IBM

Sequencing the DNA of IT Management:

IBM Process Reference Model for IT (PRM-IT)

Preface

General Information

Preface

The IBM Process Reference Model for Information Technology (PRM-IT) is a generic representation of the processes involved across the complete IT Management domain. As such, it contains a foundational examination of the IT Process topic. It is for this reason the graphical image of the DNA double helix over the basic building block of a cell is used.

About this book

Beyond the Introduction, this book has two main parts. The first part has four sections and includes:

- A brief discussion about some of the strategic drivers that impact the management of IT, and a review of the key influences on the design and implementation of IT processes.

- A summary of the principles and criteria used in the creation of PRM-IT, including those which result in alignment with ITIL[1].

- A first look at the model as a whole, including an outline of the model's content (within a wider business), the process categories, and list of processes.

- A brief discussion of what this book can provide to the reader, and how to use it.

In the second part of the book, each process category and its activities are introduced. Given for each category, are the description, mission, goals, and scope, together with a list of the next level of process analysis.

Intended audience

An understanding of the full range of the processes relevant to IT in any business is of value to those within the IT function responsible for the specification, creation, and delivery of IT services—whether at the CIO and IT executive level, considering the direction and overall management of IT, or working within any of its competencies, needing to interface with other parts of the IT value chain or value net.

Equally, the stakeholders in the business of this IT capability will benefit from greater insight into how IT serves them. This insight will enable them to better influence IT decisions and activities, to their ultimate benefit.

Next steps

At levels of exposition, ranging from this textual introduction of IT processes through the full detail in the underlying, rigorously engineered IDEFØ model, PRM-IT is a powerful management tool for purposes such as investigating and identifying areas for improvement. PRM-IT also provides a proven starting-point for the design and implementation of new and upgraded IT management capabilities.

---

1. ITIL and the IT Infrastructure Library are registered trade marks of the Office of Government Commerce in the United Kingdom.

IBM's IT consultants, architects, and specialists in IBM Global Services, working from this common base, are equipped with a full range of methods, techniques, and tools to assist our customers achieve these purposes.

General Information

Purpose

This book provides general information describing the processes identified in IBM's Process Reference Model for IT (PRM-IT) version one. PRM-IT describes the processes for exploiting IT in support of a business or enterprise. The processes described comprise **Level A** of the overall reference framework, Unified Process Framework for IT (UPF-IT).
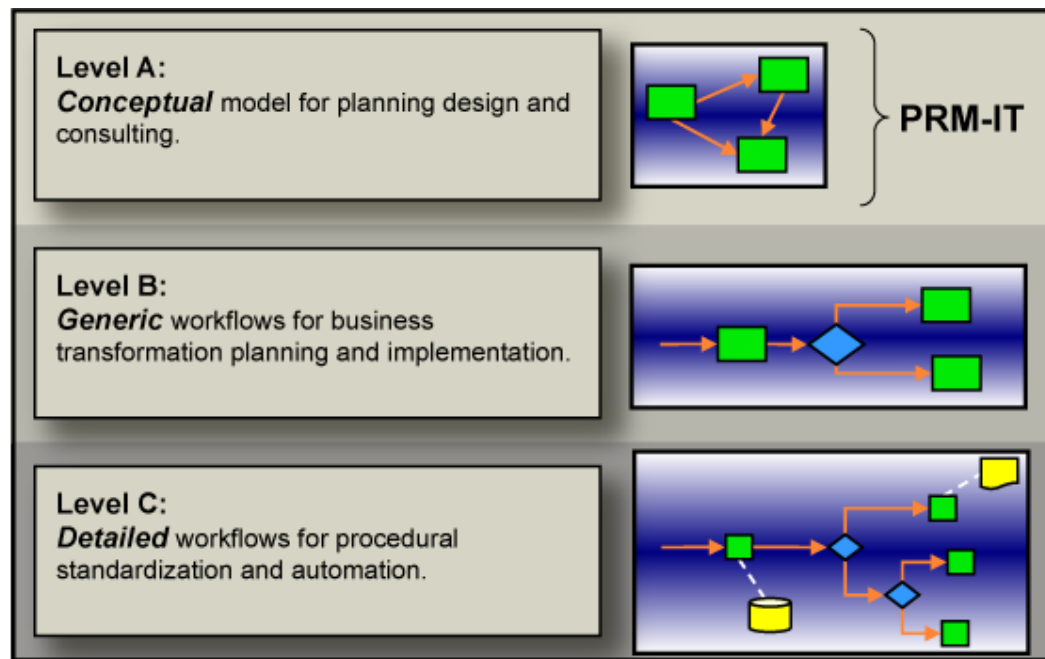
Figure 1. Unified Process Framework for IT (UPF-IT)

The reference model is a tool that can be employed in a variety of ways, like process scoping and assessment, and as a base for design and implementation. The model is IBM intellectual capital and is provided under normal copyright provisions.

Outlined in this book is the underlying integrated IDEFØ[1] model, which contains every process, its child activities, and the relationships between them. This book does not describe a method to apply this reference artifact.

A companion book set, the *Reference Manual Library***,** expands on this general information by including the IDEFØ modeling. The library includes a model glossary, containing a definition of each activity and relationship item to the process definitions described.

---

1. IDEF0 is an internationally-recognized process modeling notation used to model activities of a system.

©Copyright IBM Corp. 2007   IBM Process Reference Model for IT (PRM-IT Version 2.0)   GIM - 1

This material may not be reproduced in whole or in part without the prior written permission of IBM.

Introducing the IBM Process Reference Model for IT

Growth targets at risk

Executives are increasingly concerned that traditional sources of earnings growth cannot deliver the results necessary to reach announced profit targets across the next five years. Initial plans to reach those targets through incremental improvements in top and bottom-line performance are showing signs of weakness.

Several years of cost cutting and rollouts of productivity initiatives now leave little room for further material improvement of operating margins at most firms. After years of cost-cutting and efficiency campaigns, business leaders in companies of every size and across the industry spectrum are refocused on top line growth—and they are seeing innovation as the means to achieve it. With globalization, commoditization, and technological advances, all forcing significant change on the business, these organizations are being compelled to act in order to gain a competitive advantage. They know that exponential growth lies ahead for those who can lead the innovation movement and seize opportunities to differentiate themselves.

IBM's Global CEO Study 2006 was conducted to understand how CEOs view innovation, to capture current insights, and to learn what is on their innovation agendas. The study indicates that CEOs are expanding the innovation horizon. In fact, there is a categorical shift toward a more expansive and unconventional view of innovation, as well as a need for a greater mix of innovation types. While CEOs still believe that product, service, and operational innovations are important, they feel that innovation must also be applied to a company's very core to the way it does business.

Based on this study, three key considerations emerged for CIOs:

- Deep business model innovation is critical

  Product, service, and operational innovations remain important, but competitive pressures have pushed business model innovation much higher on the CEO's innovation agenda. Companies that can substantially change how they add value to their own or other industries differentiate themselves and gain a competitive edge. It is important to note the CEOs consider the IT organization as an important part of the enterprise. When the CEO's talk about deep business model innovation, they are including the CIO's domain.

- External collaboration is indispensable

  CEOs stressed the overwhelming importance of collaborative innovation, not just internally across traditional silos, but also externally beyond company walls. Business partners and customers were cited as top external sources for innovative ideas.

- Innovation can be ignited by business and technology integration

  Technology can enable and drive innovation. But to truly capitalize on technology's potential and unleash an organization's creative energy, technology know how must be combined with its business and marketing insights. CEOs view consistent business and technology integration as crucial to innovation.

CEOs were also asked to identify their top ten inhibitors to innovation. Figure 2 shows the results. It is apparent that the majority of issues reside somewhere inside CEO's own organizations, including the IT organization controlled by the CIO. Culture, budget, people

and process were cited as some of the most significant hurdles. The last two internal items should be of particular interest to CIOs. CEOs identified **Inflexible physical and IT infrastructure** and **Insufficient access [to information]** as two of the top ten obstacles to innovation.
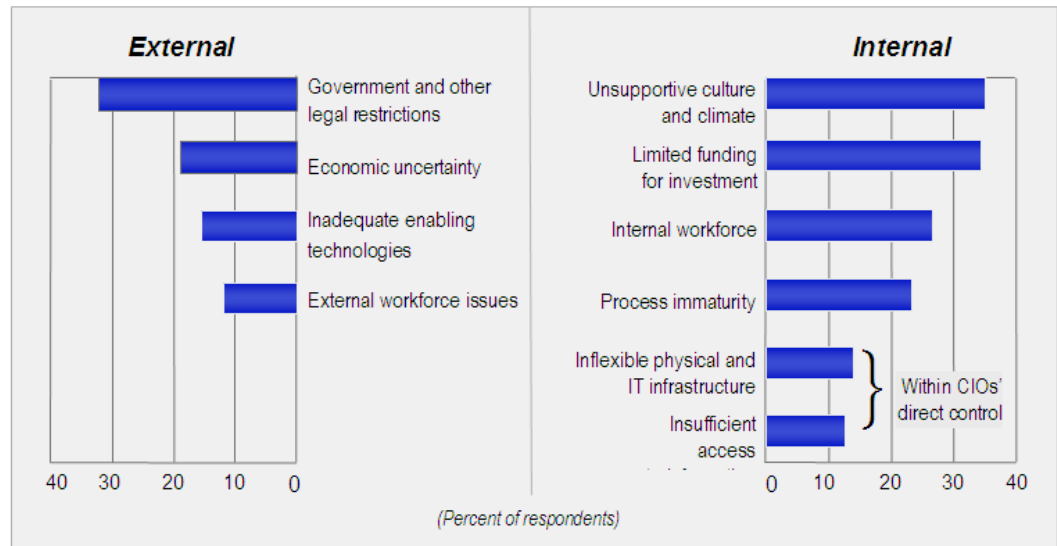
Figure 2. Top ten inhibitors to innovation

All too often, it is not just the physical infrastructure which is inflexible, but the IT organization itself. Clearly, the IT organization needs to become more agile and flexible to support and enable the business goals of the CEO. And for the organization, the path to flexibility and innovation starts with a robust enterprise architecture, including process standardization. While that might seem like a dichotomy, the patchwork collection of internal tools, ad hoc processes, and non-standard interfaces are what make many IT infrastructures inflexible. By adopting standards, the amount of time required for integration of new resources, and integrating with new business partners, is actually decreased, providing faster time to value.

At a high level, one could view the IT business model as the interaction of people, processes, and technology for the purpose of achieving specified business goals. The IT organization is responsible for a number of technical processes, and each requires a specific degree of interaction with the business. Each is executed by one or more people, often from different parts of the organization. If the processes are not adequately aligned to the needs of the business, achieving business goals can be difficult. With customer centricity as a guiding principle, the processes can be redefined, changing the way IT works within the company and increasing IT's ability to innovate in ways that positively impact the business.

To assist IT organizations in this critical challenge, IBM developed the Process Reference Model for IT.

Beyond ITIL: Driving IT management process excellence

The Information Technology Infrastructure Library was developed by the United Kingdom's Office of Government Commerce (OGC), with the input of many organizations, including IBM, beginning in the late 1980s. In the mid-1990s, IBM documented its enhanced understanding of IT Management in the IT Process Model (ITPM). In leapfrog fashion, and once again with assistance from IBM and other major vendors and consultancies, the OGC refreshed its content to create ITIL Version 2.

The ITIL Version 2 library currently consists of several books: *Service Support*, *Service Delivery*, *Security Management*, *Application Management*, *Software Asset Management*, *ICT Infrastructure Management*, *The Business Perspective*, and *Planning to Implement Service Management*.

ITIL is very much aimed at identifying best practices. ITIL describes a systematic approach to creating a service-oriented culture and practice for IT service management. The library emphasizes the central importance of meeting business requirements economically.

However, IT organizations will need to look beyond ITIL to understand the IT management process disciplines that are central to delivering on the growth agenda. IT management exemplars step up to the competing strategic priorities challenge by addressing the sources of complexity that force trade-offs between cost-efficiency, flexibility, and service availability.

The IBM model supplements the content of ITIL Version 2 based on IBM's extensive IT management experience, gained from managing thousands of IT environments, both large and small. The Process Reference Model for IT identifies the set of IT management processes required to move beyond a singular cost focus to principled decision making that accounts for changing business and technology conditions while managing existing systems complexity.

Dimensions of IT management process excellence

From cost to beyond: The portfolio lens

The most accomplished firms at IT management treat the function as less an art than a science, a standardized set of activities that can be measured and improved upon over time. Process frameworks are valuable tools, having already proven effective in many other business domains, such as manufacturing, accounting, or customer service, to name a few. To optimize organizational routines, it is necessary to identify and document the processes involved and their associated activities: where they start and stop, what they include and exclude, how they interact with one another, what resources are being allocated, and whether the investment in those resources is paying off. A process model for IT management provides a frame of reference against which an organization can assess whether it is doing the right things and whether it is doing those things right.

There are currently a variety of process frameworks and quality management systems for managing IT. Some of the more popular IT-specific frameworks include IT Infrastructure Library (ITIL); the Software Engineering Institute's System Engineering Capability Maturity Model (CMMI); and Control Objectives for Information and Related Technology (CobiT). Others such as Six Sigma, ISO 9000, and the Malcolm Baldrige Award are often leveraged in IT as part of a firm-wide initiative. Meta Group has categorized the frameworks in terms of their intended application: understanding a broad process change or understanding how to streamline a process. Both application categories are predominantly focused on driving operational efficiencies in the IT function.
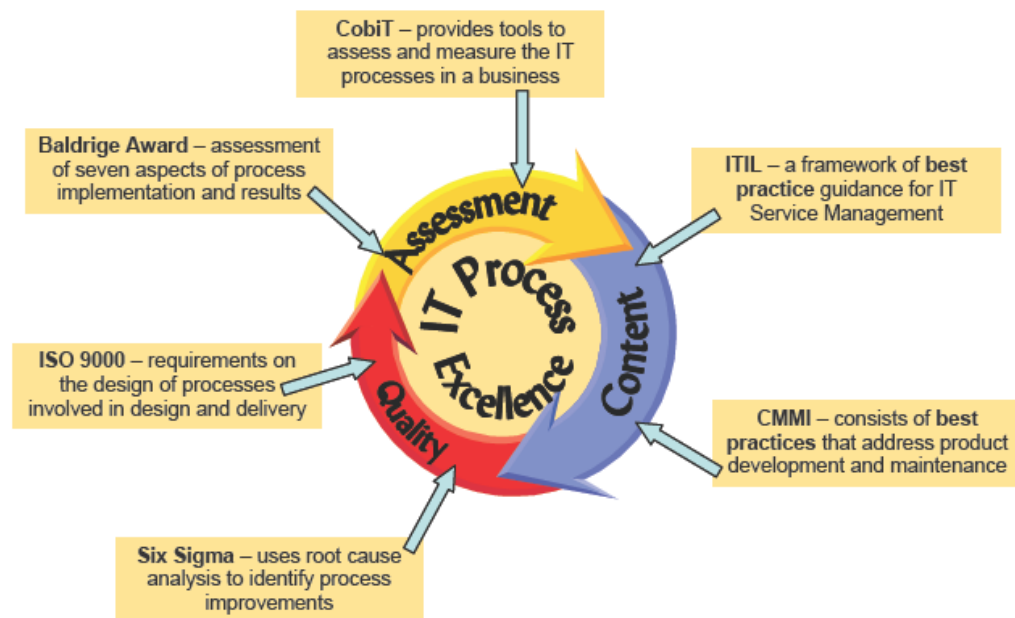
Figure 3. Frameworks for IT process excellence

