



Use best practices for software and systems development and delivery.



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Overview

When it comes to software and systems development, most midsize and large organizations are grappling with these questions:

- How can we develop critical software and systems more quickly?
- How can we build more value into our software?
- How can we ensure consistent quality over the breadth of the software and systems we develop?
- How can we achieve the preceding objectives with our resource and budget constraints?

These questions are driven by marketplace demand to deliver innovative, high-quality software in increasingly complex, organizationally and globally distributed models. This has increased the complexity of software delivery and complicated efforts to maintain governance while staying agile. Organizations need a method to create a positive feedback loop that aligns their software development teams with business objectives and service operations, leading to high-quality, high-value software. If this alignment is ignored, organizations run the risk of developing a negative feedback loop between software development and their IT operations, resulting in software of increasingly poor quality and high maintenance requirements.

Software defects are estimated to cost the business world almost \$60 billion every year.¹ In general, IT support siphons off 60 to 80 percent of most organizations' total IT budgets – and that figure is rising. In addition, even routine software problems – once statistically averaged – can take nearly 24 hours to resolve.²

Highlights

Poor software quality that results from a weak software development and delivery process forces companies to devote a larger percentage of their IT budgets to support operational tasks. Consequently, fewer resources are available to develop innovative software projects that drive business growth – and clearly demonstrate the value of IT investments to the business.

An organization can overcome these challenges when it:

- Establishes and adheres to proven and repeatable software and systems development best practices based on its own results or those of the industry.
- Integrates and aligns service management principles with their software and systems development processes, leveraging workflow management and automation to make them easy to learn, apply and execute.

By integrating service management into the development life cycle, an organization can shift their resources to business growth and innovation

This white paper shows how integrating service management into the software development life cycle through an emphasis on best practices can help organizations shift resources to where they can make a real impact on business growth: innovation.

Design and integration

Proper design and integration of your global software and systems development process can improve team efficiency across cultures and geographies by automating and governing activities. The key to a successful process is that it should be designed to be used – it should be:

- Specific enough to be operational.
- Generic enough to be reusable.

It is helpful to think of choosing a framework rather than a process – a framework that provides the flexibility to adapt processes and best practices to your organization’s needs. The fact is, no software or systems development process is completely “out of the box.” Any framework an organization embraces must be capable of incorporating and integrating with its business and IT processes, IT governance policies and IT strategy. Additionally, it is not necessary to abandon existing processes that work.

Create, adopt or integrate?

Fortunately, creating an entirely new development process is rarely necessary. So let us assume an organization is in a position to adopt or integrate, and look at how to determine the right approach.

Adopting a best-practice software or systems development framework is appropriate when the existing process does not “work” – that is, when these conditions are present:

- Existing processes are not used or are impractical.
- Processes are difficult to support, measure, customize or improve.
- Projects repeatedly cannot or do not deliver the desired quality and value to the business.

On the other hand, the ***integration*** of existing development methods and processes should be considered when:

- Globally and organizationally distributed teams have well-established and successful methods for delivering their respective responsibilities.
- Complex governance and risk management processes and methods are defined, integrated and consistently executed.
- Existing development and service management methods are defined and integrated, resulting in applications that exceed service levels after they are deployed.

Highlights

Successful integration entails identifying various processes used by distributed teams, agreeing on the most effective processes and integrating best-practices processes

A good process framework contains process patterns or reusable chunks of process. Organizations can establish end-to-end operational processes by stitching them together. The key to successful integration is to identify the various processes used by distributed teams, agree on the ones that are most effective and integrate the “best-practices” processes for your global development and delivery team.

Incorporate best practices and service management into the development process

The first step in initiating a best practices-based development process is to integrate what your organization does well: its internal best practices. From there, you can proceed to integrate industry, community and vendor best practices. As development processes are defined and integrated, service management considerations should not be overlooked.

Integrating service management principles throughout the software or systems development process results in applications and business services with manageability designed in, for true IT life-cycle support. Such a “build-to-manage” strategy helps ensure the lifetime success of applications. Forty-nine percent of enterprises and 29 percent of small-to-midsize businesses say they run their applications for more than five years.³ Clearly, service management best practices during software development can pay off significantly by reducing the overall maintenance and support costs throughout the life of your software.

Furthermore, a service management perspective helps development teams keep management considerations in mind throughout the development process. For example, they can consider scalability and availability early in development when creating an application, then test for these criteria before the application moves into production environments.

Put the process into practice

Creating a process for software and systems development is a good step – but it is just the first step on the path to an effective, best practices-based approach. If the process is just documentation, hosted on a Web site and ignored, or misunderstood by personnel, then its value is limited. It can only have value if it is operational. That means the development and delivery platform that your team uses should align with the process and enable its operation. An effective development platform should:

1. Jump-start project planning and scheduling, by leveraging your defined best-practice processes and methods.
2. Give development team members the inputs (for example, work product templates) and guidance needed to complete an activity or task — even if it comes from multiple disciplines and/or teams in remote locations.
3. Provide workflow and automation to facilitate collaboration and make your process easier to adopt and execute.

It is also critical to maintain corporate policies and critical points of control for governance – to help ensure that organizationally and globally distributed teams stay in step with compliance requirements. By making service management an integral part of your development process, your organization can benefit from built-in manageability throughout the life of the application. You can also determine production readiness early on, which can reduce the many costs and impacts of late-stage breakage or failure.

Measure and report on process efficiency and effectiveness

Visibility into the quality and effectiveness of development and delivery processes requires accurate measurements and reporting of your process in

Highlights

execution. Furthermore, process success should be measured at the portfolio and project levels:

- “Top down”— tracking performance against business goals, financial objectives, risks, resource commitments and skills inventories — across a portfolio of projects.
- “Bottom up”— tracking project-level scope, activities and results.

