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by Don Jones, Series Editor

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## Chapter 1: Introduction to IT Process Automation

For many organizations, IT Process Automation (ITPA) is little more than a dream. IT managers, easily overwhelmed in the complexity and day-to-day rigor of maintaining IT services and supporting production environments, are spread far too thin to spend the necessary time to examine all the variables that need to be understood to completely automate systems. The business that they support is often complex and, to some, a mystery wrought with continuous change management concerns, never-ending problem management sessions, and production incidents that keep teams around the globe busy at all hours of the day and night. Processes are being initiated to manage incidents, changes, server provisioning, backup and recovery exercises, and security, just to name a few, and these processes depend upon many different systems and subject matter experts (SMEs). Further, the systems used to maintain the IT infrastructure are themselves in a constant state of change as vendors release new software versions and security fixes are applied to existing systems to protect the infrastructure. Considering all this complexity, the thought of automating IT processes can be quite overwhelming. Where to begin?

This guide examines IT processes and the steps organizations can take to begin to turn the dream of ITPA into a much-anticipated reality. The benefits of ITPA will enable IT organizations to take full command of their infrastructure, realize greater efficiency, become more effective, and deliver an amazing level of business agility that will enable any organization to rapidly respond to changing business requirements with reduced overhead and greater focus on the business.

### Definition

Fundamentally, a process is defined as the act of proceeding. It is the act of moving forward, continually, in a controlled manner. Taken by itself, this definition fits the many vertical needs of organizations. Processes are created, documented, and aligned to meet the many needs of business and IT operations from associate on-boarding human resource processes to manufacturing, shipping, IT procurement, project planning, and security. Unlike human resources and the other more traditional process areas, however, IT processes are highly system-centric. That is to say that IT operations processes depend upon many different, often conflicting or competing, hardware, software, and systems solutions to meet their goals.

One universal challenge to all IT organizations is the matter of server provisioning. Once a project requests a server, and those requirements are understood, many teams are often called upon to facilitate the request including those engineers or vendors who physically install the servers, those who install the core build, and those who ultimately install the applications. To deliver server resources in the most expeditious manner, the teams supporting your infrastructure have defined many processes and implemented many different types of software solutions to fulfill those technical requests. These teams are generally well prepared to meet the challenges they face; what they often lack, however, is a means of meeting the challenges in the most efficient and effective way.

As any IT executive who has gone through a corporate merger can attest, the biggest challenges aren't always in getting a Help desk system to integrate with a paging and escalation system or provisioning servers; the challenge is in getting one system to integrate with another. Vendor solutions often come equipped out of the box with a means to improve quality control across in your enterprise as well as increase the throughput of your IT processes. The idea of integrating with competitors is foreign and abstract to many vendors. Why would "the best" product integrate with a "lesser" product, and if they did, what would be the customer's motivation to consolidate to "the best" solution? This often leads to the establishment of "tribal" knowledge and very low process maturity, and although the psychology of vendor management is outside of the scope of this text, the underlying problem is most clearly illustrated through such examples. Vendors lack the motivation, time, and resources necessary to drive integration to the level needed for end-to-end ITPA to be realized. ITPA tools bridge this gap and break through the silos that have been established by the "tribal" mentality, leading to solutions that deliver cross-functional and cross-silo efficiencies.

Responding to the need to manage IT in a controlled and predictable manner, many of your peers have begun to leverage industry-level best practices as a guide. Best practices for financial IT systems, for example, can be overheard at any major financial conference just as the best practices for IT in healthcare are being put forth during healthcare conferences. One thing these practices do (or should) have in common is a link to a larger framework. The best practice in service desk management isn't limited to a single industry segment, and selecting the best ticketing system for your Help desk, project management and change management system for your delivery teams, and provisioning software for your infrastructure teams is critical to the value proposition of IT management. IT processes simply must be aligned as efficiently and effectively as possible and ITPA is a way to not only align your best practices but also deliver them more efficiently than ever before thought possible. Software capable of orchestrating the IT infrastructure to meet the needs of the business can be leveraged, along with tighter integration and configuration management databases (CMDBs), to deliver truly automated IT processes to the data center.

## Facing the Data Center Automation Challenge

Today's data center involves myriad software, hardware, people, and processes with one purpose—serve the information technology (IT) needs of the business in the most cost-effective and efficient manner possible. Unfortunately, no organization is currently able to fully realize this purpose. Hardware and software solutions have been designed, implemented, and purposed to fulfill very specific needs. Decision criteria for the software, hardware, and systems procurement should be set by the needs of the organization requesting the system and who ultimately will be utilizing the system. Allowing these decisions to be driven out of a non-technology group, however, can cause some problems.

For example, when handling the movement of data, the likely candidates from an IT perspective would be an IT Storage Solutions team designated to manage the systems that house, manage, and administrate data, and the IT Server Support team designed to support the production system. The reality is that how data is managed is often defined more by the application system being purposed and delivered than by your internal technology teams. As a result, systems are purchased and implemented into the data center that do a relatively good job of delivering on their specific goals for the business but are difficult to manage, difficult to maintain, and difficult to optimize.

Keeping in mind that there is a lot of great software available today for IT management that wasn't available, even in concept, as little as 5 years ago and although these management tools do a really good job delivering on their out-of-box promises, they often do very little in the way of integrating into a holistic IT operations management view. Why? The answer, simply put—*it's not their job.*

Consider a vendor who develops monitoring software and who could invest the time and resources into integrating their monitoring software into another vendor's ticketing system. Such a feature may be given significant weight in procurement and would be a great feature, but just as there are many monitoring software vendors, there are also many ticketing systems. So the question then becomes which one(s) do they attempt to integrate with? The added overhead of attempting to integrate with all the potential interface points would be overwhelming for even the largest of contenders. Further complicating today's IT infrastructure is the matter of sprawl. In the IT management context, "sprawl" is much the same as it is in urban development and refers quite directly to irresponsible development, design, adoption, or implementation of IT solutions. The existence of such sprawl usually leaves the IT executive with a disparate and difficult-to-support environment consisting of incompatible "standards" and architecture. Instead of a single means of storage management, an organization may find that it has over time adopted several kinds, each with their own purposes. A small application in a business unit, for example, may use network attached storage (NAS) for storage and retrieval of temporary files at the local site. At the time, the decision seemed to be the best choice based upon cost and network bandwidth constraints. Today, however, as organization migrate smaller storage units over to storage area networks (SAN), NAS equipment may be counter to an organization's SAN direction. If the line of business has no motivator to change their system, IT managers may be left supporting technology artifacts that have simply accumulated over time. Fast forward to today's environment; while many have since learned their lesson on storage sprawl, new technologies, such as virtualization, offer up similar challenges that haven't yet been fully realized and are an order of magnitude more complex. Virtualization involves more than just a device; it is hardware and software working in concert to deliver *the* production platform on which your operational stability will be based and sprawl could lead to crippling levels of process rigor if left unchecked.


Organizations prone to transition or who have gone through many steps of acquisition and periods of growth find this problem in abundance. Reversing this equation is going to require three very important and integrated parts, which we will refer to as the pillars of ITPA.

### ***Architecting the Next-Generation Data Center***

Now that we have identified some of the fundamental problems that slow or are currently preventing centralized IT management, the next step is to identify and take action to orchestrate change towards a more cohesive IT process model. What will set the next-generation data center apart from current technology will be its ability to orchestrate processes across systems to drive IT efficiency, support business agility, and enable legal and regulatory compliance. This will be accomplished through ITPA tools, configuration management, and tighter integration within the data center.

#### **Pillar 1: ITPA**

A key success factor for the next-generation data center will be its ability to gather, analyze, and make decisions based upon predefined IT processes. Solving this problem is at the very core of the definition of ITPA. It is important to first point out, however, that ITPA *is not job scheduling* nor does it necessarily entail any scripting or coding. What ITPA is, rather, is an emerging orchestration methodology that enables the cohesive automation of IT processes from an IT management or business process view.


 When deciding upon the right ITPA tool for your organization, it is important to make certain that the options being considered are actually within the definition of ITPA. ITPA tools tend to be process oriented, rather than programming oriented, and require less technical acumen to implement and leverage than non-ITPA tools. A good ITPA tool will seamlessly integrate, out of the box, with your IT systems with no additional programming or scripting required and should have a very low technical learning curve so that those who are focused on business processes, rather than programmers, can make full use of the tool.

ITPA tools will enable your front-line IT managers to deliver cross-platform process integration. To contrast, traditionally the bigger, better, or most appealing software to an IT manager is the one that works with what they already have within the infrastructure. At times, this may mean sacrificing features for the software's ability to integrate with pre-existing software. By providing orchestration between software, ITPA tools render this decision weight irrelevant and enable IT managers to make decisions based upon the qualities of the software rather than its ability to be integrated.

## **Pillar 2: CMDB (Inventory)**

As ITPA addresses the orchestration of software and systems to fulfill IT processes, CMDBs, as the second pillar of the next-generation datacenter, will need to address how data about those information systems is kept up to date. A CMDB is a repository of information related to all the components of all the information systems within an IT infrastructure. CMDBs store granular information about information systems in records known as Configuration Items (CIs). Within the CIs' data is data relating to the technology, the ownership of the technology, and the relationship of the technology to other CIs. The result is a central database that contains an inventory of relationships between systems which can be used by ITPA tools to deliver added value.

CMDBs help organizations meet one of the biggest challenges within IT management—asset to inventory management. Acquisition, sprawl, and a multitude of other factors have contributed to your organization's infrastructure size today and inventorying that system can be a challenge. An ITPA solution can help alleviate pain associated with setting up and maintaining a CMDB by automating processes that search other inventory systems (such as those used by your procurement process), and integrate those assets into the CMDB. Ongoing CMDB maintenance from that point forward could consist of ITPA processes created to add further value by bolstering a CMDB's ability to automatically discover information about CIs and track and report on any changes as they occur in near real-time.

 The IT Infrastructure Library (ITIL) is a series of texts commissioned by the United Kingdom's Office of Government Commerce (OGC) that set forth an integrated framework of best practices for IT. We'll examine ITIL as part of Chapter 2.

### Pillar 3: Integration

The third pillar in the architecture of the next-generation data center is one that has been deeply pursued and widely understood for some time, although its full realization has yet to come to fruition—integration. Systems simply need to be able to work and function together without human intervention. The challenges preventing integration are equally as fundamental.

As an analogy, imagine for a moment that the data center of today is an airplane and that its function is to move us from one point to another. Like an aircraft, much depends upon the data center and peoples' lives can be significantly impacted if either were to malfunction. Many countries have worked together to standardize many aviation safety requirements. The result is that a pilot trained and skilled to fly a small aircraft in the U.S. will possess the skills necessary to fly an aircraft in the UK. The function is the same (move through the air) and the controls have been well thought out and established so that yoke, yaw, rudder, and aileron controls all function in much the same way. If everyone were granted the capability of designing their own airplanes using parts from many different vendors without any centralized control, the world would be a much more dangerous place. Data centers are that dangerous place. It took decades for the aviation industry to become what it is today, and in its infancy, the airplane presented a much less complicated “infrastructure” of components. So how do we replicate the tight integration achieved in manufacturing processes in the next-generation data center?

- **Make it a priority**—With the many vertical silos that exist in supporting line of business, operations driving toward a goal, such as integration, will need to be addressed systematically. To do so, you will need to have the backing of senior management. In aviation, the driver is government regulation. In an organization, it's typically happening at your level. It can even be said that the only person within an organization who is able to perform strategy work is the Chief because only he or she can provide the incentive to see that strategic decisions are fully realized.
- **Standardize**—To meet the goal of integration, organizations must adopt standards. It's important to frame the standardization discussions in the appropriate context and keep the conversation moving forward. Ask your teams questions about the software, hardware, and systems in production. If you have more than one type of software or equipment performing a specific task, take a closer look to identify why. Many times, IT managers will find that the reason for differing products or services is due to differing business requirements in or among several business units. The real component that needs to be understood, however, is how the technical requirements differ. The challenge then is to work with business partners to close any of these costly gaps.
- **Provide incentives**—To develop and then maintain an internal direction to standardize, your organization will need incentive. Senior management support is critical to getting it off the ground, but maintaining momentum, and focus, can best be achieved through incentives. Wherever possible, link the risk/reward associated with standardization to financial impacts. Associating an actual financial impact to a technology decision provides a driver that can be leveraged in terms the business can quantify and relate to.