PRM-IT evolves IT management process frameworks beyond operational efficiency to investment optimization. Using a portfolio lens, PRM-IT provides a reference process framework for managing the investment of people and resources in business technology initiatives intended to materially increase profitable revenue growth.
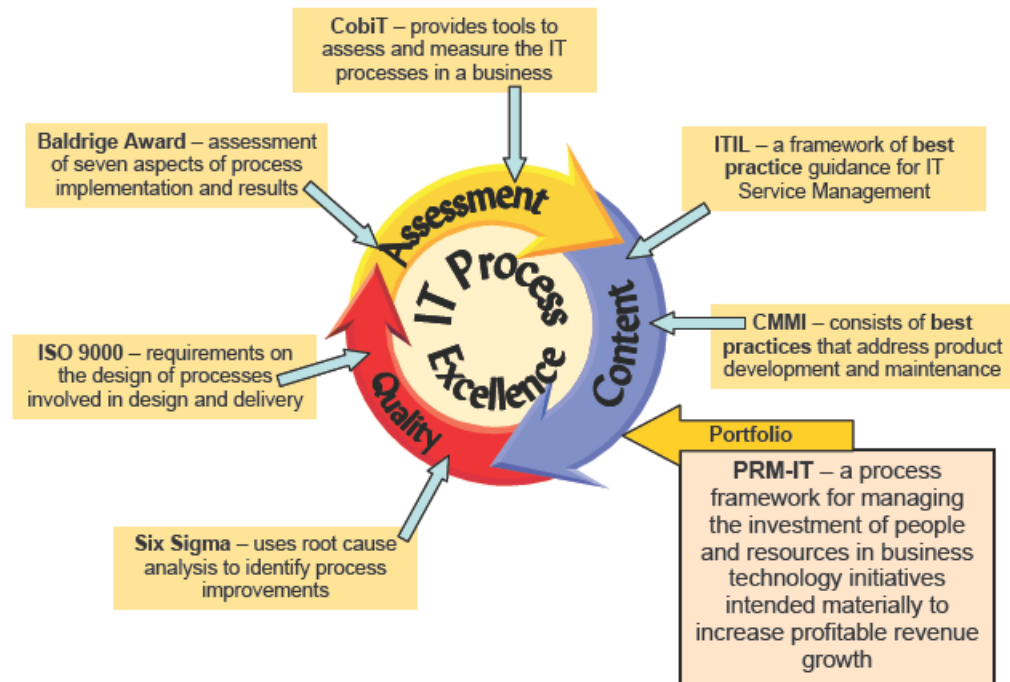
Figure 4. Adding PRM-IT to the process frameworks

Principles and design points for the model

Guiding principles

One key concept of the new process reference model is that IT can be viewed as an essential component of any business, and that it can be managed as an asset.

The basic hypotheses, or guiding principles, underlying the new process model are:

1. Regardless of organization or technology, there is a fundamental set of processes necessary to manage any information technology environment.

2. These processes do not exist or function in isolation, but in fact they interrelate and interact with one another.

3. There is no single, verifiable correct process decomposition or any means of demonstrating that a particular treatment of IT processes is always superior to any alternative treatment. Implementation specific context will always be required to make those judgments.

4. Nevertheless, the well established processes from ITIL represent a de facto standard for the subset of IT processes, which are known as Service Management.

Design points

PRM-IT is designed to satisfy key design characteristics. These include:

- The model is comprehensive

  Exhaustive efforts have been made to re-examine the entire IT structure of a business and design this model so that no fundamental process has been overlooked or excluded. It should be noted that not every IT entity within every business must engage in every process described in this model. For example, if a business does not sell its IT services, internally or externally, it need not be concerned with processes involved in pricing and contract management for those services. On the other hand, the nature of this model is comprehensive; we believe that all IT-related processes have been included in this model.

- The model is holistic

  This model does not treat processes as separate entities, but rather indicates the interaction and interfaces among them. In any IT delivery structure, the fundamental processes affect one another. They do not function in isolation. One process might provide an input to another and receive output from yet another. Changes in one process will have an effect on other processes, and that effect must be taken into consideration whenever such changes are contemplated.

- The model is neutral with regard to technologies and organizational structure

  This model is designed so it can be applied to any IT entity, thus avoiding any implicit assumptions or biases associated with specific technologies, organizational constructs, or management theories. By identifying those elements fundamental to any and all environments, this model provides a common basis for assessment, comparison, process improvement and management system design, including tool development and selection.

- This model is scalable

  This model can be applied to any business of any size, from a small, neighborhood branch office, to the largest IT outsourcing operation. What happens, in terms of IT,

in all of these environments is the same. Only the scale of what happens, how it happens, and who executes what happens is different.

- This model is flexible

This model is not the final word—it is a starting point. Its structure is not rigid but dynamic. The developers of this model recognize that no two businesses are alike, and any process model for IT management must be tailored to each business. This model is, therefore, designed so that you can build on it, order it, and customize it to suit your specific IT environment or situation.

- It is not directly implementable

The corollary from all the characteristics is that the model represents a set of foundational building blocks, which must be developed, populated, and clothed in order to reach the state required for implementable processes. The nature of reference artifacts means that they are generic, rather than specific. (See Figure 1 "Unified Process Framework for IT (UPF-IT)" on page 1 for a representation of this positioning.)

Alignment with ITIL

The model is based on some additional design principles in order to achieve alignment with ITIL service management.

This model is aligned to ITIL service management

The core processes in the widespread adoption of ITIL best practices are described in the ten processes of the ITIL *Service Support* and *Service Delivery* books. Key aspects of these processes are repurposed in this book, most notably the mission and goal treatments, the scope descriptions, and the activity representations.

Conversely, there are many considerations covered in best practice documents that are not relevant to a formal process model, and so they are not included. In particular, this model does not cover the organizational and process implementation topics covered in the ITIL books.

This model includes relevant aspects of other ITIL books

The scope of ITIL is wider than service management. Where the other books cover a topic in a process oriented way, and that treatment fits in the overall architecture of this process model, then the processes in this model aim to incorporate those approaches.

This model resolves many inconsistencies that exist in the current ITIL service management

The ITIL best practices were not developed from a formal process perspective. They were developed by largely independent teams, without a formal architecture. Many of these inconsistencies are being surfaced as part of the requirements gathering phase of ITIL Version 3.

Further, there is no established process model yet available that treats all the processes together. In order to create a model that satisfies the design points already described, it is necessary to make a judgment on how to resolve any such inconsistency.

A first look at the model

Model purpose

The IBM Process Reference Model for IT (PRM-IT) is an integrated collection of the processes involved in using information technology (IT) to assist businesses in carrying out many or all of their fundamental purposes. It describes, at a generic level, the activities that are performed in order that IT provides value to the stakeholding business or businesses.

For most of these businesses, this use of IT has been a means to improve the business processes that underpin their value propositions to the industry segments they serve. For others, IT services have been major value propositions in their own right. As the reach and range of IT-based solutions and services has extended and become, to all intents and purposes, pervasive, these two uses of IT have converged.

So, as IT exploitation becomes synonymous with business success, the basis of this model is to describe IT undertakings as if a business in its own right, and to apply the same business process description techniques to it as for any other business.

Viewpoint of the model

The focal point for all IT activities, and the executive accountable for IT value, is the CIO. Accordingly, PRM-IT considers the work done within IT from this perspective.

It is only from this vantage point that all aspects of IT are visible. Within IT, all other viewpoints can see only a subset of the complete picture.

There are two main perspectives from the CIO's viewpoint:

1. Control over IT activities.

   - Such control can be direct, in that the activities are performed by the in-house IT department.

   - Some activities can be performed within parts of the business, but under the guidance of IT-developed or owned standards. A typical example is that of users within a business division developing applications, using technology and techniques established by IT.

   - Many activities can be assigned to one or more third parties, covering the range from complete outsourcing through limited IT service out-tasking.

2. Representing the IT endeavor to its stakeholders and to the wider operating environment. These interested parties provide the context in which the IT business operates.

The context and scope of PRM-IT

The model focuses on all potential activities that could occur within the box **Manage IT**, but also recognizes that many of its workings rely upon interactions with other parties (external agents).
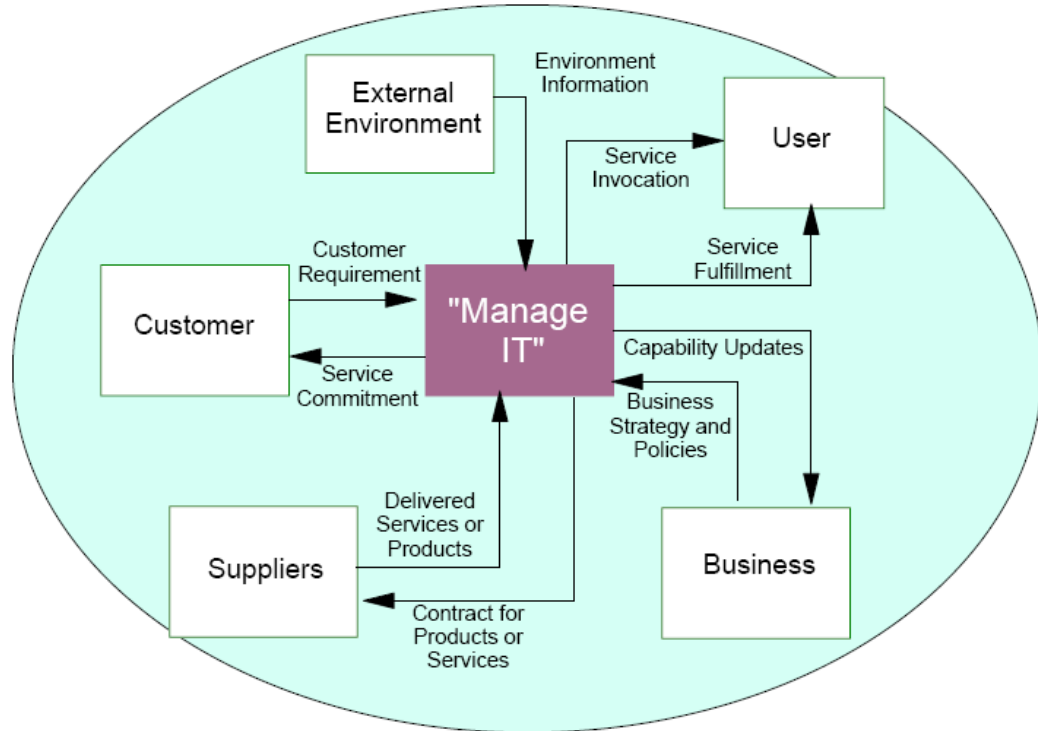
Figure 5. Comprehensive and effective activity sets in PRM-IT

Drilling into the model: The process categories

PRM-IT presents a framework that uses eight process categories:

IT Management System
- How IT ensures it is able to function effectively – its governance

Solution Deployment
- Control, deployment, and reporting of all changes

IT Customer Relationships
- Representing IT to its customers and meeting their needs

IT Operational Services
- Operation and support for IT services

IT Direction
- Strategic decision-making of IT in support of the business

IT Resilience
- Ensuring the continued readiness and integrity of the IT services

Solution Development
- Development and maintenance of all classes of IT solutions

IT Administration
- The underpinning back-office management of the IT function

Figure 6. PRM-IT process categories

The categories convey several concepts:

1. The categories with no internal shading contain the primary processes, which produce and deliver the service needed by the customer of IT.

2. The most useful decomposition of the primary activities follows a create, deploy, operate, and maintain approach. Thus producing this sequence:

    a. Solution Development

    b. Solution Deployment

    c. IT Operational Services

    d. IT Resilience

3. The shaded categories contain the supporting processes that facilitate the success of the primary processes.

4. The supporting processes are best split into those which focus on the result that IT must achieve, namely IT Customer Relationships and IT Direction, and those that describe the underpinning setup and ongoing maintenance of the IT functional capability: IT Management System and IT Administration.

The processes for the business of IT

PRM-IT contains a total of 41 processes, across the eight categories.

A1 IT Governance and Management System

A11 IT Governance and Management System
  Framework
A12 IT Governance and Management
  Capabilities
A13 IT Management System Operation
A14 IT Governance and Management System
  Evaluation

A2 IT Customer Relationships

A21 Stakeholder Requirements
  Management
A22 IT Customer Transformation
  Management
A23 Service Marketing and Sales
A24 Service Level Management
A25 Customer Satisfaction Management

A3 IT Direction

A31 IT Strategy
A32 IT Research and Innovation
A33 Architecture Management
A34 Risk Management
A35 IT Portfolio Management
A36 Program and Project Management

A4 Solution Development

A41 Solution Requirements
A42 Solution Analysis and Design
A43 Solution Build
A44 Solution Test
A45 Solution Acceptance

A5 Solution Deployment

A51 Change Management
A52 Release Management
A53 Configuration Management

A6 IT Operational Services

A61 Service Execution
A62 Data Management
A63 Event Management
A64 User Contact Management
A65 Incident Management
A66 Problem Management

A7 IT Resilience

A71 Compliance Management
A72 Security Management
A73 Availability Management
A74 Capacity Management
A75 Facility Management
A76 IT Service Continuity Management

A8 IT Administration

A81 Financial Management
A82 Asset Management
A83 Supplier Relationship Management
A84 Service Pricing and
  Contract Administration
A85 Workforce Management
A86 Knowledge Management

PRM-IT V2

Figure 7. PRM-IT processes

PRM-IT Version 2 has a complete further level of decomposition of these processes, into 269 activities. The interactions between all the categories, processes, and activities are modeled in nearly 750 inputs, outputs, controls, and several thousand individual linkages.

Every process is described in "Model Categories and Processes in IDEFØ" on page 18. For each, this book includes a listing of the activities that comprise it.

Full details of the activities, inputs, outputs, and controls that characterize the relationships among processes and activities, are available in the PRM-IT *Reference Library*.

