

PRM-IT V3 Reference Library - General Information Manual

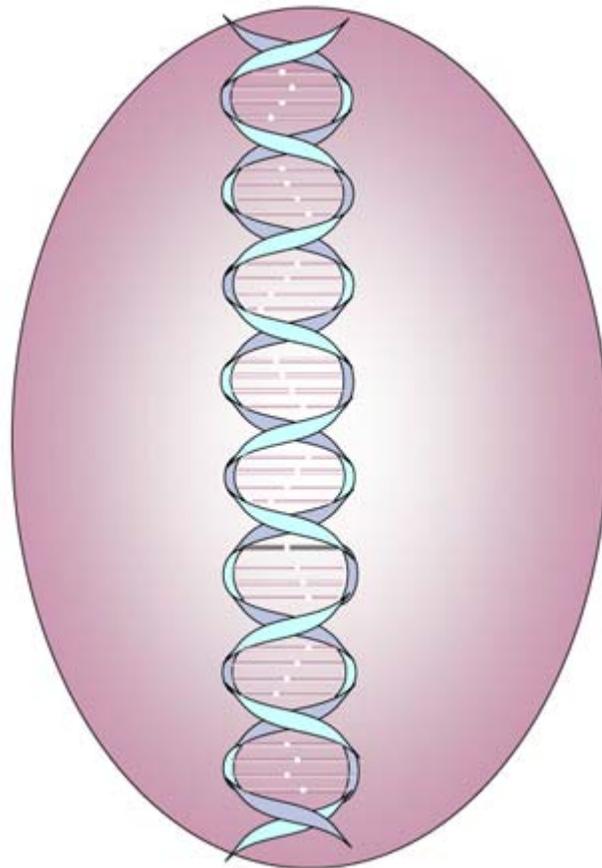
PRM-IT Version 3.0

April, 2008



PRM - IT **IBM Process Reference Model for IT**

Sequencing the DNA of IT Management



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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. 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

As a reference manual, this book provides a detailed examination of the process categories that comprise the full model. It is not intended to be read in a sequential fashion.

Each reference manual begins with a summarization of the category, and then further considers each process in turn and the activities within each process.

Details are provided for:

- The definition of each activity
- Each control, input and output
- The sources and destinations of each control, input, and output (thereby showing the model linkages)

The full IDEF0 diagram for each category and each process is included.

The final page is a breakdown of the PRM-IT node tree for this category.

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 or IT executive level), and who consider the direction and overall management of IT. Or, individuals who work 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

PRM-IT is a powerful management tool for purposes of 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.

IBM IT consultants, architects, and specialists in global services who, working from this common base, are equipped with a full range of methods, techniques, and tools to assist its customers achieve their 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).

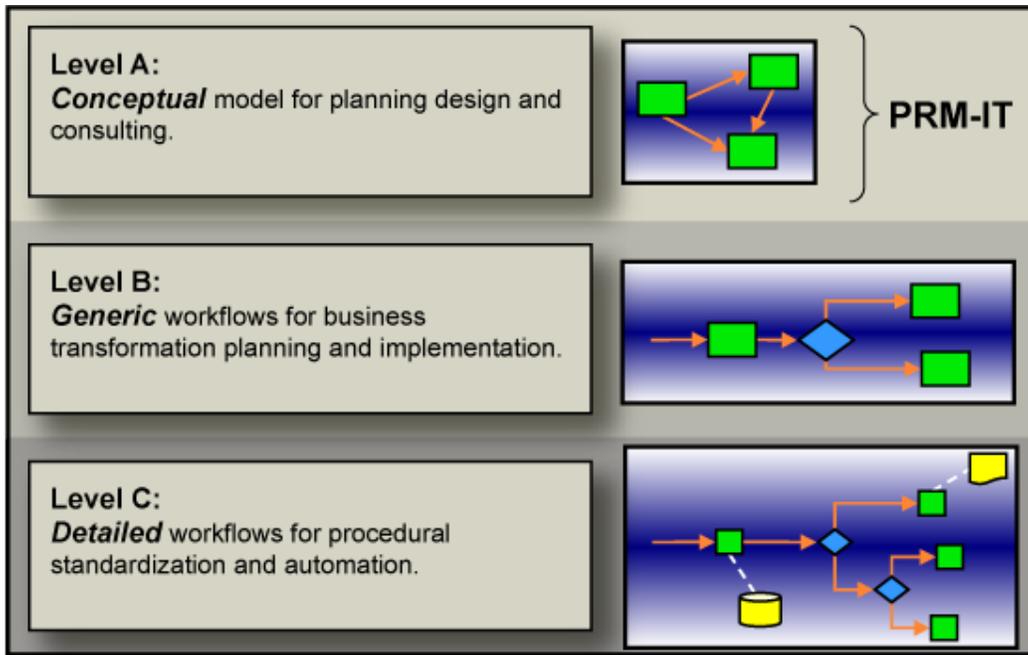


Figure 1. Unified Process Framework for IT (UPF-IT)

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 IDEF \emptyset 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 IDEF \emptyset modeling. The library includes a model glossary, containing a definition of each activity and relationship item to the process definitions described.

1. FIPS 183: Integration Definition for Function Modeling, December 1993.

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 2006² 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:³

- 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. 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.

2. The IBM Global CEO Study 2006. Survey 05 765 CEOs. See http://www-935.ibm.com/services/us/gbs/bus/html/bcs_ceostudy2006.html?re=bcstrategychange

3. "CEOs are expanding the innovation horizon: important implications for CIOs." CIO perspectives from the IBM Global CEO Study. See <http://www-935.ibm.com/services/us/imc/html/cio-implications.html?ca=WMYS&re=GTSHub#-2>

CEOs identified **Inflexible physical and IT infrastructure** and **Insufficient access [to information]** as two of the top ten obstacles to innovation.

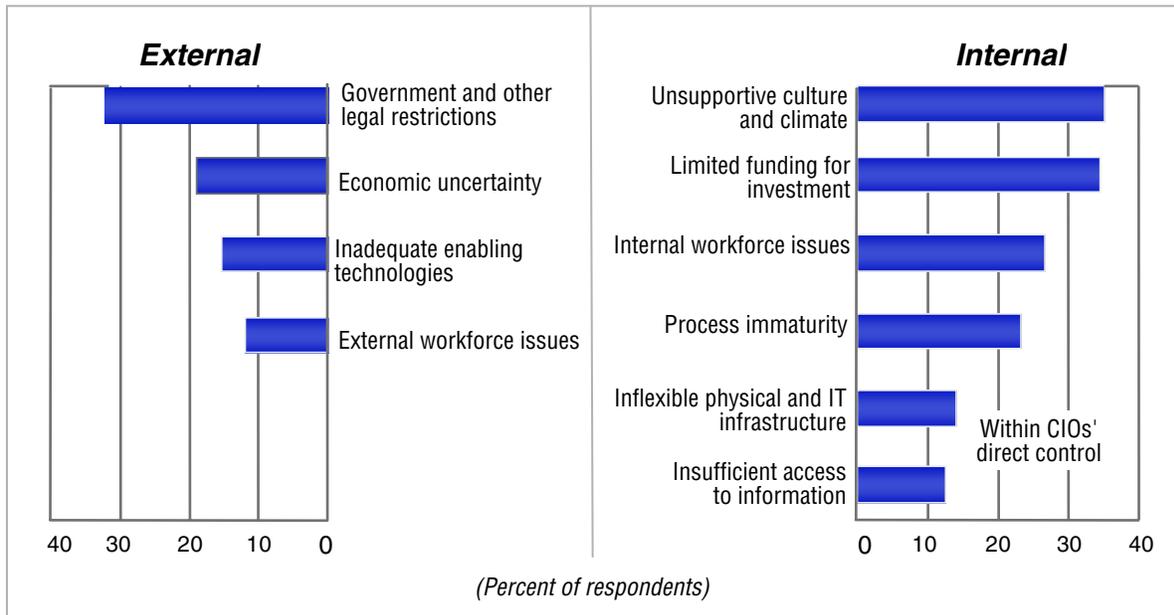


Figure 2. Top ten inhibitors to innovation

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 (ITIL) 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. ITIL V2, developed largely in the late 1990s, gained worldwide prominence for its treatment of service management and influenced the establishment of the ISO/IEC 20000 standards.

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 ITIL library emphasizes the central importance of meeting business requirements economically.

In May 2007, ITIL V3 was released at the culmination of a several year project involving global consultation (on requirements and strategy for the revision) and contribution to the ultimate content. Now known just as 'ITIL,' rather than the original words behind the acronym, V3 has used the organizing concept of the *Service Lifecycle* to strengthen the description of the contribution that service management can and should make to delivering value from IT services.

The increased emphasis that this gives to understanding the implications of managing services as early as possible, and preferably as a key strategic criterion, is perhaps the major added value of V3. Nevertheless, IT organizations will need to look beyond ITIL to understand the full set of IT management process disciplines that are central to delivering on the growth agenda. There are considerations beyond service management that must be tackled in parallel. These considerations include identification of optimal IT contributions to business processes, establishing and managing architectures, application development and maintenance, and infrastructure development and maintenance.

In the PRM-IT model, IBM has supplemented the content of ITIL V3 based on its extensive IT Management experience across the full range of IT considerations—experience 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.

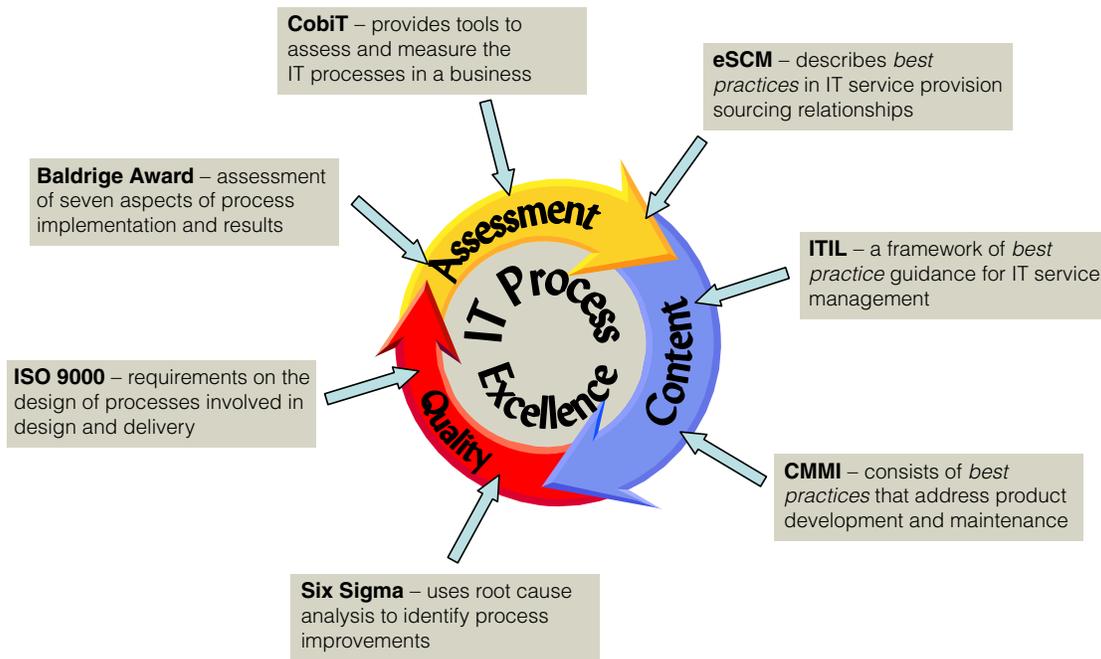


Figure 3. Frameworks for IT process excellence

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.

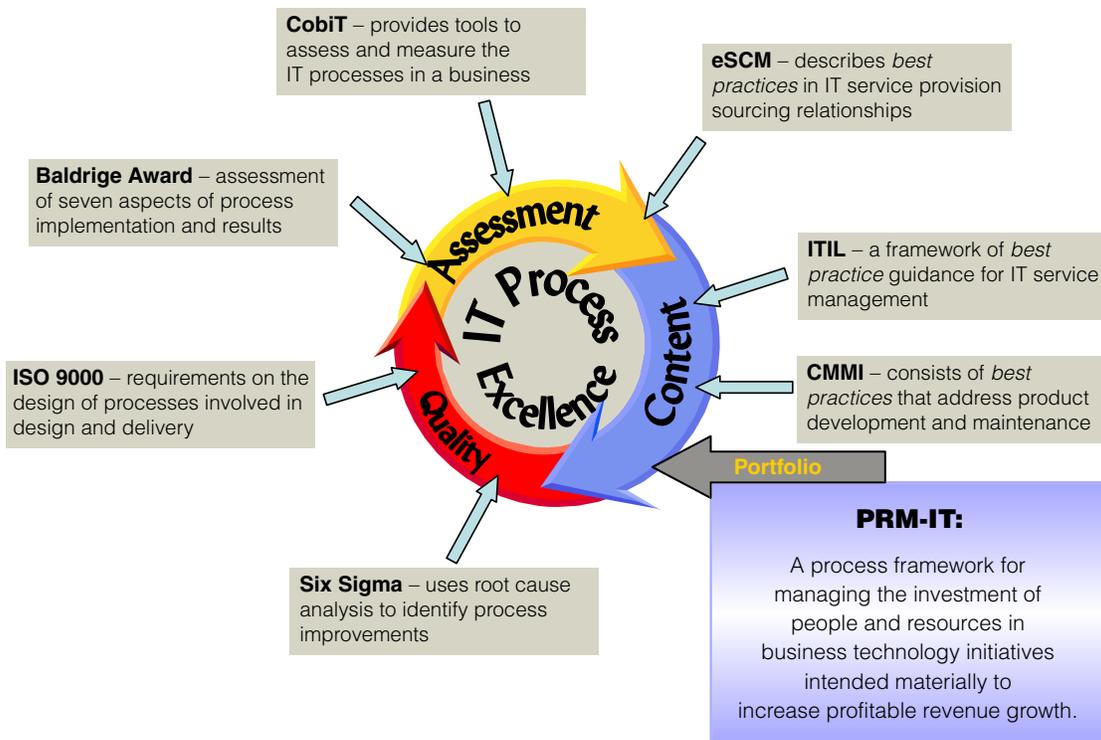


Figure 4. Adding PRM-IT to the process frameworks

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.)

- There is no preferred place to start

Or, put another way, there is no prescribed sequence to work on process design or improvement. Using the Pareto principle or a similar approach will help identify the processes most in need of improvement or that will have the biggest impact on supporting IT's mission.

The model helps in two ways: first, it provides a concise summary of each selected process and, second, for those selected processes, it identifies the significant related processes and points of interaction.

Alignment with ITIL

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

Explicit process treatments in ITIL V3 are the basis for the equivalent PRM-IT process

The majority of topics identified in ITIL V3 as a process provide an explicit treatment of the process. In these cases, key definitions available in the ITIL Glossary⁴ have been used within the PRM-IT overall process definition. Further, the activities listed in ITIL have been used for the PRM-IT activities (within the limitations of engineering them within the IDEF0 notation).

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.⁵

PRM-IT provides a formal treatment of the more conceptual process descriptions in ITIL V3

The strength of the treatment of a number of process topics in ITIL V3 comes from its introduction of key concepts relating to those processes, and how they contribute to the overall service life cycle. The process content in these cases is less explicit. For these, PRM-IT provides rigorous process decomposition and modeling that extends and supplements the ITIL treatment, in a manner consistent with its principles and precepts.

ITIL processes are presented in a single integrated model, resolving interfaces between them and with other IT processes

The ITIL best practices, including V3, were not developed from a formal process perspective. For V2, they were developed by largely independent teams, without a formal architecture. This was

4. The ITIL V3 Glossary can be downloaded from the OGC Best Management Practice Web site at <http://www.best-management-practice.com/officialsite.asp?FO=1230366&action=confirmation&tdi=575004>

5. IBM's Component Business Model for the Business of IT provides an organizational context for IT undertakings as a basis for determining opportunities for investment and improvement.

stated as a factor in the inconsistencies which were logged as part of the requirements gathering phase of ITIL V3.

In spite of this, the industry guidance to the ITIL V3 developers did not place a high priority on building the V3 books from this kind of foundation, and so a formal ITIL model still does not exist. PRM-IT provides such a model, covering service management as part of its examination of the full scope of IT.

In consequence, PRM-IT provides resolutions for any inconsistencies in inputs and outputs between ITIL processes and, in some cases, fill gaps.

(The outcome of following these alignment design principles is summarized in “Mapping PRM-IT processes to ITIL” on page 16.)

Alignment with other reference frameworks

PRM-IT is designed to be complementary to several other bodies of knowledge, which have significant contribution to IT management

CMMI

Capability Maturity Model® Integration (CMMI) is a process improvement approach for system engineering and software engineering. It originates from the Software Engineering Institute of the Carnegie Mellon University.⁶

This body of work incorporates several models and provides guidance and assessment on processes from several perspectives. For PRM-IT, the design point was to ensure that each of the *process areas* identified (as required) to achieve Level 3 maturity could be found in PRM-IT.

For reference, these are:

Table 1:

Level	Focus	Process Areas
2 (Managed)	Basic Project Management	<ul style="list-style-type: none"> – Requirements Management (REQM) – Project Planning (PP) – Project Monitoring & Control (PMC) – Supplier Agreement Management (SAM) – Measurement & Analysis (MA) – Process & Product Quality Assurance (PPQA) – Configuration Management
3 (Defined)	Process Standardization	<ul style="list-style-type: none"> – Requirements Development (RD) – Technical Solution (TS) – Product Integration (PI) – Verification (VER) – Validation (VAL) – Organizational Process Focus (OPF) – Organizational Process Definition (OPD) – Organizational Training (OT) – Integrated Project Management (IPM) – Risk Management (RSKM) – Decision Analysis & Resolution (DAR)

Because maturity levels are cumulative, achievement of Level 3 maturity requires Level 2 attainment also. Level 1 is the start point, and so has not requirements.