## Linking the Present to the Future

Today, as organizations strive to reach their operational goals, to drive out greater efficiencies, and to become more agile, and as they meet the challenges and opportunities presented by compliance with IT standards, the wise CIO will be looking for ways to link the organization's IT goals to business goals. Each of these three pillars solves problems today that can be employed to build a business case for adoption. ITPA tools can be leveraged today both to drive integration and to help with on-boarding past, present, and future CIs into the CMDB. ITPA tools may also be leveraged to open a trouble ticket and even initiate further troubleshooting steps automatically by integrating with all the software used to manage your IT infrastructure. This saves both time and process rigor.

## Strategic Drivers for Process Automation Now

Achieving cost-effectiveness and efficiency in the data center is a primary business goal of most organizations. Today's data centers, however, often have internal and external drivers, many times in conflict, that impact their ability to deliver on their purpose.

Generally, these drivers fall into three categories:

- IT effectiveness and efficiency
- Business agility
- Standards and compliance

An organization's ability to realize the goals behind the drivers in each of these categories can be significantly improved through ITPA. As we examine each of these drivers in detail, we will begin to reveal much of the power and flexibility ITPA and ITPA tools can provide.

## IT Efficiency

Efficiency is most commonly defined as the ratio of output to input for a system. In IT, efficiency is measured in many ways. A data center may measure efficiency by the load of work on the central processing units (CPUs) of its servers against the number of "transactions" processed by the line of business using known benchmarks. It may measure efficiency by comparing and contrasting power consumption against work performed. Further still, efficiency can be measured by the amount of man hours that are spent intervening into IT processes that could have been automated. It is this last area that is most directly impacted by ITPA.

Today, many IT processes are manually executed. Help desk support technicians perform tasks of varying complexity within support software to assist business partners with common technical problems or requests. These are often repetitive tasks that regularly occur, such as a request for a new server, and may require an IT process to be executed in part by manual processes, such as ordering a server, which may require a human to interact with more than one system to validate the request, confirm identity of the ordering party, and so on.

An effective ITPA tool will allow users to build and automate IT processes visually without the need to script or program anything. This reduces the technical acumen required to deliver and automate IT processes. Further down-level from the server-ordering process is the provisioning process. An ITPA tool can quickly and easily take care of consolidating several manual IT processes into a single executable process that requires no IT management intervention. Figure 1.1 illustrates the steps necessary to automate the process of provisioning a virtual server.



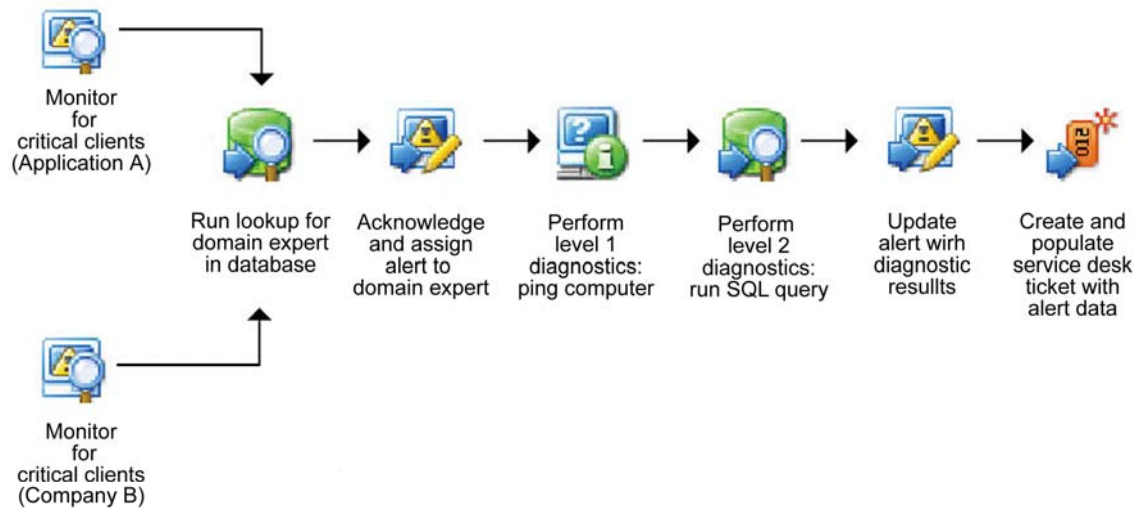
**Figure 1.1: Provisioning a server.**

The gap in IT efficiency for many organizations is quite broad and ideas fueling new ways to fix efficiency gaps abound. At the crux of the issue is an organization's ability to simplify IT management. ITPA tools simplify IT management by reducing the number of people required to automate IT processes, reducing the technical acumen involved in creating solutions, and ultimately improving the productivity of the environment.

## Business Agility

To be successful, organizations must be agile both in thought and action. Reducing the time needed to react to changing market conditions by implementing new business initiatives is vital to a business' success. IT organizations can contribute greatly to the agility of the businesses they serve by automating IT processes.

Consider an organization that has grown large enough to acquire a competitor and expand their market but whose only major limiting factor is that the organization they want to acquire is known to have deployed a different IT infrastructure model than their own organization. Integrating these two organizations is going to present a significant challenge to IT resources and create a rather large need for IT capital for project teams and replacement systems during transition. An often-unreported loss in the transition and acquisition process is the loss associated with lost software licenses. The company being acquired may have another year or more left on their software licensing agreements that will now no longer be leveraged. Wouldn't it be great if both organizations could integrate their IT processes without a wholesale replacement of software during acquisition? Through ITPA, they can. Rather than needing an immediate change in IT processes, which results in heavy impacts to IT associates, their core knowledge base and competencies, these two organizations could leverage an ITPA tool to integrate the disparate systems during acquisition. As Figure 1.2 illustrates, the newly acquired company's software is simply added as an interface point for the process within the ITPA tool. The end result is an organization that can rapidly assimilate new products and services with virtually no impact to the underlying IT processes.




**Figure 1.2: Add a new monitor to quickly assimilate a new application.**

We have thus far illustrated how ITPA tools can be leveraged to provide for automated monitoring and reaction to incidents, but they can also go a step further and provide reporting and escalation based upon SLA goals. With the proper ITPA tool in place, senior management can be kept abreast of issues that matter most to their production environments and receive escalation warnings well in advance of service level objectives.

## Standards and Compliance

As pointed out earlier, the aviation industry would likely have had a much more difficult and turbulent history had they not embraced, or through government controls been forced to embrace, some form of standardization. Some regulatory compliance drivers exist today that impact IT operations, especially within organizations that provide financial or medical services or who contract with the U.S. government, but no centralized regulatory organization exists to completely and authoritatively address IT infrastructure standardization. Instead, organizations need to work within and comply with many differing outside “standards” in order to be effective.

An IT operations team may find that it needs to put into place specific technical and administrative security controls to comply with the Health Insurance Portability and Accountability Act (HIPAA), the Sarbanes Oxley Act (SOX), or any number of government regulations. In structuring, internal governance teams may also decide to adhere to internationally accepted best practices and frameworks such as ITIL and the Control Objectives for Information and related Technology (COBIT). Further still are those directives that apply throughout an organization such as using Six Sigma as the standard process development methodology within an organization. Each of these “standards” has the potential to weigh heavily in IT decisions that have an effect on day-to-day operations. As government regulations mandate controls to how organizations do business, IT systems will need to be made compliant with those controls, and as ITIL is adopted as a standard framework for IT Service Management and Six Sigma used as the methodology for driving out process efficiencies, pressures mount. It may not be sufficient to merely deliver ITIL’s overall framework; IT managers may be challenged to do so in a way that generates metrics suitable for use in Six Sigma or other process improvement efforts.

 We will discuss Six Sigma and COBIT in more detail in Chapter 2.

ITIL provides many advantages to IT organizations, particularly in the area of IT service support. With the ITIL framework, service support is comprised of six main functions:

- **Service Desk**—The goal of the service desk is to provide a single point of contact between business partners (the users of IT systems) and the IT service managers (that maintain IT systems).
- **Incident Management**—This function provides a specific focus on restoring normal service operation as rapidly as possible and to minimize the impact of service interruption on the line of business. Incident management goals are often set forth with SLAs between the IT organization and the line of business unit dependent upon the technology.
- **Problem Management**—Problem management backs up incident management with root cause analysis specifically focused on problems caused by errors within the IT infrastructure.
- **Configuration Management**—The objective of configuration management is to track all the individual CIs within the IT infrastructure, a task which is typically accomplished through the use of a CMDB.
- **Change Management**—This function serves to ensure that changes to the IT infrastructure occur in a standard way and to minimize any opportunity for adverse impacts to line of business operations resulting from change initiatives.
- **Release Management**—Like change management, the goal of release management is to minimize impact related to changes but with a specific focus on the protection of existing services. Regular updates to server platform operating systems (OSs), such as the application of security updates and hotfixes is an example of release management.

Within each of these main functions, specific IT processes will need to be developed. Incident management may benefit from an IT process designed to monitor for IT events and dispatch tickets to the appropriate teams automatically, and, depending upon the tools available with your infrastructure, automatically provide technicians with problem details through basic automated troubleshooting and senior manager's escalation reports.

Problem management can benefit from automated trend analysis. When walking the line between the business needs of the line of business partners and the business needs of the IT organization, perspectives and priorities can become blurred. Take the common business goal of reducing operating costs. To a line of business partner, this may mean reducing the amount of money that can be spent on new initiatives. To the technology organization, it may mean seeking out funding to replace costly antiquated systems to trim support costs. Without a means of aligning perspectives, relationships can become strained and data gathered will lack the perspective necessary to make good business decisions. Using ITPA tools, IT teams can begin to bridge this gap. Data within incident tracking systems can be analyzed by running predefined queries against the trouble ticket system across multiple databases.

IT process surrounding change and release management can also benefit from automation. ITPA tools can be leveraged here to automate distribution processes, saving time spent in change and reducing manual overhead through repeatable and consistent ITPA processes.

## **Conclusion: Increased IT Effectiveness and Efficiency Through ITPA Delivers Business Agility**

At its core, ITPA is about orchestrating the IT infrastructure to meet the needs of the business. It is about accomplishing business objectives through intelligent ITPA tools that can integrate multiple disparate technology systems. ITPA tools increase IT effectiveness and efficiency by being vendor agnostic and flexible enough to meet changing business needs rapidly and with reduced overhead. In doing so, ITPA tools create an agile business environment where decisions about IT product and service acquisition can be based upon the merit of the product or service rather than its ability to integrate, on its own, into an IT infrastructure.

Combining ITPA tools with the other two pillars of the "Lights Out Data Center," CMDB and integration, will deliver a future-state data center with a tremendous amount of power and flexibility that will afford IT managers the opportunity to center their attention less on service support and more on service delivery.

## Chapter 2: Roadmap for the Automation Journey

Orchestrating the IT infrastructure to meet the needs of the business is central to delivering on the promise of IT Process Automation (ITPA). Doing so requires a keen understanding of business, a flexible IT management mentality, and the ability to identify and evaluate critical IT processes maturity. Unlike the systems that our teams support, however, organizations and IT managers don't always adhere to a standard systematic architecture when aligning people and processes to meet the needs of the business. It's fair to say that many organizations have a few IT processes with a relatively high degree of process maturity but rarely does an organization have a high degree of process maturity across all IT processes. Some may be very well documented and even tried, tested, and stood the weight of time, but there are many more that could contribute to IT efficiency that are left untouched. Beyond those few IT processes that are mature, these untouched processes exist because they've been developed ad-hoc or on the fly out of a reaction to an emerging need. There is certainly a line between what an IT associate should be expected to execute based upon their own core competencies and what needs to be a well-documented IT process. Knowing the location of that line is central to the discussion of this chapter, as we evaluate ITPA, examine processes that will help your organization improve your IT processes, and automate your returns by turning efficient processes into automated solutions.

### Evaluating Process Maturity

Evaluating process maturity begins with defining the structure upon which your organization will gauge maturity. Not to muddy the issue, but the task of gaining process maturity is itself a process. We're going to discuss the importance of having a method to gain process maturity to your IT processes and all that will need to be considered. First is the nature of your influence to the organization. Many IT processes have dependencies upon other processes that fall outside of IT, so it's important to step into this "process" knowing that your findings may have repercussions outside your span of control. The key to navigating those repercussions is in making sure that your partnerships with your internal and external business partners are well founded. So let's begin.

