



# Pragmatic ITIL Process Automation

## Why IT operational excellence requires unifying process and technology

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## Executive Summary

Because IT inefficiencies can cripple any organization's competitive position, business success increasingly relies on efficient and effective application of technology to automate business processes. Pragmatic ITIL deployment represents an effective means to correct IT deficiencies and change the perception of the IT organization from a necessary evil that is often blamed for business failure to a valued contributor that is credited with business success.

The ITIL approach to process—taken alone, without adequately considering the technology—does not equal the best overall operational practice. Process, without the proper application of technology, amounts to nothing more than an academic exercise. Management software is necessary to automate process execution and enforce process compliance. Tools and processes must complement each other—either one, implemented alone, will fail.

When IT operations intelligently integrates management technologies and properly aligns them with processes, technology and process truly work in harmony as a wonderful feedback mechanism. By leveraging each other, the two form an engine that can power operational excellence and continuous improvement.

## Introduction

The IT Infrastructure Library, more commonly known as ITIL, has gained enormous popularity globally as a definition of best practices for IT operations. ITIL's growing following stems from numerous forces compelling, and sometimes even mandating, that IT operations—generally plagued by a justifiably less-than-stellar reputation for delivering IT services quickly and with high quality—gain more operational discipline. ITIL represents an established set of guiding principles to help IT overhaul its reputation and to quantify its improvement. Without such a transformation, many IT organizations will fall victim to punitive outsourcing.

Business leaders reasonably demand good service from the IT organization. Business success increasingly relies on efficient and effective application of business automation technology. Inefficiencies in IT can cripple the competitive position of any organization. Leaders must act to change any IT deficiencies. Pragmatic ITIL deployment and evolution represent an effective means to improve this situation and change the perception of IT from a necessary evil that is often blamed for business failure to a valued contributor that is credited with business success.

Although not a tutorial about ITIL (many other sources exist for this purpose), this paper offers some practical, well-qualified guidance toward a successful ITIL implementation. Any IT service management (ITSM) initiative can help attain and strengthen a culture of discipline in IT operations. Only through a well-planned application of automation technologies to proven processes—such as those defined in ITIL—can true operational discipline be achieved.

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## The Power of Process

Haphazard IT execution in the context of true business services represents the major source of conflict between the typical IT organization and senior business leaders. In essence, the processes of running IT are either weak, poorly defined, disjointed, or poorly enforced—or all of these things. What IT needs is a set of common and proven process definitions that it can use to establish a foundation for operational discipline.

Process defines the methods and the common sense to efficient operations. Manufacturing and other mature operations have refined their processes to a scientific level. This field, called operations research, is credited with developing the rigor and efficiency behind modern repetitive operations.

A good example is McDonald's. It operates using some of the world's most efficient processes. Relentless research by its operations research scientists, coupled with strict process enforcement in its restaurants and highly optimized automation technology, enables the company to squeeze every bit of cost out of its operation. It also allows the company to track this cost efficiency and make corrections when the metrics indicate such a need. With millions of customers served each day, these cost reductions significantly improve profitability.

Many attempts have been made to define operational processes and some, such as change management, have naturally gravitated to some similarity. Most, however, did not achieve much common structure. This lack of common structure produces the sloppiness (real or perceived) exhibited by an unfortunate majority of IT organizations. To succeed as a valued business contributor, IT must pursue the kind of discipline inherent in the McDonald's operational model.

The British government developed ITIL in the late 1980s as an attempt to fulfill this need. Continually refined since then, ITIL has since spread throughout Europe, and finally to other geographies (most notably the Americas). Adoption in the United States was anemic until a tipping point in 2004, when Meta Group's annual study of infrastructure and application management trends, as well as IT Service Management Forum (itSMF) membership growth, demonstrated an inflection of ITIL recognition (see Figure 1). ITIL popularity is also evident by the flurry of media reports and other industry dialogue. ITIL has indeed arrived to guide IT discipline.

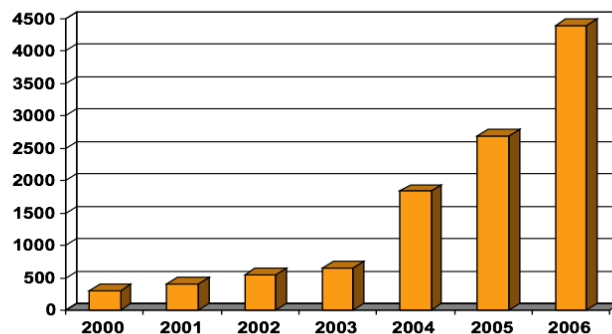


Figure 1. itSMF USA Membership Rates, 2000 to 2006

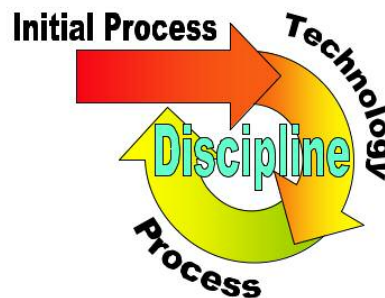
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## Process Automation

Process, without the proper application of technology, amounts to nothing more than an academic exercise. Management software is necessary to automate process execution and enforce process compliance. Tools and processes must complement each other—either one, implemented alone, will fail.