6. See <http://www.sei.cmu.edu/cmmi/general/index.html> for more information on CMMI.

COBIT

COBIT[®], published by the IT Governance Institute (ITGI) and promoted through the ISACA (previously known as the Information Systems Audit and Control Association), is a reference body of knowledge that aims to bridge across control requirements, technical issues, and business risks.⁷ It supports the increasing requirements for businesses to comply with regulations and to manage risks, and thereby contributes to IT governance.

COBIT presents a detailed set of *control objectives* used to test the degree of governance embedded into IT activities. The control objectives are organized into 34 processes, across four domains:

- Plan and Organise (PO)
- Acquire and Implement (AI)
- Deliver and Support (DS)
- Monitor and Evaluate (ME)

It has a comprehensive assessment and maturity scheme as the basis for evaluation. Each control objective maps to one or more PRM-IT processes, with the result that these frameworks are complementary.

eSourcing Capability Model

The eSourcing Capability Models, one for service providers and one for client organizations, were developed by a consortium led by Carnegie Mellon University's Information Technology Services Qualification Center (ITSqc).⁸

The eSourcing Capability Model for Service Providers (eSCM-SP) was developed specifically to provide a set of best practices and quality standards for service providers. It is composed of 84 practices associated with successful sourcing relationships. Each practice in the eSCM-SP is distributed along three dimensions: Sourcing Life-cycle (Phases), Capability Areas, and Capability Levels as shown in Table 1.

Table 1. Distribution of eSCM Practices by Sourcing Life-cycle Phase, Capability Area, and Capability Level.

Phase	Capability Area	Level			Totals
		2	3	4	
51 Ongoing	Knowledge Management	3	4	1	8
	People Management	3	7	1	11
	Performance Management	3	3	5	11
	Relationship Management	3	4	1	8
	Technology Management	4	1	1	6
	Threat Management	6	1	0	7
21 Initiation	Contracting	9	2	0	11
	Service Design and Deployment	6	2	0	8
	Service Transfer (in)	2	0	0	2
8 Delivery	Service Delivery	7	1	0	8
4 Completion	Service Transfer (out)	2	1	1	4
Totals		48	26	10	84

Within each practice is a set of activities that should be documented and performed to ensure the practice objectives are met. The model organization reduces the risk of sourcing failure and

7. See <http://www.isaca.org/template.cfm?Section=COBIT6>

8. See <http://itsqc.cmu.edu/>

encourages continual improvement. The model also provides a capability determination method for systematically assessing and improving an organization's capabilities.

The eSCM model's structure complements existing quality models such as ISO-9000, BS 15000, ISO 17799, the CMMs[®], COBIT[®] and COPC-2000[®], so they can be implemented in parallel with these other frameworks.

Additionally, the eSCM practice activities can all be found within PRM-IT V3.

Component Business Model for the Business of IT

IBM has used the Component Business Modelling approach to create a model that describes the full scope of the IT *business* in a single perspective. In other words, aspects of process, organization, resourcing, and business contribution are treated in combination rather than individually. The result is a model, CBM-BoIT, ideally suited to strategic decision making on IT investment. CBM-BoIT uses the PRM-IT set of activities (one level of decomposition beyond the processes introduced in this book) to describe the work performed in each component and thereby ensures consistency between these alternative yet complementary perspectives.

The proceeding is a brief introduction to this approach:⁹

Introduction

Component Business Modelling (CBM) is a technique for modelling an enterprise as non-overlapping components in order to identify opportunities for innovation and improvement. The modelling is of the business itself, not of applications or technology. CBM is complementary to process modelling techniques. A business process can be interpreted in CBM as a collaboration among a network of business components. Conversely, from a process perspective, a business component is a closely related group of sub-processes (activities).

CBM models a business as a set of business components. A business component is a part of an enterprise that has the potential to operate independently, in the extreme case as a separate company, or as part of another company. A business component is a logical view of part of an enterprise that includes the resources, people, technology and know-how necessary to deliver some value. The key characteristic of a business component is that a user of its services does not have to be aware of how the component works.

A business component map is a tabular view of the business components in the scope of interest. The columns of the table represent business competencies and the rows represent accountability levels. The business components are rectangles within the table. Normally each rectangle is within only one cell of the table. A business competency is a large business area with characteristic skills and capabilities, for example, product development or supply chain. An accountability level characterises the scope and intent of activity and decision making. The three levels used in CBM are directing, controlling and executing.

CBM-BoIT

The CBM-BoIT business component map was created from the perspective of the role within an enterprise having overall responsibility for the investment and use of information technology. Typically, this role is referred to as Chief Information Officer (CIO) or Chief Technology Officer (CTO). This perspective is important in that it establishes the scope of components and activities defined within the map. The map was designed to be *stand alone*, meaning that it could be applied to a company whose sole business was IT services. When applied within a different context, there may be extraneous or duplicate components which can be eliminated.

The map is technologically agnostic, meaning that it does not assume any specific type of hardware or software. Rather, it takes the perspective that the IT function can be defined in a similar manner to any other component of the enterprise, and should be managed using the same

9. Further information on CBM-BoIT is available at <http://www-935.ibm.com/services/us/imc/pdf/q510-6163-component-business-models.pdf>

business disciplines. Definitions of specific architectures or technologies must be done within context, and will affect a number of components accordingly.

International Standard for Process Description

The IBM Process Reference Model for IT has been designed to align with the International Standard for Process Reference Models. The ISO IEC 24774 standard¹⁰ is a technical report describing guidelines for process descriptions in the context of life cycle management and software and systems engineering. This technical report is designed to encourage consistency in standard process reference models. It describes the need for process reference models to include Title, Purpose, Outcomes, and Activities to provide an objective list of assessable items.

- **Title:** The title of a process is a short noun phrase intended to summarize the scope of the process, identify the principal concern of the process, and distinguish it from other processes within the scope of a process model.
- **Purpose:** The purpose should succinctly capture in a single sentence the goal or objective of performing the process. It should describe some tangible benefit to the stakeholders.
- **Outcomes:** The outcomes express multiple observable results expected from successfully carrying out the process
- **Activities:** Rather than describing the results of executing a process, activities describe a set of actions that might be undertaken to execute the process.

Generally, purpose statements are similar from model to model. Here is an example of a purpose statement. "The purpose of the Incident Management process is to respond to incidents in order to restore agreed services within agreed service level limits."

Outcomes do vary from model to model. One view of outcomes, that has been taken by some international standards work, is to take each activity and identify what the evidence is when the activity has occurred. Here is an example of written outcomes using this approach:

Outcomes: As a result of the successful implementation of the Incident Management process:

- An Incident Management strategy is developed
- Incidents are recorded, identified, and classified
- Incidents are analyzed and assessed to identify acceptable solutions

Here is another example with differing outcomes:

- IT service interruptions are restored to users within agreed service levels
- IT service availability is sustained at agreed service levels
- Workarounds to resolve similar service interruptions are created
- Potential improvements to services are identified

These examples demonstrate a difference in approach to the definition of outcomes. In the first example, the outcomes listed would provide evidence that the activities are being carried out. In the second example, the outcomes are focused on the business reason for carrying out the activities in the first place. Because the IBM Process Reference Model is focused on the business of IT, it is written in the second style, giving preference to the outcomes that describe business reasons for carrying out the process.

10. See ISO/IEC TR 24774:2007 at http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=41544

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).

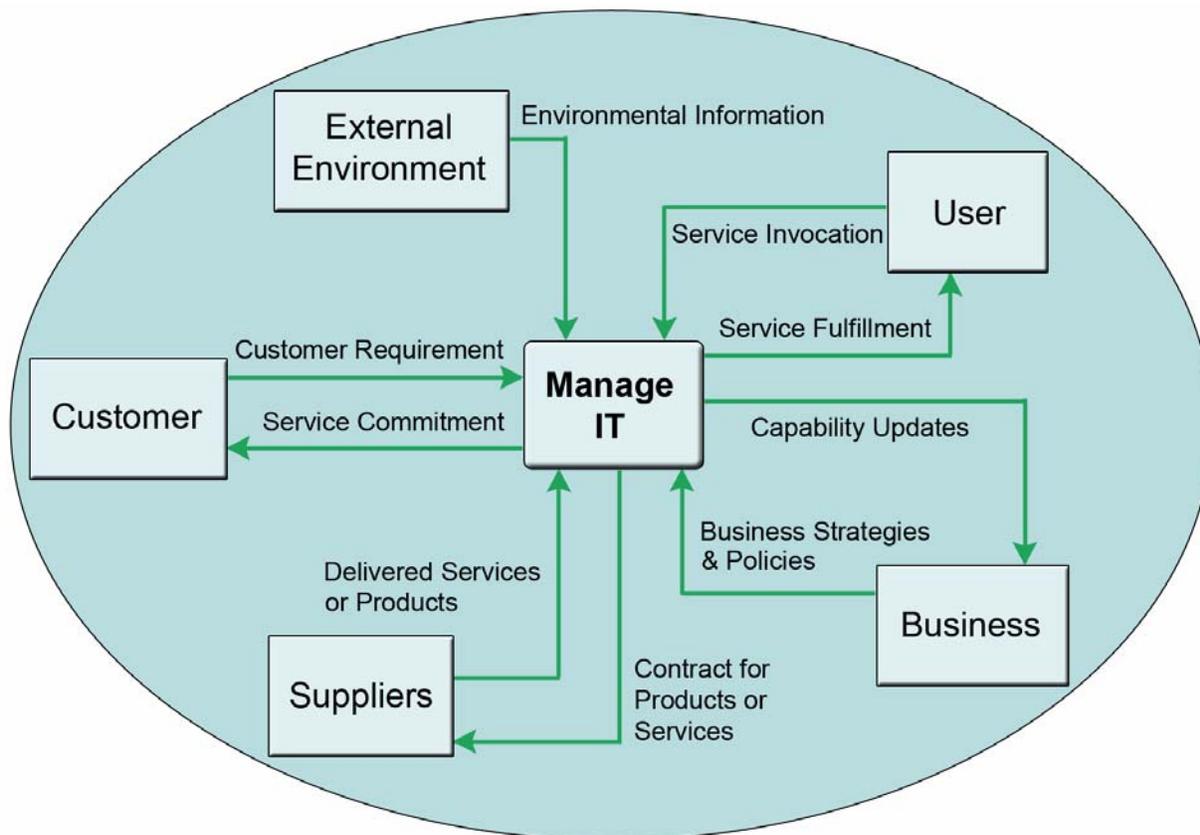


Figure 5. Comprehensive and effective activity sets in PRM-IT

Drilling into the model: The process categories

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

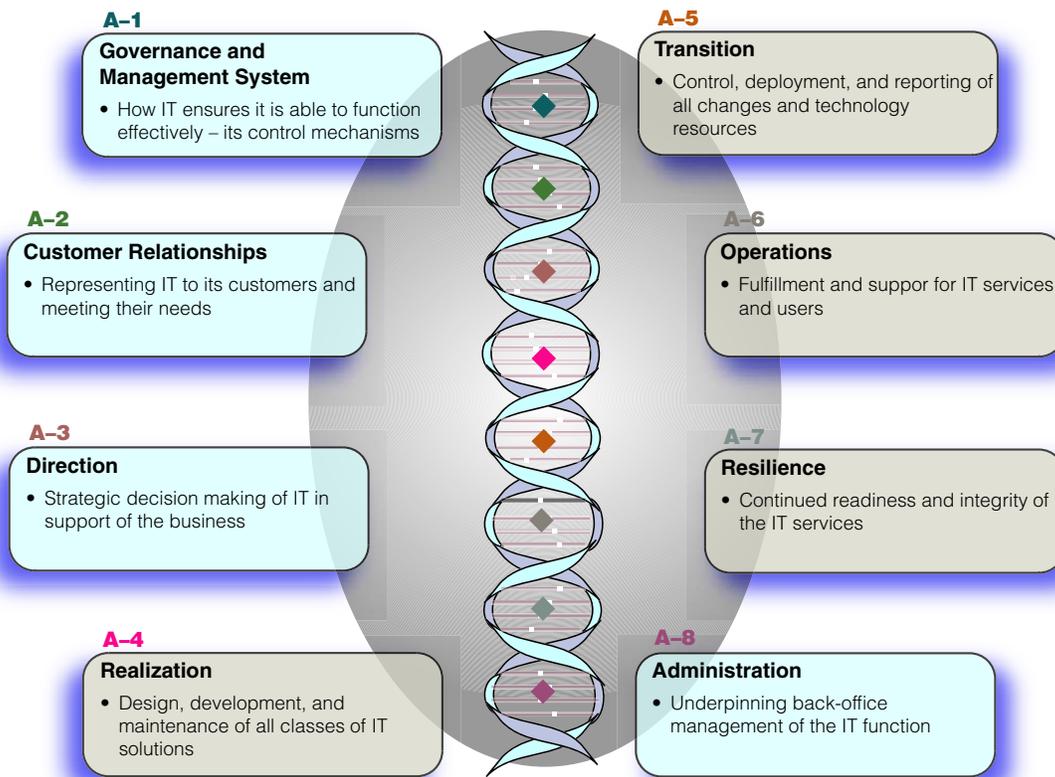


Figure 6. PRM-IT process categories

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 assumes a create, deploy, operate, and maintain approach. Thus producing this sequence:
 - a. Realization
 - b. Transition
 - c. Operations
 - d. Resilience
3. The shaded categories contain the supporting processes which 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 Customer Relationships and Direction, and those that describe the underpinning setup and ongoing maintenance of the IT functional capability: Governance and Management System, and Administration.

The processes for the business of IT

PRM-IT contains a total of 46 processes across the eight categories.

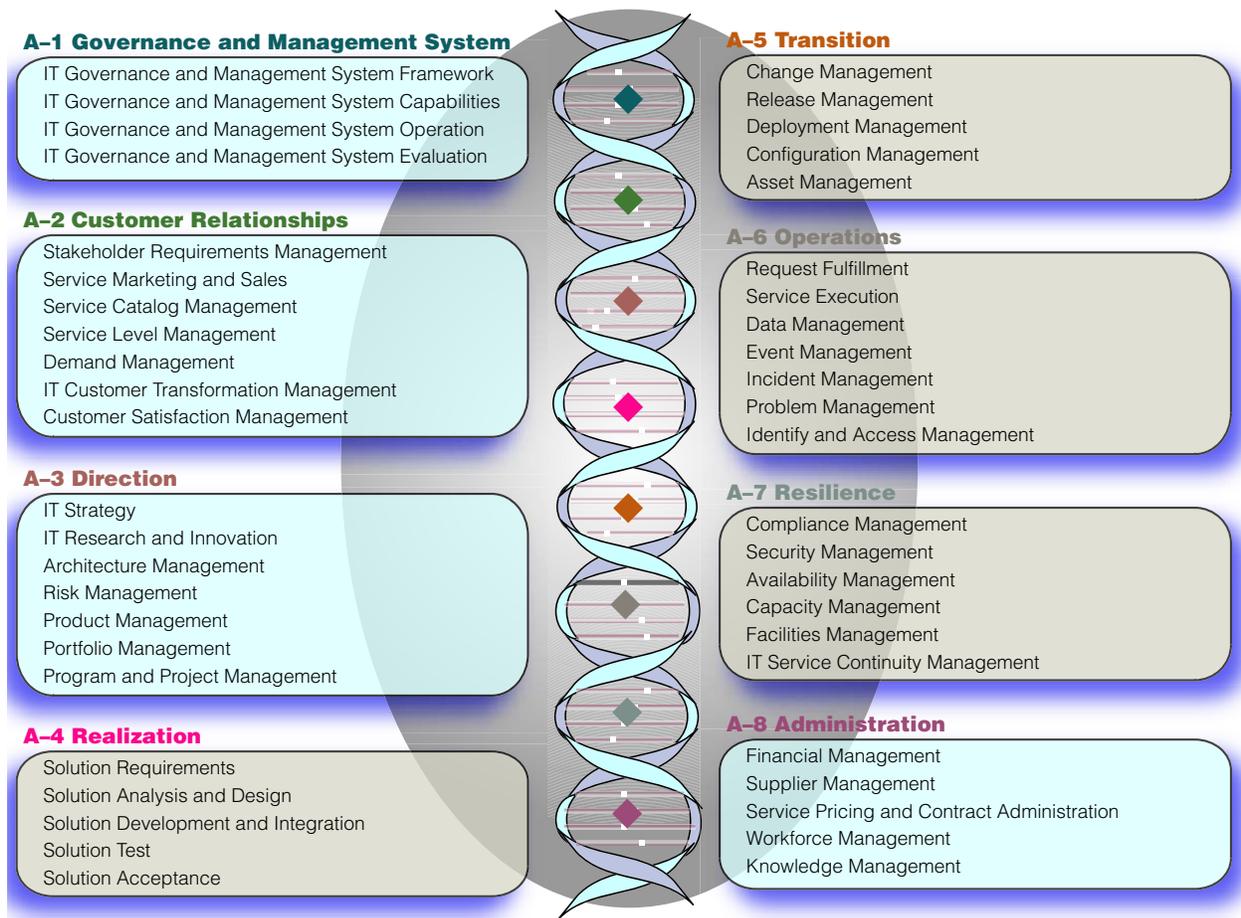


Figure 7. PRM-IT processes

PRM-IT Version 3 has a complete further level of decomposition of these processes, into 309 activities. The interactions between all the categories, processes, and activities are modeled in over 700 inputs, outputs, controls, and nearly four thousand individual links.

Every process is described in “Model Categories and Processes in IDEF0” on page 19. 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 shows how the ITIL alignment (described earlier) is achieved. Details are further provided.