One of the first steps is to agree upon a framework when discussing process maturity so that all parties involved can benefit from a common taxonomy and structure. An easy way to approach this is to leverage a common body of knowledge such as the Capability Maturity Model. CMM is a structured, staged approach to measuring capabilities and because CMM is widely used in software development, there is a high likelihood that many of your existing IT staff and outside vendors are familiar with the concepts associated with CMM. In addition to being a good place to start discussions, the stages of CMM can be used as a template to design a more granular process maturity structure for your organization.

There are five stages of CMM:

- **Maturity Stage 1: Initial**—During the initial stage, processes are non-repeatable, not clearly defined, unmanaged, and un-optimized. During this stage, the effectiveness and efficiency of an organization is entirely dependent upon the core competencies of the individual associates responding to daily demands.
- **Maturity Stage 2: Repeatable**—In stage 2, a process is repeatable, but this repeatability is often not the result of defined process but rather a business process or system design.
- **Maturity Stage 3: Defined**—The difference between stage 2 and stage 3 can be identified in a single word: documentation. Stage 3 processes are repeatable and well defined. This stage will include tailoring the process to meet the organization's own needs.
- **Maturity Stage 4: Managed**—In stage 4, processes are managed. That is, metrics for measuring process efficiency have been defined and goals have been set by which the organization can quantitatively measure the effectiveness and efficiency of a process.
- **Maturity Stage 5: Optimizing**—Stage 5 processes have reached the pinnacle of process maturity and often represent the culmination of work of many parties. Maturity in stage 5 processes are repeatable, defined, managed, and measured, and the results of those measurements are used to further refine and improve upon the process.

Each stage of CMM represents not only the maturity of the process but also the effectiveness of an IT organization. Organizations whose processes fall at stage 3 or below may function, and they may even function well, but the ability to measure process contributions to business processes in a quantifiable way is virtually non-existent. As processes become managed and begin to move towards optimization, IT managers begin to develop a greater level of control over the consistency of IT service delivery, the effectiveness of their people and processes to deliver upon the organization's needs, and the efficiency of their delivery. To begin working towards developing mature processes in your organization, we need to look at the four main process management alignments common to most IT organizations today. Keep in mind that we're examining these for the focus they bring to evaluating processes and the organizational models that can effectively execute each management alignment.

### ***Manual Process/Element Management***

The most basic form of process is the manual process. These are tasks carried out each day often considered part of the core competency of an individual or team. There are two big reasons we are going to begin our discussion on increasing IT process maturity here. The first is that evaluating manual processes is important because it gives the examiner a close-up look at a specific task. The second is that these processes are critical to the effectiveness and efficiency of your organization.

Evaluating process maturity at the manual process/element management level is essentially analyzing processes in their most basic form. In IT management, focusing on an elemental management process may mean looking specifically at how a Help desk ticket is created or how a change management request is input without necessarily taking into account the processes that exist up and downstream of the particular process being examined. The focus is to target and isolate a particular problem area for evaluation and ultimately institute corrective actions.

Examining process maturity at the manual process or elemental task level is useful in resolving problem areas in a single process. Often tasks at this level are taken for granted as core competencies but end up presenting a risk when not properly executed. Something as simple as taking the trash out, for example, can cause big problems when there are two sets of trash bins one of which is marked “Proprietary Information” and the is merely marked “Trash.” Executing a manual process of trash removal on the wrong bin may result in lost customer information, Social Security numbers, or trade secrets. Improving process maturity in your organization is going to require a closer look at manual and elemental tasks, identifying the most critical, and using CMM to evaluate and improve the processes. Reaching CMM stage 3 is important because of the role these processes play in cross-silo process maturity and ultimately in mapping IT processes to business processes.

### ***Silo-Task Based***

If beginning with the manual processes seemed a bit odd, it may be because many organizations focus on process maturity at the silo or task-based level. Managers tend to begin to improve things within their span of control, and the people most focused on process improvement often have management over an entire silo of processes. As organizations align their teams and processes to deliver on a specific goal, silos are formed along a vertical alignment of people, processes, and technology. The silo or task-based focus on process maturity is a broader approach to examining process maturity than manual or element-based and occurs within these vertical alignments or “silos.” A silo is an organization of similar processes to fulfill a goal. Think: operations management. For example, an organization may have many processes that fall within the business continuity silo or the problem management silo. These processes interrelate with one another. Unlike evaluating tasks at the manual process or elemental-task level, examining processes at the silo level is a more proactive evolution. Processes interrelate, so the problems that are associated with one process may be identified as having a source deriving from other processes upstream. Conversely, they could be identified as having impacts to other processes within the silo downstream. Beyond looking at root causes for a process within a silo and their relationship to the process maturity, the ability to look at process maturity on a more holistic level within a silo enables an organization to refine best practices at the operations management level.

### ***Cross-Silo Approach***


One step further up the organizational alignment of processes is the cross-silo approach to evaluating process maturity. This approach is where silo managers begin to work together to bring out process improvements across their respective spans of control. During this evaluation, processes are examined across multiple silos to achieve a common goal. For example, the server efficiency of a database server may depend upon processes that support the database itself as well as processes that support the operating system (OS). These two process areas may be controlled by different groups. The regular shipping of the server’s database is a function that may be performed by a database administration team while day-to-day updates and security updates applied to the OS may be performed by a server engineering team. Despite the organizational alignment of the teams, the processes they support interact. By examining processes for maturity cross-silo, organizations take one step towards not only process maturity but also organizational maturity. The ability for the teams within an organization to work closely to isolate and drive out process efficiencies and improve IT processes is one of the hallmarks of effective IT management.

## Map to Business

The highest level of process maturity evaluation occurs when mapping processes to the needs of the business. For instance, if an organization is in the business of architectural design and services three types of customers—residential, small commercial, and large commercial—an understanding of the business can enable the IT organization to drive out greater efficiencies. The server storage team, for example, may be able to weigh each customer account type for the amount of data (on average) their designs will generate in the storage infrastructure; then, based upon sales estimates alone, the IT storage team can forecast their storage needs for the next year to service that line of business. This is a simplified example, but the end goal is illustrated in that the business processes are now clearly linked to IT processes and in doing so the organization can deliver greater process and organizational efficiency.

Gaining the focus needed for this stage of evaluation is challenging. IT processes have not been traditionally evaluated against the needs of the business and doing so requires not only high technology acumen but high business acumen as well. Reaching an organizational state that is conducive to evaluating IT processes against business needs is a huge accomplishment and often represents years of work maturing processes at the cross-silo, silo, and manual process level.

This investment in time and effort is one you will want to protect, and we'll talk more about how to protect this investment later on in the chapter; for now, it's important to understand that the reason this maturation took so long is that IT processes are often linked within a silo and across silos by manual processes. If an associate in your organization needs to order a server, he or she may need to place that request by placing a phone call to a support team. The support team may not actually be the team that purchases and procures the server, rather they execute other processes to order the equipment from a vendor and dispatch the appropriate teams for set up and configuration. Even if all the teams involved, from supply chain to server and network engineering and outside vendors, all had their own request system, manual steps would still exist in between these disparate processes. This inability to integrate fully has restricted the growth of many organizations to cross-silo process evaluation.

 Recipe for Success—IT processes are like recipes refined through years of meticulous taste testing that your customers eventually sit down to eat. But even with the most thoroughly tested and well-written recipe, who would you trust to prepare it? Professional chef's cost a lot of money, as do IT solutions providers. But what if you could implement a solution that would ensure that your recipe was executed flawlessly each and every time? This is the reality of ITPA today. The same production drivers of quality and consistency that production organizations have sought after for years is finally available to IT process designers. No knowledge of "code" or complicated interfaces is required—the recipe for success is to simply point, click, design, and deliver.

## End-to-End Process Automation

In many organizations today, the effectiveness and efficiency of processes are measured on reporting dashboards. These dashboards range in complexity from simple spreadsheets to full-blown business intelligence systems and exist to provide senior managers with a view into how well processes are being executed within the organization. Some are called automated dashboards, though few actually are automated. Dashboards, particularly those that are driven by a business intelligence engine, can offer a consolidated perspective of how well an organization is executing processes and afford managers the ability to see process impacts and perform a variety of “what if” scenarios, making these tools useful for identifying gaps between processes. The challenge comes in determining which processes need to be monitored and captured in the dashboard, and then defining or developing an automated process to get the data into the dashboard. Rarely can all the information requested by senior managers be automatically generated and placed into a dashboard report and often some manual intervention is required.

The range of views available from a dashboard vary greatly by industry and line of business markets, but often they reflect a view either at the silo or operations-management level, enabling operations managers to take on a more proactive role in managing their production environments. That is, at least, their most effective level at this point in time. Ideally, these reports would generate information for senior leaders that would enable the highest decision makers in an organization to react and adapt to changing conditions and demands upon their business; however, this is more often than not a distant reality. The problem is that the underlying processes are not mature enough to provide the dashboard or business intelligence tool with accurate and/or up-to-date metrics.

Organizations with low process maturity levels have a difficult time identifying processes that need to be tracked as contributors to the organization’s efficiency; they also have a hard time gathering metrics from their processes for reporting. The more mature a process, the easier it is to monitor and report on the process. Today, immature processes are often identified as source data and lack the rigor necessary to be of genuine use to a dashboard. Such data often requires a good deal of manual data ‘scrubbing’ to normalize the report; a task that is time consuming and introduces even more process. Thus, we now have processes to support the reporting of processes and before too long the entire system becomes unmanageable.

The ideal state of process reporting would be for processes to be reported on automatically. People, and further manual processes, shouldn’t need to be interjected into the reporting process. The very act of data scrubbing and normalizing should indicate a problem with data quality, and this problem stems from immature processes. Many off-the-shelf and custom vendor solutions exist today to perform dashboard reporting, but, like the old programming axiom states “garbage in, garbage out.” Getting sound reporting on process efficiency requires a good deal more than a tool that aggregates process metrics; it requires mature processes that are capable of delivering sound metrics. So how does an organization reach the state of reporting necessary to react and survive in today’s business environment? We should begin by improving the processes that will be supplying the metrics.

## Processes for Improving Processes

Depending upon your industry and background, you might be familiar with many methods of improving upon process efficiency. Some organizations have taken the measured approach and instituted practices such as Six Sigma. Others derive approaches based upon industry best practices and measure internal processes against those best practices. Many use a combination to refine best practices to a model more custom tailored to their own organization. Regardless of how your organization decides to approach process improvement, you should be aware of the many options out there to assist you in IT process improvement efforts. Each of these frameworks, methodologies, and practices can be leveraged at some point by any IT organization and may assist you not only in improving your own internal processes but also building business cases for process improvement that can be supported by your business partners.

### **Six Sigma**

Six Sigma is a widely used set of process improvement practices that were originally developed by Motorola. Six Sigma delivers process improvement by focusing on what it refers to as defects and defines as a nonconformity of a particular product or service to a predefined specification. The name Six Sigma stems from the mathematical expression of process defects equaling 3.4 defects per one million opportunities. The concept of defects per million opportunities (DPMO) is used throughout the Six Sigma methodology and the ultimate goal is to continually reduce defects through continuing efforts to reduce variation in products or services.

Although Six Sigma, as a whole, is split into two key methodologies, the one of greatest interest to process improvement efforts is the DMAIC methodology. DMAIC stands for Define, Measure, Analyze, Improve, and Control and sets five basic steps for improving upon a product, service, or, in our case, process to reduce the number of defects or nonconforming output from the process:

- **Define**—During the define phase, the process improvement focus is on defining the improvement goals that are consistent with customer demands and enterprise strategy or direction. Different organizations will begin with different scopes of what they authorize to be an adequate stage definition; regardless, this definition should be relatively short (for example, “Increase server utilization”). As the project progresses, various aspects of what might contribute to “server utilization” will be identified, measured, analyzed, and ultimately improved upon.
- **Measure**—The measure phase of the DMAIC process exists to collect the metrics relevant to the current process (as it exists today) and use the data for future comparison.

- **Analyze**—Throughout this phase, the focus is on verifying relationship and causality. That is to say, a determination must be made of what relationships exist that drive the metrics and take them into account. If your goal is to improve a business continuity process and that process depends upon files being provided by a process keyed off of an outside vendor, that process, and vendor relationship, needs to be identified as a relationship at this stage because it might impact your metrics.
- **Improve**—Based upon the goal established in the define phase, the data identified in the measure stage, and the relationships and causality identified in the analysis phase, the improve phase exists to implement the actions necessary to improve or optimize the process.
- **Control**—The control phase exists to ensure that any variances in the process are identified before being put into production. This often involves a pilot exercise to determine whether the final process delivers as expected before being depended upon for production work. For IT processes, this may include User Acceptability Testing (UAT), load testing, stress testing, or—in the case of a business continuity process—conducting an exercise scenario specifically designed to flex the process.