Mapping PRM-IT processes to ITIL

This figure shows how the ITIL alignment (described earlier) is achieved. Details are further provided.
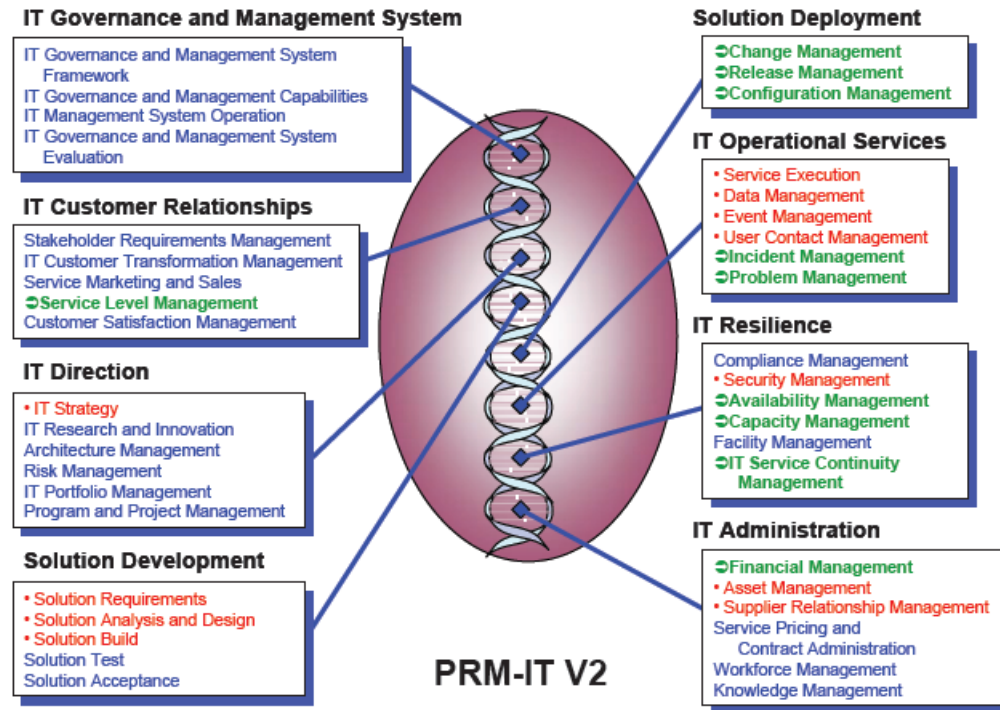
Figure 8. Key ITIL linkages

Service management processes

The ten core processes are shown in bold green text, preceded by the ➲ symbol. The names used for these processes in PRM-IT are identical to those in ITIL, with one exception. The ITIL chapter "Financial Management for IT Services" is here called IT Financial Management. This reflects the need for the scope of this process to match all IT activities, and not limit it to IT services.

Other ITIL processes

Processes shown in red (Figure 8) reflect concepts from related topics within other ITIL publications.

PRM-IT Process	Related ITIL Publication
Asset Management	*Software Asset Management*
Supplier Relationship Management	*The Business Perspective*
Service Execution, Event Management, Data and Storage Management, IT Strategy	*ICT Infrastructure Management*
Solution Requirements, Solution Analysis and Design, Solution Build	*Application Management*
User Contact Management	*Service Support (Service Desk)*
Security Management	*Security Management*

The value of this process reference model

Who can benefit from this book?

In any given organization, everyone from the top to the bottom, needs to understand the impact that information has on the business. How information is processed is a major determinant for how well the business operates and consequently how well the business is able to satisfy its customers. Indeed, it is a truism that without customer satisfaction, there will be no business.

This book is designed for the managers of an organization who want to take a serious look at how information supports their business and can be used to make that business prosper. It is designed for those who are responsible for designing and managing the information systems that will support the goals and objectives of the business. Finally, the book is designed to give some help to everyone in a given business to understand the importance of information and information technology to the success of their work.

To our clients

The new process model for IT management provides clients with a starter set; an entry point for looking at their organization and determining what their IT delivery mechanisms are doing, versus what they need to be doing. Also, it can serve as a tool to examine those activities that are not working well and see if they are implementing the necessary processes to begin with. This model can help our clients discover what they need to do, in terms of IT, and help them organize around those needs, including organizing their business transformation initiatives. In short, the new process reference model for the business of IT can help our clients move toward finding out what they need to do to optimize the value of IT to their business by understanding which things they themselves should be doing, which things they might outsource, and how these must interact to be successful.

To IBM

The new process model is the basis for a powerful assessment that we can use to determine what our customers are doing, versus what they need to be doing, and how well they are doing those things. It is an opportunity to add value to the customer relationship. For example, when helping a client develop an IT strategy, the use of this model can point out to the client all the processes that are influenced by that strategy. As a result, the use of this model can provide a springboard for working with the client and providing downstream services to optimize those processes.

In addition, the model can be used to increase the knowledge base of our own practitioners, augmenting their skills as we provide our services. It can also provide us a better base from which to design and build products. For example, before writing a new application to manage information technology, the model can be used to determine what processes and activities are involved.

Finally, the new model is the next evolutionary step in process model thinking as it applies to the management of IT. It is unique and leading edge. It reinforces IBM's leadership position in providing guidance and assistance to clients in the management of IT.

How to use this book

The next chapters of this book provide descriptions of each process, organized by category. However, it is important to note that these groupings, and their labels, are somewhat arbitrary. We have provided one logical grouping, but it is not the only grouping possible. The model is really a starter set. It is a collection of building blocks that can be reordered and reshuffled to create a model that is applicable to your unique situation.

The process model (introduced in this book and presented in complete form in the related *Reference Manual*) is your starting point. In order to proceed, certain concepts, constraints, rules, and terminology need to be understood and taken into account. In other words, one must recognize this model for what it is, as well as for what it is not.

- This model is not intended to be implemented directly

  The model focuses on what to do, not how to do it. One cannot take this model and apply it without modification. This model provides a starting point from which to build a process model customized to a given business.

- This model is not the final answer

  The authors make no pretense of having discovered the best solution for every situation. We feel, however, that what we have provided are those elements that should be present regardless of how they are ordered. Regardless of how you pick and choose among the process categories and processes, it is important to make sure that any given process receives the inputs and outputs it needs to perform its function. Where a process gets those inputs and outputs could well change, depending on a particular implementation. So, use this book as a design guide for building your own process model, not as the final answer to all.

- This model is dynamic, not sequential—it is not a flow chart

  Because this is a book (a two dimensional medium) it was obviously necessary to put the model down on paper in some kind of logical order. This does not mean that the processes contained in this model must function in that order, so do not let your thinking be constrained by the fact that processes and their activities are listed in a certain order on a given page of the book. You can rearrange these processes. The sequence of activities might change, but the relationships among the processes will not. In actual implementation, there can be multiple iterations of given processes or portions of those processes, and these iterations might happen in parallel, rather than in sequence. However, what process needs to be done remains the same, regardless of the number of iterations or sequence.

- This model is not an organizational chart

  This model should not be viewed as an organizational construct. We have not delineated process owner roles and responsibilities in this work.

One final thought

Keep in mind that there are no technology solutions to management problems. Automating a poor management process only makes undesirable things happen faster. The successful management of any IT environment depends on sound management processes, and the appropriate use of enabling technologies.

Model Categories and Processes in IDEFØ

The decomposition of the model, using IDEFØ numbering:

A1 IT Governance and Management System

A11 IT Governance and Management System
Framework
A12 IT Governance and Management
Capabilities
A13 IT Management System Operation
A14 IT Governance and Management System
Evaluation

A2 IT Customer Relationships

A21 Stakeholder Requirements
Management
A22 IT Customer Transformation
Management
A22 Service Marketing and Sales
A23 Service Level Management
A24 Customer Satisfaction Management

A3 IT Direction

A31 IT Strategy
A32 IT Research and Innovation
A33 Architecture Management
A34 Risk Management
A35 IT Portfolio Management
A36 Program and Project Management

A4 Solution Development

A41 Solution Requirements
A42 Solution Analysis and Design
A43 Solution Build
A44 Solution Test
A45 Solution Acceptance

A5 Solution Deployment

A51 Change Management
A52 Release Management
A53 Configuration Management

A6 IT Operational Services

A61 Service Execution
A62 Data Management
A63 Event Management
A64 User Contact Management
A65 Incident Management
A66 Problem Management

A7 IT Resilience

A71 Compliance Management
A72 Security Management
A73 Availability Management
A74 Capacity Management
A75 Facility Management
A76 IT Service Continuity Management

A8 IT Administration

A81 Financial Management
A82 Asset Management
A83 Supplier Relationship Management
A84 Service Pricing and
Contract Administration
A85 Workforce Management
A86 Knowledge Management

PRM-IT V2

Figure 9. PRM-IT categories and processes in IDEFØ structure

The naming convention is that each main branch represents a category, and each of the items listed within it is a process.

This introduction examines each category and process in turn, moving in IDEFØ identification sequence.

While this identification is not particularly significant at the level of detail in this book, it is provided for consistency with the *Reference Library*.

[A0] Management of the Business of IT

Model introduction

The IBM Process Reference Model for IT (PRM-IT) is an integrated collection of the processes involved in using information technology (IT) to assist businesses in carrying out many or all of their fundamental purposes. It describes, at a generic level, the activities that are performed in order that IT provides value to the stakeholding business or businesses.

For most of these businesses, this use of IT has been a means to improve the business processes which underpin their value propositions to the industry segments they serve. For others, IT services have been major value propositions in their own right. As the reach and range of IT-based solutions and services has extended and become, to all intents and purposes, pervasive, these two uses of IT have converged.

So, as IT exploitation becomes synonymous with business success, the basis of this model is to describe IT undertakings as if a business in its own right, and to apply the same business process description techniques to it as for any other business.

Viewpoint of the model

The focal point for all IT activities, and the executive accountable for IT value, is the CIO. Accordingly, PRM-IT considers the work done within IT from this perspective.

It is only from this vantage point that all aspects of IT are visible. Within IT, all other viewpoints can see only a subset of the complete picture.

There are two main perspectives from the CIO's viewpoint:

1. Control over IT activities.

   - Such control can be direct, in that the activities are performed by the in-house IT department.

   - Some activities can be performed within parts of the business, but under the guidance of IT-developed or owned standards. A typical example is that of users within a business division developing applications, using technology and techniques established by IT.

   - Many activities can be assigned to one or more third-parties, covering the range from complete outsourcing through limited IT service out-tasking.

2. Representing the IT endeavor to its stakeholders and to the wider operating environment. These interested parties provide the context in which the IT business operates.

The context for the business of IT

IT does not operate in a vacuum, it has relationships of varying kinds with a variety of other parties. In modeling terms, these parties are known as external agents.

PRM-IT contains five kinds of generic external agents:

1. The Business
2. Customers
3. Users
4. Suppliers
5. External Environment

The nature of the interactions between IT and each external agent is described in detail later.

The Business

The Business is the owner of the IT endeavor. It provides the underlying funding for IT and receives from IT a corresponding return, in the form of value against the criteria which the business sets.

The Business provides resources to and exercises control over IT, beyond the financial aspect.

- It establishes the *container* in which each section of the business operates: manufacturing, distribution, IT, and others. Each such section probably has some degree of freedom to set its own tenor (or style) of operation, but each must conform to the overall management system and governance.
- Beyond this, IT might rely wholly or partly upon other, similarly common aspects of the business infrastructure. Key examples here include finance and accounting, and workforce management.
- The Business is the ultimate arbiter over the direction and the performance scorecard of IT.

Customers

In contrast to the broad nature of The Business, the external agent, Customers, reflects that each IT service has an individual customer, or a collective set of them.

The role of the Customer covers aspects that specify and guide the makeup of the services, such as:

- Providing requirements that can eventually be satisfied by an IT service.
- Commissioning development of new or updated solutions. The agreement for this, and for the levels of service using the solution, can be formally or informally contracted, depending on the customer-provider relationship.
- Interactions relating to satisfaction (or otherwise) with delivered IT services.

The model does not differentiate between internal and external customers. The interactions depicted in the model cover both cases.

Users

This external agent is involved in the interactions with each of the services provided by IT.

- Primarily, the interactions are related to receiving service through initiating and providing data to individual transactions, and generalized services (such as e-mail and Internet access).
- Additionally, users will interact with support services (manually or electronically) for:
  - Requests for advice and guidance
  - Interruption to service (PC hardware failure, for example)

User interactions occur only within the specifications of agreed services. The Customer role is needed to commission and confirm new or extended services.

Suppliers

No IT function can provide 100 percent of the value delivered in their portfolio of IT services. At some point in each value chain, there will be dependencies on one or more Suppliers. Suppliers, in this context, are organizations outside the control of the CIO and with whom the primary linkage is in the form of a supply agreement, formally or informally. The supply agreement can be for products, services, or both. In return for this supply, there will need to be a corresponding payment, which is usually of a monetary kind.

PRM-IT does not indicate the points when the value chain will invoke a supply agreement, it does acknowledge that an agreement will be required. Similarly, while it is likely that most agreements will be with suppliers external to the business, it is possible that some suppliers might be sister organizations in the wider business.

External Environment

The policies, practices, methods and techniques the IT endeavor uses are subject to many other influences and constraints beyond the external agents mentioned. Collectively, the term External Environment is used to convey this.

Examples of agents of this type are:

- Governments
- Regulatory agencies
- Industry trends
  - The industry segments of the business
  - The IT industry in general
- IT management frameworks and techniques

In general, the External Environment has a strong influence over an individual IT endeavor. In contrast, it is relatively unlikely, though possible, for the reverse to be true.

Process details

Model composition

This model is composed of these process categories:

- A1 IT Governance and Management System
- A2 IT Customer Relationships
- A3 IT Direction
- A4 Solution Development
- A5 Solution Deployment
- A6 IT Operational Service
- A7 IT Resilience
- A8 IT Administration

IBM Process Reference Model for IT (PRM-IT Version 2.0)

[A1] IT Governance and Management System

Description

The IT Governance and Management System process category defines a structure of relationships and processes to direct and control the IT endeavor. Relationships and processes must establish the capability of the endeavor to achieve the IT function goals, while adding value and balancing risk versus return across IT and its processes.

The category defines, establishes, operates and improves upon a management framework for conducting IT activities. The management framework will outline, as an example, the management model, guiding principles, methods, organization design, information framework, process structure, policies and practices to guide the IT organization towards its stated goals. Once the management framework is defined and implemented, a continuous evaluation process is executed to enable better decision making by executives as to whether the business model is succeeding or should be modified to better achieve the objectives.

Governance considers and sets the fundamental direction for the management framework. Governance is a decision rights and accountability framework for directing, controlling, and executing IT endeavors in order to determine and achieve desired behaviors and results. Governance involves defining the management model and the creation of guiding (governing) principles, including:

- Who makes directing, controlling, and executing decisions
- How the decisions will be made
- What information is required to make the decisions
- What decision making mechanisms should be required
- How exceptions will be handled
- How the governance results should be reviewed and improved

Rationale

The IT Governance and Management System process category ensures that a framework is in place to integrate processes, technologies, people, and data in a manner that is consistent with IT goals. The category group also monitors the framework against the broader enterprise goals and quality metrics. When specific goals and quality metrics are consistently unmet, decisions will be made as to whether the overall framework will be slightly modified or restructured to ensure future success.

Value

- Integrates and coordinates the workings of IT
- Enables informed and effective decision making
- Establishes responsibility for the implementation of a set of coherent, integrated capabilities that enable IT
- Optimizes strategic, tactical, and operational effectiveness of IT
- Ensures continuous improvement

Processes

The A1 process is composed of several processes:

- A11 IT Governance and Management System Framework
- A12 IT Governance and Management System Capabilities
- A13 IT Management System Operation
- A14 IT Governance and Management System Evaluation

[A11] IT Governance and Management System Framework

Mission

To lay the foundation for building the governance and management system for the IT endeavor within a business, taking into account factors such as vision, values, goals, and overall business objectives. Also, to establish the guiding principles (a management philosophy) based on those factors.

This framework plays a key role in aligning the IT entity with the overall approach of the business. To be effective, the IT management system must focus on cultural as well as business aspects. Those items which are considered to fall within the scope of *governance* are used to set the main foundational pillars. This process does not identify the priorities of the business, but rather the approach to operating the various IT projects and processes in a coordinated fashion, managing their progress and health.