Furthermore, a good process (which can, in turn, become a project plan template) also includes estimates for effort. Providing estimates increases the chance for success because it:

- Helps reduce risk by providing insight into parts of the schedule (for example, which parts will take a long time).
- Helps you determine if the project is still on track (when measured against actuals).

Using tools to measure and report on the effectiveness of the software and systems development process gives an organization insight into which methods of the process are working well and which are not. It is important to have visibility not only at the management level (for example, tracking project plans), but also at the development activity and asset information level. This gives management a more complete and subjective view into the process and, in turn, makes it easy to know when and how to make any necessary adjustments to the process in order to ensure that it functions at an optimal level.

IBM Service Management solutions help organizations use best practices consistently

IBM Service Management solutions enable the effective governance of development processes and management of the resulting services and software, as well as the infrastructure that supports the processes. In

IBM Service Management solutions enable effective governance of development processes and management of resulting services and software

particular, IBM Service Management solutions for software and systems development help ensure that key development and operational processes are:

- Consistently designed based on best practices.
- Automated for consistent execution.
- Auditable for compliance adherence.

IBM integrated solutions leverage a framework for software and systems development based on IBM and industry best practices, such as IBM Rational Unified Process® (RUP®), Agile, IT Infrastructure Library® (ITIL®), Control Objectives for Information and related Technology (COBIT), enhanced Telecom Operations Map (eTOM), International Standards Organization (ISO) 17799 Code of Practice for Information Security Management and ISO 20000 standard for IT service management. Organizations can also draw on IBM services to help with all aspects of design, automation and integration of best-practices precepts.

IBM Rational software

The *IBM Rational® global development and delivery solution* offers process-based software and systems delivery life-cycle management. It helps organizationally and globally distributed teams reduce risk, develop iteratively, and automate core software and systems processes. The Rational solution helps organizations build in the flexibility to address changing technology and business demands, while continuously measuring results.

IBM Rational Method Composer is an easy-to-use, form-based process delivery platform. It enables organizationally and globally distributed development teams to define, integrate, adopt and deliver practical software and systems development processes and best practices. Rational Method Composer also includes the RUP process framework for software and systems development.

IBM Rational Portfolio Manager provides a project and portfolio management platform your organization can use to consistently execute its process across a global portfolio of projects. Rational Portfolio Manager can help you plan, manage and optimize global projects by flexibly leveraging a global resource pool according to your financial objectives, resource commitments and skills inventories.

IBM Rational Team Unifying Platform™ unites your global teams by establishing a common integrated process and collaboration platform for workflow, requirements management, change management, quality management, and project-level measurement and tracking. For more information on Rational software, please visit ibm.com/rational

IBM Tivoli software

IBM Tivoli® Unified Process provides a set of IT processes based on ITIL. It addresses IT service management, offering a quick start at understanding and building the optimal relationships among people, processes, information and technology in your organization. In conjunction with Rational tools, Tivoli Unified Process allows you to build applications and business services with manageability designed in for IT life-cycle support.

Designed for ITIL change and release management functions, *IBM Maximo® software* offers an enterprise-ready, scalable platform for implementing IT service management processes.

IBM Tivoli Change and Configuration Management Database (CCMDB) handles the data used to initiate and manage change. It provides an enterprise-ready platform for storing deep, standardized data on configurations and change histories to help integrate people, processes, information and technology. For more information on Tivoli software, please visit ibm.com/tivoli

Highlights

Using service management principles and a best-practices approach to software and systems development, organizations can lower development labor costs and gain software applications that require less ongoing support and maintenance

IBM Global Technology Services

IBM Process Reference Model for IT translates the IBM Service Management framework into concrete actions for implementation, so your organization can follow a streamlined path from design to production. IBM Global Technology Services helps you quickly identify quality management opportunities, choose the best entry point and speed implementation.

IBM IT Management Consulting Services for service management design helps you develop the IT service management processes required to achieve your business goals. The proven IBM framework and methodology support best practices such as ISO/IEC 20000, COBIT and ITIL.

Conclusion

Organizations that already use service management principles to initiate a best practices-based approach to software and systems development can lower development labor costs while producing software applications that rely less on ongoing support and maintenance. Contrary to opposing perceptions, improving your development process need not make it more time-consuming. In fact, it can help:

- Lower costs.
- Decrease schedule and cost variance.
- Improve code quality.

For more information

To learn more about how IBM Service Management solutions can help your organization better manage and apply best-practices precepts to the software development process, contact your IBM representative or IBM Business Partner, or visit ibm.com/itsolutions/servicemanagement

About IBM solutions for enabling IT governance and risk management

IBM enables IT organizations to support governance and risk management by aligning IT policies, processes and projects with business goals. Organizations can leverage IBM services, software and hardware to plan, execute and manage initiatives for IT service management, business resilience and security across the enterprise. Organizations of every size can benefit from flexible, modular IBM offerings that span business management, IT development and IT operations and draw on extensive customer experience, best practices and open standards-based technology. IBM helps clients implement the right IT solutions to achieve rapid business results and become a strategic partner in business growth. For more information about IBM Governance and Risk Management, visit ibm.com/itsolutions/governance



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¹National Institute of Standards and Technology. June 28, 2002. nist.gov/public_affairs/releases/n02-10.htm#

²Enterprise Management Associates internal research.

³"Saving Money from Outsourcing Beats Expertise," *Application Development Trends* magazine, August 31, 2005. www.adtmag.com/article.aspx?id=11733