The Six Sigma methodology improves processes by taking a non-assuming approach to process improvement. The process is defined by its needs, measured by the expectations placed upon it, analyzed for its capabilities, improved based upon scientific findings, and tested through a control phase prior to implementation. It works because it doesn't begin with an answer; rather it begins with a requirement and works toward an answer. This singular point of focus is one of the biggest driving points behind the success of Six Sigma. One simply cannot execute a Six Sigma process with a predetermined answer and expect the improvement effort to deliver the anticipated result. You might have an idea about the outcome but often the metrics will tell a story of their own; taking the time to really look into a process with this approach will yield measurable results.

Of course, once a process is improved, it is unlikely that it will stay that way. The relationships and causalities identified in the analysis phase may change and the focus of the process effort and business strategy might also alter. These variables may result in a process that, while once efficient, no longer conforms to the needs of the organization.

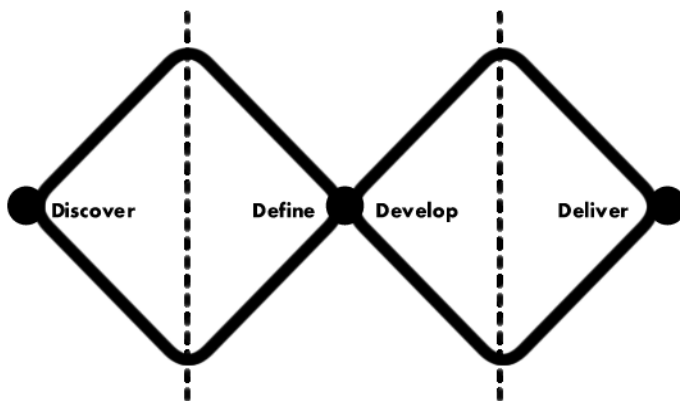
The Six Sigma methodology has been executed by production organizations for years, and its focus on quality aligns directly with ITPA tools. Just as assembly plants added robots to perform manual, labor-intensive tasks to improve quality and consistency, IT organizations can add process automation tools to rapidly develop, implement, deliver, and refine processes hand in hand with the Six Sigma method.

### Double Diamond Design Process

Much like the world of design, information technology (IT) management is often a creative effort and improving IT processes is, at its core, a creative exercise. As organizations bring together internal and external subject matter experts (SMEs), define a goal, and work to design the best solution, a certain amount of flexibility and creativity must emerge. Innovation is often merely the art of using existing things in new ways. Identifying ways to use existing items in those new ways, however, is the hard part.

The Double Diamond design process model is a simplified graphical way of describing the design process in four distinct phases: Discover, Define, Develop, and Deliver. This process maps the divergent and convergent stages of the design process to show the different modes of thinking that designers might employ. Supported and funded by the British Government Design Council (<http://www.designcouncil.org.uk>—the strategic body for design for all the United Kingdom).

The Double Diamond is segregated into quarters with convergent and divergent areas. As Figure 2.1 illustrates, the first quarter is the Discover quarter, which marks the beginning of the project or process improvement. Translating the Double Diamond to IT process improvement isn't much of a stretch. During the discover phase, an initial idea is evaluated. Much like the undocumented idea generation & planning (IG&P) phase of a Six Sigma effort, the Discover phase includes initial idea generation, research, management of information, and perhaps the establishment of workgroups to “discover” potential new ways to approach a process management concern.



**Figure 2.1:** An illustration of the Double Diamond approach.

The second quarter of the double diamond model is the Define stage. During this quarter, the design will, aptly enough, be defined through the identification of key business objectives and alignment of key activities for project development, project management, and ultimately project sign-off. To compare with the Six Sigma methodologies, the Design quarter of the Double Diamond is akin in many ways to the measure and analyze phases of the Six Sigma DMAIC.

Developing a solution to the problems presented as part of the process improvement effort falls into the Develop quarter of the Double Diamond. During this quarter, design-led solutions are developed and tested. The activities and objectives during the Design stage may include the commissioning and tasking of multi-disciplinary teams to lend broad subject matter expertise to the use of visual management techniques, the development of prototype processes, and the testing of potential solutions.

The final stage of the Double Diamond design approach is the Deliver stage, where the finalized process is taken through a period of final testing, review, approval, and launch. This stage also includes the evaluation of the success of the initiative against predefined targets and feedback from key stakeholders.

End to end, the Double Diamond approach may appear on the surface to be very much like Six Sigma, but beneath, the Double Diamond is much more focused on creativity than on hard metrics, especially in the Define and Develop phases.


Leveraging ITPA tools, the teams executing the Double Diamond approach will have on hand a means to rapidly create and deploy solutions in new and interesting ways. Experimenting with process designs in a lab environment has never been quicker, as solutions that would have traditionally required human intervention or complex coding—such as integrating with your ticketing system, your asset management system, and your monitoring tools—can all now be executed in a fully automated fashion, cutting the time needed to develop and implement new solutions. That saves money.

Another approach an enterprise can take to improving process maturity is to leverage industry best practices. For IT organizations, best practices abound; for sound IT management governance, two frameworks clearly stand out as world class—the IT Infrastructure Library (ITIL) and the Control Objectives for Information and Related Technology (COBIT).

## ITIL / ITSM

ITIL is a series of texts commissioned by the United Kingdom's Office of Government Commerce (OGC) that set forth an integrated framework of best practices for IT organizations. These best practices can offer a starting point to organizations focused on improving the effectiveness and efficiency of their IT operations. Unlike Six Sigma and Double Diamond, however, ITIL is a framework of best practices and is less focused on performance. Rather, it focuses on sound IT management practices and organization. Among these are Service Support and Service Delivery. The former defines best practices for Service Desk operations, incident management, problem management, configuration management, change management, and release management—all of which are key areas of focus for IT managers working to align IT delivery to business needs. Service Delivery focuses on how the support functions of IT are delivered to the business by defining areas of best practice in service level management, capacity management, IT service continuity management, availability management, and financial management of IT services.

ITIL can be used to improve existing IT processes by first aligning your organization's processes with industry standards. In much the same way that "backup software" is now referred to as "business continuity software," solutions for what was once thought of as "Help desk" software is now aligned to service desks as well as incident, problem, change, and release management. The focus has shifted from a manual process to a silo and cross-silo based approach. As organizations realize that incident management, for example, is far more complex than merely opening a ticket and dispatching a vendor, management of incidents has evolved into an entire hierarchy of needs. ITPA tools enable ITIL and ITSM by bridging the gap between disparate systems and allowing processes to be structured around sound governance rather than whatever your current system is capable of doing on its own.

 In Chapter 3, "Identifying high Impact Areas for Automation" we will discuss and provide examples of ITIL processes that benefit from ITPA.

## COBIT

COBIT is a framework of best practices published by the Information Systems Audit and Control Association (ISACA) and the IT Governance Institute (ITGI). Its purpose and focus is to provide IT managers (and auditors) with a set of best practices for measuring IT. This includes the categorization of IT into four domains: Plan and Organize (PO), Acquire and Implement (AI), Delivery and Support (DS), and Monitor and Evaluate (ME). Each domain is divided into multiple high-level control objectives. Each of COBIT's four domains contains specific guidance and maturity models for IT management and control that can be extremely useful at the silo and cross-silo organizational levels. What makes COBIT particularly valuable is an appendix entry that maps IT to business goals. Before we dive into a discussion of this process, let's first examine each of the four major COBIT domains and their high-level control objectives:

### ***Plan and Organize (PO)***

This domain covers the use of IT within an organization to achieve the organization's objectives from its highest level in the definition of a strategic IT plan and direction to the lowest level of managing projects. Of particular interest to process improvement efforts is COBIT PO4, which provides guidance and a maturity model on defining IT processes and is achieved by defining an IT process framework, establishing the organizational structure necessary to deliver the IT processes, and defining roles and responsibilities. Each COBIT high-level objective clearly illustrates the control point, the reason the control point exists (to satisfy a business requirement), the control point focus, how the control point will be achieved, and, most important to process improvement, how it will be measured.

### **Acquire and Implement (AI)**

The high-level control objectives within the AI domain cover the identification of requirements related to the acquisition and implementation of technology. These best practices and their associated maturity models can be particularly helpful in improving upon processes within the change and configuration management space. They cover a broad scope of acquisition and implementation from identification of solutions to the installation of and accreditation of solutions and changes. Each of the areas within the AI domain offer valuable insight into industry best practices that can be used for refining any process associated with the acquisition and implementation of hardware and software from procurement through production.

### **Delivery and Support (DS)**

The bulk of IT operations fall within the DS domain. From the definition and management of service levels and third-party contracts through the day-to-day incident and problem management and education of users, the DS domain covers all the high-level objectives focused on the delivery of IT.

#### **ITIL vs. COBIT?**

On the surface, one might look at the list of high-level objectives within the DS domain and think that many of these objectives cross over with ITIL—they would be correct. ITIL and COBIT have similarities in structure but offer different scopes of guidance. ITIL is more of a framework. It is heavy on organization and light on the actual implementation. COBIT is quite a bit more detailed in the execution of processes. There really is no choice to be made between ITIL and COBIT; both frameworks can work side-by-side to help you strengthen the processes within your organization. You might, for instance, desire to align your organization and processes to the ITIL framework and then use guidance from the COBIT framework to identify areas for improvement.

### **Monitor and Evaluate (ME)**

The ME domain focuses on the continuous monitoring and evaluation of IT and business objectives that require control. This includes evaluation and control over IT performance and regulatory compliance. The ME domain is the most often-overlooked domain in IT management, but it is really an area that can't afford to be neglected. When you consider the time and effort put into any process improvement, it is important that investment be protected.

COBIT is a control framework and maintaining a control framework can be especially challenging as organizations and business processes grow. ITPA tools provide a means to maintain pace with business process growth by offering the tools necessary to rapidly author and deploy control sub-processes. ITPA tools don't just make IT process development and deployment faster, they also introduce new ways to automate the gathering of control metrics. For example, measuring the number of management-level escalations that have occurred in traditional incident management might require skimming through tickets, reviewing Help desk logs, and digging deeply into post-problem review reports. An automated IT process, in contrast, could simply include a logging sub-process to report and keep track of each escalation actively so that escalation metrics are captured in real time. The result then becomes escalations gaining instant visibility to all parties involved and an active track of escalations being maintained for future review and management activities.

## Linking Process Improvement to ITPA

Throughout this chapter, we've examined methods to improve processes from a systematic approach (Six Sigma and Double Diamond) as well as a best practices approach (ITIL and COBIT). Each of these tools can be used to improve processes within an organization, and they will certainly each bring their own specific set of tools to bear on the problems facing your IT organization. This begins the process of continuous improvement that will drive your organization to world-class performance.

### ***Automating Returns***

To many, the business of process improvement, to be followed by organizational change and then to be followed again by process improvement, may seem status quo drudgery and it is; however, it is so only in the same way that rows of bank tellers in large financial institutions existed to service customer needs in the 1950s. Today, there are automated teller machines (ATMs), and if you walk into your local branch, you're likely to see only a small handful of tellers required. An organization could have spent years working with all manner of SMEs and never reach the level of efficiency accomplished through this single device. What changed wasn't the process, it was the entire paradigm. When ATMs hit the market, no matter how efficient teller operations could become, they simply couldn't compete with the automated solution, and organizations that failed to jump to the next curve of innovation were left behind and eventually crushed under the weight of their own processes.

ITPA is the ATM of IT management, and it's poised to be the single most substantial contribution to IT management in recent history. By implementing ITPA tools within an IT infrastructure, investment in process maturity is returned and continuously reported. Dashboards feeding senior management decisions can reach a state of near-real-time reporting as processes are measured by other automated processes and inefficiencies in process can be reported and escalated in a timely way.

Consider an incident management process and how it might function today with full-time employees. In a non-automated environment, a problem, such as a down server, may go unnoticed and unreported until an actual human takes note and calls for help. Vendor time to arrive on site, identify the root cause, and take corrective action is largely an unknown as technicians are dispatched "in the blind" without any up-front diagnostics to know where to look for the problem. Sometimes problems, such as a server down, are actually network problems and server technicians respond only to find out they need to dispatch network technicians, further delaying resolution and further impacting production.

With an ITPA tool in play, however, the server down would likely have been noticed by automated monitoring in near real time. The tool could open the ticket, perform basic diagnostic processes (such as checking network connectivity), and then based upon those results dispatch the appropriate teams. An ITPA tool could even update senior leaders on key issues as they occur in near real time, such as vendors failing to respond to a page or massive outages impacting the business.