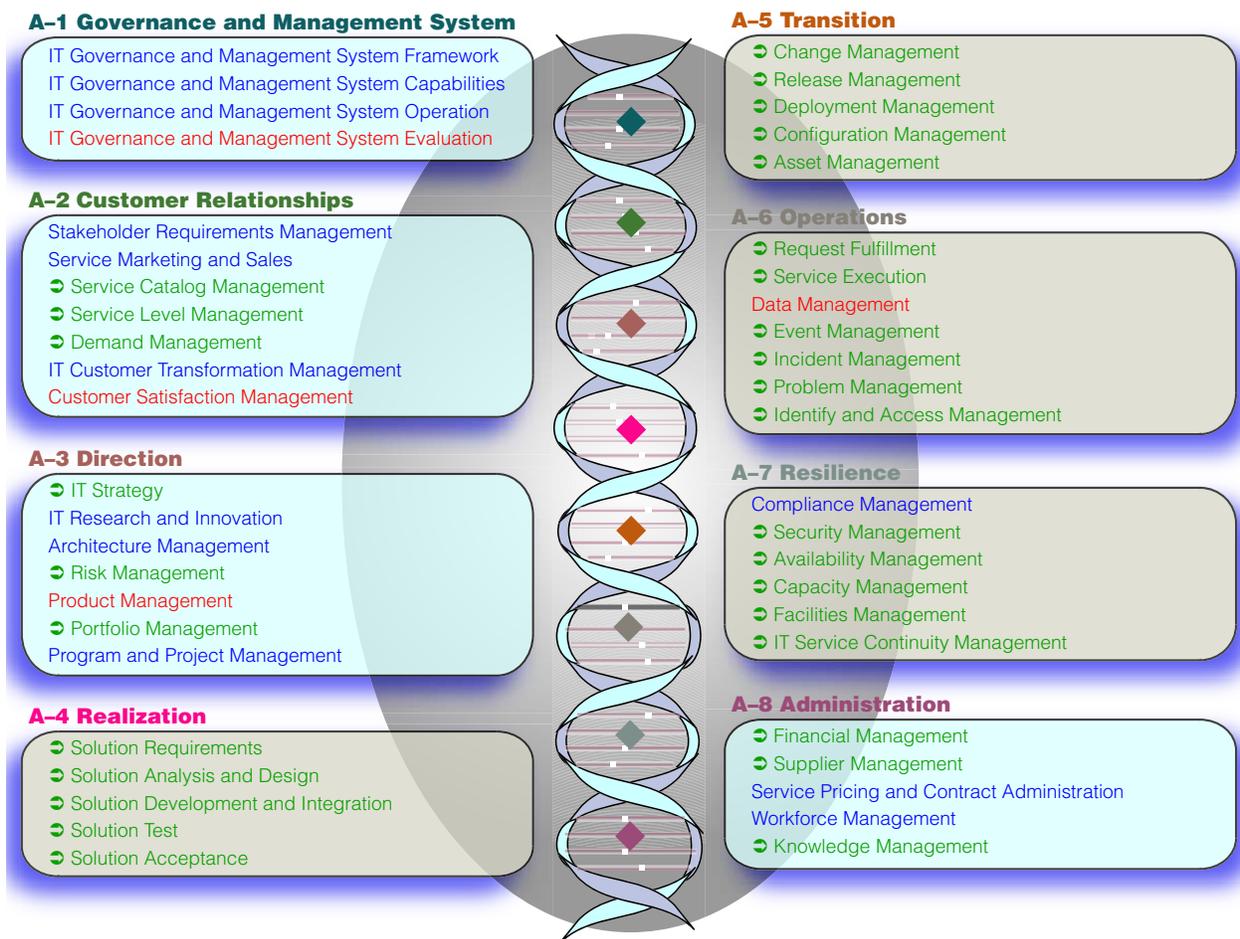


Figure 8. Key ITIL links

Directly aligned processes

Twenty nine processes are shown in green text and preceded by the ➤ symbol. For these processes, there is an identical or nearly identical named process in ITIL.

As an example of variation, consider Identity and Access Management. The ITIL process is called Access Management. In our judgment, the concept of identity is a foundation of Access Management. The ITIL chapter makes significant reference to identity. In the absence of its being explicitly considered elsewhere in ITIL V3, these two items have been modeled here in a single process.

Processes with implicit ITIL content

PRM-IT processes shown in red are implicitly represented as processes in ITIL books. ITIL covers concepts and practices relevant to the purpose and scope as defined in PRM-IT. For instance, Appendix B.2 “Product Managers” in the *ITIL Service Strategy* book, relates directly with PRM-IT as the Product Management process.

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:

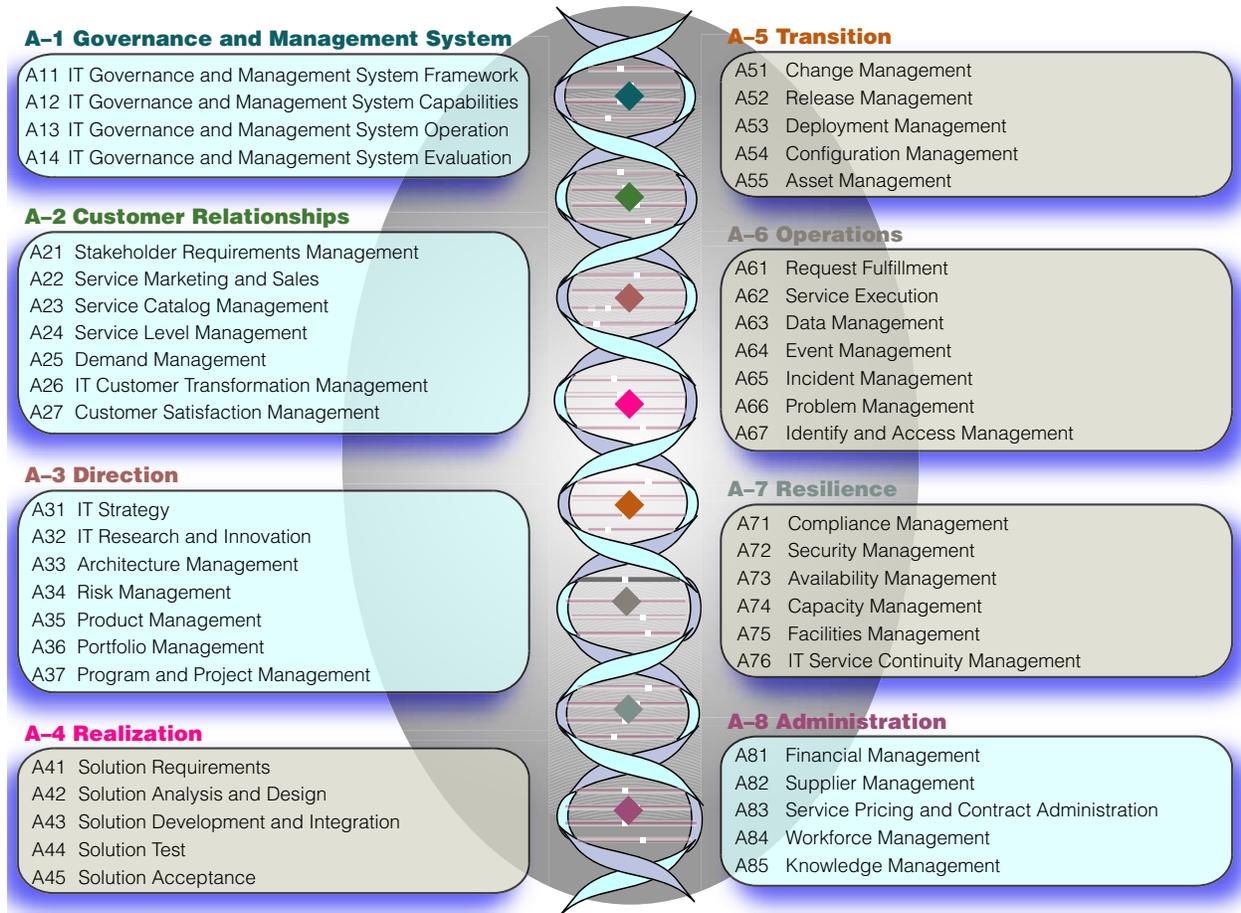


Figure 9. PRM-IT categories and processes in IDEFØ structure

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

This chapter 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] Manage 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.

PRM-IT is independent of organizational design and makes no assumptions about the chain, network or mesh of IT business entities — or the nature of their inter-relationships (such as contractual, partnership, joint venture) — by which the IT service is provided to the primary businesses. Each of these IT business entities will need to understand both the activities they undertake to contribute to IT service provision and (perhaps increasingly) the interfaces they have with related parties.

Viewpoint of the Model

The focal point for all IT activities, and the executive accountable for IT value, is the CIO. In some IT undertakings, these accountabilities are assigned to an executive body that has CIO-role responsibilities. Accordingly, PRM-IT considers the work done within IT from the CIO or CIO-role perspective.

It is only from this vantage point that all aspects of IT for the IT business entity within scope are visible. Elsewhere within that IT business entity, 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 undertaking 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 undertaking. 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. In particular, the Customer can themselves be another IT service provider, perhaps in the role of a prime contractor to the ultimate customers or of a service integrator in a multi-sourcing arrangement.

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 undertaking uses are subject to many other influences and constraints beyond the external agents thus far mentioned. Collectively, the term *External Environment* is used to convey these influences and constraints.

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, such as published *best practice* and bodies of knowledge

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

Model Composition

This model is composed of these process categories:

- A1 Governance and Management System
- A2 Customer Relationships
- A3 Direction
- A4 Realization
- A5 Transition
- A6 Operations
- A7 Resilience
- A8 Administration

[A1] Governance and Management System

Description

Purpose

The Governance and Management System process category defines a structure of relationships and processes to direct and control the IT undertaking. These processes must establish the capability to achieve the information technology (IT) goals. The governance and management system must add value by balancing *risk versus return* across IT and all processes.

The category defines, establishes, operates, and improves upon a management framework for conducting IT activities. The *management framework* outlines, 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 will be executed to make possible better decision making by executives on whether the business model is succeeding or should be modified to achieve the objectives better.

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 creating the governing or guiding principles. This includes:

- Who makes directing, controlling, and executing decisions, and defines the ultimate authority (final arbiter)
- How the decisions will be made, and the procedures for escalation and arbitration
- What information will be required to make the decisions
- The frequency of decision making must be executed or revisited
- The required decision making mechanisms
- How exceptions will be handled
- How decisions will be communicated to the concerned parties
- How the results of the implemented governance should be reviewed and improved

Rationale

The Governance and Management System process category ensures that a framework is in place to integrate processes, technologies, people, and data in a manner consistent with the IT goals. This category 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 regarding the overall framework and whether it will be 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 enables IT
- Optimizes strategic, tactical, and operational effectiveness of IT
- Ensures continuous improvement

Processes

This process category is composed of these processes:

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

[A11] IT Governance and Management System Framework

Purpose

The purpose of the IT Governance and Management System Framework process is to lay the foundation for building the governance and management of an IT organization or undertaking, taking into account such factors as vision, values, goals, and overall business objectives. Further, it establishes guiding principles (or 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. 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, that will manage their progress and health.

Outcomes

As a result of the successful implementation of this process:

- Clear, unambiguous objectives and roadmaps for the overall IT Governance and Management System are set
- Overall IT governance meets the objectives provided by the owning business
- The IT management system aligns with the overall business management system
- Management system directions are transformed into a functional, workable, and implementable management system

Scope

The framework for IT will be established within an overall governance and management framework set by the business. It adds IT-relevant characteristics to relevant aspects of the business framework and any items unique to IT undertakings.

Scope

The framework for IT will be established within an overall governance and management framework set by the business. It adds IT-relevant characteristics to relevant aspects of the business framework and any items unique to IT undertakings.

Includes

- ◆ Specifying:
 - Management models
 - Guiding principles
 - Policies and standards
 - Measurement and control approaches, such as CIO dashboard, balanced scorecard
 - Quality management approaches
 - Defining critical success factors

- ◆ Generating a list of decision areas and issues, and selecting decision options based on guiding principles, values, and assumptions
- ◆ Responding to any identified gaps between the current baseline and the desired framework
- ◆ Communicating direction

Excludes

- ◆ Identifying gaps between the current governance and management baseline and the desired framework (IT Governance and Management System Evaluation)
- ◆ Priorities and decisions on the business results of IT (Portfolio Management)
- ◆ IT strategy for the business (IT Strategy)

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

Purpose

The purpose of the IT Governance and Management System Capabilities process is to define, establish, and deploy an ecosystem for governing and managing an IT organization (or undertaking) in order that IT undertakings proceed within the philosophies and controls set by the parent business. It recognizes that this is not a one-off undertaking, but will be exercised at any time to create capability adjustments both small and large-scale.

Outcomes

As a result of the successful implementation of this process:

- The desired scope for governance is established over a defined set of key decisions, with clear assignment of decision rights and accountability to appropriate organization units and roles.
- A management system that is consistent with the direction of information technology and with the enterprise as a whole, and is in control of all IT activities.
- The management system is both effective and efficient, ensuring the integrated and coordinated workings of IT.
- A set of coherent, integrated capabilities that enable and empower IT activities is established

Scope

This process uses a simple model of a management system to illustrate the activities, and their key inputs and outputs, which will start with the directional frameworks and build a functioning management ecosystem. Many other models of a management system exist; the one used here can be summarized as follows:

- Governance aspects dictate the overall shape of the capabilities
- There are four main components in a management system: process, organization, (management) information, tools
- A management system is made effective by equipping it with measurement and control capabilities, built from aspects of all the components listed in item two

Includes

- ◆ Defining information technology management system requirements and key indicators
- ◆ Building capabilities to realize the specified management models
- ◆ Creating instruments that conform to policies and standards, such as:
 - Methods
 - Measurement and control capabilities
 - Quality management system
 - Continual improvement techniques
- ◆ Organization design in relation to IT, such as:
 - Structure, behaviors, enablers
 - Roles and responsibilities definitions
 - Process structure
 - Implementation or change transition plans, including schedule

Excludes

- ◆ Development of IT solutions for management system needs these compete for resources alongside other needs (Portfolio Management)

Activities

This process is composed of these activities:

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

[A13] IT Governance and Management System Operation

Purpose

The purpose of the IT Governance and Management System Operation process is to operate and run the management system to satisfy the overall Business' needs.

Outcomes

As a result of the successful implementation of this process:

- The balance of strategic, tactical, and operational effectiveness of IT is optimized
- Informed and effective decisions are made
- The workings of IT are integrated and coordinated
- Conditions are established to best ensure that key measurements can be and are met

Scope

This process does not direct what IT activities should be performed to reflect the priorities of the Business (see A3 Direction category of processes). It does, however, oversee monitoring and control of the collected IT projects and processes, and makes corrective adjustments where needed.

Includes

- ◆ Measurement and control, such as:
 - Issues management
 - CIO dashboard
 - Balanced scorecard
- ◆ Steering IT workings within the tolerances set by Governance
- ◆ Regulating the execution of IT processes

Excludes

- ◆ Priorities and decisions on the business results of IT (a business responsibility, with participation from the processes in the Direction category)
- ◆ Portfolio Management
- ◆ Regulating IT services and solutions (processes in the Direction category)

Activities

This process is composed of these activities:

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

[A14] IT Governance and Management System Evaluation

Purpose

The purpose of the IT Governance and Management System Evaluation process is to review and assess the execution and implementation of the IT governance and management system, and to identify potential improvements to it.

Outcomes

As a result of the successful implementation of this process:

- The overall health of the IT governance and management system is visible to the key stakeholders of the IT endeavor
- Key measurements are effective in guiding the realization of IT goals
- Potential problems with the management system are identified and resolved before their impact results in other problems (for example, customer dissatisfaction)
- There is a continual focus on the identification of improvement opportunities to the IT governance and management system

Scope

This process monitors the measurements from all IT processes in order to ensure that the system is functioning in the manner intended.

It provides the ability to audit all (or any part of) the IT governance and management system.

Includes

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

Excludes

- ◆ Making changes to the IT Management ecosystem (IT Governance and Management System Framework, IT Governance and Management System Capabilities, depending on the scale of change)

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] Customer Relationships

Description

Purpose

The Customer Relationships process category gives IT service providers a mechanism to understand, monitor, perform and compete effectively in the marketplace they serve. Through active communication and interaction with customers, this process category provides the IT enterprise with valuable, current information concerning customer wants, needs, and requirements. Once these requirements are captured and understood, the process category ensures that an effective market plan is created to bring the various IT services and capabilities to the marketplace.

Use of a Service Catalog contributes to effective communication with customers, and also provides everyday usage details to approved users of services. In support of delivering these services, service level agreements (SLAs), underpinning contracts (UCs), and operational level agreements (OLAs) are planned, created, implemented, monitored, and continuously improved in this process category. A sound understanding of the real demand for services, categorized by the mix of user communities, helps ensure the vitality of SLAs and underpins achievement of targets.

As the dependence of business activities on technology-based support grows, assistance is needed to help customers understand and exploit the transformation potential from technology. 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.

The governance and implementation details of each process will depend on the essential nature of the relationship with customers, most obviously indicated by whether they are internal or external. For an IT provider solely serving internal customers there can be little or no flexibility in the choice of marketplace. (ITIL uses the term Market Space, defined as "All opportunities that an IT Service Provider could exploit to meet business needs of Customers. The Market Space identifies the possible IT Services that an IT Service Provider may wish to consider delivering."¹¹) This marketplace selection decision occurs in the Direction category; here, the customer-facing implications of those decisions are addressed and can result in more than one implementation of each process depending on the market complexity.

