been determined, developed, and accepted by both IT and the Business. Service tests will validate the vital business functions of the service, validate or show where improvements are required to meet the Service Level Requirements, validate the service scaling to the specifications of the Pattern of Business Activity, and if the Service Assets support the Service. As stated above, the output of the tests are delivered to the appropriate teams and entered into the Service Knowledge Management System. Services often fail to pass all required tests and need some modification before entering a new round of testing. The Service modification can impact Service Level Requirements, architecture, business functions, or down to database and/or code-level changes. New tests may also be required to address the modifications. The Project Manager must allocate sufficient time to the project to allow for multiple iterations of testing and validation in order to ensure a successful project and satisfied customers.

**Resources and Staffing**

Appropriate staffing must be available for Service Validation and Testing. This is often drawn from a diverse group that represents business and technology. There should also be a dedicated Project Manager to track time and effort associated with testing multiple services. Members from the business will participate in User Acceptance Testing and Service Requirements Testing. They may also provide real-user testing during automated stress testing, to provide an additional level of feedback. Technology team members should represent infrastructure teams, such as server administration, database administration, network management, event management, and capacity planning. This technology core may be dedicated staff or may be assigned based on the size and complexity of the Service, and frequency of change. In some cases, organizations use a rotation from the infrastructure teams to support the efforts. The business users involved in testing will vary based on the audience for the service (e.g. staff from Accounting will be involved in testing accounting related services, etc.). Preparing business users for testing activities generally requires extra effort for the Project Manager and Project Sponsor as the business units may not be familiar with the testing process, or hesitant to utilize their resources. As with any functional team, the Service Validation and Testing team must have executive management sponsorship and a solid communication vehicle to the rest of the organization. The team must also provide demonstrable value to the business.

Within the staffing model, some portions of the team may focus on the service as a whole, relative to validating the business functions, while another portion may focus on individual applications to test certain components. At an even more detailed level, team members may focus on the performance of tiers and individual servers, application instances, databases, batch jobs, etc.
Processes and Activities

Once the business functions of the service are validated, it is necessary to review the Service Level Requirements and prepare the appropriate validation tests. There are three critical timing components with an overall Service Level Requirement:

- End-user response time for functions
- Batch job completion
- Delivery of business value

Delivery of business value, as a metric, is sometimes confused with functional response time. This can be valid for online and interactive services. However, in complex services, this may be comprised of many end-user functions and multiple batch processing phases.

Consider the often referenced online banking service and loan application function. The functional requirements will be detailed in the Service Design Package along with the timing requirements as part of the Service Level Requirements. All of the Service Assets that comprise the service will be detailed. The validation and testing team will need to verify the requirements, instrument the Service Assets (install monitoring agents, profiling tools, end-to-end response timers, etc.), and build a test plan. From a business perspective, the functionality, availability, and timeliness requirements are the most visible, while the infrastructure teams need to focus on the resource capacity (CPU, Memory, bandwidth, etc.) necessary to deliver the service per the defined requirements.

To a banking customer, the application should follow a well defined path and be appropriately responsive. To the internal bank staff, the application must present the right information at the right time to make a good business decision and again, be responsive for individual functions. Once a decision is reached, there may be a batch process that sends summary information on decisions to all applicants and appropriate employees. In this albeit simplified example, all three of the above timing aspects are apparent.

In the example, all of the components mentioned are testable and can be validated. However, all three have different mechanisms for timing and validation. Building the testing apparatus is both a bottom-up and top-down effort. From a top-down perspective, functional requirements are evaluated. From the bottom-up perspective, each component must be monitored in order to validate the service as a whole. Users and some tools can validate functions and service content (does the service respond correctly within a given function?). In order to validate the architecture and Pattern of Business Activity, automated testing tools are often required. These tools can apply a load to specific functions within the service or specific tiers to push the service and/or individual applications to their anticipated peak volumes. In addition, for proper capacity modeling, the various points along the spectrum from low utilization to average to peak, and above peak volumes should be tested. This is especially true for new services or significant functionality enhancements. There are likely to be cases where enhanced user functions are not predictable and the business does not have a good model for user adoption of that function or option. In these cases, the Service Validation and Testing team should collaborate with the Business to develop likely scenarios and review the Service Knowledge Management System for similar efforts.
Reporting

Reporting templates should be utilized for reporting from the Service Validation and Testing team. This will ensure that components are not neglected and that report recipients will be accustomed to how the information is presented. Basic information, such as service name, service owner, and test dates should be included in addition to the reason for the test, how the test was performed, the expected results, the actual results, and relevant analysis and comments.

Once information is disseminated, it should be entered into the Service Knowledge Management System. Building a knowledge base of testing processes, templates, analytics, results, and recommendations will benefit the testing team, and new IT and businesses group employees, as well as provide reference material for developing new tests or revising existing tests.

The documentation entered into the Service Knowledge Management System becomes a portion of the transition package given to Release and Change Management in order to support the service as it is promoted to production. The documentation also supports the warranty period, by providing consistent and centralized information to development, transition, and support teams. In most organizations, the warranty period covers a defined time after the production rollout where the service development staff is actively involved in the support of the service in order to ease the transition to Operations.

Conclusion

Service Validation and Testing is an important step in the overall Service Lifecycle Management Process. Service Validation and Testing provides service, application, and resource requirements and quality validation in a consistent and repeatable methodology. It also ensures structured documentation which supports a smooth transition from development to production. The risks of not including Service Validation and Testing include loss of productivity, revenue, and credibility due to service downtime, lack of functionality, and poor performance. These risks greatly outweigh the investment in Service Validation and Testing processes and resources.

About Maryville Technologies:

Maryville Technologies is a leading independent IT professional services firm. Maryville delivers integrated solutions in support of IT service provisioning and IT service management that facilitate IT operational excellence. Our technical prowess, process expertise, project management discipline and history of facilitating IT organizational change help businesses optimize IT service levels at the lowest operational cost. Maryville’s IT Resource Optimization ITRO® methodology combines detailed process understanding that maps to industry standards with a practical “how to” implementation approach. Our entility® IT service management utilities complement our service offerings and vendor alliances with cost effective, feature rich functionality. Maryville also has extensive experience designing, implementing, and managing the enabling infrastructure for business applications. Every day, Maryville delivers the consulting services, processes and technology that others only talk about.

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