Goals

- To set clear, unambiguous objectives and roadmaps for the overall IT Governance and Management System
- To ensure that IT governance meets the design objectives provided by the owning business
- To align the IT management system with the overall business management system
- To ensure that management system directions can be transformed into a functional, workable, and implementable management system

Scope

Includes

The specification of:

- Management models
- Guiding principles
- Policies and standards
- Measurement and control approaches
  - CIO dashboard
  - Balanced scorecard
- Guidelines for regulating the execution of IT processes

Defining critical success factors

- Generating a list of decision areas and issues, and selecting decision options based on guiding principles, values, and assumptions.
- Determining the gaps between the current baseline and the desired framework.
- Communicating direction.

Excludes

- ◆ Priorities and decisions on the business results of IT
- ◆ IT strategy for the business

Activities

This process is composed of these activities:

- ■ A111 Define IT Governance Framework
- ■ A112 Define IT Management Goals
- ■ A113 Establish IT Management Policies
- ■ A114 Establish IT Management Practices

[A12] IT Governance and Management System Capabilities

Mission

To define, establish, and deploy an ecosystem for managing an IT organization. To select the key management model or models that will be used in the IT management system, and to actually implement the system. For example, assigning roles and responsibilities, and process owners.

Goals

- To provide a governance capability that:
  - Establishes the set of key decisions that cover the desired scope for governance
  - Assigns decision rights and accountability to appropriate organization units and roles.
- To provide a management system that is consistent with the direction of information technology and with the enterprise as a whole
- To provide a management system that is effective and efficient, ensuring the integrated and coordinated workings of IT
- To implement a set of coherent, integrated capabilities that enable and empower IT activities

Scope

Includes

- Defining information technology management system requirements and key indicators.
- Management models
- Policies and standards
- Methods
- Measurement and control capabilities

Organization design

- Structure, behaviors, enablers
- Roles and responsibilities definitions
- Process structure
- Implementation plan, including schedule

Excludes

- Development of IT solutions for management system needs

Activities

This process is composed of these activities:

- A121 Establish IT Governance Capabilities
- A122 Establish Process Capabilities
- A123 Establish IT Organizational Capabilities
- A124 Establish IT Information Management Capabilities
- A125 Establish IT Operational Environment Capabilities
- A126 Establish IT Measurements and Control Capabilities

[A13] IT Management System Operation

Mission

To run the management system whereby the overall IT function performs its work of satisfying the business needs. This process does not direct what IT activities should be performed to reflect the priorities of the business, but rather oversees the monitoring and control of the collected IT projects and processes, making corrective adjustments where needed.

Goals

- To ensure that key measurements are being met
- To optimize the strategic, tactical, and operational effectiveness of IT
- To execute informed and effective decision making
- To facilitate the integrated and coordinated workings of IT

Scope

Includes

- Measurement and control
    - CIO dashboard
    - Balanced scorecard
- Governance
- Regulating the execution of IT processes

Excludes

- Priorities and decisions on the business results of IT
- Portfolio Management
- Regulating IT services and solutions

Activities

This process is composed of these activities:

- A131 Produce IT Measurements
- A132 Monitor, Analyze, and Report IT Outcomes
- A133 Operate IT Controls

[A14] IT Governance and Management System Evaluation

Mission

To evaluate the execution and implementation of the IT governance and management system and identify potential improvements to it. This process monitors the measurements from the other processes in the IT management system as well as those from the overall management system to ensure the system is functioning correctly. It provides the ability to audit all (or any part) of the IT governance and management system.

Goals

- To ensure continuous improvement
- To ward off potential problems with the governance and management system before they result in other problems (for example, customer dissatisfaction)
- To ensure key measurements remain effective in order to realize IT goals
- To review and challenge the status quo

Scope

Includes

- Validating the adherence to management system rules
- Identifying continuous improvement actions
- Quality management assessment
- Regulating the execution of IT processes

Excludes

- Making major changes to the IT Management Ecosystem

Activities

This process is composed of these activities:

- A141 Collate IT Management System Outcomes
- A142 Analyze IT Governance and Management System Performance
- A143 Audit IT Governance and Management
- A144 Communicate IT Governance and Management System Performance

[A2] IT Customer Relationships

Description

Purpose

The IT Customer Relationships process category gives the IT service providers a mechanism to understand, monitor, and perform effectively in the marketplace they serve. Through active communication and interaction with customers, this process group provides the IT enterprise with valuable, current information concerning customer wants, needs, and requirements. Once these requirements are captured and understood, the process group ensures that an effective market plan is created to bring the various IT services and capabilities to the marketplace. In support of delivering these services, service level agreements (SLA), underpinning contracts (UCs), and operational level agreements (OLAs) are planned, created, implemented, monitored, and continuously improved in this process group. Further, the actual service catalog is initially created and maintained with information from the marketplace, customers, and service level achievements. While the IT services are in operation, customer satisfaction data is continuously gathered, monitored, and recorded to enhance IT service capabilities and IT's presence in the enterprise.

Rationale

The IT Customer Relationships process category ensures that the IT enterprise is effective in the marketplace. Through active market research, the IT services are kept current with the dynamic wants, needs, and requirements of customers. Furthermore, customer satisfaction data is gathered and reported in order to find areas of the IT services that require improvement. Overall, this process category provides a means for the IT enterprise to understand customer requirements, market IT services to customers, and monitor the quality of the delivered IT services.

Value

- Improves communication and understanding of customer wants and needs
- Identifies new market opportunities
- Coordinates the marketing and selling of IT services
- Establishes clear service level expectations
- Highlights areas within IT service delivery requiring improvement
- Identifies updates to IT services for greater effectiveness in meeting customer requirements
- Enhances customer satisfaction and loyalty

Processes

The A2 process category is composed of these processes:

- A21 Stakeholder Requirements Management
- A22 IT Customer Transformation Management
- A23 Service Marketing and Sales
- A24 Service Level Management
- A25 Customer Satisfaction Management

[A21] Stakeholder Requirements Management

Mission

To capture, classify, qualify, promote, and maintain requirements, from the business and for the management of IT activities, for IT services. This also involves providing information on the status of all requirements throughout their lifecycle.

Definition of *requirement*: A requirement describes a condition or capability to which a service or service component must conform; either derived directly from user needs, or stated in a contract, standard, specification, or other formally imposed document.[1] Alternatively, a requirement is an accepted, qualified customer need.

Goals

- To allow service and component stakeholders to provide input concerning the service or component
- To enable the development of an agreement between IT customers and providers concerning the service and service components
- To provide a basis for acceptance of the implemented requirement
- To optimize development spending
- To enable services management to meet the stated needs and expectations of the customer

Scope

This process is the starting point for the translation of customer needs, as expressed in business terms, into functional requirements (in IT terms) that can be acted on by other processes. It begins with recognizing, verbalizing, and documenting needs. It ends with an established set of feasible and measurable requirements that is maintained until the requirements are satisfied, changed, or rejected.

Includes

- Handing requirements in support of business capabilities
- Handling requirements in support of infrastructure capabilities
- Initial feasibility analysis to confirm requirements
- Customer validation of requirements statements
- Tracking and communicating the status of requirements

Excludes

- Order taking
- Activities that deliver solutions and services for the agreed requirements
- Detailed requirements analysis for a software application (see "[A41] Solution Requirements" on page 59).

---

1. Altered RUP definition of requirement.

Activities

This process is composed of these activities:

- A211 Establish Stakeholder Requirements Management Framework
- A212 Capture Stakeholder Needs
- A213 Transform Needs into Stakeholder Requirements
- A214 Monitor and Report Stakeholder Needs and Requirements
- A215 Evaluate Stakeholder Requirements Management Performance

[A22] IT Customer Transformation Management

Mission

To assist customers of IT in the transformation of their business throughout the lifecycle: from the genesis of transformation ideas through the measurement and optimization of the benefits from implemented transformation. While this process primarily exists to support technology-based transformation, a customer might request assistance under this process for other kinds of transformation.

Goals

- To identify transformation opportunities, both incremental and more fundamental
- To oversee and encourage the adoption and exploitation of transformation capabilities
- To measure, analyze, and report on the benefits achieved by transformation and on any benefits missed or further, unanticipated benefit potential.

Scope

Includes

- Being able to deal with each identified customer in a manner relevant to their individual needs
- Gaining sufficient understanding of the customer's business in order to contribute at the desired level
- Where appropriate:
  - Establishing joint working arrangements with the designated customer representatives
  - Providing business modeling and business case development skills and capabilities
  - Supporting transformation based upon cultural and procedural change that is not (significantly) technology based
- Contributing to the cultural changes and other organizational change management efforts needed for successful transformation
- Benefit measurement and reporting

Excludes

- Decision making on inclusion of responses (for example, new services) to transformation proposals
- Direct development of technology-based solutions and services

Activities

This process is composed of these activities:

- A221 Establish IT Customer Transformation Management Framework
- A222 Understand IT Customer Context
- A223 Identify IT Customer Transformation Opportunities
- A224 Develop IT Customer Transformation Proposal
- A225 Enable and Promote IT Customer Capability Adoption
- A226 Optimize IT Customer Benefit Realization
- A227 Evaluate IT Customer Transformation Management Performance

[A23] Service Marketing and Sales

Mission

To understand the marketplace served by the providers of IT, to identify customers, to market to them, to generate marketing plans for IT services, and support the selling of IT services.

To match up customer wants and needs with IT service capabilities, and to sell appropriate IT services.

Goals

- To promote IT capabilities to existing and potential customers
- To stimulate awareness of IT services and capabilities
- To understand customer and marketplace trends and opportunities
- To establish IT service contracts at the optimum price point for both customer and provider
- To promote the IT organization as the IT service provider of choice

Scope

This process addresses marketing to both general and specific customer needs. It involves working with current internal and external customers as well as identifying potential customers. It supports the marketing and selling of both current services and potential solutions and services.

Includes

- Understanding the market, customer segmentation, and the opportunities
- Developing the list of prospects
- Generating marketing and sales collateral: communicating the features, advantages and benefits for unique buying criteria
- Negotiating and closing sales within pricing guidance and rules

Excludes

- Developing solutions and services
- Implementing solutions
- Preparing contracts
- Establishing pricing guidance and rules

Activities

This process is composed of these activities:

- A231 Establish Service Marketing and Sales Framework
- A232 Analyze Market Wants and Needs
- A233 Create Marketing Plan
- A234 Execute Marketing Plan
- A235 Manage Opportunities and Forecast Sales
- A236 Consult and Propose Services Solutions
- A237 Negotiate and Close Services Opportunity
- A238 Analyze and Report Marketing and Sales Results
- A239 Evaluate Service Marketing and Sales Performance

[A24] Service Level Management

Mission

To negotiate service level agreements (SLAs) with IT customers, monitor service level targets, perform service reviews, and initiate service improvement plans.

Goals

- To enhance the quality of IT service through IT service review and service level monitoring
- To ensure that customer objectives are translated into service-level objectives that can be (and are) attained and measured by the providers of information technology
- To clarify the goals, commitments, and attainment of service to both the providers of information technology and the customer
- To define remedies for the failure to attain service level commitments

Scope

This process addresses lifecycle management of service agreements.

Includes

- Planning, creation, and maintenance of a service catalog containing the services defined in the service portfolio
- Identifying new services offered by service providers
- Implementing service level agreements, from feasibility through monitoring, renewing, and improving
- Integrating the service characteristics of specific processes (such as availability, capacity, and others)
- Evaluation of IT transactional service performance in relation to business services and their requirements
- Creation and maintenance of operational level agreements (OLAs) with providers further along the service supply chain, and consideration of resulting requirements for and performance defined in underpinning contracts (UCs)

Excludes

- Making decisions on requests from customers for new services and functionality
- Publishing the service catalog
- Pricing the elements in the service catalog and specific SLAs.

Activities

This process is composed of these activities:

- A241 Establish Service Level Management Framework
- A242 Create and Maintain Service Catalog
- A243 Create and Maintain Service Level Agreements
- A244 Monitor and Report Service Level Achievements
- A245 Conduct Service Review
- A246 Formulate Service Improvement Plan
- A247 Evaluate Service Level Management Performance

[A25] Customer Satisfaction Management

Mission

To determine if and measure the quality of whether customers are satisfied with the services, solutions, and offerings from the providers of IT. In addition to this determination, the process aims to proactively predict what the customer satisfaction will be, and then to determine what must be done to maintain or, where appropriate, enhance satisfaction and customer loyalty.

Definition of *customer satisfaction*: An expression of perceived actual service received versus expected service.[1]

Goals

- To achieve the stated targets for customer satisfaction and loyalty
- To identify, measure, and manage the key contributors to customer satisfaction
- To identify early signs of customer dissatisfaction so that there are no major surprises
- To remedy the causes of customer dissatisfaction
- To achieve the above goals in business constraints

Scope

This process is active throughout the service lifecycle. From the first contact with a customer as part of the effort to determine wants and needs, the process continues through either creating a satisfied customer or with monitoring remedial actions to correct any problems that could lead to customer dissatisfaction. This process encompasses the entirety of IT's services, solutions and offerings: the IT service catalog, for example.

Includes

- Identifying customer types and classes
  - Understanding customer expectations
  - Understanding customer perceptions
- Analysis of the current services catalog
- Ongoing identification of the key factors contributing to customer satisfaction and loyalty or dissatisfaction
- Development and maintenance of measurements of satisfaction and loyalty
- Collection and analysis of such measurements
- Planning, directing, and monitoring efforts to remedy customer dissatisfaction, as well as to increase satisfaction, on both a proactive and reactive basis

---

1. Global Services Method: Task Outcome "Customer Satisfaction Assessment."

Excludes

◆ Execution of specific corrective actions for resolving issues

◆ Fulfillment of specific customer requirements

◆ Ongoing activities for managing service agreements and service level attainment

Activities

This process is composed of these activities:

- A251 Establish Customer Satisfaction Management Framework
- A252 Capture Customer Satisfaction Data
- A253 Analyze Customer Satisfaction
- A254 Manage Customer Satisfaction Issue Resolution
- A255 Assess Customer Satisfaction Patterns
- A256 Communicate Customer Satisfaction Management Results
- A257 Evaluate Customer Satisfaction Management Performance

[A3] IT Direction

Purpose

The IT Direction process category provides guidance on the external technology marketplace, aligns the IT organization to the business strategy, minimizes risk exposures, and provides a mechanism to manage the IT architecture and IT portfolio. Using the business strategy, related business requirements, and overall technology trends as key inputs, this process category creates an IT Strategy within the manageable constraints of the existing IT architecture and portfolio. In addition to the IT strategy, the IT portfolio and IT architecture are planned, created, implemented, monitored, and continuously improved within this process category. The IT portfolio includes all items managed by the IT budget, including, but not limited to, the services published to clients through the service catalog, internal services executed within the IT organization, and new and established development initiatives. Moreover, the process category supplies the IT organization with a Project Management process to manage initiatives driven by the IT strategy, such as development projects. Finally, risks to the IT organization, such as those posed by regulatory requirements, are prioritized and managed through risk mitigation plans.

Rationale

Through a business aligned IT strategy, IT architecture, and IT portfolio, this process category ensures that the IT enterprise is aligned with the overall business direction. Using these artifacts, the IT organization will have the capability to clearly communicate to its customers the value of the services they provide, while mitigating the overall risk posture. This process group also instills basic project management discipline and controls.