Rationale

The Customer Relationships process category ensures that the IT enterprise is effective in the marketplace, whether internal or external. Through active market research, the IT services are kept current with the dynamic wants, needs, requirements, and demand level 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, ensure and monitor the quality of the delivered IT services, and contribute to the maximization of business value from technology usage.

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

11. ITIL V3 Glossary

- Highlights areas within IT services delivery requiring improvement
- Identifies updates to IT services for greater effectiveness in meeting customer requirements
- Guides customers in understanding where and how technology can transform their business
- Enhances customer satisfaction and loyalty

Processes

This process category is composed of these processes:

- A21 Stakeholder Requirements Management
- A22 Service Marketing and Sales
- A23 Service Catalog Management
- A24 Service Level Management
- A25 Demand Management
- A26 IT Customer Transformation Management
- A27 Customer Satisfaction Management

[A21] Stakeholder Requirements Management

Purpose

The purpose of the Stakeholder Requirements process is to capture, classify, qualify, promote, and maintain requirements for IT services, from the business and for the management of IT activities. This also involves providing information on the status of all requirements throughout their life cycle.

Definition of stakeholder: “All people who have an interest in an organization, project, IT service etc. Stakeholders may be interested in the activities, targets, resources, or deliverables. Stakeholders may include customers, partners, employees, shareholders, owners, etc.”¹²

Outcomes

As a result of the successful implementation of this process:

- IT service stakeholders provide input concerning individual services or collections of services
- An agreement can be defined between IT customers and providers concerning an IT service and IT service components
- Implemented requirements are justified
- IT service management can better meet the stated needs and expectations of customers

Scope

This process is the starting point for the translation of customer needs, typically 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.

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Includes

- ◆ Handling 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 (Service Marketing and Sales)
- ◆ Detailed requirements analysis for any application or service (Solution Requirements)
- ◆ Activities that deliver solutions and services for the agreed requirements (Realization category of processes beyond Solution Requirements)

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] Service Marketing and Sales

Purpose

The purpose of Service Marketing and Sales process is two fold:

- Marketing – 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
- Sales – To match up customer wants and needs with IT service capabilities, and to sell appropriate IT services

Outcomes

As a result of the successful implementation of this process:

- Existing and potential customers have visibility and understanding of IT capabilities
- Awareness of IT services and capabilities is stimulated
- Customer and marketplace trends and opportunities are understood
- IT service contracts are established at the optimum price point for both customer and provider
- The IT organization is promoted as the IT service provider of choice

Scope

The 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, the opportunities and the competitive (to the IT service provider) threats
- ◆ 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

- ◆ Deciding to commission service and solution extensions (Portfolio Management)
- ◆ Developing solutions and services (Realization category of processes)
- ◆ Implementing solutions (Transition category of processes)
- ◆ Preparing contracts (Service Pricing and Contract Administration)
- ◆ Establishing pricing guidance and rules (Service Pricing and Contract Administration)

Activities

This process is composed of these activities:

- A221 Establish Service Marketing and Sales Framework
- A222 Analyze Market Wants and Needs
- A223 Create Marketing Plan
- A224 Execute Marketing Plan
- A225 Manage Opportunities and Forecast Sales
- A226 Consult and Propose Services Solutions
- A227 Negotiate and Close Services Opportunity
- A228 Analyze and Report Marketing and Sales Results
- A229 Evaluate Service Marketing and Sales Performance

[A23] Service Catalog Management

Purpose

The purpose of the Service Catalog Management process is to provide an authoritative source of consistent information on all agreed services and ensure that it is widely accessible to those who are approved to view this information.

Outcomes

As a result of the successful implementation of this process:

- Customers and approved users trust the published service catalog as the authoritative description of the services available to them
- Accurate information on all operational services and those being prepared to be run operationally (details, status, interfaces and dependencies) is maintained and updated in the service catalog
- Role-based views of the Service Catalog are created and maintained in order for each role (such as customers, end users, service management support personnel) to understand service definitions and use the information effectively

- The services catalog is aligned and consistent with the Service Provider and Customer needs

Scope

The primary output of the process is the Service Catalog itself. It includes a strategic view that allows the service manager, customers, and IT executives to see the list of services and their status (for example: available, soon to be available, or soon to be retired), and detailed service characteristics for negotiation, financial or strategic planning. It also contains a tactical view that allows IT end-users to request services available to them. Additional information will be available to personnel involved in the provision of the services represented in the catalog in order to facilitate the consistent, effective and efficient delivery of those committed services.

Includes

- ◆ Entering and updating service definitions
- ◆ Navigation support
- ◆ View management
- ◆ Service selection and transaction tracking
- ◆ Education on how to use the Service Catalog

Excludes

- ◆ Negotiating and closing Service Agreements (Service Marketing and Sales)
- ◆ Creating service level agreements (Service Level Management)
- ◆ Request management, user entitlement authorization and execution workflow (Request Fulfillment)

Activities

This process is composed of these activities:

- A231 Establish Service Catalog Management Framework
- A232 Define Service Package Catalog Requirements
- A233 Build and Maintain Service Catalog Content
- A234 Create and Maintain Service Catalog Views
- A235 Publish Service Catalog
- A236 Monitor, Analyze and Report Service Catalog
- A237 Evaluate Service Catalog Management Performance

[A24] Service Level Management

Purpose

The purpose of the Service Level Management process is to ensure that the service delivered to customers matches or exceeds the agreed, committed service quality characteristics.

Definition of service level agreement (SLA): "An Agreement between an IT Service Provider and a Customer. The SLA describes the IT Service, documents Service Level Targets, and specifies the responsibilities of the IT Service Provider and the Customer. A single SLA may cover multiple IT Services or multiple customers."¹³

Outcomes

As a result of the successful implementation of this process:

- Both the providers of IT service and their customers have a clear, unambiguous and consistent expectation of the quality of service to be delivered and received
- Service commitments are achievable
- Service attainments against targets are reported accurately and in a timely fashion to all defined service stakeholders
- Service quality is revived in an agreed way following any service level breach
- Opportunities for continual service improvement are identified and, where cost-justified, realized

Scope

This process addresses life cycle management of service level agreements. It covers negotiation of them with IT customers, monitoring service level achievements against targets, performing service reviews, and initiating service improvement plans.

Includes

- ◆ Establishing strong relationships with customers based on mutual trust
- ◆ Implementing SLAs from feasibility through monitoring, renewing, and improving
- ◆ Integrating the service characteristics of domain specialist 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)
- ◆ Reporting to customers on any aspect of service level attainment, including reviewing variation from target
- ◆ Oversight of the implementation (by other processes) of Service Improvement Plans related to service level quality

Excludes

- ◆ Making decisions on requests from customers for new services and functionality (Portfolio Management)

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- ◆ Primary responsibility for contractual relationships with either customers or suppliers (Supplier Management)
- ◆ Pricing the elements within the service catalog and specific SLAs (Service Pricing and Contract Administration)
- ◆ Technical work to implement changes to any service component or operational procedures relating to service improvements (as appropriate: many individual processes, Change Management, Portfolio Management)

Activities

This process is composed of these activities:

- A241 Establish Service Level Management Framework
- A242 Develop Service Level Relationships
- 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] Demand Management

Purpose

The purpose of the Demand Management process is to understand the patterns of the customers' business behaviors and relate those patterns to the impact on the supply of IT services. The intent of this process is to synchronize the consumption (demand) with the capacity (supply) of IT resources.

The benefit of demand management is to maximize the business value (value defined as benefit minus cost of the business process or business service) from the investment in IT resources. (Capacity Management focuses on the behavior of those IT resources; Demand Management understands and influences the behavior of IT resource consumers.)

Outcomes

As a result of the successful implementation of this process:

- IT understands defined and tracked patterns of business activity (user profiles and geographic distribution)
- Patterns of consumption are identified
- Service level package¹⁴ recommendations are provided to Service Level Management
- Instances of insufficient and excess capacity are minimized
- Consumption and production of service capacity are synchronized
- Demand policies and incentives are defined (both positive and negative)

Scope

This process understands the expected business behavior of all demand sources across all customers, both at an individual customer level and collated to represent the overall impact on IT. It translates demand from business terms into IT service terms (such as consumption units). It

14. See the PRM-IT Glossary and the ITIL V3 Glossary

identifies gaps and misalignment between demand and supply, and proposes policies and incentives designed to minimize or close the gaps.

Includes

- ◆ Definition of high-level strategy and policy to influence demand
- ◆ Consideration of all mechanisms that can influence demand, including:
 - Rewards
 - Penalties
 - Service availability restrictions
 - On demand capacity allocation
- ◆ Investigation of both internal and external inhibitors to demand
- ◆ Recommendations for IT resource investment (when demand management measures are unable to reduce demand to fit within available supply)
- ◆ Translation of patterns of business activity into IT service consumption
- ◆ Recommendations on cost and price elasticity

Excludes

- ◆ Implementation of demand influencing activities, such as policies and incentives (Capacity Management, Service Pricing and Contract Administration)
- ◆ Service portfolio content definition (Portfolio Management)
- ◆ Service catalog content update (Service Catalog Management)
- ◆ Investment decisions (Portfolio Management)
- ◆ IT resource consumption monitoring and reporting (Service Execution, Capacity Management)

Activities

This process is composed of these activities:

- A251 Establish Demand Management Framework
- A252 Value and Classify Business Demands
- A253 Consolidate Business Demand Patterns and Forecasts
- A254 Forecast Service Demand
- A255 Identify and Plan Demand Management Initiatives
- A256 Assess and Report Demand Management Outcomes
- A257 Evaluate Demand Management Performance

[A26] IT Customer Transformation Management

Purpose

The purpose of the IT Customer Transformation Management process is to assist customers in the transformation of their business throughout the life cycle; 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 (a quality improvement program, using an approach like LEAN).

Outcomes

As a result of the successful implementation of this process:

- Transformation opportunities, both incremental and more foundational, are identified and prioritized
- Customers and the business are encouraged to adopt transformational capabilities
- The IT organization contributes to the exploitation of transformational capabilities by guiding and overseeing their introduction
- The benefits achieved by transformation are defined, measured, analyzed, improved and controlled
- Reports indicating both benefits missed as well as further, unanticipated benefit potential inform transformation leadership teams

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 on 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 the portfolio impact (for example, new services) resulting from transformation proposals (Portfolio Management)
- ◆ Direct development of information technology solutions and services (Realization category of processes)

Activities

This process is composed of these activities:

- A261 Establish IT Customer Transformation Management Framework

- A262 Understand IT Customer Context
- A263 Identify IT Customer Transformation Opportunities
- A264 Develop IT Customer Transformation Proposal
- A265 Enable and Promote IT Customer Capability Adoption
- A266 Optimize IT Customer Benefit Realization
- A267 Evaluate IT Customer Transformation Management Performance

[A27] Customer Satisfaction Management

Purpose

The purpose of the Customer Satisfaction Management process is to determine if customers are satisfied, and the degree of their satisfaction 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 (committed) service.

Outcomes

As a result of the successful implementation of this process:

- Customer satisfaction and loyalty will be sustained and enhanced
- Customer satisfaction can be measured and tracked
- Early signs of customer dissatisfaction can be addressed and resolved before major issues emerge
- Causes of customer dissatisfaction are remedied

Scope

This process is active throughout the service life cycle. It begins at the first contact with a customer as part of the effort to determine wants and needs, and continues through either creating a satisfied customer or with the monitoring of remedial actions to correct any problems leading to customer dissatisfaction. It encompasses the entirety of IT services, solutions and offerings (the IT service catalog).

Includes

- ◆ Identifying customer types and classes
- ◆ Understanding:
 - Customer expectations
 - 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 of efforts to remedy customer dissatisfaction, as well as to increase satisfaction, on both a proactive and reactive basis

- ◆ Communicating constraints and decision criteria agreed with customers transparently to users

Excludes

- ◆ Fulfillment of specific customer requirements (handled through Service Marketing and Sales) Execution of specific corrective actions for resolving issues (any other process, depending on the issue)
- ◆ Ongoing activities for managing service agreements and service level attainment (Service Level Management)

Activities

This process is composed of these activities:

- A271 Establish Customer Satisfaction Management Framework
- A272 Capture Customer Satisfaction Data
- A273 Analyze Customer Satisfaction
- A274 Manage Customer Satisfaction Issue Resolution
- A275 Assess Customer Satisfaction Patterns
- A276 Communicate Customer Satisfaction Management Results
- A277 Evaluate Customer Satisfaction Management Performance

[A3] Direction

Description

Purpose

The Direction process category provides guidance on the external technology marketplace, aligns the IT outcomes to support the business strategy, minimizes risk exposures, and manages 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. Items put forward for inclusion in the IT Portfolio are managed throughout their life cycle using product management approaches well established in many industries.

The IT portfolio includes all items managed to deliver the IT Strategy, 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 category also instills basic project management discipline and controls.

Value

- Aligns IT endeavors to business goals and strategy
- Identifies and explains new trends and directions in the technology marketplace
- Triggers new initiatives to meet dynamic business and technology requirements
- Incorporates new technology trends into IT strategy and plans
- Establishes architectural guidelines and standards for solutions and services in order to enhance consistency, reuse, and overall value across the range of capabilities, balancing the need for individual solution optimization
- Mitigates IT and business risks efficiently and effectively
- Translates the initiatives into a mix of products (services, solutions) which will be managed through their life cycle from vision and business case to value measurement and retirement
- Optimizes the allocation of IT resources through 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

This process category is composed of these processes:

- A31 IT Strategy
- A32 IT Research and Innovation

- A33 Architecture Management
 - A34 Risk Management
 - A35 Product Management
 - A36 Portfolio Management
 - A37 Program and Project Management
-

[A31] IT Strategy

Purpose

The purpose of the IT Strategy process is to set the direction for the outcomes to be achieved by the use of information technology, ensuring that it supports the business and business strategy to the level desired and funded.

It exists “To set the goals, and decide on areas of change,”¹⁵ for IT capability to support the business strategy.

Definition of an IT Strategy: The collection of goals, policies, and plans that specify how an IT organization should function over a specific period.

Outcomes

As a result of successful implementation of the IT Strategy process:

- The business has an understanding and appreciation of the potential value of information technology to the business. Examples are’s role in providing the business with the capability to achieve competitive advantage, and ensuring the ability to readily respond to changes in the business environment
- All aspects of information technology strategy (such as infrastructure, applications and services) are aligned with the business strategy, and regularly examined to maintain that alignment
- Information technology strategy is cost effective, appropriate, realistic, achievable, business-focused, balanced, and timely
- Clear and concrete short term goals (which are then to be translated into operational plans) can be derived from and are traceable back to specific long term plans.

Scope

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.

Includes

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

15. Source: IBM Academy of Technology Study AR221 (2004), “Enterprise Architecture in the era of on demand”.
Definition of strategy.

Excludes

- ◆ The creation of the first level of plans to realize the strategy (Portfolio Management, Product Management)
- ◆ The creation, recommendation, and adoption of IT architectures for the next layers of detail, like hardware and software (Architecture Management)
- ◆ Adjusting the way that the IT undertaking organizes and runs itself to realize the strategy (IT Governance and Management System category of processes)

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

Purpose

The IT Research and Innovation process exists to identify new developments in technology, methods and solutions that have potential to create business value. It conducts research on the applicability and benefit of new approaches and technologies, and promotes the use of viable, innovative concepts in support of business objectives.

General definitions of:

- Research: (*Noun*) Scholarly or scientific investigation or inquiry (*Verb*) To study something thoroughly to present it in a detailed, accurate manner
- Innovation:
 1. The act of introducing new things or methods
 2. Innovation = creative idea + implementation

Outcomes

As a result of successful implementation of this process:

- The business is fully aware of marketplace, industry and technology trends, and the potential impact of these forces
- Business value is created through the qualification and staging of the most appropriate advances and innovations in technology, methods and solutions
- Business objectives are met with improved quality and reduced cost as a result of the identification and promotion of viable innovative solutions for operational usage

Scope

The process covers any selected combination of internal, external and cooperative efforts in any part of the range of research and innovation activities.

Includes

- ◆ Identification of areas or fields to be researched
- ◆ 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 (Portfolio Management)
- ◆ Actual development and deployment of solutions for productive use (Realization and Transition processes)
- ◆ Project Management (Program and 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

Purpose

The Architecture Management process exists to create, maintain, promote and govern the use of IT architecture models and standards, across and within business change programs. IT Architecture thus helps the stakeholder community coordinate and control their IT related activities, in pursuit of common business 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.”¹⁶

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

Outcomes

As a result of successful implementation of this process:

- From the boardroom to the desktop, all elements of business and IT solutions receive governance and guidance that has enhanced flexibility, consistency, integration, and reuse
- All information systems and information technology infrastructure exhibit improved manageability characteristics
- The exploitation of IT across the enterprise is effective and efficient

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, data, services, infrastructure architectures, and 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. The processes should be in concert with the business-as-usual business and IT project prioritization planning processes.

Includes

- ◆ Business Architecture (BA)
 - The relationships and interactions between the various business units, at appropriate levels of decomposition
- ◆ Information Systems (IS) Architecture
 - The business-dependent aspects of IT; the automated parts of BA
- ◆ 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), including 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 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 and controlled – It is necessary to actively ensure that solution projects conform to the constraints of the architecture (while still assuring their ability to meet the project's 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 Requirements)
- ◆ 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 Create and Maintain Architecture Models
- 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

Purpose

The Risk Management process exists to identify risks associated with the activities of the IT endeavor and to make measured, appropriate responses to mitigate, ignore, avoid or transfer those risks in line with the desired level of risk tolerance.

