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Manage Change and Problems From Beginning to End With a Unified Service Model

By Steve Solomon

"A quick dive into the figures shows that the most frequent cause of application disruption are laid at the hands of **'software component failure'** with 'network failure or poor performance' being identified as the second most likely area to cause problems."¹



In the same way that an application change doesn't start with code check-out, a problem doesn't start when it is reported to the help desk. The challenge is to determine what systems should be part of a unified process for all of IT to manage change and problems from beginning to end, no matter how many systems are affected.

Traditionally, much of IT has been siloed, with various departments remaining isolated from each other. The help desk, for example, typically had no visibility into the changes that affected the end users it had to help. Changes, however, are often a major cause of the service disruptions that cause end users to call the help desk — so this lack of visibility is obviously problematic. That's why the help desk needs access to the tools that allow them to quickly answer the question, "What has changed?" Conversely, developers need access to operational system configurations so that they can understand the potential impact of their change.

In change planning today, all the help desk typically knows is that a new release is scheduled for a specific date. To move to the next plateau in change management, we need to adjust our thinking about the amount of change information we provide to the help desk. It may be necessary to inform the help desk about the details of the 500 components and four servers that are to be changed by the release. This level of detail is only possible if the change management process and the system that manages the software changes are integrated with the service desk system. To have a unified IT change process, operations and development need to unify and combine their operational systems.

The Project Management Office (PMO) also needs to be involved as the third member of the unified process triad. To truly run IT as a business, we need to more efficiently manage all change — not just those associated with large projects. By doing so, IT can get a clear understanding of all proposed changes and assess demand and available resources in order to ensure its ability to meet the business need. In addition, to provide a measure of demand management, all changes should be reviewed, approved and scheduled, or rejected as appropriate. Only by exercising these options can IT intelligently manage costs and resource allocation.

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¹ Freeform Dynamics, "The long and winding road to application service availability," Tony Lock, August 7th 2008.

In other words, IT can truly manage problems and changes from beginning to end by integrating operations, development and PMO in a single unified process. The key IT applications that need to be integrated to support the Unified Service Model (USM) include the Service Desk, Configuration Management Database (CMDB), Project and Portfolio Management (PPM) and Software Change Management (SCM). By integrating these IT systems into a unified solution, IT can both deliver significantly greater value to the business and become more accountable for delivering that value.

Service Desk: A Single Point of Contact that ITIL® Endorses

One of the key concepts in Information Technology Infrastructure Library (ITIL) is that business customers should have a single place to interact with IT to get their questions answered, to report problems and to monitor progress. In most organizations, a Service Desk system is used by the help desk to track all interactions with the business customers and to provide self service for IT requests. The service desk should therefore become the single point of contact ITIL endorses. ITIL breaks down requests into Incidents, Request for Change (RFC) and Problems.

When a business customer has a request, they should be able to contact the help desk or interact directly with the service desk application to create an Incident. A customer Incident could be a Problem, RFC or a Request for Information (RFI). One of the hardest jobs of the help desk analyst is to determine if an Incident is really a Problem. A customer Incident of "Slow Response" may be a problem in the system, a request for additional hardware or the system could be performing according to agreed-upon service levels. With the advent of CMDB technology, a help desk analyst has visibility into how the production environment is configured with associated relationships and Service Level Agreements (SLAs). With the additional information provided by the change management process and SCM system, the analyst can check to see if there was a recent change that could be causing a problem. This visibility into IT configuration environment and change process allows the help desk analyst to respond promptly and accurately to customer requests.

If a Problem or RFC is created from the Incident, then it is important that the business be kept apprised of the status of changes required. With this level of system integration, the business customers can now check for themselves the status of all change requests, eliminating the need to call the help desk.

The CMDB: Improving Change and Configuration Management Functions

A CMDB is not a common database for storing changes and problems for the systems that are part of the unified process, nor is it a communication system for transferring requests between systems. A CMDB stores only the information necessary to model the current IT environment. This model enables IT to understand how IT resources integrate to provide services to its business customers.