Value

- Aligns business goals and strategy with IT endeavors
- Identifies and explains new trends and directions in the technology marketplace
- Promotes new initiatives to meet dynamic business and technology requirements
- Incorporates new technology trends into IT strategy and plans
- Mitigates IT and business risks efficiently and effectively
- Optimizes the allocation of IT resources through IT portfolio management
- Articulates the value of IT's contribution to the business
- Ensures methodical project management processes and controls for improved quality and predictability

Processes

The A3 process category is composed of several processes:

- A31 IT Strategy
- A32 IT Research and Innovation
- A33 Architecture Management
- A34 Risk Management
- A35 IT Portfolio Management
- A36 Project Management

[A31] IT Strategy

Mission

"To set the goals, and decide on areas of change,"[1] for IT capability to support the business strategy. The IT strategy should address long and short-term objectives, business direction and its impact on IT, the IT culture, communications, information, people, processes, technology, development, and partnerships.

Definition of an *IT strategy*: The collection of goals, policies, and plans that specify how an IT organization should function over a specific period.[2]

Goals

- To ensure the business achieves maximal support for its strategy through the use of information technology (infrastructure, applications, and services)
- To be proactive in advancing an appreciation of the potential value of information technology to the business. For example, providing the business with the capability to achieve a competitive advantage and ensuring that the provider of information technology is positioned to support changes to the business environment
- To ensure that any information technology strategy is aligned with the business strategy, and regularly examined to stay in alignment
- To ensure that the information technology strategy is cost effective, appropriate, realistic, achievable, business focused, balanced, and timely
- To periodically assess long term plans and to derive clear and concrete short-term goals (which trigger the translation of them into operational plans)
- To ensure that the customer has the opportunity to influence and participate in IT strategy formulation.

Scope

Includes

- Interacting with business strategy
- Setting strategic goals for IT
- Creation of the overarching guidance for specific IT functional areas
- Understanding the value, both the classes and the specific targets, which the business requires IT to provide or support
- Generating preliminary value propositions for the IT actual and proposed contributions to the business

Excludes

- The creation of the strategies for the next layer of implementation detail
- The creation, recommendation, and adoption of IT architectures for the next layers of detail (hardware, software, among others)

---

1. IBM Academy Study *Enterprise architecture in the era of on demand*: Definition of strategy.
2. Adapted from WSDDM glossary.

Activities

This process is composed of these activities:

- A311 Establish IT Strategy Process Framework
- A312 Understand Business Strategy
- A313 Determine IT Strategic Potential
- A314 Develop IT Strategy Initiatives
- A315 Consolidate and Communicate IT Strategy
- A316 Monitor and Assess IT Strategy Effectiveness
- A317 Evaluate IT Strategy Process Performance

[A32] IT Research and Innovation

Mission

To identify new developments in technology, methods, and solutions with potential business value. Conduct research into their applicability and benefit, and promote viable, innovative concepts in support of business objectives.

Definitions of:

- *Research*

    1. Scholarly or scientific investigation or inquiry

    2. To research: to study something thoroughly so as to present in a detailed, accurate manner

- *Innovation*
    - The act of introducing something new

Goals

- To ensure awareness of marketplace, industry and technology trends, and to assess the potential impact of these forces
- To ensure that the most appropriate advances and innovations in the use of technology, methods, and solutions are qualified and staged for potential use in IT services, thereby enhancing business value
- To facilitate the transfer of innovative solutions to operational usage, improving quality, reducing costs, and meeting business objectives

Scope

Includes

- Identification of areas or fields for research

- Responding to research requests and identifying relevant developments within monitored fields of interest

- Monitoring, understanding, and promoting:
    - Market and industry trends
    - Emerging technologies
    - Technology enabled solutions
    - Methods and techniques for exploiting technology and solutions
    - Solution strategies
    - Organizing the storage and retrieval of research results

Excludes

- Decisions on adopting innovative technologies and solutions for productive use

- Actual development and deployment of solutions

- Project management

Activities

This process is composed of these activities:

- A321 Establish IT Research and Innovation FrameWork
- A322 Identify IT Research and innovation Candidates
- A323 Qualify Candidates and Define IT Research and Innovation Projects
- A324 Perform IT Research and Innovation Project
- A325 Promote IT Research and Innovation Results
- A326 Evaluate IT Research and Innovation Performance

[A33] Architecture Management

Mission

To create, maintain, promote, and govern the use of IT architecture models and standards, across and within a business' change programs. IT architecture thus helps the stakeholder community coordinate and control their IT related activities, in pursuit of the business' common goals.

Definition of *IT architecture*: "An overarching set of rules of construction, suitable for a defined range of external circumstances. Usually includes a definition of the parts permitted for use in the design, together with a specification of how the parts can be used within specific implementations and the range of values for which the part is valid."[1]

Goals

- To guide and govern development of IT solutions in order to provide flexibility, consistency, integration, and reuse across all elements of the business and IT, at all levels from the boardroom to the desktop
- To enable the creation of manageable information systems and information technology infrastructure
- To ensure the effective and efficient exploitation of IT across the enterprise

Scope

An effective enterprise architecture (EA) should encompass:

- An architecture
  - *This is the way our projects should be engineered*.
  - An EA provides a specification of the business and IT architecture models that must be adopted by change programs and projects. This includes the overall business, application and data, and infrastructure architectures, together with the principles and guidelines needed to ensure these models are exploited properly.
- Governance
  - An EA must be flexible and evolve constantly if it is to support the business changes needed by an organization wanting to innovate and transform itself. Architectural governance has two aspects: ensuring that the architecture's specifications are adhered to (or formal exceptions granted), and ensuring that the architecture evolves in step with business demands.
- Transition planning
  - *These are the projects we should do and this is their scope*.
  - An EA needs a collection of processes and tasks designed to support the selection and scoping of the right projects aimed at realizing the EA vision. This should be done in concert with the business-as-usual business and IT project prioritization planning processes

---

1. Source: IBM Academy of Technology Study AR221 (2004), "Enterprise Architecture in the era of on demand", page 15.

Includes

◆ Business architecture

– The chunking, relationships, and interactions between the various bits of the business.

◆ Information systems (IS) architecture

– The business dependent aspects of IT—the automated parts of business architecture.

◆ Information technology (IT) architecture

– The business independent aspect of IT—the underlying IT infrastructure.

The architecture must consistently support several viewpoints across these three areas:

◆ The applications viewpoint – ensuring functionality can track through the layers. For example, enabling an architect to link business activities and processes to applications and transaction management services.

◆ The data viewpoint – ensuring an architect approach to information. For example, linking business entities to data definitions and into database technologies.

◆ User viewpoint – facilitating the identification and support of an enterprise's user groups (whether internal or external, private or corporate). This includes the definition of how they are to be supported at the IS (user interface) and IT (interface technology) levels.

The architecture must be:

◆ Maintained – An enterprise's needs to keep its architecture fresh and vital, reacting to changes in the businesses strategy as well as changes in technology through a vitality process. In all probability this will include the identification of new, or changes to existing, standards through a selection process.

◆ Used – It is necessary to actively ensure solution projects conform to the constraints of the architecture (while still assuring their ability to meet the projects' business requirements) through a conformance process. Inevitably, there will be occasions when there is a conflict between the project's needs and the architecture, requiring an exception process.

◆ Communicated – To be effective, the architecture must be understood by those who are required to use it, through the use of a communication process.

Excludes

◆ Portfolio management, in which specific change programs are identified, prioritized, and managed to completion.

◆ Requirements specification, in which specific business requirements are identified and translated into specifications.

◆ Solution design, in which specific IT systems are designed to meet particular business or IT operational needs.

◆ Solution delivery and operation, including the procurement, commissioning, and operation of IT components and systems.

◆ Enterprise systems management, responsible for planning and execution of day-to-day management of the installed IT infrastructure.

Activities

This process is composed of these activities:

- A331 Establish Architecture Management Framework
- A332 Review Overall Environment and Architecture
- A333 Refine Architecture
- A334 Define and Maintain Architecture Baselines and Roadmaps
- A335 Promote Architecture Transition Initiatives
- A336 Govern Architecture Usage
- A337 Evaluate Architecture Management Performance

[A34] Risk Management

Mission

To identify risks associated with the activities of the IT endeavor and to take measured, appropriate actions to mitigate those risks to the desired level of risk tolerance.

The definition of risk is an ongoing or upcoming concern that has a significant probability of adversely affecting the business.

Goals

- To support the achievement of the greatest benefit from all the activities carried out in IT
- To position the business to be able to respond to threats and opportunities
- To support the fulfillment of fiduciary responsibilities to the stakeholders of the business

Scope

This process provides the overall framework of how risks are handled. Some other processes in "[A0] Management of the Business of IT" on page 19, will work in conjunction with this process to ensure that specific risk areas are adequately covered.

Risks occur from a variety of internal and external sources, and cover the range of strategic, tactical, and operational activities. Consideration of risk covers the potential opportunity from a risk outcome happening in addition to the more traditional consideration of possible downside outcomes.

Includes

- Both internal and external risks
- Financial risks
- Strategic risks to the enterprise, such as competition, market changes, and acquisitions
- Regulatory risks
- Employee and company culture
- Technology risks
- Control and governance risks

Excludes

- Identification of compliance requirements and controls (considered part of compliance management)
- Security risk management (considered part of security management)
- Implementation and operation of the recommended risk controls (responsibility of the target IT processes)
- Business continuity management

Activities

This process is composed of these activities:

- A341 Establish Risk Management Framework
- A342 Identify Threats, Vulnerabilities and Risks
- A343 Assess Risk
- A344 Define Risk Mitigation Plans and Countermeasures
- A345 Enact and Operate Risk Countermeasures
- A346 Assess Risk Mitigation Results
- A347 Evaluate Risk Management Performance

[A35] IT Portfolio Management

Mission

To decide on the set of IT investments (both long-term and large-scale) as well as short-term, limited-scope opportunities, based on the strategic intent and priorities of the business. This includes assessing all applications, services, and IT projects that consume resources in order to understand their value to the IT organization.

Definition of *portfolio*: The set of development projects and ongoing delivery services that are part of the IT budget.

Goals

- To maximize the value of the IT portfolio to the business
- To ensure strategic fit
- To align business needs with IT expenditures
- To ensure the portfolio is balanced in meeting business needs
- To ensure that customers have an opportunity to participate in defining the IT portfolio

Scope

Provide for the continuous identification, evaluation, selection, control, and lifecycle management of IT investments.

Includes

- Identification of key business drivers
- Decisions on what projects to fund
- Decisions on funding the projects that create elements from which a service catalog is built
- Application portfolio management (as described in ITIL's *ICT Infrastructure Management* book, section 3.3.1)
- Identification of in-sourced, outsource, business, and infrastructure applications and services to be included in the portfolio
- Determination of value obtained or projected from portfolio items

Excludes

- Execution of projects
- Asset management
- Delivery of services
- Service level management and customer satisfaction management

Activities

This process is composed of these activities:

- A351 Establish IT Portfolio Management Framework
- A352 Inventory IT Projects and Services
- A353 Create and Maintain IT Portfolio Categories
- A354 Assess and Prioritize IT Portfolio
- A355 Make IT Portfolio Decisions and Commitments
- A356 Conduct IT Portfolio Review
- A357 Communicate IT Business Value and IT Portfolio Performance
- A358 Evaluate IT Portfolio Management Performance

[A36] Program and Project Management

Mission

To plan and oversee programs and projects in support of their objectives.

Goals

- To drive each project to completion by the committed target date and within the allocated budget
- To reduce risk within the customer's business environment through precisely defined projects with clearly identified and managed risks
- To increase productivity by a clear definition of roles, responsibilities, and deliverables, which result in faster startup through the use of knowledge management, less rework, and more productive time available to the project
- Clear separation of project resource commitments from operational workload demands
- To facilitate easier and clearer communication because customer and project teams form more quickly and use common terminology
- To provide customer visibility to the project plans, schedule, and actual performance against the project objectives, helping to increase customer satisfaction.

Scope

The same activities apply to both Program and Project Management, but with differing scope and timescales. Activities within the program and project management process can be classified into four basic groups:

- Defining and initiating
- Planning
- Executing, monitoring, and controlling
- Closing

A project usually consists of a series of phases, known as the project lifecycle, and these groups of process activities can be applied to each phase individually or to a set of multiple phases. Therefore, these groups do not necessarily correspond to the phases of the project lifecycle. For example, executing and controlling activities can be completed in the design phase of a project, followed by planning activities for the development phase.[1]

The activities described represent a broad model for Project Management activities, which is largely applicable to both projects and programs alike. "A program is a long-term endeavor undertaken to implement a strategy or mission to meet business or organizational goals."[2]

A program is realized through multiple projects and ongoing activity.

---

1. IBM WWPMM Concepts.
2. IBM WWPMM Concepts.

Includes

- Identifying program and project goals

- Establishing clear and achievable objectives

- Balancing the competing demands for quality, scope, time, cost factors and resources

- Creating project plans

- Program and project status reporting to stakeholders

- Reconciling the specifications, plans, and approach to the different concerns and expectations of various stakeholders

Excludes

- Performance and delivery activities

- Promotion of the end result to production

Activities

This process is composed of these activities:

- A361 Establish Program and Project Management Framework
- A362 Manage Program
- A363 Define and Initiate Project
- A364 Plan Project
- A365 Track and Report Project
- A366 Control Project
- A367 Close Project
- A368 Evaluate Program and Project Management Performance

[A4] Solution Development

Description

Purpose

The Solution Development process category exists to create solutions that will satisfy the requirements of IT customers and stakeholders, including both the development of new solutions and the enhancements or maintenance of existing ones. *Create* includes options to build or buy the components of that solution, and the integration of them for functional capability.

This process category encompasses the engineering and manufacturing of information technology products and services and includes the making or buying of solutions, systems, integration, and extensions to existing solutions. Maintenance and end of life shutdown activities are also addressed in this process.

The basic unit of work is assumed to be a project. However, these projects can vary from quite small and of short duration to very large and long-term. The processes act together in a project driven context to create systems solutions for specific sets of stakeholder requirements.

Rationale

The Solution Development process category addresses a broad range of systems integration activities, including integration of hardware components, software and network components, applications development, and other modifications to the computing infrastructure. This process category accommodates all levels of the solution's configuration (individual parts, subassemblies, distributed components, among others) and component types (hardware, software, printed documentation, skills, architectures and designs).

Value

- Lays the foundation for the business to receive value from its investment in IT by creating solutions that meet customer requirements
- Ensures that buy or build guidelines are followed
- Provides fully integrated solutions with predictable performance characteristics
- Obtains full stakeholder agreement that solutions are ready for deployment
- Produces higher quality work products

Processes

The A4 process category is composed of these processes:

- A41 Solution Requirements
- A42 Solution Analysis and Design
- A43 Solution Build
- A44 Solution Test
- A45 Solution Acceptance

[A41] Solution Requirements

Mission

To provide "a systematic approach to finding, documenting, organizing, and tracking a system's changing requirements,"[1] so that an agreed understanding is reached as to what the solution should do.