The definition of risk is “A possible Event that could cause harm or loss, or affect the ability to achieve Objectives. A Risk is measured by the probability of a Threat, the Vulnerability of the Asset to that Threat, and the Impact it would have if it occurred.”¹⁷

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Outcomes

As a result of successful implementation of this process:

- All of the activities carried out within IT support the desired risk posture while providing the maximal benefit
- The business and IT are able to appropriately respond to threats and opportunities
- Minimal risk exists in the fulfillment of fiduciary responsibilities to stakeholders of the business

Scope

This process provides the overall framework in which risks are handled. Other processes within IT work in conjunction with this process to ensure that specific risk areas are adequately responded to and 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

- ◆ External risk sources¹⁸ such as:
 - Financial: Interest rates, foreign exchange, credit
 - Strategic: Competition, industry and customer changes, mergers and acquisition integration
 - Operational: Regulations, Culture, Board Composition
 - Hazard: Natural events, environment, contracts
- ◆ Internal risk sources:
 - Employees
 - Information systems
 - Accounting controls
 - Cash flow
 - Research and development
 - Facilities
- ◆ Risk workshops
- ◆ Mitigation strategies

Excludes

- ◆ Identification of compliance requirements and controls (Compliance Management)
- ◆ Security-specific risk management (Security Management), though overall decision making *is* part of this process
- ◆ Implementation and operation of the recommended risk controls (responsibility of the target IT processes)
- ◆ Business Continuity Management (Business responsibility in conjunction with IT Service Continuity Management)

18. Taken from *A Risk Management Standard*. The Institute of Risk Management. 2002

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 and Report Risk Mitigation Results
- A347 Evaluate Risk Management Performance

[A35] Product Management

Purpose

The purpose of the Product Management process is to guide any IT product (such as an application, an infrastructure component, an IT service, documentation, or combination thereof) throughout its life cycle from inception to retirement and to be the ultimate owner of that product.

Definition of Product: an application, asset, tool, or IT assembly that will be used in the delivery of a set of IT services to IT customers.

Outcomes

As a result of the successful implementation of this process:

- Robust, resilient products meet the IT service needs of IT customers
- Evolving IT products meet business needs
- Adequate resources are provided to carry out product development and support needs
- Each product has a long-term vision and direction

Scope

Product Management involves oversight through the entire life of a product.¹⁹ This process will make the case for allocation of resources to this product (and hence its inclusion into the portfolio) and then provide stewardship over the efforts to create, launch, operate, maintain and finally retire the product. It will measure product value against objectives throughout the life cycle, and make recommendations for any modification of the product within the overall portfolio.

Designation as a product does not indicate the make-up of solutions and services that will be managed. It acts purely as the unit of management for this process. A product could be developed that becomes the basis for, or contributes to, many services. The converse is also possible.

This process has a symbiotic relationship with Portfolio Management; put another way, they could be seen as two sides of a coin. Whereas Portfolio Management takes an aggregate, balancing view across all IT activities, Product Management exists to champion the case for each IT solution, service or general capability which is managed as a product. In many cases, the Portfolio Management process will trigger a product life cycle by making a high-level, conceptual decision to pursue an opportunity area. Product Management is then responsible for developing the concept through to productive use while under the overall decision-making authority of Portfolio Management.

19. See ITIL V3 *Service Strategy*, Appendix B2 for further discussion

Includes

- ◆ Product vision
- ◆ Long-term product requirements management (as opposed to Solution Requirements, which manages requirements for a specific release)
- ◆ Product marketing and launch
- ◆ Ownership of the content that is included in the Service Catalog
- ◆ Oversight of ongoing product development and enhancement
- ◆ Approval authority over product change requests
- ◆ Initiation of necessary change requests to bring a new product release into production
- ◆ Product assessment and improvement
- ◆ Product retirement

Excludes

- ◆ Development (Realization category of processes)
- ◆ Product sales (Service Marketing and Sales)
- ◆ Project management

Activities

This process is composed of these activities:

- A351 Establish Product Management Framework
- A352 Formulate Product Concept
- A353 Plan and Control Product Lifecycle
- A354 Initiate and Oversee Product Realization
- A355 Guide Product Transition and Operation
- A356 Monitor and Assess Product Performance
- A357 Evaluate Product Management Performance

[A36] Portfolio Management

Purpose

The purpose of the Portfolio Management process is to decide the content of and resource allocation for the set of IT investments. It includes 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 undertakings that consume resources (such as applications, services, and IT projects) 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.

Outcomes

As a result of the successful implementation of this process:

- Customers participate in defining the IT Portfolio
- The strategic fit of IT investments to business intent and priorities is very well matched
- Business needs correlate very closely to IT expenditures

- The portfolio meets business needs
- The business receives maximum value from the IT Portfolio

Scope

Provide for the continuous identification, evaluation, selection, control, and life cycle management of the aggregate collection of IT investments

Includes

- ◆ Cognizance of key business drivers to influence investment decisions
- ◆ Decisions on what programs and projects to fund, often in conjunction with any business or customer stakeholders
- ◆ Application portfolio management
- ◆ Identification of in-sourced, out-sourced, 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 (Program and Project Management)
- ◆ Asset management
- ◆ Delivery of services (Operations category of processes)
- ◆ Service Level Management
- ◆ Customer Satisfaction Management

Activities

This process is composed of these activities:

- A361 Establish Portfolio Management Framework
- A362 Inventory IT Projects and Services
- A363 Create and Maintain IT Portfolio Categories
- A364 Assess and Prioritize IT Portfolio
- A365 Make IT Portfolio Decisions and Commitments
- A366 Conduct IT Portfolio Review
- A367 Communicate IT Business Value and IT Portfolio Performance
- A368 Evaluate Portfolio Management Performance

[A37] Program and Project Management

Purpose

The purpose of Program and Project Management is to plan and oversee programs and projects in support of their objectives.

The definition of a project is a team-based effort to meet specific objectives within a defined period of time.

The definition of a program is a long-term endeavor undertaken to implement a strategy or mission to meet business or organizational goals. A program is realized through multiple projects and ongoing activity.

Outcomes

As a result of successful implementation of this process:

- Projects are completed by the committed target date and within the allocated budget
- Stakeholder value is maximized through continuous evolution with stakeholders of project parameters (scope, budget, time lines, quality) as necessary
- The risk within the customer's business environment is reduced through precisely defined projects with clearly identified and managed risks
- Programs controlling multiple projects achieve maximization of value through coordination of trade-offs between requirements and solution space, and of incremental project completion and delivery
- Productivity is increased 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
- Project resource commitments are clearly separated from operational workload demands
- Customer and project teams form more quickly and use common terminology, facilitated by clearer communication
 - Customer satisfaction increases through visibility of the project plans, schedule, and actual performance against the project objectives

Scope

Programs and projects are similar in that they both require planning and oversight. However, they are different in a number of ways. Projects are a temporary endeavor with a simple management structure, whereas programs are long-term, have a more complex management structure (typically involving a steering committee), and are carried out by a number of projects. In addition, the success or failure of a program is more likely to affect the bottom line of a business.

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

1. Defining and initiating
2. Planning
3. Executing, monitoring and controlling
4. Closing

A project usually consists of a series of phases, known as the project life cycle, 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 life cycle. For example, in a waterfall project, executing and controlling activities can be completed in the design phase of a project, alongside or followed by planning activities for the development phase.²⁰

The activities described represent a broad model for Project Management activities, which is largely applicable to both projects and programs alike. A program is realized through multiple projects and ongoing activity.

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
- ◆ Running joint projects with any external agent (such as business, customers, suppliers):
 - Such projects might need to establish agreed standards and conventions
 - Alternatively, in the case of multi-supplier projects, there can be reporting responsibilities to the prime contractor while in-house practices apply within each contractor's scope

Excludes

- ◆ Performance and delivery activities (many process categories carry out this work)
- ◆ Promotion of the end result to production (Deployment Management, usually within a program or project context)

[A4] Realization

Description

Purpose

The Realization 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. Development 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 (requiring solution adjustment) are also addressed in this category.

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, often iteratively and in parallel, in a project-driven context to create information technology solutions for specific sets of stakeholder requirements.

Many engineering disciplines are relevant to the achievement of successful outcomes for these projects. Examples of such disciplines include:

- Performance engineering
- Test engineering
- Requirements engineering

Rationale

The Realization process category addresses a broad range of systems and service synthesis 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, training).

Value

- Lays the foundation for the business to receive value from its investment in IT by creating solutions that meet customer requirements
- Ensures that standards and principles (such as 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 high quality work products

Processes

This process category is composed of these processes:

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

[A41] Solution Requirements

Purpose

The purpose of the Solution Requirements process is to provide “a systematic approach to finding, documenting, organizing, and tracking a system's changing requirements,”²¹ 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.”²²

Outcomes

As a result of successful implementation of this process:

- Stakeholder agreement on high-level requirements is achieved before the solution is designed, developed, and deployed
- Detailed requirements are evolved iteratively with solution design, development, and testing
- Trade-offs between requirements and solution are managed to maximize stakeholder value
- An accurate understanding of solution requirements exists, enhancing the probability that the correct solution will be created
- Customer, stakeholder, and user requirements are clearly defined and documented
- Traceability is maintained between requirements and solution specifications derived from them
- Rework due to incorrect or misunderstood requirements is minimized

Scope

This process focuses on translating or elaborating 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.

It includes establishing operational requirements engineering approaches. Examples often cited include IEEE 830 Recommended practice for software requirements specifications, IEEE Software Engineering Body of Knowledge, CMMI and the ITIL V-model (ITIL Service Transition).²³

Includes

- ◆ Business context modeling
- ◆ Collecting, understanding, validating, formalizing and documenting solution requirements
- ◆ Clarifying, analyzing, and refining the requirements from the Stakeholder Requirements Management process
- ◆ Ongoing management of requirements for this solution
- ◆ The complete Solution Requirements taxonomy, including:
 - Functional requirements
 - Non-functional requirements, under headings such as Service Management and Compliance
 - Deployment requirements (packaging, education, and training)
 - Usability requirements
 - Change cases and scalability requirements

21. IBM Rational Unified Process

22. IBM Rational Unified Process

23. See *ITIL Service Design*, p167

- Testing requirements
- Stakeholder acceptance criteria
- Solution life cycle requirements, including solution shutdown and retirement
- ◆ 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 (Solution Analysis and Design)
- ◆ The life cycle management of customer wants and needs through agreed, prioritized business requirements (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

Purpose

The Solution Analysis and Design process exists to create a fully documented design from the agreed solution requirements, describing the behavior of solution elements, the acceptance criteria, and agreed measurements.

Outcomes

As a result of successful implementation of this process:

- Solution designs optimize the trade-offs between requirements and constraints
- Stakeholder agreement on high-level solution design is achieved before major investments in solution development is done
- Reuse of existing solution designs and components minimizes time-to-implementation and improves solution quality
- Flexible and effective designs reduce the total cost of ownership over the complete solution life cycle

Scope

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

Includes

- ◆ Creating and managing design baselines (specifications baseline, component architecture baseline) throughout the full range of the solution life cycle including solution shutdown and retirement
- ◆ Ensuring solution design compliance with the business and IT architectures
- ◆ Identification and consideration of constraints, such as budget, and making cases for constraint relief or seeking guidance when a sound solution design is not achievable against those constraints
- ◆ Creating different solution architectural views (component model, operational model, deployment model, data model)
- ◆ Evaluating trade-offs (such as financial cost alternatives) and making design and sourcing approach decisions (make versus buy versus reuse)
- ◆ Making architecture exception requests
- ◆ Modeling, simulation, and prototyping
- ◆ Design of all required solution elements (application, infrastructure, process, organization, data, training, deployment, technology, testing)
- ◆ Systems operation and management design, such as significant event definition, monitoring data definitionHigh and low level design
- ◆ Ensuring cross-functional participation in design acceptance from service management disciplines

Excludes

- ◆ Enterprise architecture (Architecture Management)
- ◆ Requirements management (Stakeholder Requirements Management, Solution Requirements)
- ◆ Procurement (Supplier Management)
- ◆ Solution Development 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 Development and Integration

Purpose

The Solution Development and Integration process exists to bring together all of the elements specified by the solution design, regardless of whether they are to be created or acquired, and to complete their customization, configuration, and integration.

Outcomes

As a result of the successful implementation of this process:

- Agreed solutions are produced to approved specifications, on time, within budget and generally maximizing stakeholder value
- Frequent demonstrations of capabilities to stakeholders are done to provide feedback on requirements, other specifications, and implemented assets
- Lessons learned are fed to key stakeholders so requirements and other specifications can be evolved as necessary
- Solutions are ready for testing and examination of solution capabilities
- All necessary elements exist to support Solution Management (life cycle, maintenance, known errors, documentation, best practice guidance, and others)
- All solution components are identified and tracked
- Solution characteristics are fully verified before Solution Acceptance activities

Scope

Includes

- ◆ Establishing development standards
- ◆ 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
- ◆ Making any procured elements available to the solution development and integration team. These can come from external or internal providers
- ◆ Working in conformance with agreed version control policies and procedures for solution elements, at whatever level of assembly or integration

Excludes

- ◆ Testing (unit testing is considered to be in the Solution Test process, even if performed by the implementer or builder)
- ◆ Solution pilot and deployment (Deployment Management)
- ◆ Procurement (Supplier Management)
- ◆ Asset Management
- ◆ Administration of version control (includes Configuration Management of elements within the solution during the development phase)
- ◆ Called change management version control (CMVC) in CMMI

Activities

This process is composed of these activities:

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

[A44] Solution Test

Purpose

The Solution Test process exists to validate prior to deployment that the solution and its features conform to design specifications and requirements. It also verifies that interim work products exist and conform to standards.

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

Outcomes

As a result of successful implementation of this process:

- Solution functionality is verified and documented
- The actual characteristics and behavior of the solution are well known. Any differences with the solution requirements and agreed design specifications are reported.
- Solution defects are identified before the decision is made to migrate to the production environment
- Developers and stakeholders receive thorough quantitative and qualitative assessments of solution quality. (It is intended that the developers and stakeholders take some action as a result of having received this information.)
- Stakeholder expectations match solution characteristics.

Scope

The *ITIL Service Transition* book provides useful discussion and examples. See the discussions around the service V-model.²⁴

Includes

- ◆ All types of testing, such as:
 - Unit testing
 - Integration testing
 - Acceptance testing
 - Usability testing
 - Operability testing
 - Security testing
 - Regression testing
- ◆ Test case development

24. *ITIL Service Transition*, figures 4.21 and 4.30

- ◆ Generating test results
- ◆ Managing the documentation of the test results
- ◆ Satisfying the requirements of the test management checklist

Excludes

- ◆ Fixing errors (depending on the nature of the error, this could involve any combination of Solution Requirements, Solution Analysis and Design, Solution Development and Integration)
- ◆ Design for testability (Solution Analysis and Design)
- ◆ Knowledge management
- ◆ Gaining acceptance (Solution Acceptance)
- ◆ Piloting (Deployment Management)
- ◆ Auditing (Solution Acceptance)

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

Purpose

The purpose of the Solution Acceptance process is to validate that the proposed solution, either as individual artifacts or in its complete form, meets acceptance criteria at defined checkpoints

Outcomes

As a result of successful implementation of this process:

- Stakeholders agree before deployment that all requirements have been met
- The solution's capability to meet service level agreements is validated
- Transition of the solution into live service presents minimum risk
- The production environment remains stable and predictable after incorporating this solution
- Those responsible for delivering service and support are properly prepared to do so

Scope

ITIL defines acceptance as: "Formal agreement that an IT Service, Process, Plan, or other Deliverable is complete, accurate, Reliable and meets its specified Requirements. Acceptance is usually preceded by Evaluation or Testing and is often required before proceeding to the next stage of a Project or Process." ²⁵

25. ITIL V3 Glossary

This process operates throughout and beyond the lifetime of a solution realization project. An instance of examining the acceptance of a service can be triggered post-deployment, perhaps as part of a pilot rollout.

Includes

- ◆ Periodic review of solution project performance to date and status in respect of solution acceptance criteria
- ◆ Involvement of all relevant stakeholders, such as:
 - Solution customer
 - Solution developer
 - Provider of service for the solution once deployed—this includes operational staff as well as management
 - Interested parties in relation to non-functional concerns, like security, compliance, conformance to architectural and development guidelines)
 - Users
- ◆ 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 (Solution Test)
- ◆ Providing education and training (Deployment Management)
- ◆ Establishing service levels (Service Level Management)

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 Package Certified Solution
- A457 Evaluate Solution Acceptance Performance

[A5] Transition

Description

Purpose

The Transition category of processes exists to support any aspect related to a life cycle status change in *solutions* and *services*. The processes provide defined and repeatable approaches to planning, effecting and recording these transitions and can be applied to all stages of the life cycle. They also serve to maintain control over the Information Technology (IT) resources that are subject to such status changes. Further, the processes in this category provide vital enabling information to other process areas related to the management of IT. Using these processes, developments in IT capabilities supporting the stakeholding businesses and customers achieve their desired operational status from which value can be derived.

Rationale

A transition can vary in scope and scale from a roll out of a major solution to a large population of users across multiple geographic territories to the installation of a fix or patch to a single configuration item or the controlled update of an individual software module during development. Transition instances can also be triggered by changes in the service provider arrangements, whether or not there is also a change in service capabilities and characteristics. Any modification to a known set of resources carries with it some risk of failure and so, whatever the motivation for the transition, there is a need to ensure that approaches which minimize that risk are followed and that information about the state of resources is maintained.

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

This process category is composed of these processes:

- A51 Change Management
- A52 Release Management
- A53 Deployment Management
- A54 Configuration Management
- A55 Asset Management

[A51] Change Management

Purpose

The purpose of the Change Management process is to achieve the successful introduction of changes to an IT system or environment. Success is measured as a balance of the timeliness and completeness of change implementation, the cost of implementation, and the minimization of disruption caused in the target system or environment. The process also ensures that appropriate details of changes to IT resources (assets, CIs) are recorded.