### So Which Should Come First—Process or Technology?

The answer is process (see Figure 2). Although the two feed on one another—refining the overall discipline over time—when you start with process, you define the potential ideal state and then fit the tools to the processes. Starting with technology first carries significant risk because the limitations associated with these in-place tools constrain your initial process definitions.



**Figure 2. The Automation Cycle**

Like many automation mechanisms, management software allows for faster process execution and requires fewer staff to maintain the IT environment. It also helps ensure higher quality because errors decrease dramatically when management software automates manual tasks. Operational costs decrease, services improve, IT becomes more nimble, and IT management can allocate staff to more interesting and strategic work. Many highly skilled, high-paid IT specialists are wasting their time, energy, and knowledge on routine, predictable tasks that can—and should—be automated.

Tools do not always map to processes in a 1-to-1 ratio. One tool may span multiple processes (for example, performance monitors), while one process (such as incident management) may require several tools from several vendors. A sensible architecture for tools will account for these overlaps. Although having tools perfectly fit processes might seem ideal, technology and process tend to evolve independently. Yet it remains possible to fit tools to processes with minimal effort. As long as you understand this overlap and apply it to your technology and process decisions, you can easily execute a solid automation strategy.

As IT organizations increasingly apply tools to their processes, they also must use a common-sense architecture and follow sound design principles. A dangerous approach is to simply cobble together a collection of monitoring tools that have little (if any) integration, determine cross-domain relationships poorly (if at all), and do not align well with service-focused processes (if they align at all). The result of this kind of hope-for-the-best aggregation is a common nightmare (defined by the management frameworks of the late 1990s) that perpetuates a restrictive, domain-specific focus, which, in turn, has contributed to the poor reputation of IT operations and management tools in general.

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When IT operations intelligently integrates management technologies and properly aligns them with processes, technology and process truly work in harmony as a wonderful feedback mechanism. By feeding on one another, the two form an engine that can power operational excellence and continuous improvement.

## Management Technology Considerations

The issue of management technology is critical to the success of any ITIL initiative. You should carefully consider the value of incumbent management tools and those inevitably necessary to complete your automation puzzle.

ITIL defines best practices for IT processes based on the services provided to IT users. It neither prescribes best practices for managing your information infrastructure end to end, nor the complex, ever-changing relationships and interdependencies that exist across it. Moreover, in the quest for technologies to provide a cohesive management framework to maximize ITIL, many quickly find most existing management technology inadequate. Its heritage—focused on managing discreet technologies—is often ineffective in understanding the complex relationships and interdependencies that exist in today’s information infrastructures. On the technology side, many ITIL deployments will struggle to knit together a systems approach. This is why a willingness to change to new management technology models is critical and why extreme care must be applied to management technology design.

The ITIL approach to process—taken alone, without adequately considering the technology—does not equal the best overall operational practice. A simple example illustrates this problem: A user calls the service desk to report that she cannot connect with an online service. Although ITIL clearly defines the process—the best practice—that operations should undertake, we will examine the technology involved in that process execution.

The call center will log an incident ticket for the user. ITIL’s incident management process cannot correlate this ticket with other existing incidents or problems. Its ability to identify the source of this person’s incident is limited. It could be in the application infrastructure, servers, storage systems, networks, databases, or any number of a variety of elements in the operating environment supporting the application. Even a best-practice deployment of ITIL will quickly move this incident on to ITIL’s problem management process.

At first glance, one may think this is fine, since such a handoff is how ITIL defines such a situation. However, the actual result will be an unacceptably high percentage of incidents being addressed by problem management instead of the more desirable resolution within incident management. One key decision of which operations center gets this issue remains largely a mystery in this scenario. Since no mechanism (a person or an IT tool) has correlated this incident with the behavior in the various parts of the information infrastructure, the problem management process would require that many operations staff pursue this problem. Because the relationships and interdependencies in the infrastructure are so complex, alarms and alerts go to multiple operational centers, with no clear known problem—or root cause—and therefore no single problem management owner. Rather, multiple owners, across different operations teams, all chase down the same problem. Even with the best ITIL deployments, the lack of a cohesive management infrastructure results in operational inefficiencies that are nowhere close to optimized.