This is a simplified example but it illustrates the capabilities of an ITPA tool to interface with both the monitoring and ticketing software and execute predefined IT processes—definitely saving time and cost associated with routine IT process recovery. Similar parallels can be made anywhere routine IT processes are executed upon.

## Summary

Just like the banking centers of yesteryear, IT management is a process-driven environment that has become entirely too dependent upon manual interaction. We often reward and recognize our associates in IT management for their hard work and heroics that take place to keep the business functioning, but how often do we neglect to research the reason heroics were required to get the job done in the first place. IT managers shouldn't be in a position to have the word *hero* interjected into their title; rather, they should be recognized for the tremendous value they bring to the organization. As businesses become more IT enabled, IT managers play an ever-increasing role in the financial viability of operations. Leveraging their knowledge to understand processes before they are automated is vitally important to any organization seeking growth in a highly process-driven economy.

## Chapter 3: Identifying High Impact Areas for Automation

Growth. Change. Maturity. Regardless of context, each of these words carries some amount of familiar pain. IT processes are matured generationally. That is to say that a process is designed, implemented, and then improved upon continuously. How rapidly an organization can identify process improvement areas and execute those improvements is a crucial factor in the success of the organization. Manual processes suffer greatly from what Gartner has coined as “human latency” or, simply put, the amount of time it takes for someone to figure out what to do. ITPA tools offer an ideal solution to human latency by automating tasks that previously might have been deemed un-automatable by traditional means.

To refresh, ITPA tools exist today that can help your organization realize fully automated end-to-end IT processes. Implementing and taking advantage of these tools is easily accomplished; however, to gain maximum return on investment (ROI), you’ll need to ensure that the IT processes being automated are fully mature.

In the previous chapter, we covered several process-improvement and maturity-focused tools to assist you, including CMM, COBIT, the Double Diamond design process, and Six Sigma. This chapter will identify high-impact areas for automation, pointing out both the quick-win scenarios and areas that can be established and matured over multiple generations to build a best-in-class, automated, IT infrastructure.

### Top Pain Points

In Chapter 1, we covered the strategic drivers for process automation including:

- IT efficiency
  - Simplify IT management
  - Improve productivity
  - Provide more budget for new innovation
- Business agility
  - Enable quick reaction time to new business initiatives
  - Maximize ROI / Reduce TCO IT operations through process automation
  - Meet SLAs
- Standards and compliance
  - Look to ITIL as a framework
  - Make processes repeatable
  - Automate processes for consistency
  - Report on and audit process performance
  - Develop a culture of continuous process improvement

As we examine the top pain points in this chapter, it will become clear that each of these areas of “pain” can be correlated back to an accompanying strategic driver. Efficiency, agility, and compliance are drivers that have been hewn into the bedrock of IT management. We simply must accomplish our goals in these areas. Now, as we examine the top pain points, we’ll explore how the failure to meet these goals has caused “pain” and we will more clearly see the need for ITPA today.

The business needs of the line of business units do not always directly align with the business needs of IT. Balancing the tension between the line of business desires to develop new product and service offerings and IT’s own desire to reduce the complexity and cost of the IT infrastructure is a challenge that requires a great deal of strategic and focused leadership.

As a thought leader in your organization, you may be challenged to work with your line of business partners to ease the pain associated with IT management especially in areas such as

- Project Management
- Incident Management
- Problem Management
- Release Management
- Configuration Management
- Disaster Recover/Business Continuity
- Security
- Provisioning

Each of these areas depends upon processes and, far often than not, these processes are highly human dependant, prone to error and misinterpretation, and difficult to control. As your line of business operations partners work to achieve their goals, they will demand rapid implementation of their new initiatives. In a globalized economy, the ability for an organization to deliver a specified product or service today is often not as big a foothold as one might think. Consumers demand organizations that can deliver “right now,” and in today’s fast-paced environment of rapid innovation and shortened times to market, a business must be able to keep pace with change. Trying to protect the corporate investment in IT infrastructure is a challenge and as an IT executive you must ensure that your infrastructure growth can be properly managed and supported. Demanding sufficient project management controls to ensure new systems align with the overall IT strategy and are manageable and supportable is critical to success, but this will only address part of the overall problem.

Once initiatives are in the infrastructure and problems develop, line of business operations will also demand rapid resolution to their problems. Essentially, the pain felt in IT management can be summed up in five simple words: “Fix it for me now.” An effective executive is one who can work with his or her line of business partners to establish processes to minimize the impact to line of business operations by delivering three things for the business:

- Reduce the time to market for new initiatives through reduction in IT process time for new initiatives (hardware/software approval, provisioning, change management, configuration management, and release management). The focus is on delivery of a new product and service to a consumer in a quick and inexpensive manner, and IT project management and service delivery management are both major contributors to both cost and time. Don’t underestimate the role ITPA can have in reducing project cost and ongoing support costs for your business partners.
- Increase transactions per Full Time Employee (FTE) by increasing IT availability through the reduction of incident management, problem management, release management, and business continuity IT process timelines.
- Establish clear service level expectations with line of business partners that are focused on the needs of the business (IT service management).

IT has no desire to adversely impact project timelines. But IT processes and controls do greatly contribute to project time, and certain process and controls must be put into place to ensure new projects are on-boarded to the enterprise infrastructure with all due diligence. From the perspective of IT management, new projects may need to be examined for impacts to several major areas of IT concern:

- Hardware compatibility with current enterprise standards
- Software compatibility against declining/not permitted technologies
- MIPS utilization
- Storage utilization
- Leveraging of pre-invested environments (such as storage, virtualization, or utility computing infrastructure)
- Security/complexity of security controls
- Time to market/delivery
- Resilience/recoverability
- Abnormal SLA requirements

Impacts in any of these key areas can spell real challenges for meeting IT business goals. Fully articulating and communicating IT business goals to line of business partners isn’t where a CIO needs to be focusing time; the best place to focus is in driving IT service delivery that aligns to the business goals of the line of business partners being supported. This goal is obtainable through the leveraging of industry best practices, such as ITIL, and ITPA tools to automate the delivery of service. The ITIL framework and associated best practices will help you organize your infrastructure and ITPA tools will deliver the horsepower to get ITIL done.

## IT Service Management/ITIL

IT Service Management (ITSM) refers to the high-level discipline of managing IT service and delivery to a customer. ITIL, as you'll recall from Chapter 2, is one of the commonly used frameworks for ITSM, along with COBIT and several others. ITIL is being embraced by organizations around the world with a desire to standardize and drive out process maturity for their IT processes and really stands out as best in breed as an ITSM framework because of the perspective it delivers IT managers. ITIL is just broad enough to avoid granularly dictating an IT organization's finest details while still providing clear lines of departure between IT process disciplines. ITIL is not a new concept nor was it unique when it was originally created and the questions it has been designed to help address are nearly as old as technology's use in business.

As early as the 1970s, IT managers were recognizing a need for an organized and systematic approach to ITSM. In his 1974 book *Managing the Data Resource Function*, Richard L. Nolan set forth what is essentially the foundation of ITSM when he began to identify the need for a management focus centered on what managers at the time referred to as the data resource "function." Today, that function is the nerve center business, and managing it has become increasingly complex.

Why has the task of reaching the goals associated with ITSM been so difficult? Rapid technology growth is certainly one cause, but that is an excuse that has far too many hats hung from it already. Rapid technology growth contributed to the complexity of the issue but not necessarily the issue itself. The real issue behind ITSM adoption is really ungoverned organizational tension. This type of tension leads to a state of continuous requests for expediting of IT processes, uncontrolled escalation of project concerns, and the development of an adversarial mentality that pits business against IT in a struggle to deliver shareholder value. People become emotional, processes break down, and delays impact the business. But what if each IT process could be executed without any political or emotional motive? Consider this question as we examine the traditional mindset that leads to this situation.

IT management has traditionally become frustrated with the relatively low degree of technical acumen, and regard for IT process governance, found in business units, while business units traditionally view IT constraints as obstacles to be circumvented rather than measures implemented to protect the bottom line. ITSM holds the promise to alleviate much of this tension by focusing attention on the business value of IT. Implementing ITSM, however, is nearly impossible when all the business and IT resources that need to come together to approach the delivery of ITSM are pitted against one another. Our teams can't work well together internally with an "us" vs. "them" attitude, and even if your IT and business unit relationships are strong, chances are that the teams are so overworked that putting enough time and effort towards making ITSM a success is completely out of the question. Simply stated, today's organizations cannot achieve a state of ITSM/ITIL best practices on their own without introducing ITPA tools. The resources required to do so would be cost prohibitive, which makes the use of an ITPA tool the only conceivable way to truly reach an optimized state of ITSM.

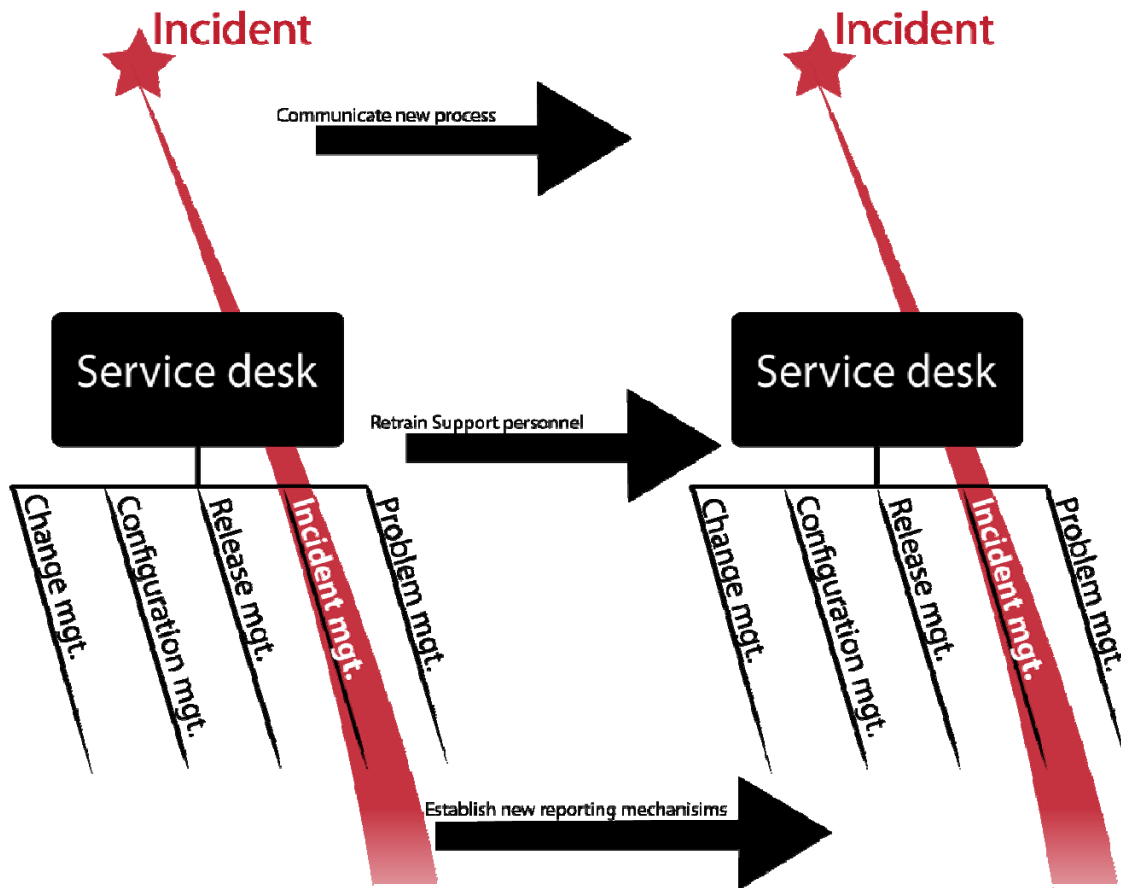
ITPA holds the promise of releasing the pressure on IT resources by automating routine, not-so-routine, and even highly complex IT processes. As we will explore in the following sections, ITSM makes IT governance and ultimately IT service delivery much better. ITPA makes ITSM, among other things, much better by reducing human latency and enabling rapid process deployment. This will free your human elements to focus on the factors that matter most, such as delivering upon their unit goals and communicating with their partners while spending less time on fire drills and knee-jerk reactions.