Basically, 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 environment. The definition of a change is the addition, modification or removal of approved, supported or baselined hardware, network, software, application, environment, system, desktop build or associated documentation.

A change request (for which RFC is an established synonym) is the means for documenting proposed change and actual change activity in IT resources or capabilities. Change requests can be triggered for a wide variety of reasons, from a wide variety of sources. Change requests can be concerned with any part of the infrastructure or with any service or activity.

Outcomes

As a result of the successful implementation of the Change Management process:

- Changes are introduced in a timely and controlled manner
- Proposed changes are not approved nor introduced without an accurate assessment of their costs and other effects
- Incidents resulting from the introduction of changes are minimized
- Service quality is measurably improved
- Appropriate balance is maintained between the business need to deploy innovation and the need to maintain the stability of IT service

Scope

Change Management typically begins with the creation of a Change Request (RFC). The change request documents details of the proposed change in order to support a range of business and technical assessments, leading to approval (or rejection) and ultimately to application of the change.

The Change Management process represents a pattern of activities and work flow, which can be implemented over a range of contexts. The most prominent contexts include operations and development. Operations Change Management and Development Change Management are similar in a number of ways, including recording of all change requests, assessment of all change requests prior to approval, a team-based approach to change approval, and review of change effectiveness. However, they are different in a number of ways:

- Development Change Management addresses changes proposed to a system under development. These changes may include requests for new functionality, patches, or redevelopment. In contrast, Operations Change Management focuses on changes to operational CIs in the entire IT infrastructure. These changes can include capacity tuning, asset transfer, and system resets.
- Changes are assessed and approved using a team. Each context typically has its own change board and membership, addressing different types of changes, and using different assessment criteria. In development, the team is often known as the Change Control Board; in ITIL, the term Change Advisory Board is used. A higher level board can be established to ensure integration of changes across contexts.

Change Management can appear in other contexts besides operations and development. There can be a single implementation of the Change Management process or several, with each

implementation covering the scope of a defined context. Factors such as size of the organization and different start and end points defining a change can lead to multiple implementations of change management, with each following the process principles and pattern described but employing procedures and decision criteria customized for their context.

This process establishes classification and categorization schemes to assist with change assessment activities. It also defines the implementation approaches that will be assigned to approved changes in order to standardize the supervisory control levels, consistent with the assessment recommendations. ITIL, in the context of managing production environments, uses the term Change Model for these schemes.

Definition of Change Model: "A repeatable way of dealing with a particular Category of Change. A Change Model defines specific pre-defined steps that will be followed for a Change of this Category. Change Models may be very simple, with no requirement for approval (e.g. Password Reset) or may be very complex with many steps that require approval (e.g. major software Release)."²⁶

Examples of change models:

- A standard change is "A pre-approved Change that is low Risk, relatively common and follows a Procedure or Work Instruction. For example password reset or provision of standard equipment to a new employee. RFCs are not required to implement a Standard Change, and they are logged and tracked using a different mechanism, such as a Service Request."²⁷
- An emergency change is "A Change that must be introduced as soon as possible. For example to resolve a Major Incident or implement a Security patch."²⁸
- For software development, there will frequently be different change types based on the impact to the overall system, and hence requiring different levels of approval, such as architectural change as compared with scope change, and change that is local to one component.

Some activities in the process require examination of several or all changes collectively rather than on an individual basis. For example, scheduling changes for implementation requires consideration of the other changes planned for the same dates and target environments in order to identify conflicts.

Includes

- ◆ Planned changes, standard changes (pre-approved by policy), and emergency changes (policy exception request)
- ◆ Establishing both recurring and one-time only schedules (change windows) during which changes can be performed without negatively affecting commitments, such as project schedules, 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 coordination of the implementation of those changes that are subsequently approved
- ◆ Maintenance of open channels of communications to promote smooth transition when changes take place

26. ITIL V3 Glossary
27. ITIL V3 Glossary
28. ITIL V3 Glossary

- ◆ Increased visibility and communication of changes to both business and support staff

Excludes

- ◆ Requirements Management (Stakeholder Requirements Management)
- ◆ Creation of new or revised functionality (Realization category processes)
- ◆ Building the packaging for the delivery of new or revised functionality (Release Management)
- ◆ Technical implementation, such as distribution, preparation, installation, and back out if necessary (Deployment Management)
- ◆ Configuration Management, although the interface to this process must be managed
- ◆ Asset Management, although the interface to this process must be managed
- ◆ Business transformation and organizational change (IT Customer Transformation Management)

Activities

This process is composed of these activities:

- A511 Establish Change Management Framework
- A512 Create and Record Change Request
- A513 Accept and Categorize Change
- A514 Assess Change
- A515 Authorize and Schedule Change
- A516 Coordinate Change Implementation
- A517 Review and Close Change
- A518 Monitor and Report Change Management
- A519 Evaluate Change Management Performance

[A52] Release Management

Purpose

The purpose of the Release Management process is to prepare and finalize release packages that are fit for deployment so that optimal business value will be attained when deployment occurs.

Definition of release: “A collection of hardware, software, documentation, Processes or other Components required to implement one or more approved Changes to IT Services. The contents of each Release are managed, Tested, and Deployed as a single entity.”²⁹

Outcomes

As a result of the successful implementation of the Release Management process:

- Release packages – whether supporting new business capability, improvement in cost performance, or other advances in service quality - form the basis for deployment
- Deployment risks to existing service quality are minimized
- Customer and user satisfaction upon release deployment is increased
- All implications to the parties involved in deploying or receiving a release are identified and validated prior to the deployment event

29. ITIL V3 Glossary

- Only authorized releases are introduced into the live environment

Scope

Release Management spans the planning and direction of the rollout of software, hardware, and operational processes including related documentation, and operating procedures. The changes that comprise the release are managed by Change Management, and their inclusion in the release can be determined by time, technology interdependencies, target, risk mitigation, organization, scale (multiple copies) or service dependencies. The design of the release will need to consider how rollout is achieved. For example, whether or not the release can be requested by a user using a self-service selection and then installed automatically and transparently.

Includes

- ◆ Release design, creation, and testing
 - For example, implementation scripts
- ◆ Specifying the deployment model for a release. The deployment model provides a template of the activities and plans from which specific deployment instances can be customized for geography, scale, local conditions, and other factors
- ◆ Checking and testing training materials and incorporating them into the deployment model
- ◆ Verification of successful release package installation, including ensuring that the integrity of function has been maintained
- ◆ Roll back (also known as back out) mechanisms and procedures

Excludes

- ◆ Solution Realization (creation of functionality, usage procedures, training materials, and any other release deliverable) (Realization category)
- ◆ Testing of solution functionality (Solution Test)
- ◆ Management of change requests (Change Management)
- ◆ Deployment of release packages (Deployment Management)

Activities

This process is composed of these activities:

- A521 Establish Release Management Framework
- A522 Plan Release Strategy
- A523 Design and Build Release
- A524 Test and Verify Release
- A525 Monitor and Report Release
- A526 Review and Close Release
- A527 Evaluate Release Management Performance

[A53] Deployment Management

Purpose

The purpose of the Deployment Management process is to place releases and other desired changes into their target environments, and to activate them in order that the functionality and operational improvements they contain can create their intended value.

Definition of Deployment: “movement of new or changed hardware, software, documentation, Process, etc to the Live Environment.”³⁰

The *other desired changes* includes transferring the responsibility for any subset of an IT endeavor’s operations from ownership by one service provider to another, while maintaining service continuity. For certain such transfers, deployment involves managing the effective transfer of resources necessary to deliver the service. Resources include staff, technology infrastructure, and intellectual capital.

Outcomes

As a result of the successful implementation of the Deployment Management process:

- New capability is introduced on a timely basis, and with minimized risk, disruption and cost
- Transfers of service responsibility are effected on a timely basis, and with minimized risk, disruption and cost
- All parties involved in a deployment (for example, users of the capabilities being deployed, service providers performing the deployment) are appropriately prepared, trained and skilled to ensure successful deployment
- In the event of failures during deployment, contingency plans ensure the expected level of service quality is delivered

Scope

Deployment Management is primarily triggered by an instruction to roll out any approved combination of software, related hardware, documentation, and operating procedures to one or more defined targets (for example: systems, user groups) within constraints such as cost and time. An alternative trigger for the instantiation of Deployment Management relates to the transfer of the responsibility for one or more services between providers or across business or organizational boundaries. At the other end of the scale, the implementation work related to a change which impacts a single CI is also performed by this process.

The completion of each deployment is indicated when the stakeholders affirm that the expected outcomes of a deployment are achieved and a business-as-usual operational service state has been attained.

Includes

- ◆ Deployment planning and co-ordination with affected parties
- ◆ Identification of resources (hardware, software, processes and procedures, and staff) to be deployed, or to be transferred between service providers
- ◆ Creating capabilities and procedures to support deployment activities, and to verify the readiness of and account for resources impacted
- ◆ Creating a plan for continuity of service
- ◆ Execution of the deployment plan, including:
 - Electronic distribution of software and other soft-copy items

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- Invoking logistical movements for physical items
- Installing technical resources
- Activating the desired configuration
- Testing the installation against defined criteria (as provided in the Release Package and Change)
- Back out of installed items, when needed
- Delivering training
- Providing initial user assistance
- ◆ Assessment of readiness to begin service delivery, and for handover to business-as-usual
- ◆ Management of risks and issues related to the deployment activities.

Excludes

- ◆ Logistics and movement of physical assets (Asset Management)
- ◆ Preparation and commissioning of the supporting environment (Facilities Management)
- ◆ Accounting for capital transfers and deployment expenditures (Financial Management)
- ◆ Program and project management techniques (Program and Project Management)
- ◆ Achievement of business benefits from new functionality (IT Customer Transformation Management)
- ◆ Updates to the CMS (Configuration Management)
- ◆ Knowledge and skill transfer (Knowledge Management)

Activities

This process is composed of these activities:

- A531 Establish Deployment Management Framework
- A532 Plan Deployment Program
- A533 Prepare Deployment Capabilities
- A534 Perform Transition Administration
- A535 Perform Deployment
- A536 Verify Deployment and Activate Service
- A537 Review and Close Deployment
- A538 Monitor and Report Deployment Program
- A539 Evaluate Deployment Management Performance

[A54] Configuration Management

Purpose

The purpose of the Configuration Management process is to maintain the integrity of the configuration items (CIs) employed in, or related to, IT systems and infrastructure in either a development or operational context, and to provide accurate information about CIs and their relationships.

Configuration Management emerged out of complementary needs within both IT development and IT operations. IT development needs to maintain the integrity of evolving development artifacts in a development project. Similarly, IT operations should maintain the integrity of CIs that have been made operational.

Definition of a configuration item: "Any Component that needs to be managed in order to deliver an IT Service. Information about each CI is recorded in a Configuration Record within the Configuration Management System and is maintained throughout its Lifecycle by Configuration Management. CIs are under the control of Change Management. CIs typically include IT Services, hardware, software, buildings, people, and formal documentation such as Process documentation and SLAs."³¹

Outcomes

As a result of the successful implementation of this process:

- All configuration items within IT systems and infrastructure are accurately identified and cataloged
- All configuration items are adequately tracked and controlled
- Authorized requests to obtain CIs from secure libraries or stores (or to return them) are satisfied promptly and accurately
- Accurate configuration information is provided in response to informational requests
- Any exceptions between configuration records and the corresponding CIs are identified and corrected
- In development projects: development CIs in multiple development streams are controlled and coordinated

Scope

Relationship with Asset Management

To properly understand Configuration Management, it is necessary to understand its relationship with Asset Management. Asset Management keeps track of things of value (assets) to an IT organization, whether that value is financial, technical, or otherwise, throughout the asset's entire life cycle. That life cycle stretches from the time the asset is ordered or commissioned to the time when it is retired and disposed.

At various stages in an asset's life cycle, the usage of that asset can cause it to become a part of some larger object requiring management (for example, a processor is added to a pool of processors allocated to a particular task) or it can be split into a number of parts at smaller granularity (for example, a physical server is operated as several virtual servers). Similarly, an ERP system licensed from a vendor might represent one or a handful of assets to be tracked (for financial or contract management purposes), whereas it can represent hundreds of modules which must be identified individually. For example, for local customization, problem determination, or maintenance patch application purposes.

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The characteristic of these events is that the asset has been applied to some defined purpose, typically through any or all of the Solution Development and Integration process, the Release Management process and the Deployment Management process. At these times, those parts become configuration items (CIs) and are managed by Configuration Management. Configuration Management focuses on the internal and external relationships of a CI and addresses the configuration needs of a stage in an asset's life cycle.

For instance, during development of a software asset, Configuration Management might be used for source code control of the components that make up that asset. Another instance is when a system becomes operational within the IT infrastructure. In that instance, Configuration Management is used to maintain operational information about that CI and its relationships to other CIs in the IT infrastructure. The two most widely recognized uses of Configuration Management are *development* Configuration Management and *operations* Configuration Management.

Configuration Management in Development and Operations

Configuration Management addresses the needs of both IT development and IT operations. The characteristics of these domains are similar,³² yet also have differences. Similarities include:

- Both development and operations focus on the various configuration items that make up their domains. In development, these include evolving hardware, software, and documentation that constitute an IT system being developed. In operations, these include fully developed hardware, software, and documentation that have been deployed and made operational within the IT infrastructure.
- Both development and operations maintain information about CIs and their relationships.
- On a regular basis, that information is checked for accuracy against the actual configuration items and inaccurate information is corrected.

Differences between *development* Configuration Management and *operations* Configuration Management include:

- IT development maintains the integrity of development CIs primarily by controlling the CIs themselves, whereas IT operations maintains the integrity of operational CIs by controlling information about the CIs.
- Check-in/check-out of IT development CIs is a normal practice in Configuration Management for IT development. (There is a distinct difference in how check-in and check-out is performed for electronic as opposed to physical CIs.) IT operations does not perform check-in/check-out of CIs.
- IT operations focuses on controlling updates to information about CIs. Significant information about CIs must be manually maintained. In contrast, information about development CIs is primarily obtained from the CI itself.
- Development CIs (such as software and hardware components and document chapters) are typically smaller-grained than operational CIs (such as PCs, applications, servers, and others).
- The configuration management system for IT development (often called a source code control system) is typically maintained separately from the configuration management system for IT operations, and the technology and procedures used by each system is usually different.
- The CIs that make up an operational IT infrastructure are typically also considered assets. However, most CIs in a development project are not considered to be assets because their value to the IT organization is considered too small (or too intangible) to track. For this reason, a development project might have few *assets* tracked by Asset Management other than the overall system under development.

32. Industry examples of this can be seen in ISO/IEC 15288 Systems and Software Engineering - System Life Cycle Processes and ISO/IEC 12207 Systems and Software Engineering - Software Life Cycle Processes.

The similarities in Configuration Management between IT development and IT operations are sufficient to define a single process at a high level. The differences between IT development and IT operations are significant only at a lower level of the process.

Common Data

In practical terms, Asset Management and Configuration Management carry out their activities using data about these assets and CIs, which is largely common to them both, though each has some attributes and relationships not significant to the other. Successful implementation of both processes requires joint work on their data models and clear rules (that is, governance) on which process *owns* any shared attribute.

Types of CIs

The ITIL definitions of asset and of configuration item include a range of types of IT elements which can fall under Configuration Management. Whether an implementation covers all or just some of these types, it is likely that there will be some process aspects that are dependent on the needs of different component types. Consideration of a few examples illustrates this:

- Each hardware item is a candidate for both configuration and asset management, though probably at different levels of granularity. An IT organization will want to keep track of that hardware item throughout its life cycle from the standpoint of Asset Management. At the same time, when that system is operational, Configuration Management might be interested in internal hardware components (which are CIs) as well as other CIs that have some operational relationship to this CI. Hardware items cannot usually be cloned.
- Software components might have no record in the asset register. They can be subject to tight access controls (for example, to avoid erroneous multiple update during development) and at the same time they can be cloned to create as many instances as needed within limitations such as license counts. Larger software elements, such as applications can be both a CI as well as an asset.

The process will also need to take into account the arrangement of the set of internal and external service providers and establish appropriate interfaces with the Configuration Management process of those service providers.

Includes

- ◆ Establishing naming conventions for configuration items and relationships
- ◆ Designing, creating, populating, and updating the Configuration Management System (CMS)
- ◆ Managing movements into and out of secure libraries
- ◆ Supporting configuration item audits
- ◆ Identifying configuration item interdependencies
- ◆ Linking configuration item changes to specific change requests (RFCs)
- ◆ Defining and reporting configuration baselines

Excludes

- ◆ Inventory tracking (Asset Management)
- ◆ Procurement of configuration items (Supplier Management)
- ◆ Tuning and installing configuration items (Capacity Management, Deployment Management)
- ◆ Assets that are not CIs, such as:
 - Items ordered but not received
 - Items no longer in operation

- Bulk inventory
- Assets not operationally managed

Activities

This process is composed of these activities:

- A541 Establish Configuration Management Framework
- A542 Identify Configuration Items
- A543 Control Configuration Items
- A544 Report Configuration Status
- A545 Verify and Audit Configuration Items
- A546 Evaluate Configuration Management Performance

[A55] Asset Management

Purpose

The purpose of the Asset Management process is to control all assets owned by the IT endeavor throughout their life cycle and to maintain accurate information about them in an Asset Register. The aspects of asset control under this purpose include inventory, contractual (licensing, maintenance), ownership and location

ITIL provides the following definitions:

- Asset: “Any Resource or Capability. Assets of a Service Provider include anything that could contribute to the delivery of a Service. Assets can be one of the following types: Management, Organisation, Process, Knowledge, People, Information, Applications, Infrastructure, and Financial Capital.”³³
- Asset Register: “A list of Assets, which includes their ownership and value. The Asset Register is maintained by Asset Management.”³⁴

The definition of *asset* is much broader than those in widespread usage within the IT industry.³⁵ In this model, many of the types identified are controlled by other processes specialized for the management issues that pertain to them.