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This all-too-common example highlights why you need to unify process and technology into a common operational execution philosophy (as introduced in the previous section and illustrated in Figure 2). Although the proper application of ITIL can produce great results, process without effectively deployed technology to automate process execution will fail. Likewise, management technology, deployed without considering how it serves processes, will not work either. We can look back at the well-known failures of the broad management frameworks to understand this latter point. Haphazard aggregations of management tools are unsustainable. Succeeding in increasingly complex business and IT environments requires a new approach to integrating process and technology.

## Management Technology: Buyer Beware

Most of today's management technology was designed to manage distinct technology islands, and lacks any automated means of defining the multiple relationships and dependencies that exist across the applications, servers, operating systems, storage arrays, and networks. More importantly, they lack the ability to navigate these relationships to automatically pinpoint root causes across the information infrastructure in the context of services provided and users impacted.

Many management technology providers have adapted their solutions to ITIL via little more than aggressive marketing efforts. Products that once managed technology silos and had no ability to automate these relationships and interdependencies suddenly have been positioned as ITIL solutions. An astute IT organization must separate marketing hype from the reality. These systems are no better at automating end-to-end service management than they were in the past. If anything, they present a false sense of security in automating ITIL execution, inhibit progress toward success, drain resources and budget, and perpetuate the poor reputation of management tools—and the IT organization.

To understand how ITIL and management technology can effectively join forces, let us revisit our service management example from the previous section. Consider that this ITIL effort was augmented by a well-designed and implemented management infrastructure.

First, it will automatically discover the structure and behavior of the IT environment. It will learn what is in the information infrastructure and how these elements logically, physically, and virtually depend on each another to support this user's service. Such a management infrastructure would, in real time, automatically identify the anomalous condition when this user first experienced her problem. Such a management system would then automatically:

- Analyze the root cause of the incident
- Generate the trouble ticket
- Prioritize the incident
- Direct it to the specific operations group with resolution responsibility

Operational efficiency improves dramatically because other operations teams that may be impacted by this problem no longer have to respond—and they become aware of the impact as well as its resolution status. This type of advanced management system would also notify the service desk—at the moment of the service impact—of the specific incident root cause, what else is impacted, and what users are affected. Rather than receiving this user's call in the first place, an efficient service desk, and an IT organization executing ITIL best practices, would have been proactive in contacting those affected users with clear information on the incident and its status to resolution.



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Therefore, to truly implement ITIL as a best practice, IT leaders must attend to the underlying management systems that can accelerate service quality and responsiveness to users. When compared to an approach based purely on process or purely on management technology, the operational efficiency advantages of a combined approach can be phenomenal.

This example automated the generation of the incident and problem ticket, effectively using automation to bypass the service desk. Does that mean the service desk is becoming an anachronism? No, the service desk will always be necessary, although its focal-point role to incident and problem management can be diminished. Rather than be the front line for a relentless assault of IT emergencies, the service desk can become more proactive. It always will represent the point of contact for users wishing to speak to a person. Technology remains decades away from totally using automation to remove the person from the process.

## Does ITIL Really Work?

The short answer is “Yes!”

Many shining examples have been presented at conferences and in the press. This does not mean ITIL and operational discipline are easy. Anything as ambitious as ITIL will not be easy—but it is feasible. ITSM is not only feasible, we have examples that we can emulate. Like any difficult but rewarding journey, success lies not in the status quo, but in the will to change. Ironically, although IT is rooted in enabling business change, IT operations tends to resist change. Succeeding at ITSM and ITIL will likely require substantial—maybe painful—changes in behavior. This gets to the heart of the whole concept of ITIL.

ITIL—and indeed the entire ITSM movement—are neither standards nor blueprints for how you should adopt best practices in your organization. They represent what is fundamentally a new set of behaviors for many in IT. To thrive—and not just survive—IT must adapt to changing business needs. This means behavioral changes will always be necessary.

Because ITIL can be daunting to early-stage adopters, many wonder where to start. Although the answer to this differs depending on the individual organization, the best place to start for most organizations is with incident management. Since it represents the core of ITIL and every other ITIL process relies heavily on solid, valid configuration information, configuration management ideally would be the first process to start to manage. However, the relative familiarity and experience level in most organizations make incident management a better place to start.

All IT organizations are already executing some form of incident management—because maintaining the working state of IT services forms the basis of all IT operations. Although many IT organizations do not perform incident management well, they all do it at some level. The basic tasks and many of the automation technologies are in place. By reassembling these existing elements and refining some parts while augmenting the gaps, incident management can, with relative ease, be made more effective.

During the early stages of incident management refinement, simple improvements can yield significant results. More importantly, these results can be measured using metrics such as mean time to resolution (MTTR). If you establish a baseline for MTTR before making process improvements, you can assess each incremental step by how it impacts MTTR. Over time—and often, a short period of time—genuine, objective, quantifiable improvement can be demonstrated and tracked.