Definition of *solution requirement*: "A condition or capability to which the system must conform."[2]

Goals

- To ensure that there is stakeholder agreement on requirements before the solution is designed, developed, and deployed
- To make sure the right solutions are developed, based on an accurate understanding of requirements
- To meet customer, stakeholder, and user requirements
- To ensure traceability between requirements and solution specifications
- To reduce rework

Scope

This process focuses on translating agreed customer (business) requirements and IT stakeholder generated requirements or constraints into solution-specific terms, within the context of a defined solution project or program.

Includes

- Business context modeling
- Collecting, understanding, validating, formalizing and documenting solution requirements
- Clarify, analyze, and refine requirements from the Stakeholder Requirements Management process
- Ongoing management of requirements for this solution
- Solution requirements taxonomy, including:
  - Functional requirements
  - Non-functional requirements
  - Deployment requirements (packaging, education and training)
  - Usability requirements
  - Change cases and scalability requirements
  - Testing requirements
  - Stakeholder acceptance criteria
  - Solution lifecycle requirements, including solution shutdown and retirement

1. Rational Unified Process.
2. Rational Unified Process.

◆ Risk and feasibility analysis of requirements

◆ Requirements baseline generation and traceability audits

◆ Service management considerations

◆ Business modeling discipline and requirements management discipline

Excludes

◆ Translation from requirements to design specification

◆ The lifecycle management of customer wants and needs through agreed prioritized business requirements. (See [A21] Stakeholder Requirements Management.)

◆ Configuration Management

Activities

This process is composed of these activities:

- A411 Establish Solution Requirements Framework
- A412 Refine and Verify Business Context
- A413 Document and Analyze Solution Requirements
- A414 Validate Solution Requirements with Stakeholders
- A415 Manage Solution Requirements Baseline
- A416 Evaluate Solution Requirements Performance

[A42] Solution Analysis and Design

Mission

To create a documented design from the agreed solution requirements that describe the behavior of solution elements, the acceptance criteria, and agreed measurements.

Goals

- To define an optimal design for a solution that will satisfy the agreed requirements within constraints
- To ensure stakeholder agreement before the solution is built
- To produce a flexible design that reduces the total cost of ownership throughout the lifecycle

Scope

Design of all aspects of the solution necessary to meet stakeholder requirements

Includes

- Creating and managing baselines (specifications baseline, component architecture baseline) throughout the full range of the solution lifecycle including solution shutdown and retirement
- Ensuring solution design compliance with the business and IT architectures
- Identification and consideration of constraints
- Different solution architectural views (component model, operational model, deployment model, data model)
- Evaluating trade-offs and making design and sourcing decisions (make versus buy versus reuse)
- Modeling, simulation, and prototyping
- All required solution elements (application, infrastructure, process, organization, data, training, deployment, technology, testing)
- High and low level design
- Systems operation and management design, such as significant event definition, monitoring data definition
- Ensuring cross-functional participation in design acceptance from service management disciplines

Excludes

- Enterprise architecture
- General requirements management
- Actual procurement
- Construction and integration

Activities

This process is composed of these activities:

- A421 Establish Solution Analysis and Design Framework
- A422 Create Conceptual Solution Design
- A423 Identify and Select Solution Components
- A424 Create Detailed Solution Design
- A425 Validate Solution Design With Stakeholders
- A426 Evaluate Solution Analysis and Design Performance

[A43] Solution build

Mission

To bring together all of the elements specified by the solution design, regardless of whether they are to be created or acquired, and for their customization, configuration, and integration.

Goals

- To build the agreed solution based on approved specification on time and within budget
- To prepare the solution for test and synchronize examination of solution capabilities
- To create elements that support the solution's management (lifecycle, maintenance, known errors documentation, best practices)
- To satisfy the requirements of the construction phase checklist
- To verify the build content before Solution Acceptance activities.

Scope

Includes

- Development of new functionality
- Integration of new and existing functionality
- Use of all design elements
- Prototyping
- Creating alpha, beta, and general availability versions of solutions
- Getting any procured elements to the solution build team. These can come from external or internal providers
- Version control (includes Configuration Management of elements within the solution during the development phase (called CMVC in CMMI)

Excludes

- Testing (unit testing is considered to be in the Solution Testing process, even if performed by the implementer or builder)
- Solution pilot and deployment
- Procurement
- Asset Management
- Configuration Management

Activities

This process is composed of these activities:

- A431 Establish Solution Build Framework
- A432 Develop Solution Build Plan
- A433 Prepare and Manage Solution Build Environment
- A434 Acquire or Create Solution Components
- A435 Integrate Solution Components
- A436 Refine and Tune Integrated Solution
- A437 Verify Integrated Solution
- A438 Evaluate Solution Build Performance

[A44] Solution Test

Mission

To validate that the solution and its features conform to design specifications and requirements, prior to the deployment of the solution, and to verify that selected interim work products meet specified requirements.

Testing is performed throughout the entire lifecycle of the solution, including post-deployment.

Goals

- To identify defects in the solution before it is installed in the production environment
- To verify functionality in a solution
- To measure the quality of the solution and provide useful information to solution developers and stakeholders (It is intended that the developers and stakeholders take some action as a result of having received this information.)
- To identify and report on the difference between the actual characteristics and behavior of the solution and the agreed design specifications and requirements
- Optionally, to determine how the solution measures against stakeholder expectations

Scope

Includes

- All types of testing, such as:
  - Unit testing
  - Environment testing
  - Integration testing
  - Acceptance testing
  - System testing
  - Usability testing
  - Operability testing
  - Security testing
  - Capacity testing
  - Regression testing
  - Functionality verification testing
  - Failure recovery testing
  - Positive and negative testing
- Test case development
- Generating test results
- Managing the documentation of the test results
- Satisfying the requirements of the test management checklist

---

Excludes

- ◆ Fixing errors

- ◆ Design for testability

- ◆ Knowledge management

- ◆ Gaining acceptance

- ◆ Piloting

- ◆ Site surveys

- ◆ Auditing

Activities

This process is composed of these activities:

- A441 Establish Solution Test Framework
- A442 Develop Solution Test Strategy and Plans
- A443 Prepare and Manage Solution Test Environment
- A444 Perform Solution Test
- A445 Analyze and Report Solution Test Results
- A446 Evaluate Solution Test Performance

[A45] Solution Acceptance

Mission

To validate that the proposed solution, whether as individual artifacts or in its complete form, meets acceptance criteria at defined checkpoints.

Goals

- To gain stakeholder agreement before deployment that all requirements have been met
- To minimize risk while facilitating transition of the solution into live service
- To protect the production environment
- To ensure that those responsible for delivering service are properly prepared
- To validate the solution's capability to meet service level agreements

Scope

This process operates throughout the lifetime of the solution development project.

Includes

- Periodic review of project performance to date and status
- Involvement of all relevant stakeholders:
  - Solution customer
  - Solution developer
  - Provider of service from the solution once deployed
- Assisting in the development of approved solution plans and commitments
- Obtaining the customer perspective on prototype work products and accepted solutions
- Working with the customer to facilitate acceptance of the solution
- Working with the customer to facilitate acceptance of solution shutdown and retirement
- Documenting how the confirmed requirements are met in the accepted solution and in interim milestones
- Identifying and tracking of all acceptance review results and issues

Excludes

- Testing
- Providing education and training
- Establishing service levels

Activities

This process is composed of these activities:

- A451 Establish Solution Acceptance Framework
- A452 Create Solution Acceptance Plan
- A453 Define Solution Acceptance Criteria
- A454 Perform Solution Acceptance Review
- A455 Certify Solution Acceptance
- A456 Evaluate Solution Acceptance Performance

[A5] Solution Deployment

Description

Purpose

The Solution Deployment category of processes takes Solutions from having completed testing and achieved *accepted* status to being deployed as services in their intended *live* environment. This process category contains those process areas required to control every aspect of implementing developed solutions, from the initial request through the post implementation review. This category also provides vital enabling information to other process areas.

Rationale

The Configuration, Change, and Release Management categories are grouped together because their effectiveness requires tight integration. For example, Change Management is not effective in assessing the potential impact of changes without Configuration Management information indicating the relationships between configuration items. Release Management and Change Management between them provide the means of introducing new capabilities into the target environments, and have a particularly close relationship. Change Management relies upon Configuration Management information as part of determining who should participate in a change advisory board (CAB).

Value

- Improves the speed of innovation while balancing the business need for stability in the IT infrastructure
- Controls and maintains accurate information on the infrastructure, applications, and services
- Implements solutions that provide new functionality, eliminates the root causes of defects or performs tuning actions without business disruption
- Enables gradual and measured improvements in the way that changes are introduced into complex and interdependent *live* environments
- Supports the efficiency and effectiveness of other processes by providing accurate information on managed elements (configuration items (CIs), managed objects, among others)

Processes

The A5 process category is composed of these processes:

- A51 Change Management
- A52 Release Management
- A53 Configuration Management

[A51] Change Management

Mission

This process is responsible for controlling and managing requests for change (RFC) to the IT environment, from inception through implementation.

A request for change is "a means of proposing a change to any component of an IT infrastructure or any aspect of an IT service."[1]

Definition of *change*: a change is anything that alters the status of a configuration item (CI). This typically includes anything that adds to, deletes from, or modifies the IT infrastructure.

Goals

- To facilitate the timely introduction of business benefit and enhanced user productivity
- To minimize the risk of disruption to IT services
- To minimize incidents caused by changes
- To ensure accurate assessment of the cost of proposed changes before they are incurred
- To allow the absorption of changes at the rate required for business and technical purposes
- To generate enhanced perception of the quality of IT
- To balance the business need for innovation with the business need for stable IT service, by using standard and repeatable methods for everything that occurs from the RFC to the post-implementation review (PIR)

Scope

The following items are normally included in an RFC form, whether paper or electronic:

- RFC number (plus cross reference to Incident or problem report number, where necessary)
- Description and identity of items to be changed (including CI identifications if Configuration Management system is in use)
- Reason for change
- Effect of not implementing the change
- Version of item to be changed
- Name, location, and telephone number of person proposing the change
- Date the change was proposed
- Change priority
- Impact and resource assessment (can be on separate forms where convenient)
- CAB recommendations where appropriate (can be held separately, with impact and resource assessments, where convenient)

---

1. itSMF Publication: *A Dictionary of IT Service Management Terms, Acronyms and Abbreviations*.

- Authorization signature (can be electronic)
- Authorization date and time
- Scheduled implementation (release identification, date and time)
- Location of release implementation plan
- Details of change builder and implementer
- Back out plan
- Actual implementation date and time
- Review date
- Review results (including cross-reference to new RFC where necessary)
- Risk assessment and management
- Impact on business continuity and contingency plans
- Status of RFC: logged, assessed, rejected, accepted, or sleeping

Includes

- Planned changes, standard changes (preapproved by policy), and emergency changes (policy exception request)
- Changes applications, infrastructure, or both.
- Establishing both recurring and one-time only schedules (change windows) during which changes can be performed without negatively affecting projected availability or SLA commitments
- Enforcement of standard methods and procedures from request for change through post implementation review
- Establishing regular meetings and communication schedules to evaluate proposed changes and schedules
- Control and management of the implementation of those changes that are subsequently approved
- Maintenance of open channels of communications to promote smooth transition when changes take place
- Increased visibility and communication of changes to both business and support staff

Excludes

- Configuration Management
- Hardware faults and repairs that do not alter the form fit or function of a tracked configuration item (CI)
- Solution development and testing

Activities

This process is composed of these activities:

- A511 Establish Change Management Framework
- A512 Accept and Categorize Change
- A513 Assess Change
- A514 Approve and Schedule Change
- A515 Coordinate Change Implementation
- A516 Prepare, Distribute and Implement Change
- A517 Review and Close Change
- A518 Monitor and Report Change Management
- A519 Evaluate Change Management Performance

[A52] Release Management

Mission

To control the introduction of releases into the production environment and minimize risk associated with the changes.

Definition of *release*: the controlled deployment of approved changes within the IT infrastructure.

The relationship could be based on time, technology interdependencies, target, risk mitigation, organization, scale (multiple copies) or service dependencies.

Goals

- To achieve the timely introduction of new capability to support business goals, for example:
  - New functionality
  - Minimization of risk to existing functionality and service
  - Audit capability
- To protect the production environment and IT services through the use of formal procedures and checks
- To reduce the impact of scheduled outages to the live environment by bundling multiple changes
- To create a holistic view of multi-faceted changes involving activities of multiple organizations
- To ensure only authorized releases are introduced into the live environment.

Scope

Release Management spans the planning and direction of the rollout of software, related hardware, documentation, and operating procedures.

Includes

- Release creation
- Release installation and activation through the Change Management process
- Large hardware and software rollouts
- Bundling or batching of related changes through the Change Management process
- Training plans
- Protecting the live environment
- Verification of successful installation
- Roll back and back out

Excludes

- ◆ Business Process Change

- ◆ Solution Development (creation of functionality)

- ◆ Testing of functionality

- ◆ Management of Requests for Change (RFCs)

Activities

This process is composed of these activities:

- ■ A521 Establish Release Management Framework
- ■ A522 Plan Release
- ■ A523 Design and Build Release
- ■ A524 Test and Accept Release
- ■ A525 Plan Release Rollout
- ■ A526 Communicate, Prepare, and Train for Release
- ■ A527 Distribute and Install Release
- ■ A528 Evaluate Release Management Performance

[A53] Configuration Management

Mission

To maintain and provide accurate information about configuration items (CIs) and their relationships using a configuration management database (CMDB).

Goals

- To identify all configuration items within the IT infrastructure and within services provided to IT customers
- To provide accurate configuration information to all processes requiring such information
- To enable the correction of any exceptions related to configuration records and the corresponding CIs themselves, by verifying the configuration records against the infrastructure

Scope

Includes

- Establishing naming conventions for configuration items and relationships
- Designing, creating, populating, and updating the Configuration Management Data Base (CMDB)
- Supporting configuration item audits
- Identifying configuration item interdependencies
- Linking configuration item changes to specific RFCs
- Defining and reporting configuration baselines.

Excludes

- Asset Management
- Inventory tracking
- Procurement of configuration items
- Tuning and installing configuration items

Activities

This process is composed of these activities:

- A531 Establish Configuration Management Framework
- A532 Identify Configuration Items
- A533 Control Configuration Items
- A534 Report Configuration Status
- A535 Verify and Audit Configuration Items
- A536 Evaluate Configuration Management Performance

[A6] IT Operational Service

Description

Purpose

This category contains the operational service processes that enable daily IT activities using available infrastructure, applications, and services to meet service level agreements (SLAs) and business objectives. Managing contact and communications with users is an important function as these processes sense and respond to day-to-day aspects of operations and events, quickly and correctly to address any incidents and problems that might arise.

Rationale

Operational Service comprises all the activities and measures necessary to enable and maintain the intended and committed use of the infrastructure, applications, and services. The processes in this group require close integration to function effectively. Operational plans and workload balancing are augmented by constant operational monitoring throughout service delivery. This, tool is combined with complex capabilities to identify, analyze, and quickly resolve any anomalies. Operational Service is also the focal point for receiving and responding to a wide variety of user requests. This process category is vital to enabling organizational constructs such as a Service Desk or an Operations Bridge or an Operations Center. Problem Management is included in this group because of its dependence on incident management information. (Problem Management could also have been placed in the IT Resilience group because it, like the other IT resilience processes, has a key objective to prevent significant disruptions from disrupting IT infrastructure, applications, and services.)