- Items Management, Organization, Process are the subject of the IT Governance and Management System category of processes
- Knowledge Management is a process in its own right
- People are recruited, developed, and assigned to responsibilities by the Workforce Management process
- Financial Capital is under the custodianship of the Financial Management process, with interfaces to this process where Asset activities have an impact on financial valuation (for example, by a decision to dispose of an asset or to transfer ownership to a new owner).

The technology object types Information, Applications, Infrastructure are all covered by this process, where each individual item can qualify for any of the asset control purposes in scope. For example, it is not unusual for accessories for PCs (such as keyboards, mice) to be excluded from asset control.

33. ITIL V3 Glossary

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35. See [HTTP://en.wikipedia.org/wiki/IT_asset_management](http://en.wikipedia.org/wiki/IT_asset_management)

Outcomes

As a result of the successful implementation of the Asset Management process:

- Value is maximized from technology assets over their lifetime
- Assets are provided in an accurate and timely manner to supply, movement or other requests
- Accurate and timely information about technology assets supports informed IT decision making, at both strategic and tactical levels
- Exposure to risks relating to IT assets is minimized
- IT assets are managed in compliance with legal, industry and corporate standards and requirements
- Governance of assets drives the right trade-offs in investments in asset and usage of assets

Scope

Asset Management has dual responsibilities:

1. To control each asset from initial creation (such as receipt from suppliers) through all life cycle events (such as change of location, transfer of ownership, change of use) until eventual retirement or disposal.
2. To identify, collect, maintain, control, and report inventory and financial information about IT assets throughout their life cycle

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
- ◆ Physical logistics (such as transportation) of assets
- ◆ Retirement of outdated assets
- ◆ Triggering requisition for the procurement of additional assets (for example, if a policy of maintaining minimum inventory stock levels for standard, frequently needed asset item is in place)
- ◆ Financial life cycle of assets (including valuation)

Excludes

- ◆ Risk Management
- ◆ Contract and Supplier Management (including Procurement) (Supplier Management)
- ◆ Configuration Management (logical relationships)
- ◆ Managing the security of an asset (Facilities Management, Security Management)

Activities

This process is composed of these activities:

- A551 Establish Asset Management Framework
- A552 Ready and Control Asset
- A553 Control Asset Information
- A554 Monitor, Audit and Reconcile Asset Records
- A555 Oversee Asset Contracts and Financials
- A556 Retire and Dispose of Asset
- A557 Report Asset Information
- A558 Evaluate Asset Management Performance

[A6] Operations

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. Responsibility for delivery of service sits here. Managing contact and communications with users (for example, service requests) 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

The Operations category 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 category require close integration to function effectively. Operational plans and workload balancing are augmented by constant operational monitoring throughout service delivery. This operational data is used by many processes to identify, analyze, and quickly resolve any anomalies. The Operations category is also the focal point for receiving and responding to a wide variety of user service requests. This process category is vital to operating organizational constructs such as a Service Desk or an Operations Bridge or an Operations Center. Problem Management is included in this category because of its dependence on incident management information.

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 within the designed 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, service requests and other interactions, improving communications and customer perception of service quality
- Provides the designed level of integrity for data at all stages of its life cycle, including protection of business (and IT) data from accidental loss
- Ensures that any faults or issues are recognized and appropriately addressed

Processes

This process category is composed of these processes:

- A61 Request Fulfillment
- A62 Service Execution
- A63 Data Management
- A64 Event Management
- A65 Incident Management
- A66 Problem Management
- A67 Identity and Access Management

[A61] Request Fulfillment

Purpose

The purpose of the Request Fulfillment Process is to receive service requests from users and route each request to the appropriate process for handling. Some service requests are handled by the Request Fulfillment Process, whereas many others are routed to other processes for fulfillment. Request Fulfillment can be the contact management process for an implementation of an IT Service Desk (or equivalent).

Definition of service request: "A request from a user for information, or advice, or for a standard change or for access to an IT service. For example to reset a password, or to provide standard IT services for a new user. Service requests are usually handled by a service desk, and do not require an RFC to be submitted."³⁶

Outcomes

As a result of the successful implementation of the Request Fulfillment Process:

- User and customer satisfaction is enhanced
- User requests to the IT organization are successfully received and processed for fulfillment or other appropriate handling
- Requests are accurately and appropriately routed to the correct process and correct service provider for handling (fulfillment)
- Service level targets for service desk responsiveness and quality are achieved
- Users receive accurate and timely communication concerning the status of their service requests

Scope

At the initial receipt of a service request from a user, the nature of the request and information within it has to be established. Many such service requests can be dealt with by the set of activities within this process. Other service requests, once initially assessed, will be beyond the capability of this process to perform the primary added-value work needed by those requests 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 which types of service requests should be handled by which processes. Over time, the range of service requests which can be directly fulfilled is likely to increase.

Examples of interactions are:

- Incidents are routed to the Incident Management process
- Service requests assessed as standard changes are passed directly to other appropriate processes
- Other, more significant change requests are transferred to the Change Management process

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

This process provides the primary interface point for users of IT services with the service provider.

Includes

Receipt and management of service requests relating to:

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- ◆ Incidents
- ◆ Standard changes (such as deployment of standard software)
- ◆ Identity
- ◆ Access rights
- ◆ Security service requests
- ◆ Information, advice, guidance
- ◆ User satisfaction interactions
- ◆ Complaints

Items which are assessed to be change requests (rather than standard changes) can be routed to Change Management

Excludes

- ◆ Those interactions between the business (and other customers) and the IT service provider that consider the status, scope or coverage of the overall service provision agreements. (Service Level Management)
- ◆ The direct fulfillment of those service requests 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 activities are part of those processes. An example of this would be interacting with a user as part of deploying a PC (Deployment Management)
- ◆ Establishing entitlement limits for user communities against each service (Combination of Service Marketing and Sales, and Service Level Management)
- ◆ Granting access rights (found in Identity and Access Management)
- ◆ Installing standard technical components (Deployment Management)

Activities

This process is composed of these activities:

- A611 Establish Request Fulfillment Framework
- A612 Receive and Approve Service Request
- A613 Fulfill or Route Service Request
- A614 Close Service Request
- A615 Own, Monitor, Track and Communicate Service Requests
- A616 Evaluate Request Fulfillment Performance

[A62] Service Execution

Purpose

The purpose of the Service Execution process is to deliver operational services to IT customers, by matching resources to commitments and employing the IT infrastructure to conduct IT operations.

Definition of operation: "Day-to-day management of an IT Service, System, or other Configuration Item. Operation is also used to mean any pre-defined Activity or Transaction. For example loading a magnetic tape, accepting money at a point of sale, or reading data from a disk drive."³⁷

Outcomes

As a result of the successful implementation of this process:

- Services are delivered in a reliable, robust, secure, and consistent manner
- Services are provided within service level targets
- Resources needed to operate IT services are managed effectively and efficiently
- Consumable resources used to deliver services are supplied in a timely manner
- Up-to-date service metric information is available

Scope

This process is responsible for the scheduling, operation and execution of the IT-based services which have been committed to customers. These services are of many types, including business transaction and batch processing, and also many types of self-service functionality offered as standard services to users.

Service Execution applies the resources made available to it through Deployment Management to the dynamic mix of workload demands. It makes adjustments to resource allocations within the tolerances provided and specified in the solution design.

Includes

- ◆ Understanding, creation, and maintenance of operational schedules
- ◆ Starting, stopping, and other operational resource management 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 and from service start to service close

Excludes

- ◆ Correlating and processing significant events (Event Management)
- ◆ Operational security (Security Management)
- ◆ Data management, backup, and recovery (Data Management)

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Activities

This process is composed of these activities:

- A621 Establish Service Execution Framework
- A622 Schedule and Adjust Workload
- A623 Assign and Control Delivery Resources
- A624 Deliver Service
- A625 Monitor and Report Service Execution Operations
- A626 Evaluate Service Execution Performance

[A63] Data Management

Purpose

The purpose of the Data Management process is to ensure that all data necessary in providing and supporting business and operational services is available for use and is actively managed from creation and introduction until final disposal or destruction.

Outcomes

As a result of successful implementation of this process:

- Data life cycle management policies and governance capabilities are effectively provided
- Data life cycle management services are sustained in order to meet or exceed service level commitments
- Legal, regulatory, and business requirements are met for data privacy, quality, and retention
- The accessibility, performance, cost, and value characteristics of data are established, managed and optimized throughout the full life cycle
- The integrity of data at all stages of its life cycle is ensured, including protection of business (and IT) data from accidental loss and destruction

Scope

Management of the full life cycle 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 cataloging new data
- ◆ Planning and control of data placement, retention, and disposalData backup and restoration of data to prior states

Excludes

- ◆ Information management activities:
 - Data typing and classification (Architecture Management)
 - Content management (Business responsibility, as part of each business process)
- ◆ Change management
- ◆ Access control and security protection (Identity and Access Management, Security Management)
- ◆ Configuration Management

Activities

This process is composed of these activities:

- A631 Establish Data Management Framework
- A632 Plan Data Portfolio Lifecycle
- A633 Acquire and Prepare Data
- A634 Control, Deploy and Maintain Data
- A635 Backup and Restore Data
- A636 Dispose of Data
- A637 Monitor and Report Data Management Operations
- A638 Evaluate Data Management Performance

[A64] Event Management

Purpose

The purpose of the Event Management process is to identify and prioritize infrastructure, service, business process and security events, and to establish the appropriate response to those events, especially responding to conditions that could lead to potential faults or incidents.

Definition of event: “A change of state which has significance for the management of a configuration item or IT service. The term event is also used to mean an alert or notification created by any IT service, configuration item or monitoring tool. Events typically require IT operations personnel to take actions, and often lead to Incidents being logged.”³⁸

Outcomes

As a result of the successful implementation of the Event Management process:

- Service quality is sustained and improved
- Incidents are detected early
- The time between event occurrence and detection is minimized
- Appropriate actions are taken in response to events, in order to resolve some without manual response
- Responses to understood faults are started with minimal delay

Scope

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

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

Includes

- ◆ Providing both real time and historical event information to other IT processes, to facilitate service quality improvement and resource availability
- ◆ Providing similar information relating to the automated aspects of business processes for business analysis
- ◆ Correlation and filtering of events, to identify alert notifications and other conditions
- ◆ Examination and analysis of individual events in isolation as well as events in context with other events
- ◆ Creation of incidents from event information
- ◆ Capture, logging and administration of data generated by the activities within this process

Excludes

- ◆ System monitoring – Monitoring all things that happen related to a system, whereas event management identifies meaningful changes of state that can represent faults.³⁹ System monitoring takes place in Service Execution and Data Management.

Activities

This process is composed of these activities:

- A641 Establish Event Management Framework
- A642 Detect and Log Event
- A643 Filter Event
- A644 Correlate Events and Select Response
- A645 Resolve Event
- A646 Close Event
- A647 Evaluate Event Management Performance

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[A65] Incident Management

Purpose

The purpose of the Incident Management process is to focus on the restoration of a service affected by any real or potential interruption which has impact upon the quality of that service.

Definition of incident: "An unplanned interruption to an IT Service or a reduction in the Quality of an IT Service. Failure of a Configuration Item that has not yet impacted Service is also an Incident. For example Failure of one disk from a mirror set."⁴⁰

Outcomes

As a result of the successful implementation of the Incident Management process:

- Following interruptions, IT service is rapidly restored
- IT service availability is sustained at a high level
- Workarounds to resolve similar service interruptions are created
- Potential improvements to services may be identified

Normal service operation is defined here as working within agreed service level targets.

Scope

The management of the life cycle 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 by automation or people
- ◆ Handling (automatically or with human assistance) of system events that have been identified as incidents by the Event Management process
- ◆ Creation of workarounds
 - While service restoration has the highest priority, consideration has to be made of the risk that a workaround could exacerbate the original incident. For example, certain virus infections might spread beyond their initial scope if a simple service restoration is put into effect
- ◆ Implementation of workarounds (with Change Management, where required by the change policy)
- ◆ Participation within the procedures (typically involving several processes working in conjunction) defined for handling *major incidents*

Excludes

- ◆ Monitoring (Service Execution, Data Management)
- ◆ Responding to business-as-usual perturbations in the running of services (Event Management)
- ◆ Service requests (Request Fulfillment)
- ◆ IT Resilience – ensuring the continued readiness and integrity of the IT services (Resilience category processes)

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Activities

This process is composed of these activities:

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

[A66] Problem Management

Purpose

The purpose of the Problem Management process is 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 change requests (RFCs) against those problems.

Definition of problem: "A cause of one or more incidents. The cause is not usually known at the time a problem record is created, and the Problem Management Process is responsible for further investigation."⁴¹

Outcomes

As a result of the successful implementation of this process:

- The number and adverse impact of incidents and problems is minimized
- Potential incidents are prevented
- Recurrence of incidents is prevented
- The management of incidents is more effective and efficient
- The productivity of support staff is improved

For example, by improving Service Desk first time fix rate

An effective problem management process maximizes system availability, improves service levels, reduces costs, and improves customer convenience and satisfaction.

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.

Effective problem management requires the identification and classification of problems, root cause analysis, and resolution of problems. The problem management process also includes the formulation of recommendations for improvement, maintenance of problem records, and review of the status of corrective actions.

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Includes

- ◆ Root cause analysis and identification
- ◆ Solution (and workaround) definition and selection
- ◆ Submission of change requests (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 (Incident Management)
- ◆ 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 (Knowledge Management)

Activities

This process is composed of these activities:

- A661 Establish Problem Management Framework
- A662 Detect and Log Problem
- A663 Categorize and Prioritize Problem
- A664 Investigate and Diagnose Problem
- A665 Resolve Problem
- A666 Close and Review Problem
- A667 Monitor, Track and Report Problems
- A668 Evaluate Problem Management Performance

[A67] Identity and Access Management

Purpose

The purpose of the Identity and Access Management process is to establish and maintain a registry of IT user identities and their associated access rights for each service. The registry provides a key reference for the authorization or rejection by the Security Management process of service usage attempts.

The process provides the ability to control and track who has access to data and services. It contributes to achieving the appropriate confidentiality, availability, and integrity of the organization's data.

ITIL definition of identity: "A unique name that is used to identify a user, person or role. The identity is used to grant rights to that user, person, or role."⁴² This definition is narrower than those established in ISO standards relating to security. For the purposes of this process, the user might not be directly linked to one or more persons; it can take the form of an IT product or system for which access rights must be established and tracked, and for which an identity is therefore established.⁴³

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43. ISO/IEC 15408-1, *Information technology – Security techniques – Evaluation criteria for IT security*. "Part 1: Introduction and general model." Widely known as the *Common Criteria*.

Definition of rights: “Entitlements, or permissions, granted to a user or role. For example, the right to modify particular data, or to authorize a change.”⁴⁴

Outcomes

As a result of the successful implementation of the Identity and Access Management process:

- An accurate and complete identity registry and associated rights is maintained
- There is a definitive source so that decisions can be made allowing users have access to information and the services they need while unauthorized access attempts are denied
- Authorized access to data and services is aligned with security policies
- Records of access attempts can be audited
- The data necessary to demonstrate compliance in relation to service and information access is available

Scope

This process operates within the set of controls described by the IT Security Policy, which itself takes direction from the Business Security Policy. The users for whom (or which) an identity is registered include not only those outside the IT organizational entity but also all resources involved in running the IT capability itself. Levels of control of identities and access rights will vary depending upon the scope of access required and the level of potential harm (fraud) from malicious access.

Access policies can be dynamic, reflecting the need to vary access rights depending on the time of day or the role being performed. The process must recognize that the authority to give access rights, or even to delegate the authority to give access rights, is a normal activity for many users.

Includes

- ◆ An identity schema aligned with business and security policies
- ◆ Establishment and maintenance of identities
- ◆ Establishment and maintenance of access rights
- ◆ Translation of business rules for roles and group authorities so as to enact them within the identity schema
- ◆ Access to the registry for those processes providing affiliated security services, like physical access (Facilities Management)
- ◆ Raising warnings or revoking access rights when access attempt thresholds are breached

Excludes

- ◆ Definition, implementation, and operation of authentication mechanisms (Security Management)
- ◆ Enforcement of access rights (Security Management)
- ◆ Definition of the rules for business role and group authorities – defined by the business
- ◆ Physical security and access (Facilities Management)
- ◆ Security policies – defined by the business and Security Management

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Activities

This process is composed of these activities:

- A671 Establish Identity and Access Management Framework
- A672 Evaluate and Verify Identity and Access Request
- A673 Create and Maintain Identity
- A674 Provide and Maintain Access Rights
- A675 Monitor and Report Identity and Access
- A676 Evaluate Identity and Access Management Performance

[A7] Resilience

Description

Purpose

The Resilience category of processes describes the analysis and proactive planning required to enable resilient infrastructure, applications, and services. Resilience is here defined as the ability to absorb conditions or faults without service failure and the ability to quickly return to a previous good condition. 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 processes require input from a wide range of other processes, including such items as architectural information, problem and known error information, solution designs, scheduled projects and changes, as well as operational monitoring data. 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 category 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) or human actor used to deliver services. The processes in this category 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 support of 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
- Provides assurance that agreed to IT Services will continue to support business requirements in the event of a catastrophic disruption to the business environment

Processes

This process category is composed of these processes:

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

[A71] Compliance Management

Purpose

The purpose of the Compliance Management process is to ensure adherence to laws and regulations, internal policies, procedures, and stakeholder commitments.