As we explore ITSM and ITIL, keep in mind that in order for ITSM to be successful, you need talented and thoughtful IT professionals building relationships and becoming active listeners to business needs. Your IT delivery executives and service delivery managers have a role to play as salespeople, as consultants, and, in matters of enterprise governance, as advocates for the lines of business they support. ITPA will free their time enough to fulfill those goals.

### ***ITIL Service Support***

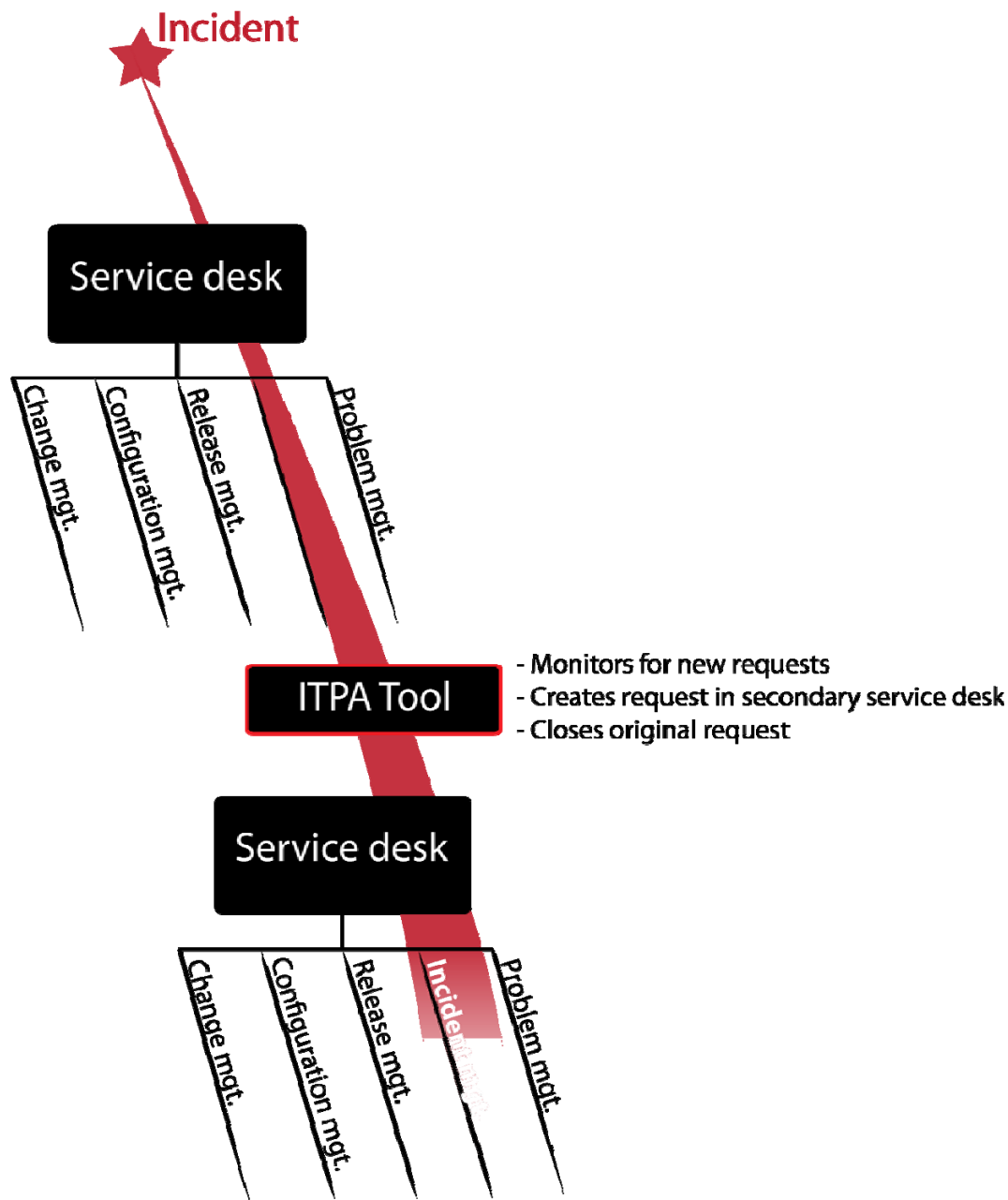
Service Support is the discipline within ITIL, and ITSM as a whole, that can benefit the most from ITPA improvements, primarily because it is most concerned with day-to-day IT servicing of critical business functions. The Service Support discipline depends upon what ITIL refers to as a Single Point of Contact (SPOC) that provides the line of business with a single point of entry and exit for service support processes. Ensuring a SPOC exists for all IT concerns within your organization is likely to be your first major point of ITSM failure. Generally, the larger the organization, the more groups develop and evolve service desk routines to support the business. Centralizing these service desks can be a challenge that is complicated by different and disparate service desk software being used to perform this function. Outside contractors and vendors can further complicate the concern as many offer their own service desk function that organizations can leverage as their own.

ITPA can offer a quick win in helping to consolidate service desk operations by orchestrating the integration between different service desk applications. For example, if your organization has two service desks that are being consolidated, rather than take on the entire administrative overhead of communicating the new service desk information to the organization during transition, re-training service desk personnel en masse, and establishing new reporting mechanisms, certain portions of service desk operations could be re-routed to the other service desk. Figure 3.1 illustrates, at a high level, the parallel approach and the three main tension points that develop: communication, retraining, and reporting.



**Figure 3.1: Pain points associated with consolidating service desk operations.**

In Figure 3.2, however, an ITPA tool is being implemented that allows, in this example, incident management functions to be offloaded from one service desk to another. As training of service desk personnel proceeds, more and more service desk functions can be offloaded until the entire service desk is consolidated into a single solution. Communication of the final, consolidated service desk contact information can wait until the majority of service desk functions have been offloaded and the expanded service desk can accommodate the workload, minimizing miscommunication (read as confusion) and extraneous effort.



**Figure 3.2:** ITPA tool can be used to export incident management functions to a new service desk.

The users still call into the same service desk number or enter data into the same service desk tool to create a ticket, but once created, an ITPA tool can be waiting to execute an orchestration process to bridge the two systems seamlessly. This kind of automation is just the tip of a very large ITPA spear. As we examine the five disciplines under service support in more detail, keep in mind that ITPA tools can deliver process automation extremely rapidly, and with their innate ability to interface with and leverage your pre-existing service desk and IT management applications, the sky is the limit as to what capabilities exist within your own infrastructure.

## Incident Management

The goal of incident management is to restore operations in the most expeditious manner possible while reducing further impacts stemming from the incident. The key point of pain in this statement stems from the word *expeditious*. For a process to be executed rapidly and successfully, it needs to possess a high degree of process maturity. Either this means that you have clearly documented and controlled procedures for manual IT processes or you have implemented some form of process automation already. ITPA delivers both quick and multigenerational process wins in this category in a variety of ways. First, ITPA tools are by their very nature much more rapid than human intervention, taking your mature service desk processes to new heights of speed and accuracy. In addition to the specific examples already provided in earlier chapters, ITPA tools can automate incident escalation and reporting into disparate systems. This capability is particularly helpful in organizations with multiple production notification systems or where compliance concerns drive a need for specific reporting based upon incident scope and impact, such as those with strong regulatory or compliance constraints.

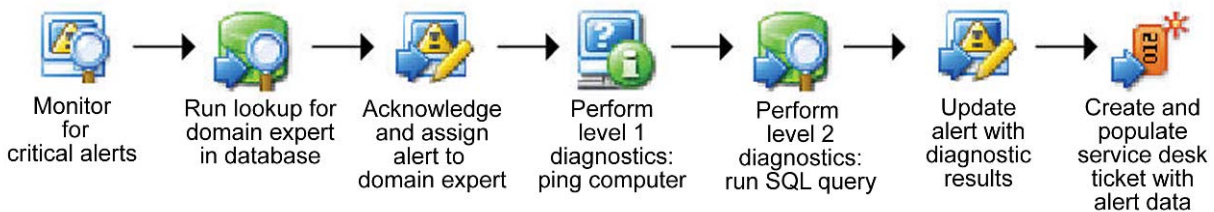


Figure 3.3: ITSM workflow example.

## Problem Management

The goal of problem management is to identify and resolve the root cause of incidents to prevent their reoccurrence. Problem management and the methods used throughout a problem life cycle are different from incident management methodologies. Problem management is conducted through the execution of a post-problem review (PPR), which is a process whose purpose is to review all the details associated with a particular incident, or set of incidents, to try to identify root cause. This root cause analysis of an incident can be a labor-intensive process.

As problem managers work to isolate and identify the different contributing factors to the problem, they often need to perform a great deal of research using a variety of IT tools. Incident management systems are usually just the beginning. More troublesome are the research points that lead outside of incident reporting itself and into the realm of IT delivery. Network trace logs, server logs, and mainframe system logs may all need to be accessed, cross-referenced by time code, and sorted (just to name a few). Automating the research and organization of this type of information is nearly impossible outside of the construct of an ITPA tool.

By integrating with existing IT applications, the depth of research that can be performed using an ITPA tool is nearly limitless. Problem managers can quickly connect new research processes to multiple systems with your IT infrastructure and compile detailed data organized by time/date stamp with even the most rudimentary process knowledge and no programming or macro coding required.

## Change Management

Change management is the ITIL discipline focused on ensuring standardized procedures are used for the efficient handling of all changes. Requesting, authorizing, governing, and implementing these changes requires many processes, each of which can benefit quickly from the implementation of an ITPA tool.

Consider the process surrounding the request of a new email account, which would typically include

1. Submitting a request for change by an authorized manager (or requestor)
2. Reviewing change requirements
3. Creating an email account based upon the user's name (or other unique identifier)
4. Assigning rights associated with that email account
5. Communicating the change completion to the authorized requestor

Through a traditional semi-automated change management process, this task could take hours or even days. An ITPA tool could be leveraged in this situation to monitor change requests from the service desk application, use the information contained within that request to provision a new email account, assign the appropriate rights, and communicate the completion all, quite literally, in a matter of seconds. Specific audit functions and error handling could also be included so that names that currently match existing mailboxes don't error out while trying to create a duplicate account, and process steps could also be added to update the existing request and requestor along the way so that if a flag is raised regarding a problem with an account, the requestor and more importantly the email team are both promptly informed of any delays that require management attention.

Taking this example a step further, an ITPA tool could automate the entire user creation process including Active Directory (AD) account, mainframe accounts, application permissions, email accounts, and welcome emails from human resources explaining important policies or procedures. An email could even be sent automatically to members of the new associate's team, letting them know his or her new email address automatically. Even greater value in change management can be found on the opposite end of this example—user account deletion—which we will cover later in this chapter.

## Configuration Management

Configuration management is the ITIL discipline intended to ensure standardized procedures are in place for the handling of all configuration items (CI) with a Configuration Management Database (CMDB). As you'll recall from previous chapters, configuration management is an important discipline because of the critical role the CMDB plays in the success of the lights out data center.

ITPA tools contribute greatly to the management of CIs by automating the processes that add, alter, and delete CI information. For example, if an organization has multiple systems of record for computer hardware asset information, an ITPA tool could be used to establish a process that would gather information from one system, combine it with information from another system, and integrate both into a new CI in a CMDB.

Potential for ITPA use in configuration management varies greatly by organizational need and stage of configuration management adoption. Due to their flexibility, however, ITPA tools can contribute greatly to configuration management within any organization.

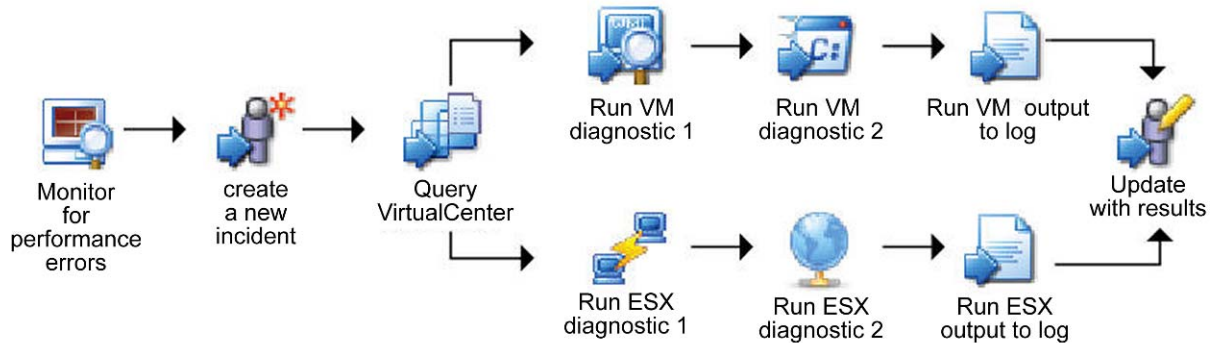
## Release Management

The goal of release management is to ensure rapid and successful distribution of software to the production environment and that distributions delivered do not adversely affect production. This is typically achieved through rigorous process disciplines surrounding the deployment of software distribution packages and software distribution applications that enable the precise timing and deployment of software packages. ITPA tools contribute to release management success by assisting in the automation of deployment solutions, monitoring and auditing deployment status, and reporting.