Value

- Operates, manages, and maintains an end-to-end infrastructure to facilitate the delivery of the services to the business, meeting all of the agreed to requirements and targets
- Provides *sense and respond* correction and optimization for any fluctuations in the operating characteristics of the IT infrastructure, applications, and services
- Provides a focal point for reliable, robust, secure, and consistent delivery of service, minimizing potential negative impact on the efficiency and effectiveness of business processes
- Establishes responsibility for user contact and interaction, improving communications and customer perception of service quality
- Provides full integrity of data at all stages of its lifecycle, including protection of business (and system) data from accidental loss
- Ensures that the agreed and implemented IT services are functioning as planned, and that any requests or issues are promptly addressed

Processes

The A6 process category is composed of these processes:

- A61 Service Execution
- A62 Data and Storage Management
- A63 Event Management
- A64 User Contact Management
- A65 Incident Management
- A66 Problem Management

[A61] Service Execution

Mission

To deliver operational services to IT customers, by matching resources to commitments and employing the IT infrastructure to conduct IT operations.

Goals

- To attain service level objectives using allocated (technical and human) resources effectively and efficiently
- To provide reliable, robust, secure, and consistent delivery of service
- To ensure up-to-date resource consumption and service metric data

Scope

Includes

- Understanding, creation, and maintenance of operational schedules
- Starting, stopping, and other operational actions on system components, applications and other services
- Monitoring of system resources
- Detecting events and sending significant events to Event Management
- Understanding and maintenance of operational status
- Managing production workloads from submission through delivery of results

Excludes

- Correlating and processing significant events
- Operational security
- Storage management, backup, and recovery

Activities

This process is composed of these activities:

- A611 Establish Service Execution Framework
- A612 Schedule and Adjust Workload
- A613 Assign and Control Delivery Resources
- A614 Deliver Service
- A615 Analyze and Report Service Execution Operations
- A616 Evaluate Service Execution Performance

[A62] Data Management

Mission

To ensure that all data required for providing and supporting operational service are available for use and that data storage facilities can handle normal, expected fluctuations in data volumes and other parameters within their designed tolerances.

Goals

- To provide effective data lifecycle management policies and governance capabilities
- To sustain normal data lifecycle management service that meet or exceed service level commitments
- To meet legal, regulatory and business requirements for data privacy, quality and retention
- To optimize the accessibility, performance, cost and value characteristics of data throughout its full lifecycle
- To ensure the integrity of data at all stages of its lifecycle, including protection of business (and system) data from accidental loss and destruction

Scope

Management of the full lifecycle of both externally acquired and enterprise generated data, as well as information about that data.

Includes

- Managing data as a portfolio and the overall plan for the portfolio's elements
- Cataloging and controlling all data types, such as:
  - Business data
  - Journals and logs
  - Program libraries
  - Systems management data
- Accepting and cataloguing new data
- Data backup and restoration of data to prior states
- Planning and control of data placement, retention and disposal

Excludes

- Information management activities:
  - Data typing and classification
  - Content management
- Change management
- Access control and security protection
- Configuration management

Activities

This process is composed of these activities:

- A621 Establish Data Management Framework
- A622 Plan Data Portfolio Lifecycle
- A623 Acquire and Prepare Data
- A624 Control, Deploy and Maintain Data
- A625 Back up and Restore Data
- A626 Dispose of Data
- A627 Monitor and Report Data Management Operations
- A628 Evaluate Data Management Performance

[A63] Event Management

Mission

To identify and prioritize infrastructure, service, business and security events, and to establish the appropriate response to those events, especially responding to conditions that could lead to potential faults or service level exceptions.

An *event* is a notification of some status change within the IT infrastructure. Events can be triggered by faults affecting a system resource. Changes to the status or configuration of a resource, regardless of whether or not they are intentional, can also generate events. Events can also be used as reminders to take action manually or as simple notification that an action has occurred.

Goals

- To sustain and improve service quality
- To initiate appropriate action based on an event
- To identify significant events before a fault occurs
- To automate the handling of IT events throughout the IT environment
- To progress an event through its life cycle

Scope

Event Management is accomplished through scanning monitoring data, and from this collecting, evaluating, responding to, and reporting events throughout the business.

Not all events require a response, only those deemed *significant* events. Typically, a response to a significant event involves either a proactive, predefined response or the creation of an incident in the Incident Management process.

Includes

- Providing both real time and historical event information to other processes in the information technology organization, to facilitate service quality improvement and resource availability
- Creation of incidents from event information
- Correlation and filtering of event notification
- Examination of individual events in isolation as well as events in context with other events

Excludes

- Definition of *significant events:* This is considered a part of solution design
- Base system resource monitoring[1]

---

1. Operational monitoring is very much related to the operation of any service aspect, and event management is not the only consumer of monitoring information. The monitoring activity is thus to be found within each relevant process, such as Service Execution.

Activities

This process is composed of these activities:

- A631 Establish Event Management Framework
- A632 Monitor, Detect, and Log Event
- A633 Examine and Filter Event
- A634 Correlate, Escalate, and Process Events
- A635 Resolve Event
- A636 Close Event
- A637 Evaluate Event Management Performance

[A64] User Contact Management

Mission

To manage each user contact and interaction with the provider of IT service throughout its lifecycle. User Contact Management is the front end process for an implementation of an IT Service Desk (or equivalent).

Goals

- To promote customer satisfaction
- To attain service level targets for user contact responsiveness and quality
- To articulate and route requests accurately and appropriately to the service provider
- To ensure accurate and timely communication of status
- To close or escalate requests with user consensus

Scope

At the initial receipt of a contact item from a user, the nature of the request and information within it has to be established. Many such contact items can be dealt with by the set of activities within this process. Other contact items, once initially assessed, will be outside the remit of this process and will be passed on to other, more specific processes. This process will interact at the process framework level with the specific processes to determine for which cases this process has the capability to handle them successfully.

Examples of routings are:

- Incidents are routed to the Incident Management process.
- Service requests are routed as minor or preapproved standard RFCs to the Change Management process.
- Other inputs are routed to other appropriate processes

Wherever the contact item is dealt with, this process retains ownership of the contact item on the user's behalf and is responsible for achievement of service level targets relating to user contacts.

Includes

- ◆ Receipt and management of contacts relating to:
  - Incidents
  - Service requests
  - Information, advice, guidance
  - User satisfaction interactions
  - Complaints

Excludes

- ◆ Those interactions between the business (and other customers) and the IT service provider which consider the status, scope or coverage of the overall service provision agreements.

- ◆ Fulfilling those interactions which are dealt with by other processes. Where such fulfillment workings require direct contact between IT service provider staff performing those processes and users, then those contact activities are part of those processes.

- ◆ Granting access and entitlements (found in Security Management).

Activities

This process is composed of these activities:

- A641 Establish User Contact Management Framework
- A642 Receive and Assess User Contact
- A643 Fulfill or Route User Contact
- A644 Monitor and Communicate User Contact Status
- A645 Analyze and Report User Contacts
- A646 Evaluate User Contact Management Performance

[A65] Incident Management

Mission

To focus on the restoration of a service effected by any real or potential interruption of the quality of that service.

Goals

- To rapidly re-establish a service to normal levels of operation and quality
- To promote accepted levels of service operation by quickly eliminating disruptions and working within agreed service level targets

Scope

The management of the lifecycle of incidents (including reception, logging, acknowledgement, classification, response, tracking and reporting) for all *components* involved in the provision of IT service.

Includes

- Incidents reported by users or discovered within the IT organization
- Handling (automatically or with human assistance) of system events that have been identified as incidents by the Event Management process
- Creation and implementation of workarounds (with Change Management)

Excludes

- Service requests (covered by the User Contact Management or Change Management processes)
  - The handling of service requests is focused on responding to requests for information, advice, documentation, and common and straightforward requests for other IT services - including those selected from the Service catalog.
- IT Resilience – ensuring the continued readiness and integrity of the IT services.

Activities

This process is composed of these activities:

- A651 Establish Incident Management Framework
- A652 Detect and Record Incident
- A653 Classify Incident and Provide Initial Support
- A654 Investigate and Diagnose Incident
- A655 Resolve Incident and Recover Service
- A656 Own, Monitor, Track, and Communicate Incidents
- A657 Close Incident
- A658 Evaluate Incident Management Performance

[A66] Problem Management

Mission

To resolve problems affecting the IT service, both reactively and proactively. Problem Management finds trends in incidents, groups those incidents into *problems*, identifies the root causes of problems, and initiates requests for change (RFCs) against those problems.

Goals

- To minimize the number and adverse impact of incidents and problems
- To prevent potential incidents
- To prevent recurrence of incidents
- To contribute to the effectiveness and efficiency of managing incidents
- To improve the productivity of support staff

Scope

The process is primarily concerned with establishing the root cause of an incident and its subsequent resolution and prevention. The reactive function is to solve problems relating to one or more incidents. The proactive function is to identify and solve problems before Incidents occur.

Includes

- ◆ Root cause analysis and identification
- ◆ Resolution solution selection and definition
- ◆ Submission of Requests for Change (RFCs)
- ◆ Appropriate prioritization of resources required for resolution based on business need
- ◆ Contribution to the collective problem resolution knowledge base.

Excludes

- ◆ Identification, creation and resolution of incidents
- ◆ Actual implementation of the resolution of a problem. Problem Management initiates their resolution through Change Management and participates in the Post Implementation Review (PIR)
- ◆ Knowledge management methodology. (See the Knowledge Management process.)

Activities

This process is composed of these activities:

- A661 Establish Problem Management Framework
- A662 Control Problems
- A663 Control Known Errors
- A664 Manage Problems Proactively
- A665 Monitor and Report Problems
- A666 Evaluate Problem Management Performance

[A7] IT Resilience

Description

Purpose

The IT Resilience[1] category of processes describes the analysis and proactive planning required to enable resilient infrastructure, applications, and services. Each process covers a range of activities from handling everyday adjustments as required by service operations through anticipating the potential future demands upon its specific domain.

In order to accomplish their collective mission, all require input from a wide range of other processes, including such things as architectural information, problem and known error information, solution designs, scheduled projects and changes, as well as operational monitoring data. IT Resilience processes use this input to establish ongoing resilience capabilities, ensuring service level attainment and customer satisfaction while controlling costs.

Rationale

All of the processes in this group analyze information from a variety of sources and then generate proactive plans to minimize risks associated with the potential failure of any component or group of components used to deliver services. The processes in this group are also responsible for ensuring compliance with (internal and external) laws and regulations, internal policies and procedures, as well as maintaining defined levels of security on information and IT services.

Value

- Ensures compliance with all security and regulatory considerations and requirements, reducing both IT and business risk
- Establishes proactive plans to ensure that infrastructure and application-based services are reliable, robust, secure, consistent and facilitate the efficient and effective business processes
- Provides the means to monitor both current IT system availability as well as to project future capacity requirements, improving IT's ability to support business direction
- Establishes responsibility for operation, management and maintenance of all physical facilities necessary to deliver services to the business
- Certifies that agreed to IT Services will continue to support business requirements in the event of a catastrophic disruption to the business environment

---

1. The ability to quickly return to a previous good condition.

IBM Process Reference Model for IT (PRM-IT Version 2.0)

Processes

The A7 category is composed of these processes:

- A71 Compliance Management
- A72 Security Management
- A73 Availability Management
- A74 Capacity Management
- A75 Facility Management
- A76 IT Service Continuity Management

[A71] Compliance Management

Mission

To ensure adherence to laws and regulations, internal policies, procedures, and stakeholder commitments.

Goals

- To ensure and demonstrate regulatory compliance
- To avoid legal liabilities and related productivity losses consequential upon any compliance breach
- To protect the reputation and value of the brand of the businesses that IT serves

Scope

Integrity and compliance as an outcome across all of the IT endeavor's undertakings.

Includes

- Consideration of internal and external regulations, standards and legal obligations impacting the business where they could require IT support. For example:
  – Privacy regulations
  – Industry standards and guidelines such as Sarbanes Oxley or ISO17799
- Internal and external audit readiness preparations
- Compliance audits

Excludes

- Setting external policies, compliance requirements and regulations
- Operation of the defined compliance controls within the transactions of the IT endeavor. This responsibility becomes part of the activity of each relevant IT process

Activities

This process is composed of these activities:

- A711 Establish Compliance Management Framework
- A712 Identify Compliance Requirements
- A713 Assess Compliance Requirements
- A714 Define Compliance Controls Plan
- A715 Implement Compliance Controls
- A716 Audit Compliance
- A717 Evaluate Compliance Management Performance

[A72] Security Management

Mission

To identify security threats, vulnerabilities, and risks. To develop an overall approach to resolve them within the IT organization.

Goals

- To meet external security requirements from service level agreements, contracts, legislative dictates, and any enterprise-imposed security policies
- To enforce security requirements needed in operational level agreements and underpinning contracts
- To meet internal security requirements, as defined by the overall business
- To see that security procedures are carried out by the IT organization
- To align with the business' overall security requirements

Scope

The process covers the lifecycle of security concerns, including planning, operational measures, evaluation and audit.

Includes

- Security incidents
- Information security
- IT services
- Infrastructure (including assets)
- Confidentiality, integrity, and accuracy controls
- Compliance enforcement measures
- ISO 17799 categories, including[1]
  - Security policy
  - Personnel security
  - Asset classification and control
  - Systems development and maintenance
  - Access control
  - Organizational security
  - Communications and operations management
  - Business continuity management
  - Physical and environmental security
  - Achievement of security compliance

---

1. ISO 17799 is broader than ITIL, so the scope will be broader. For instance, physical security is specifically not covered by ITIL, but is covered by ISO 17799.

Excludes

- ◆ Health and safety
- ◆ Business security management
- ◆ Identification of privacy requirements (within the scope of Compliance Management)

Activities

This process is composed of these activities:

- A721 Establish Security Management Framework
- A722 Analyze Security Threats, Vulnerabilities and Risks
- A723 Plan Security Practices
- A724 Apply Security Protection Mechanisms
- A725 Operate Security Protection Mechanisms
- A726 Assess and Report Security
- A727 Evaluate Security Management Performance

[A73] Availability Management

Mission

To enhance the availability of services by planning long-term service availability, measuring and monitoring service availability, and formulating service availability requirements.

Goals

To plan, analyze, measure, and report on the availability of IT services and infrastructure components.

Scope

ITIL defines components of availability to be:

- Reliability
- Maintainability
- Serviceability

Includes

- Availability needs and requirements
- Identification of capabilities needed to meet requirements

Excludes

- Direct handling of service failures (incidents)
- Approval of capabilities needed to meet requirements
- Creation of capabilities needed to meet requirements

Activities

This process is composed of these activities:

- A731 Establish Availability Management Framework
- A732 Determine Availability Requirements
- A733 Formulate Availability Design Criteria
- A734 Define Availability Targets and Related Measures
- A735 Monitor, Analyze, and Report Availability
- A736 Investigate Unavailability
- A737 Produce Availability Plan
- A738 Evaluate Availability Management Performance

[A74] Capacity Management

Mission

To match the capacity of the IT services and infrastructure to the current and future identified needs of the business. Capacity Management focuses on the design and planning of service capacities rather than the operational aspects of service capacity.