CMDB technology should be used extensively by both operations and development staff in planning and managing change. CMDBs vary by company; however, their most common use is to improve change and configuration management functions. The approved configurations represented within a CMDB are used to plan hardware swaps or software deployments and should be used for performing impact analysis, for planning change and when performing problem root-cause problem analysis.

Data stored in the CMDB is known by the collective term Configuration Item (CI). In its most basic form, a CI is any item that is managed under change control, and can vary widely in complexity, size and type ranging from an entire business application to a single source module. CIs can also be hardware, documentation and even SLAs. A CI can contain other CIs. For example, a server can host one or more applications, and each application can be made up of hundreds of programs.

The next step in the evolution of CMDB technology is the integration of software component level relationship data in the CMDB, provided by the SCM system. This process allows true cross-platform and cross-SCM system impact analysis before changes are started. A typical company may have three different SCM systems: one for mainframe development, one for the Windows development team in New York and one for the Windows team in San Francisco.

By incorporating SCM information from all these systems in the CMDB, common code that spans all development environments can be developed and automatically tracked to where it is used.

CMDBs typically only hold data on production systems. As usage matures, however, companies are finding that information from test and development systems is also very useful. Remember CMDBs don't store everything — only the data and relationships that are the most useful for managing change and configurations.

PPM: Returning the Highest Value to the Business

A key goal of the unified process is to provide IT with the ability to manage all tasks and IT spending. Therefore, when an RFC is created by the service desk, it needs to be logged as an IT service request in the PPM system — since the PPM system contains the processes to review, approve and prioritize the RFC.

PPM systems provide the ability to review all changes together and make sure that IT is working on the projects that will return the highest value to the business. PPM systems coordinate the work efforts and make sure all teams are kept informed. Once the RFC is approved, the PPM system then allocates the resources, scheduling and budget to complete the changes.

The status of projects and tasks are a critical part of a PPM system. Often, the update process for these tasks is the bane of development or project managers. PPM and SCM should be tightly linked, allowing developers to work within their chosen development environment. With a unified process, as the development tasks are completed, the updates in the PPM system can be made automatically and reflected in the service desk application.

The Expanding Role of SCM

SCM has grown substantially in recent years. Simple check-out and check-in of source and branch management is no longer sufficient for modern development. It is just as important to be working on the right tasks as the right source modules, and coordinating these activities with all other developers is critical to overall change management success. It doesn't matter if your development team uses Waterfall or Agile development methodologies; task and activities against those tasks need to be tracked against business priorities.

The SCM system must collect information on the release — identifying which software modules are part of a release, including modules used during the Build process. The SCM system has new additional responsibility to track the bill of materials for production components. This bill of materials provides the information needed to populate the CMDB, thereby allowing users of the CMDB to drill down to the lowest level possible.


As we have seen in the PPM and CMDB sections, the role of the SCM system is expanding into a system supporting the needs of developers, project managers, operation analysts and help desk analysts. For an integrated solution, it is critical that as developers move software changes to test and production, the PPM system will be updated, making the status of those changes visible to customers via the service desk.

Bridging the Information Gap

The ultimate goal of this unified process is to have people work with tools, process and procedures optimized for their respective roles. Help desk analysts work with a tool optimized to manage Incidents and RFCs; project management works within a PPM application; developers interface with the process via SCM.

Developers probably have the most diverse needs, since they work with multiple development Integrated Development Environments (IDEs) and languages. An automated SCM system needs to be able to work in these varied environments while still providing updates on tasks and activities to the PPM and service desk systems. The CMDB is used by all to determine change impact and to research problems. Having a CMDB that spans hardware and software allows users to drill down to any level and identify change impact at the most granular level.

As the RFC is completed in the SCM system, the CI data for the change needs to be captured by the SCM system. When the change is deployed into production, the updates need to be made in the CMDB and in the PPM system, by marking the project "complete." These actions should close the Incident or RFC in the service desk with proper notification to the requestor that the change has been completed.



The time is right for a Unified Service Model that bridges the information gap among operations, project management and development solutions. There is no single vendor system available today to do for IT what Enterprise Resource Planning (ERP) systems have done for the business. Companies that embrace this vision will need to focus on the solutions they have today, fill gaps where needed and then focus on integration opportunities and vendor roadmaps.

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