## Virtualization

Virtualization has brought with it a whole new definition of IT efficiency. Prior to the virtualization revolution, far too many organizations were spending far too much money on dedicated hardware and software solutions. Sadly, much of this was the result of what was, at the time, sound IT strategy. The world of IT management lived in a state founded upon “don't put all of your eggs in one basket” logic that forced the segregation of critical IT systems. Today, however, we have learned that we can put all our eggs into one basket provided, of course, that the basket itself is a fortified, compartmentalized, and meticulously controlled basket. The sound strategy of segregation at the server level has evolved to compartmentalization within a single server infrastructure. Virtualization alone may be one of the most cost-saving, intelligently designed server management constructs ever conceived. It allows IT to invest in hardware infrastructure prior to knowing the exacting requirements of each project, saving time and money, and it enables rapid provisioning of server resources when needed. ITSM can provide process guidance to make it all work smoothly, but even the most well-organized and meticulously documented processes can't accommodate for human error. When humans do make mistakes, one of the biggest benefits of virtualization, rapid provisioning, can present a big risk as those mistakes are deployed rapidly.

ITPA tools can help you keep a good eye on your basket by automating the monitoring process and even executing a few diagnostic and recovery routines along the way. Figure 3.4 illustrates the monitoring of a virtual environment for errors and the execution of multiple diagnostics to help determine root cause.

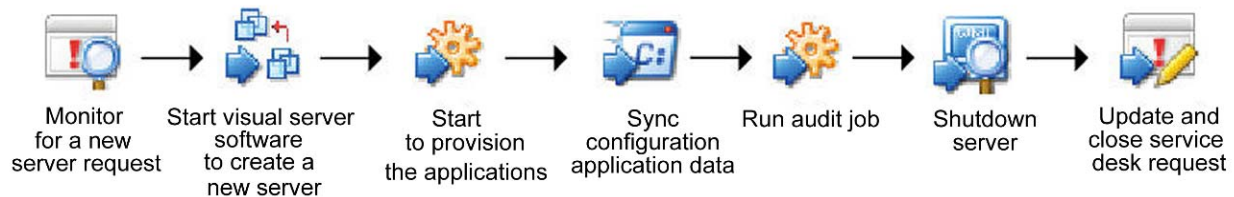


**Figure 3.4:** ITPA tolls monitoring a virtual environment for errors.

Beginning at the first stage in Figure 3.4, an ITPA tool can watch your monitoring software for indications of performance errors, and when they occur, create a new incident (in your own incident management software) to record the problem. From this point, the ITPA tool may execute a query to determine root cause, whether through Virtual Machine (VM) diagnostics or through ESX diagnostics (depending upon which system is used in your organization). Finally, the ITPA solution can log the output and update the trouble ticket with results. The benefits continue: Perhaps you need to notify a VM engineer or vendor when errors occur. If so, a process can be established off of any of the previous steps to notify them via email, pager, or through virtually any software you currently use to manage these notifications. ITPA tools are platform- and software-agnostic and are designed to deliver fully automated IT processes regardless of what systems you currently leverage to get the job done.

## Consolidation

All IT organizations are continually challenged to do more with less. Through ITPA tools, this goal can actually be realized. In nearly as little time as it takes to define the consolidation process, ITPA tools can orchestrate end-to-end data or server consolidation projects. For example, ITPA solutions can extract data from event monitoring and service desk tools and consolidate events into a central system. Migration of data can expedite the elimination of redundant systems as well as correlate events between systems so that the data that resides in multiple places is synchronized. ITPA solutions also offer a highly efficient method to migrate physical configurations to virtual systems, including moving data from multiple systems into a new system solution and monitoring for a new server request to provisioning the applications making the provisioning pipeline for virtual servers tightly oriented towards high-speed execution.



**Figure 3.5: Using an ITPA tool to orchestrate an end-to-end physical server to virtual server migration.**

As Figure 3.5 shows, this particular ITPA process is monitoring an asset database (CMDB) for a new server request. Once one is received, the ITPA tool can, using information provided in the change management record, interface with your provisioning server software to create a new virtual server. Gathered configuration and application data is applied to the virtual server, while the physical windows and Unix servers are shut down. Once the physical servers are removed, the virtual server is started, and an audit is run to ensure the configuration is compliant. From there, the asset database is updated and the originating ticket to migrate the server is updated and closed.

## Security

Security must be executed flawlessly. Unlike a single character mistake in a virtualization or provisioning process, which may result in a misnaming of a server or at worst a failure that will quickly be realized in production, a single character flaw in a security process can spell disaster on a broader scale quite rapidly. This isn't to say that security is any more or less important than any other IT process discipline; it is, however, one whose management focus on the granular details and flawless execution gain some notoriety and which can benefit greatly from flawless process execution.

Unlike manual, human-executed processes, automated IT processes don't make mistakes in the actual process execution. Provided the process itself is sound, ITPA tools can be leveraged to streamline and expedite security, or virtually any other IT process, and deliver consistent results. Consider the process associated with removing a user from the organization. This will often involve changes in a variety of IT systems from AD, mainframe access, and Exchange, just to name a few. Figure 3.6 illustrates how an ITPA tool can be used to set up a process that will monitor for requests for user removal, acknowledge the change request, disable the account in AD, archive the user's mailbox, delete the mail account, and close the request. The process can even include a step to send an email notification once complete. The best part is that the entire process, from the time a manager initiates a request to the time the request is closed, takes mere seconds rather than the hours or days associated with a manual process, saving your organization time which equates to money, and reduces the overall IT risk.



**Figure 3.6:** An ITPA security process for user removal.

## Provisioning

Taking steps to improve time to market, the provisioning process and automation of mature provisioning processes can deliver, pound for pound, the greatest ROI to line of business project timelines. As you may recall, we touched slightly on the provisioning process in Chapter 1. Explaining this process in a bit more detail, an ITPA tool can be leveraged to automate provisioning processes between service desk applications, provisioning applications, auditing functions, and release management. For example, in Figure 3.7, an ITPA tool is being used to monitor a service desk application for a change request and then executing a pre-defined ITPA process to configure server settings (based upon the change request), audit settings, create a package for distribution, and deploy the new system. End to end, this process, once automated, will take a fraction of the time associated with semi-automated tasks.



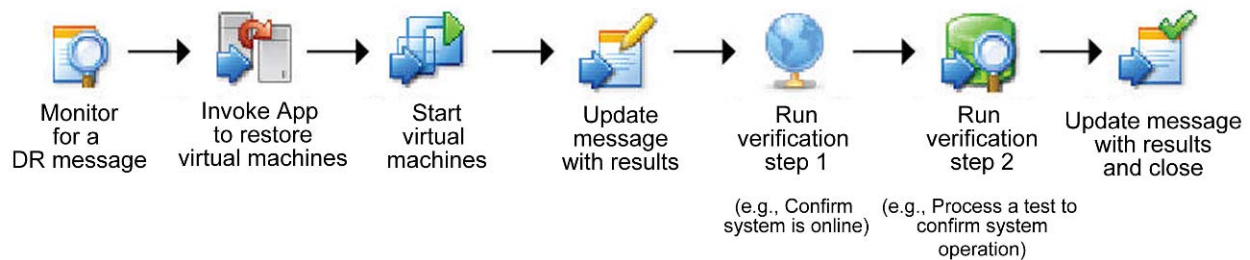
**Figure 3.7: Provisioning a server.**

Leveraging ITPA tools to provision servers within your organization will reduce the time to deliver of IT services which, in turn, will reduce time to market for operational products and services.

There's no doubt that ITPA tools can provide vastly shortened delivery times, but they can also help you reduce the complexity of your IT infrastructure. A major theme of this chapter has been *pain* in terms of time and cost. By choosing to automate only those processes that lead to the greatest IT business benefit, such as virtualization and provisioning of virtual environments, the disparity in project time associated with building a virtual environment vs. a dedicated server environment will be a solid leveraging point to drive business use towards the virtual infrastructure. If a virtual environment can be provisioned and delivered 100 times faster than a dedicated environment, line of business partners will have a strong financial motivator to see their projects leverage the virtual infrastructure.

## Disaster Recovery

The processes supporting disaster recovery may be an area within your organization in which you can gain the most traction for ITPA. ITPA tools can be leveraged within disaster recovery to dramatically reduce recovery times. Figure 3.8 illustrates an example ITPA tool process that monitors for disaster recovery messages, invokes the restore process, runs various verification steps, and provides results to management. The entire process is orchestrated to run automatically without human intervention, so the only limitations on how fast an environment can recover are those of the technology infrastructure.



**Figure 3.8:** An example automated disaster recovery process.

## Summary

When considering areas for improvement within your IT organization, the places we most often start are those that provide us with the greatest sources of pain. Manual, high-impact, high-volume tasks are often at the center of IT attention (and tension), as these tasks are the most likely to raise the highest visibility when they fail. Incident and problem management tasks, software and server provisioning, security, and disaster recovery solutions can all benefit from ITPA. Manual tasks are human dependant, error prone, difficult to control, and costly. In contrast automated processes are faster, more accurate, easier to control, and will enable your organization to reach peak efficiency in IT operations.

As we learned in Chapter 2, manual tasks are typically representative of the lowest degree of process maturity and generally are dependent upon experiential knowledge to succeed. Even the most skilled and diligent employees sometimes make mistakes. Any change or modification to the normal personnel or process and a high degree of error can quickly be introduced. For your high-impact, high-volume tasks, consider this question: Is it really fair to place a single person in the position to impact production through a single action or inaction? Operations personnel do need to be competent and diligent, but at a certain threshold of risk, there comes a point where management accountability needs to come into play and limit the amount of influence an individual can exercise over operations. These are ideal points for ITPA tools to be leveraged to reduce risk.

To reduce your delivery and support time, increase the number of transactions per FTE, and establish truly clear definitions of service levels, ITPA tools must come into play. And in doing so, they will help you avoid abnormal SLA requirements while reducing overhead and increasing operational efficiency. These tools deliver the speed, accuracy, efficiency, and simplicity necessary to meet your goals and as such will reduce your overall IT “pain.”

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## Chapter 4: Getting Started—How to Evaluate Vendors

So far in this guide, we've covered quite a bit of ground. Chapter 1 set the stage for ITPA and illustrated how the state of the data center today is becoming increasingly dynamic as it approaches optimization through automation. To achieve the goal of a sustained state of IT efficiency while remaining quick to respond to business needs and able to meet standards and compliance challenges demand dynamic optimization methods, and ITPA tools deliver to meet that need. Chapter 2 explored the various stages of process maturity and presented tips on how to automate returns. In Chapter 3, we covered many of the ways in which the pain associated with common IT processes can be relieved through ITPA.

This chapter will answer what may be the most important question: Who can we trust to deliver on the need for ITPA in your enterprise? Identifying the right vendor to partner with and work through your ITPA goals can be challenging. However, through research, you can answer the appropriate questions and base your technical evaluations on the right criteria to ensure success. Research is absolutely essential, and if you know the right questions to ask, the work becomes much less daunting and produces much more useful results.

### Establishing a Short List of Vendors: Do Your Analyst Research

For many organizations, the entire success or failure of their ITPA initiatives hinge squarely on vendor selection. Knowing this, however, organizations still fail to consistently put aside the time and resources necessary to fully evaluate their vendor selections. Evidence to this point is clear and likely lurking in your own enterprise as no doubt by now you may have already identified several systems that may be consolidated and optimized through ITPA.