Goals

- To plan, analyze, measure, and report on the availability of IT services and infrastructure components.
- To accommodate scalability requirements
- To avoid incidents caused by lack of capacity
- To reduce the cost of capacity acquisition by planning and optimizing capacity usage.

Scope

The process covers the range from understanding service requirements, component capacities, and the design and deployment of capacity to meet expectations through the collection and analysis of data relevant to infrastructure utilization and performance in order to determine whether there are potential problems and issues that need to be addressed.

ITIL defines three focus areas which are addressed by Capacity Management. Each uses the primary activities of the process decomposition in differing ways, to differing end results.

1. Business Capacity Management

   - This focus area is responsible for ensuring that the future business requirements for IT services are considered, planned, and implemented in a timely fashion. This can be achieved by using the existing data on the current resource utilization by the various services to trend, forecast or model the future requirements. These future requirements will come from business plans outlining new services, improvements and growth in existing services and development plans.

2. Service Capacity Management

   - This focus area is the management of the performance of the IT services used by the customers. It is responsible for ensuring that the performance of all services, as detailed in the targets in the SLAs and SLRs is monitored and measured, and that the collected data is recorded, analyzed, and reported. As necessary, action will be taken to ensure that the performance of the services meets the business requirements. This is performed by staff with knowledge of all the areas of technology used in the delivery of end-to-end service, and will often involve seeking advice from the specialists involved in Resource Capacity Management.

3. Resource Capacity Management

- This focus area is the management of the individual components of the IT infrastructure. It is responsible for ensuring that all components in the IT infrastructure that have finite resources are monitored and measured, and that the collected data is recorded, analyzed, and reported. As necessary, action will be taken to manage the available resources to ensure that the IT services that it supports meet the business requirements. In carrying out this work, the Capacity Management process will be assisted by individuals with specific knowledge in the particular areas of technology.

Includes

- Business capacity planning and management

- Service capacity planning and management

- Demand planning and management

- Resource capacity management (as it affects in-house service operations, with consideration of impacts to and requirements upon service partners)

- High-level service capacity monitoring

- Performance management

Excludes

- Low-level system capacity monitoring, which is performed by the Service Execution process

- Generalized human resource management

Activities

This process is composed of these activities:

- A741 Establish Capacity Management Framework
- A742 Model and Size Capacity Requirements
- A743 Monitor, Analyze, and Report Capacity Usage
- A744 Plan and Initiate Service and Resource Tuning
- A745 Manage Resource Demand
- A746 Produce and Maintain Capacity Plan
- A747 Evaluate Capacity Management Performance

[A75] Facility Management

Mission

To create and maintain a physical environment that houses IT resources and optimizes the capabilities and cost of that environment.

Goals

- To ensure availability of physical infrastructure supporting information technology
- To protect availability of IT systems from physical threats (including environmental, security, continuity)
- To enable flexible and timely response to facility requirements
- To provide the physical environment needed to support service continuity needs

Scope

Includes

- Physical facilities planning and implementation (physical planning) – space, power, HVAC, physical cables and connectors, physical security implementation, protection (such as sprinklers, halon systems, badge readers, security personnel)
- Physical logistics (receipt, staging, moving)
- Physical environment for all information and communications technology
  - For example, participating in the design of racks and cabling

Excludes

- Asset Management
- Procurement
- Business resilience and continuity
  - Corporate facilities (buildings, maintenance, caterings, mail delivery, desks, lights) unless associated with a secure data center
- Corporate security (building security)
- IT security policies and practices
- Media management (see Data and Storage Management) but would include physical transportation and security of media
- Planning, contracting, and maintenance of printers and other equipment (see Asset Management)
- Management of suppliers

Activities

This process is composed of these activities:

- A751 Establish Facility Management Framework
- A752 Plan Facilities
- A753 Manage Facility Request
- A754 Operate and Maintain Facility
- A755 Evaluate Facility Management Performance

[A76] IT Service Continuity Management

Mission

The purpose of the Service Continuity Management process is to ensure that agreed IT services continue to support business requirements in the event of a disruption to the business, based on the committed recovery schedule.

Goals

- To support the Business Continuity Management process, and form part of the organization's Business Continuity Plan.
- To ensure that predetermined service level agreements can be met through the recovery of agreed IT services and technical facilities to agreed timescales, under change management control.
- This process is required to sustain the vitality of the business, foster close working arrangements between IT and business functions, maintain a competitive advantage, and continue to meet regulatory requirements.

Scope

The process fulfils its mission through risk reduction measures, controlled recovery options, and restoration facilities.

Includes

- Service capability for prioritized, critical business processes, and their attendant support requirements. Examples include:
  - IT application services
  - Organizational procedures
  - Consideration of facilities
  - Consideration of IT Services provided by business partners
- Specification of service continuity solutions
- Definition of circumstances and thresholds for continuity invocation
- Proactive prevention of IT disruptions
- Control of continuity solution invocation in the event of disruption
- Testing of the continuity solution

Excludes

- Normal operational fluctuations
- Deliberate business strategy changes and long term risks such as business diversification or restructuring
- Identification and prioritization of critical business processes (performed in a business impact analysis by the Business Continuity Management process; outside the scope of this model)
- Development and implementation of service continuity solutions
- Contractual arrangements with third parties

Activities

This process is composed of these activities:

- A761 Establish IT Service Continuity Management Framework
- A762 Identify Business Service Continuity Requirements
- A763 Create and Maintain IT Service Continuity Strategy
- A764 Create and Maintain IT Service Continuity Plan
- A765 Prepare IT Service Continuity Capability
- A766 Execute IT Service Continuity Plan
- A767 Evaluate IT Service Continuity Management Performance

[A8] IT Administration

Description

Purpose

The IT Administration process category brings together the processes that look after many of the non-technical resources, such as people, finances, contracts, and others, that support IT service delivery. It provides the underpinning management of the IT business which builds a foundation for other processes to deliver the IT services that the parent business needs.

Rationale

The processes in this category help build and manage the necessary infrastructure for controlling IT assets (such as hardware, software, and people). These processes are a necessary part of any endeavor's management system and contain the fundamental management building blocks of any organizational entity; namely, people management, financial and administrative management, asset management, and skills management. Failure in any of these areas of management could lead to the failure of the businesses' IT entity. Without these processes, there would be no ability to accomplish the information technology mission of the business, regardless of the technology available.

Value

- Contributes to managing the business and finances of IT with an approach and discipline consistent with the business practices employed by the rest of the enterprise
- Provides accurate and up-to-date financial information to facilitate management controls
- Establishes the means to track and manage assets throughout their lifecycle, maximizing the value obtained from them
- Manages contracts and relationships with internal and external suppliers of products and services, optimizing the value and quality of service and support
- Attracts and retains a highly-skilled workforce to ensure that business needs can be met through IT
- Enables innovation through the capture and dissemination of knowledge

Processes

The A8 process category is composed of these processes:

- A81 Financial Management
- A82 Asset Management
- A83 Supplier Relationship Management
- A84 Service Pricing and Contract Administration
- A85 Workforce Management
- A86 Knowledge Management

[A81] Financial Management

To provide effective control of IT financial resources, including accounting, charging, and collecting for IT services.

Goals

- To establish and enforce IT financial controls
- To transform operational data into financial information and management actions
- To ensure compliance with legal, industry, and corporate standards and procedures
- To enable benchmarking and other financial comparisons
- To assist IT portfolio decisions on investment by providing detailed business cases and by providing financial input to decision support
- To effectively predict and control IT budgets

Scope

IT finance is focused on budgeting, accounting and (optionally) charging for IT resources

Includes

- Budgeting – capital and operational
- Accounting – including accounts receivable (AR) and accounts payable (AP)
- Charging
  - Metering, rating, and billing
- Cost models and accounting systems
- Resource types:
  - Labor
  - Products
  - Services (inbound and outbound)
- Decision Support
- Financial analysis and reporting
- Collecting financial data
- Operational data collection requirements for financial purposes
- Design and implementation of accounting systems
- Analysis and control of the impact of chargebacks (influences on user and customer behavior)
- Paying internal and external invoices and bills

Excludes

- ◆ Asset management (including lifecycle management)
- ◆ Resource usage data collection
  - – Systems and services
  - – Time recording and labor claiming
- ◆ Service, solution, and offering pricing
- ◆ Contract management
- ◆ Procurement

Activities

This process is composed of these activities:

- ■ A811 Establish Financial Management Framework
- ■ A812 Plan and Control IT budgets
- ■ A813 Perform IT Financial Accounting
- ■ A814 Administer IT Charging
- ■ A815 Evaluate Financial Management Performance

[A82] Asset Management

Mission

To identify, collect, maintain and report inventory and financial information about IT assets throughout their lifecycle.

Goals

- To maximize the value obtained from, and optimize the lifetime ownership cost of, technology assets
- To support informed IT decision making, at both strategic and tactical levels
- To reduce exposure to risks associated with IT assets, ensuring compliance with legal, industry and corporate standards and requirements related to IT assets

Scope

Includes

- License management (including software license compliance)
- Lease and maintenance administration of each asset
- Inventory management (includes physical components and specifications)
- Allocation of available assets to meet approved requests
- Triggering retirement of outdated assets procurement of new ones
- Financial lifecycle of assets (including valuation)

Excludes

- Risk management
- Contract and supplier management (including Procurement)
- Configuration management (logical relationships)
- Physical logistics (such as transportation) of assets
- Managing the security of an asset

Activities

This process is composed of these activities:

- A821 Establish Asset Management Framework
- A822 Ready and Controls Asset
- A823 Maintain Asset Information
- A824 Monitor, Audit and Reconcile Asset Records
- A825 Oversee Asset Contracts and Financials
- A826 Retire and Dispose of Asset
- A827 Report Asset Information
- A828 Evaluate Asset Management Performance

[A83] Supplier Relationship Management

Mission

To develop and exercise working relationships between IT and suppliers in order to make available the external services and products that are required to support IT's service commitment to its customers.

Goals

- Promote attitudes and behaviors that encourage mutual success
- Optimize procurement and delivery of products and services for maximum value across supplier relationships
- Ensure that both parties in the relationship fully meet their respective obligations as efficiently and effectively as possible
- To achieve optimal value for costs in maintaining supplier relationships

Scope

Involves all aspects in managing relationships with suppliers and outsourcers and in the procurement of assets and services. Addresses the complete lifecycle from strategic considerations to tactical considerations to operational considerations.

Includes

- Agreement on joint architecture and risk controls
- Negotiation and enforcement of contracts
- Supplier evaluation, selection and relationship management
- Supplier performance review, including
  - Benchmarking
  - Ts and Cs conformance.
- Procurement (placing the order)
- Internal and external suppliers.

Excludes

- Service Level Management
  - Establishing SLA, OLA, UC commitments
  - OLA and UC Service monitoring.
- Physical logistics (from Facilities Management)
  - Product and services requirements and specifications (from Solution Design, for example).

Activities

This process is composed of these activities:

- A831 Establish Supplier Relationship Management Framework
- A832 Manage Portfolio of Suppliers
- A833 Manage Supplier Contracts
- A834 Manage Procurement
- A835 Evaluate Supplier Performance
- A836 Provide Supplier Product and Service Information
- A837 Evaluate Supplier Relationship Management Performance

[A84] Service Pricing and Contract Administration

Mission

To establish a pricing mechanism for the IT entity to sell its services to internal or external customers and to administer the contracts associated with the selling of those services.

Goals

- To set prices that reflect the charging policies of the Information Technology Organization
- To align pricing in order to achieve business objectives
- To be responsive to requests for pricing
- To administer customer contracts and agreements effectively and efficiently

Scope

This process applies if the decision is made to charge for IT services. It encompasses defining a pricing method, establishing prices, managing the resulting contracts, tracking the effect of pricing on how well the service or solution is being accepted by the customer, and examining proposals and contract continuation.

Includes

- Defining the charging pricing algorithm
- Providing standard prices for IT services
- Providing pricing alternatives (such as fixed, time and materials, flexible terms and conditions)
- Monitoring impact on user and customer behavior and making appropriate adjustments

Excludes

- Billing
- Initiating pricing negotiations

Activities

This process is composed of these activities:

- A841 Establish Service Pricing and Contract Administration Framework
- A842 Collect Pricing Data
- A843 Provide Price Alternatives
- A844 Administer Customer Contract or Agreement
- A845 Monitor Pricing Effects
- A846 Evaluate Service Pricing and Contract Administration Performance

[A85] Workforce Management

Mission

To provide the optimal mix of staffing (resources and skills) that is needed to provide the agreed IT services at the agreed service levels.

Goals

- Attract and retain the best workforce
- Ensure that staffing and skills meet needs of the business, including required technical and business skills
- Ensure compliance with all legal and regulatory requirements, and corporate practices
- Minimize HR expense while maintaining service levels and investment priorities
- Enable a succession strategy for leadership and critical skills
- Provide workforce management information to support informed decision making on sourcing strategy

Scope

- Workload
- Skills
- HR

Includes

- Acquiring, hiring, retaining, developing, firing, retiring
- Introducing and acclimating new resources to the workplace
- Skills management
- Workforce management, including capacity planning and forecasts
- Work and job design
- Skills development and training
- Performance evaluation
- Employee communications
- Workforce task management

Excludes

- ◆ The execution of corporate HR activities

- ◆ Setting overall budgets for workforce

- ◆ Payroll and benefits administration

- ◆ HR systems (part of Portfolio Management and Solution Development and Deployment, in support of the business' HR processes)

- ◆ Managing the workforce of service providers

- ◆ Setting sourcing strategy

Activities

This process is composed of these activities:

- A851 Establish Workforce Management Framework
- A852 Forecast and Plan Workforce
- A853 Administer Human Resources
- A854 Manage Skills
- A855 Evaluate Workforce Management Performance

[A86] Knowledge Management

Mission

To promote and enable the sharing of knowledge across organizational and functional boundaries.

Goals

- To promote and enable innovation
- To improve organizational and individual knowledge and skills
- To assist all areas of IT in providing optimized IT end-to-end business services
- To leverage technologies for capture, location and dissemination of knowledge and expertise
- To enable communities of practice to optimize the use of organizational knowledge

Scope

Includes

- Management of IT knowledge and directly related business knowledge, including:
    - The full range of knowledge from technical to services
    - Knowledge gained from external sources as well as from internal activities
    - Interfaces to support any other IT process such as Incident Management and Business Value Management
    - Lifecycle management of knowledge, from development through retirement
    - Content management for IT Web-based data
- Linkage to business-side Knowledge Management (if a program exists)
- Coordination with skills building and learning activities
- Knowledge linkage with service providers and suppliers
- Knowledge linkage with customers
- Intellectual property management

Excludes

- Understanding and acting on the knowledge (outcome management is the responsibility of all other IT processes)
- General Knowledge Management for the business
- Content management for business Web-based data (responsibility of the business)

Activities

This process is composed of these activities:

- A861 Establish Knowledge Management Framework
- A862 Create and Maintain Knowledge Plan
- A863 Acquire Knowledge
- A864 Evaluate and Structure Knowledge
- A865 Disseminate Knowledge
- A866 Evaluate Knowledge Management Performance

IBM Process Reference Model for IT (PRM-IT Version 2.0) ©Copyright IBM Corp. 2007