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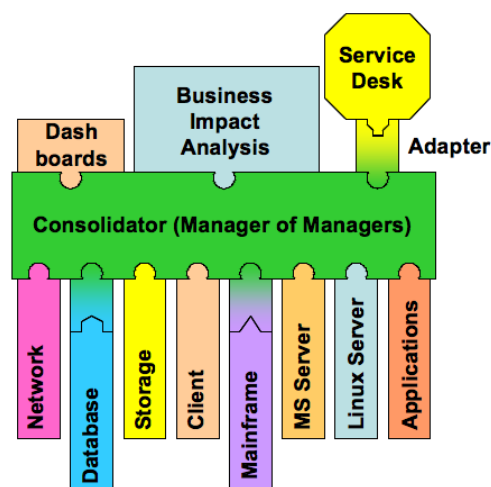
Metrics act as proof to justify additional investment in ITIL and ITSM. Executives skeptical about the actual value of ITIL and ITSM will believe objective metrics. To make a strong ITSM case, many tie MTTR and other IT metrics to financial metrics. Although senior managers may balk at technology discussions, all will understand financial returns. Proving real cost savings or revenue potential will make senior business executives more likely to fund expansion of the work.

## A Practical Tactical Plan for ITIL

Above all else, anyone embarking on the ITSM journey must remain pragmatic about ITIL and automation technologies. Although ITIL is no panacea, it represents a great foundation for building effective service management with quantifiable, objective success criteria. An update to ITIL (version 3) is now emerging to incorporate more guidance for discipline.

With the cacophony of messages, history, analyst reports, and media coverage circulating about management tools, decisions on automation can be confusing. The only way to navigate this labyrinth is to dedicate time to learn the realities, and then formulate a well-engineered plan of architecture, design, implementation, and execution.

Modular automation architecture is the most flexible technology strategy. Figure 3 illustrates this as applied to incident management. This example—a classic management tool consolidation problem, where organizations are attempting to reduce the number of overlapping and often ineffective tools—works because it sits within reach of almost every IT organization.



**Figure 3. Modular Incident Management**

In this modular example, the tools along the bottom are tailored to specific domains. Each common point tool—possibly effective in its respective domain—is not useful beyond its myopic area. However, each “plugs into” a central consolidation tool that collects events from domain managers and ideally performs cross-domain correlation of these events. Similarly, tools along the top accept qualified incident information for additional value.

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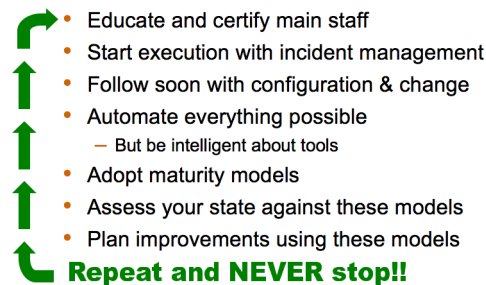
The last factor to note in a modular architecture is the badly overlooked concept of integration. Technology integration will remain an issue in process automation because integration standards will perpetually lag the needs of those performing the integration. Although EMC and others are collaborating on standards more effectively than ever before, this lag time represents a “natural law” of service management. Where standards are not an option, adapters are needed. Although some of these will be provided by vendors such as EMC, no vendor can effectively supply all necessary adapters.

To those with aspirations of world-class operational excellence, this means integration must become a core competency of their automation technology experts. These people require software coding skills in XML, Java, .Net, and other relevant programming mechanisms so that they can develop their own adapters where needed. Although technology vendors such as EMC must solve as many of these issues as possible, a need will always exist for home-grown integration—especially for those on the leading edge of ITSM innovation.

## Conclusion

In general, the operational automation market is only in its early stages of evolution. The future will require a far different set of technologies than the familiar, sometimes scorned management tools and frameworks of the last 10 to 20 years.

Although process automation needs to have a proper strategy, many failures will be associated with poor tactics. A good strategy must lend itself to tactical execution, so a practical mode of thinking must prevail to allow success. Making ideology paramount to the needs of the business will prove fatal to almost every IT organization.



**Figure 4. A Pragmatic Approach to ITIL**

Common sense makes sense. Use common sense in both process and technology, and success will come naturally.

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## References

For more information on how EMC® Resource Management automation solutions strongly support and enhance ITSM and ITIL initiatives related to incident, problem, configuration, and change management, see the EMC white paper titled *Automating ITIL Process Execution*.

Several links to good ITIL publications are available from the itSMF and other sources. One of the best overviews of ITIL is the complimentary publication, *An Introductory Overview of ITIL*, available at <https://asp5.catalog.com/khamilto2/books/itSMF%20Overview%20Pocket%20Guide.pdf>.

Official ITIL publications can be purchased through most booksellers, as well as from your local itSMF chapter.



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