Vendors in the ITPA tool market vary in size, market focus, and experience, so it is important to research all options to find the vendor best suited for your needs. One commonly used tool to help in vendor evaluation is known as an *evaluation matrix*. The following list highlights key areas you should ensure receive heightened attention and are captured on your matrix:

- Experience
  - How long has the vendor been developing ITPA tools?
  - Does the vendor show evidence of understanding best practices in your area of interest such as ITIL/ITSM, security, or virtualization?
- Compatibility Integration
  - Will this system interaction/function with all your existing infrastructure applications?
  - Will any special coding be required?
- Ease of Use/Supportability
  - What does the process design process and interface look like (that is, is it script driven or is there a GUI with a drag-and-drop interface)?
  - How difficult is it to relate a business process to the system input?
  - Can a non-technical person understand the process steps as they appear in the system?
  - How much will support cost and how will it be delivered?
  - What is the learning curve/on-boarding time for new associates?
- Infrastructure Overhead
  - Is the ITPA tool client based (requiring code on each system it interacts with) or is it clientless? If it is client based, who will support those clients? How often do they need to be updated?
  - How many new transactions/traffic is this system going to introduce? Will it touch multiple systems/multiple times or does it retain information for use throughout its processes?
  - How many servers and what kind of processing power is going to be required to maintain this environment?

Table 4.1 shows a sample evaluation matrix based upon these categories used to evaluate two vendors with similar products.

	Vendor 1	Vendor 2
Experience	3y	2y
Compatibility / Integration	5/10	9/10
Ease of Use / Supportability	7/10	9/10
Infrastructure Overhead	5/10	8/10

**Table 4.1: Sample evaluation matrix.**

Your own evaluation matrix may weight these categories differently or perhaps break them into their core elements a bit further to ensure a fully detailed analysis. For example, Ease of Use/Supportability could be broken into segments focused on the user experience, learning curve, support overhead, and documentation, just to name a few. The important factor is that you clearly establish your criteria prior to vendor selection so that as you perform your evaluations, you are doing so with a common measuring stick.

## Request for Proposal and Request for Information

Once you've established your measurement criteria, the next step is to document a Request for Proposal (RFP) and send it through your supply chain management process and begin to solicit vendor proposals. If you have a particular vendor in mind, a similar document, a Request for Information (RFI), can also be used to solicit information directly and to determine whether the vendor's surface qualifications meet your expectations before pursuing them by sending an RFP.

Your organization is likely to have its own standard format for which RFPs are created, including their structure and layout. Rather than give a lesson in RFP structure, let's cover what it will take to ensure that your RFP will be as effective as possible and help you receive the most qualified RFP responses. From a high level, your RFP should contain basic answers to the common interrogative construct, also known as "The 5 W's" (Who, What, When, Where, Why) and how. Specifically

- Who—What industry are you in? Who do you serve? From within which departmental organization do you operate?
- What—What is it specifically that you're looking for? For example, you may state something along the lines of "We desire an ITPA tool capable of orchestrating all the various disparate systems within our enterprise into a centrally managed process framework that can be managed by entry-level process design consultants with no programming experience. The system should be GUI based, easy to use, and integrate fully with all existing systems including..."
- When—What is your project timeline?
- Why—State the reasons you're requesting the proposal. If it is fair to say that you're looking for an ITPA tool to assist in ITIL implementation or infrastructure optimization, then do so. Some tools may be geared more towards server provisioning, for example, rather than IT service management. You'll want to identify any potential gaps in the solutions vendors offer and note those for review.
- How—How will the vendor be evaluated by your team? This is an important step both for your own team's understanding and for the vendors submitting the proposals so that everyone has a documented reference of what is expected and graded.

Answering these questions will prove a solid foundation upon which to begin to author the RFP within your organization.

## Time to Value and Implementation

The following sections offer a few important notes to cover in your RFP document specifically around time to value and implementation of an ITPA tool.

### ***Best of Breed vs. Suites***

Is your infrastructure a single vendor environment or heterogeneous? Solutions that can meet the needs of heterogeneous environments are much more desirable for their flexibility and for "future proofing" your environment against change. Best of breed vendors provide agility, with more frequent release cycles and an ability to influence product direction, and are specialists in ITPA. Management vendors who acquire smaller vendors have used technology to fix integration between product suites.

### ***IT Process Automation vs. Task Automation***

Many vendors offer point solutions for task automation for their own products, but these are not true ITPA tools in the sense that they do not orchestrate IT processes across platforms, product suites, and silos. There are also ITPA vendors that specialize in a specific area such as storage, database, or incident handling. Although these solutions might meet initial needs, expanding automation outside of that silo may not be possible.

### ***Service-Based vs. Product-Based Automation***

How does the ITPA vendor implement ITPA? Many ITPA vendors started as service companies and implement ITPA using code/script-based methodologies, which lengthens implementation and makes it more difficult to update process rules as business logic changes. Be wary that services cost more than the product.

### ***Out of the Box***

What support services are offered beyond the ITPA tool implementation? Are process automation consultations available? What about best practices libraries of processes to be automated (look for mature libraries of predefined best practice processes)? Does the vendor offer any visibility into its future release schedules so that you can plan for change? All these questions will provide you with a much clearer understanding of the experience and capabilities of the vendor you may be working with.

Does the tool offer a truly end-to-end process framework? ITPA tools are not merely job schedulers or management tools; they are cross-platform, logical decision tree-based tools with built-in monitoring, capable of working with many applications to execute an end-to-end IT process. Even human-based Help desks can't offer this kind of end-to-end process execution, which begins with an event and ends with a resolution often touching dozens of systems in-between and all within a matter of mere moments from inception.

It is also important to fully involve in the RFP process all parties that will contribute to the success of the project. Gaining a clear voice of the customer and maintaining an open seat at the project "table" often means the difference between project success and failure. Invite your partners to participate, solicit feedback, and encourage open and candid discussions on concerns.

## Technical Evaluation—Features and Function

Once your RFPs have been received and weighed through your evaluation matrix, the process of detailed vendor evaluation can begin. You've no doubt narrowed your choices and now, with full proposal details in hand, your teams can begin to technically evaluate the features and functionality of the vendor products. To orchestrate, integrate, and automate your environment, there are a number of key technical features to consider, which the following sections highlight.

### ***Design Environment***

Look for a design environment that offers:

- Operator's console—Ability to view and interact with running workflow
- Executive dashboard—Ability for executives to view operational metrics to measure the impact of automation on the business
- Intuitive workflow designer—Ability to create codeless workflow designs, with codeless integrations, codeless rules engine, and codeless data bus

### ***Architecture***

Is the environment entirely server based or is it distributed? A distributed automation tool depending upon many “agents” spread across the various application systems and devices it may potentially need to integrate with is much less attractive than an agent-less solution which would accomplish its automation tasks seamlessly and without any added overhead on any of your existing application systems. Be leery of code that “must” be executed on you secondary systems (such as your virtual server provisioning platform, or help desk) that may interfere with normal maintenance of those software packages.

### ***Script vs. Non-Script Environments***

Script is a code word for “software code” which implies complexity, implies specialized knowledge and implies added support costs to maintain. Introducing even the slightest bit of code complicates the process design work flow and may require added support to ensure that as IT processes are changed the appropriate level of technology management is engaged to “script” solutions. In short, scripts and automation are not ideally paired for the long-haul. ITPA tools that offer a script-less interface are clearly preferred over those which require bits of code strung together to enable them to function properly within your environment. An ideal solution would involve no coding on the part of the IT process designer at all, simply a point and click interface connecting IT processes together in a visual way that is easy to understand and easy to manage going forward.

## The Truth About BPEL

There has been some considerable “buzz” and some confusion in recent years over BPEL, the Business Process Execution Language, so as an important point of clarity let’s pause for a moment to discuss. BPEL is an XML-based language designed to enable task-sharing for distributed (otherwise known as “grid”) computing environments. It is not an IT process automation tool or workflow designer. BPEL is commonly used by programmers to write code that can execute across multiple web servers. The name is deceptive and easy to confuse in name alone with ITPA tools which, in contrast, offer a full workflow design suite geared towards process designer use. These technologies are not related and do not serve similar functions. One is a XML based language, the other will reduce your infrastructure costs, streamline your processes, optimize your infrastructure, save you money and increase your customer satisfaction.

## Real-World Value

The ease of use and rapid implementation of ITPA tools are making real impacts in many organizations today along the pain points we discussed in Chapter 3. All manner of IT service management can be automated (Incident, Problem, Change, Release, and Configuration) as well as IT processes supporting server provisioning, virtualization, and business continuity. Table 4.2 illustrates how ITPA tools are being used today in midsize and large organizations to significantly decrease process time and FTE resources and save organizations money.

Industry	Business Challenge	Without ITPA	With ITPA	Estimated Savings
Telecommunications	Time-to-acknowledge and response to customer outages on 200 servers (9 processes)	25 min	1 min	\$ 2.5M/year
Software	Time-to-onboard new employees through Active Directory (1 process)	45 min 3 staff	2 min 0 staff	\$ 450K/year (1800 requests)
Food Retailer	Time-to-run 100 maintenance and inventory processes across 2,000 stores	60 min per store 1 staff	5 min per store 0 staff	\$ 150K Prevented on-site staff \$10M
Financial Services	Time-to-fulfill service requests for new virtual servers (1 process)	120 min 2 staff	3 min 0 staff	\$ 280K/year

**Table 4.2: ITPA real-world impact.**

To dive a bit deeper, let’s take an up-close look at a real-world implementation for a large government tax authority.

### **Situation**

The organization monitors thousands of operations and application servers that process tax applications, insurance, assessment, and customs taxes for companies and individuals for millions of customers. The organization has deployed multiple monitoring systems that have traditionally required a sustainable human investment to manage each application environment and ensure continuous service delivery. A proprietary application had been developed to “integrate” some of the systems; however, the software was code-based, and built upon aging technology that proved to be restrictive and difficult to manage, which resulted in gaps in service-level support. Gaps in documentation and the core competencies of the internal teams and vendors, few of which could still support this aging technology and then only at a premium, increased the systems, people, and process risk associated with managing the environment and maintaining operational stability.

### **Impact**

Year after year, budget drain increased as support capabilities from internal and external teams waned. As knowledgeable support diminished, service response times and expenses increased.

### **Challenge/Goal**

The goal is to consolidate the nine operations needed into a single, cohesive, operations center and to free up 12 full-time employees for reallocation to other, more strategic projects and initiatives as well as enable the delivery of a single management console. This will reduce costs and improve service quality.

### **Solution**

An ITPA tool has been implemented and is today processing approximately 2 million events per month filtering, translating, and then generating up to 750,000 events per month into the enterprise console.

Taking a look at the breakdown of numbers, the solution resulted in:

- Each of the 2M events initiates at least two actions in an ITPA workflow = 6million actions
- Of those, as many as 750,000 events can get forwarded into the console per month; every one of those passes through a minimum of three policies and a total of 23 objects, for a total of 17,250,000 actions undertaken ( $23 \times 750,000$ )
- 2.75M workflows /month
- 91,600k workflows/day

This results in 275,000 actions a day being executed by a tool that is not “code based” or dependent upon “tribal” knowledge but rather is built to deliver a simple drag-and-drop interface to ITPA.

### **Benefit/ROI**

Costs have been reduced and significant improvement in service quality and response time has been gained. An estimated savings of \$1.5M / 12 people at \$125,000 (fully loaded employee cost) has been realized and those associates are now focused on more strategic initiatives that will further reduce the organization's costs through ITPA and ultimately save tax payers money.

The value of ITPA by now is clear. Through sound design and simplified execution, ITPA tools can reduce the total cost of IT by automating repetitive, even deeply complex, tasks. As tools designed to be vendor agnostic, ITPA tools orchestrate data center operations to deliver extremely high process efficiency yields while remaining a neutral companion in “vendor wars” for your operational budget. Combined with industry best practices and sound IT governance, these tools will make your organization more effective and agile while freeing up your talented IT human investment to focus on the projects that matter most: those that grow your business.

### **Time to Value, Adaptability to Change**

There's an old saying in IT that goes “Test then invest.” Simply put, every idea must be vetted for its viability, and this process, when properly executed, also delivers as a byproduct an indication to the project's time to value. IT projects usually start with a small first run, also known as a pilot, to identify viability. IT process improvement efforts are no different. When weighing ITPA tools, consider this: How quickly can you prototype and test an “idea” with this tool? Will your teams be able to test ITPA solutions quickly? The answers of course should be yes.

A solid ITPA tool will enable your IT process design team members to rapidly develop, test, and deploy new processes or make changes to existing processes. Interfaces into your existing IT infrastructure shouldn't feel like “interfaces” but rather simply part of the ITPA tool itself so that your teams can spend their valuable time focusing on developing and refining the best processes rather than trying to make processes work within the constraints of an ITPA tool.

ITPA is the cornerstone that must be laid to architect the next generation “lights out” data center, and selecting the vendor best capable of delivering ITPA to your enterprise is no simple task. However, armed with the tips covered here, you're well on your way to success.

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