Outcomes

As a result of successful implementation of this process:

- Regulatory, audit, and other internal compliance is ensured and demonstrated
- Legal liabilities and related productivity losses consequential upon any compliance breach are avoided
- The reputation and value of the brand of the businesses that IT serves is protected

Scope

Integrity (sound operating) 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
 - Laws such as Sarbanes Oxley
 - Industry standards and guidelines such as ISO 27001 (ISO17799), COSO and CobiT
- ◆ Specification of compliance controls needed within IT services and solutions and also within other IT processes
- ◆ Internal and external audit readiness preparations
- ◆ Compliance audits

Excludes

- ◆ Setting internal policies (IT Governance and Management System Framework)
- ◆ Modification to IT services and solutions to establish compliance controls (through Realization and Deployment categories)
- ◆ Modification to other IT processes (through IT Governance and Management System categories)
- ◆ 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 and Report Compliance
- A717 Evaluate Compliance Management Performance

[A72] Security Management

Purpose

The purpose of the Security Management process is to establish and operate security controls and protections over all IT assets and services in order to conform to overall business security as well as IT-specific requirements. It includes activities to mitigate the risk posed by malicious outsiders and insiders, and to decrease vulnerabilities in the IT services, systems and processes that would make it easier for such malicious parties to succeed.

Outcomes

As a result of the successful implementation of the Security Management process:

- The confidentiality, integrity, and accessibility of information meets agreed requirements:
 - Information is available for approved purposes
 - Access (whether internal or external) to protected items can be validated and tracked
 - Information and systems are protected from unauthorized access and any attacks
- IT services and infrastructure meet external security requirements from service level agreements, contracts, and legislative dictates
- IT security aligns with the business' overall security requirements
- The reputation of the business as secure and trustworthy is protected

Scope

The process covers the life cycle of security concerns, including planning, operational measures, evaluation, and audit. It will identify IT security threats, vulnerabilities, and risks in order to develop an overall approach to counter and handle them that is aligned with business security requirements. It will operate security protections and mechanisms which meet the desired level of confidentiality, availability and integrity for information and IT services.

Includes

- ◆ Information security policy
- ◆ Specification of information security controls including asset use, access, documentation, and information controls and overseeing their establishment
- ◆ Operation of controls and measures such as:
 - Credential operations
 - Perimeter defense
 - Intrusion detection
 - Secure coding standards
 - Key and encryption management
 - Separation of duties
 - Application isolation
- ◆ Identification of IT security incidents
- ◆ Management of supplier and partner access to services and systems
- ◆ Compliance enforcement measures (related to security)

Excludes

- ◆ Establishment and maintenance of identities and access rights (Identity and Access Management)
- ◆ Health and safety (Business responsibility, with contribution from Facilities Management)

- ◆ Business security management, including trust management as it relates to business processes (Business responsibility)
- ◆ Identification of privacy requirements (within the scope of Compliance Management)

Activities

This process is composed of these activities:

- A721 Establish Security Management Framework
- A722 Produce and Maintain Security Policy
- A723 Analyze Security Threats, Vulnerabilities and Risks
- A724 Classify Information Asset Security
- A725 Plan and Implement Security Practices
- A726 Operate Security Protection Mechanisms
- A727 Monitor, Assess, Audit and Report Security
- A728 Evaluate Security Management Performance

[A73] Availability Management

Purpose

The purpose of Availability Management is to match the availability of the IT services against the current and future identified needs of the business or to exceed them. Availability Management enhances the availability of services by planning long-term service availability, measuring and monitoring service availability, and formulating service availability design criteria that meet requirements.

Definition of availability: "Ability of a Configuration Item or IT Service to perform its agreed Function when required. Availability is determined by Reliability, Maintainability, Serviceability, Performance, and Security. Availability is usually calculated as a percentage. This calculation is often based on Agreed Service Time and Downtime. It is Best Practice to calculate Availability using measurements of the Business output of the IT Service."⁴⁵

Outcomes

As a result of the successful implementation of the Availability Management process:

- IT infrastructure provides a consistent level of availability that enables the business to meet its current and future objectives
- Availability related incidents and problems are minimized
- The provided level of availability is cost justified and optimized

Scope

ITIL defines components of availability to be:

- Reliability – "A measure of how long a Configuration Item or IT Service can perform its agreed Function without interruption."⁴⁶
- Maintainability – "A measure of how quickly and Effectively a Configuration Item or IT Service can be restored to normal working after a Failure. Maintainability is also used in the

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context of Software or IT Service Development to mean ability to be Changed or Repaired easily."⁴⁷

- Serviceability – "The ability of a Third Party Supplier to meet the terms of their Contract. This Contract will include agreed levels of Reliability, Maintainability or Availability for a Configuration Item."⁴⁸

Includes

- ◆ Availability needs and requirements
- ◆ Identification of capabilities needed to meet requirements
- ◆ New and existing IT services
- ◆ Ensuring that availability provision of underlying services and suppliers in support of primary IT services is factored in
- ◆ Considering all aspects of IT service delivery and support that could impact availability (training, tools)

Excludes

- ◆ Business Continuity Management or disaster recovery (Business responsibility along with IT Service Continuity Management)
- ◆ Direct handling of service failures (Incident Management)
- ◆ Approval of capabilities needed to meet requirements (Portfolio Management)
- ◆ Creation of capabilities needed to meet requirements (Realization category of processes)
- ◆ Managing suppliers (Supplier Management)

Activities

This process is composed of these activities:

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

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[A74] Capacity Management

Purpose

The purpose of Capacity Management is 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 complete spectrum from design and planning of service capacities through the operational aspects of service capacity.

Definition of Capacity: "The maximum Throughput that a Configuration Item or IT Service can deliver whilst meeting agreed Service Level Targets. For some types of CI, Capacity may be the size or volume, for example a disk drive."⁴⁹

Outcomes

As a result of the successful implementation of the Capacity Management process:

- IT always has the capacity to meet the expected (agreed) current and future identified needs of the business
- Scalability requirements of the business are understood and accommodated
- Incidents caused by lack of capacity are averted
- The cost of capacity acquisition is reduced by planning and optimizing capacity usage.

Scope

The process covers a wide range: understanding service requirements, determining component capacities, the design and deployment of capacity, and meeting expectations. It collects and analyzes data that is relevant to application and infrastructure utilization and performance for the purpose of determining 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.

- Business Capacity Management
 - This focus area is responsible for ensuring that the impacts of future business requirements for IT services upon IT resources are considered, planned, and implemented in a timely fashion
- 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 service performance is monitored, measured, and reported; and meets business requirements and agreements
- Component Capacity Management
 - This focus area is the management of the performance, utilization, and capacity of individual technical components possessing finite resources

Includes

- ◆ All aspects of the Performance Management discipline
- ◆ Interfacing with Demand Management on Service Demand Forecasts
- ◆ Component capacity management (both as it affects in-house service operations and with consideration of impacts to and requirements upon service partners)
- ◆ High-level service capacity monitoring

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- ◆ Determining the requirements for space and other facilities that will result from capacity proposals and plans

Excludes

- ◆ Low-level system capacity monitoring (Service Execution)
- ◆ Generalized human resource management (Workforce Management)
- ◆ Designing and implementing the facilities needed to support capacity plans (Facilities 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 Supervise Tuning and Capacity Delivery
- A745 Produce and Maintain Capacity Plan
- A746 Evaluate Capacity Management Performance

[A75] Facilities Management

Purpose

The purpose of the Facilities Management process is to create and maintain a physical environment that houses IT resources and to optimize the capabilities and cost of that environment.

Definition of Facilities Management: “The Function responsible for managing the physical Environment where the IT Infrastructure is located. Facilities Management includes all aspects of managing the physical Environment, for example power and cooling, building Access Management, and environmental Monitoring”.⁵⁰

Outcomes

As a result of the successful implementation of the Facilities Management process:

- The physical environment within which information technology resources perform supports operational needs
- Availability of IT systems is protected from physical threats (including environmental, security, continuity)
- Facility requirements are analyzed, planned for, and met in a timely and cost-effective manner

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)

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- ◆ Physical logistics (receipt, staging, moving)
- ◆ Physical environment for all information and communications technology
 - For example, participating in the design of racks and cabling
- ◆ Physical access management to IT facilities
- ◆ Safety
- ◆ Managing incidents concerning facilities, and interfacing with Incident Management when both IT and Facilities components are involved

Excludes

- ◆ Asset Management
- ◆ Procurement (Supplier Management)
- ◆ Business resilience and continuity (Business responsibility, in conjunction with IT Service Continuity Management)
- ◆ Corporate facilities (buildings, maintenance, catering, mail delivery, desks, lights) unless associated with a secure data center (Business responsibility)
- ◆ Security of corporate facilities, such as office buildings, factories (Business responsibility)
- ◆ IT security policies and practices (Security Management)
- ◆ Media management (see Data Management) but would include physical transportation and security of media
- ◆ Management of suppliers (Supplier Management)

Activities

This process is composed of these activities:

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

[A76] IT Service Continuity Management

Purpose

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

Definition of IT Service Continuity Management: “The Process responsible for managing Risks that could seriously impact IT Services. ITSCM ensures that the IT Service Provider can always provide minimum agreed Service Levels, by reducing the Risk to an acceptable level and Planning for the Recovery of IT Services. ITSCM should be designed to support Business Continuity Management.”⁵¹

Outcomes

As a result of the successful implementation of the IT Service Continuity Management process:

- A set of IT Service Continuity and IT Recovery plans are created, maintained, and tested that support the organization’s overall Business Continuity Plans
- Business continuity targets can be met through the recovery of agreed IT services and technical facilities to agreed time scales, under Change Management control
- Regulatory requirements for IT service continuity are met
- Business vitality and functions are maintained at agreed levels

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
- ◆ Contributing to proactive prevention of IT disruptions (by identifying and analyzing risks, and sharing the analysis)
- ◆ Control of continuity solution invocation in the event of disruption
- ◆ Testing of the continuity solution

Excludes

- ◆ Normal operational fluctuations (Service Execution, Event Management)
- ◆ Minor technical faults that are covered by Incident Management
- ◆ Deliberate business strategy changes and long term risks such as business diversification or restructuring (IT Strategy)

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- ◆ Responsibility for 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 (once agreed by Portfolio Management, these solutions are treated as any other solution through Realization and Transition)
- ◆ Contractual arrangements with third parties (Supplier Management)

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] Administration

Description

Purpose

The Administration process category brings together the processes that look after many of the non-technical resources: people, finances, and contracts, among others that support IT service delivery. It builds a sound foundation for the IT business, which other processes can deliver the IT services for the parent business.

Rationale

The processes in this category help build and manage the necessary infrastructure for controlling IT resources (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, pricing and contract management, and skills management. Failure in any of these areas of management could lead to the failure of the IT entity of the business. 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
- 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

This process category is composed of these processes:

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

[A81] Financial Management

Purpose

The purpose of the Financial Management process is to ensure that financial controls and procedures are in place to effectively predict and control IT budgets, enable business decisions, and ensure that legal, corporate and regulatory compliance is maintained. The outputs from the Financial Management process also enable benchmarking and business case analysis to support organizational decision making.

Outcomes

As a result of the successful implementation of this process:

- IT financial controls are established and enforced
- Operational data is transformed into financial information and management actions
- Compliance is ensured with legal, industry, and corporate standards and procedures
- Benchmarking and other financial comparisons are enabled
- IT portfolio decisions are assisted on investment by providing detailed business cases and by providing financial input to decision support
- IT budgets are effectively predicted and controlled

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
- ◆ Financial management (depreciation) of assets

Excludes

- ◆ Asset management (including life cycle management)
- ◆ Resource usage data collection

- Systems and services (Service Execution)
- Time recording and labor claiming (any process, especially Program and Project Management)
- ◆ Service, solution, and offering pricing (Service Pricing and Contract Administration)
- ◆ Contract management (Service Pricing and Contract Administration)
- ◆ Procurement (Supplier Management)

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 Perform Financial Modeling
- A813 Plan and Control Budgets
- A814 Perform Financial Accounting
- A815 Administer Charging
- A816 Audit Financials
- A817 Evaluate Financial Management Performance

[A82] Supplier Management

Purpose

The purpose of the Supplier Management process is to manage interactions with suppliers and partners formally by selecting them based on their ability to meet identified requirements, and managing performance against the agreed commitments.

Outcomes

As a result of the successful implementation of this process:

- Attitudes and behaviors are promoted that encourage mutual success
- Procurement and delivery of products and services are optimized for maximum value across supplier relationships
- Obligations are met as efficiently and effectively as possible by both parties in the relationship
- Optimal value is achieved for costs in maintaining supplier relationships

Scope

Involves all aspects of managing relationships with suppliers and outsourcers and of the procurement of assets and services. Addresses the complete supplier and procurement life cycle from strategic considerations to tactical considerations, and 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
 - Terms and conditions conformance
- ◆ Procurement (placing the order), both against established contracts and for off-the-shelf items
- ◆ Internal and external suppliers
- ◆ Formalizing the operational level agreement (OLA) items, where they are to be fulfilled by an external supplier, within an underpinning contract (UC)

Excludes

- ◆ Service Level Management
 - Establishing the substance of OLA items which relate to a supplier
 - OLA and UC service monitoring
- ◆ Physical logistics (Facilities Management)
- ◆ Product and services requirements and specifications (from Solution Design, for example)

Activities

This process is composed of these activities:

- A821 Establish Supplier Management Framework
- A822 Manage Portfolio of Suppliers
- A823 Manage Supplier Contracts
- A824 Manage Procurement
- A825 Evaluate Supplier Performance
- A826 Provide Supplier Product and Service Information
- A827 Evaluate Supplier Management Performance

[A83] Service Pricing and Contract Administration

Purpose

The purpose of the Service Pricing and Contract Administration process is 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 selling those services.

Outcomes

As a result of successful implementation of this process:

- Prices are set that reflect the charging policies of the IT organization
- Pricing is aligned to achieve business objectives
- Requests for pricing are satisfied in a responsive manner
- Customer contracts and agreements are administered 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, and flexible terms and conditions)
- ◆ Monitoring impact on user and customer behavior and making appropriate adjustments

Excludes

- ◆ Metering (Service Execution, Data Management)
- ◆ Billing (Financial Management)
 - Initiating pricing negotiations (Service Marketing and Sales)

Activities

This process is composed of these activities:

- A831 Establish Service Pricing and Contract Administration Framework
- A832 Collect Pricing Data
- A833 Provide Price Alternatives
- A834 Administer Customer Contract/ Agreement
- A835 Monitor Pricing Effects
- A836 Evaluate Service Pricing and Contract Administration Performance

[A84] Workforce Management

Purpose

The purpose of the Workforce Management process is to provide the optimal mix of staffing (resources and skills) in order to deliver the agreed IT services at the negotiated service levels and commitments.

Outcomes

As a result of successful implementation of this process:

- An appropriately skilled and motivated workforce is attracted and retained
- Staffing and skills meet needs of the business, including required technical and business skills, both on a day-to-day basis and over time
- Compliance with all workforce-related legal and regulatory requirements and with corporate practices is ensured
- A succession strategy for leadership and critical skills is enabled
- Workforce management information is provided to support informed decision making on sourcing strategy

Scope

Any aspect of managing the human resources available and necessary for the IT endeavor to fulfill its obligations, including workload, skills, and personnel.

Includes

- ◆ Acquiring, hiring, retaining, developing, firing, retiring
- ◆ Introducing and orienting new resources to the workplace
- ◆ Skills management
- ◆ Workforce management, including capacity planning and forecasts
- ◆ Work and job design, including roles and responsibilities
- ◆ Skills development and training
- ◆ Performance evaluation
- ◆ Employee communications
- ◆ Workforce task management
- ◆ The execution of corporate human resources (HR) activities in relation to the IT workforce
- ◆ Representing human resource issues relating to the IT workforce to corporate HR

Excludes

- ◆ Establishing corporate HR policies and their deployment beyond IT
- ◆ 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:

- A841 Establish Workforce Management Framework
- A842 Forecast and Plan Workforce
- A843 Administer Human Resources
- A844 Manage Skills
- A845 Evaluate Workforce Management Performance

[A85] Knowledge Management

Purpose

The purpose of the Knowledge Management process is to focus on capturing and exploiting the information and knowledge needed by personnel to work effectively.

Definition of Knowledge Management: "The Process responsible for gathering, analysing, storing and sharing knowledge and information within an Organisation. The primary purpose of Knowledge Management is to improve Efficiency by reducing the need to rediscover knowledge".⁵²

Outcomes

As a result of the successful implementation of this process:

- Organizational and individual knowledge and skills are improved
- All areas of IT are assisted in providing optimized IT end-to-end business services
- Technologies are leveraged for capture, location, and dissemination of knowledge and expertise
- Communities of practice are able to optimize the use of organizational knowledge
- Innovation is promoted and enabled

Scope

The process emphasizes controlled but efficient access to assets across the organization, ensuring consistency and reuse as appropriate to take advantage of best practices and enable innovation.

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
 - Life cycle management of knowledge, from development through retirement
 - Content management for knowledge data across all media and access mechanisms in which it resides
- ◆ Working with other IT processes so that the relevant knowledge in their data and information repositories is made available and is actively managed
- ◆ 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, such as patents and external publications

Excludes

- ◆ Understanding and acting on the knowledge (outcome management is the responsibility of all other IT processes)
- ◆ Establishing and operating the data and information repositories associated with individual IT processes; for example, the Configuration Management database

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- ◆ General Knowledge Management for the business
- ◆ Content management for business Web-based data (responsibility of the business, with support from Data Management)

Activities

This process is composed of these activities:

- A851 Establish Knowledge Management Framework
- A852 Create and Maintain Knowledge Plan
- A853 Acquire Knowledge
- A854 Evaluate and Structure Knowledge
- A855 Disseminate Knowledge
- A856 Monitor, Assess and Report Knowledge Status
- A857 Evaluate Knowledge Management Performance