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It Service Management for the Nlp an Executive Overview

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Abstract

Implementation of IT Service Management (ITSM) processes as prescribed by the Information Technology Infrastructure Library (ITIL) or in Microsoft Operation of Framework (MOF) can be a difficult undertaking. The Regis University Networking Lab Practicum (NLP) has opted to align its current IT Management methodology with the current best practices employed by other organizations. An initial analysis in the form of an executive overview was conducted in order to substantiate the benefits of IT Service Management and to determine the implementation feasibility in an organization comprised mainly of transient IT personnel.

The impetus for the transition away from business as usual in major companies and corporations was directly correlated to the lack of consumer confidence brought about by recent corporate scandals. Due to the extensive nature of the unscrupulous behavior of corporate executives, Congress was forced to enact new legislation to stem the tide of malfeasance. The new legislation took the form of the Sarbanes-Oxley Act of 2002. This act contained numerous provisions that dictate increased verifiable and auditable financial disclosures that reflect the status of operations in a real-time mode. In order to comply with this new regulation, IT systems needed to become much more reliable.

IT Service Management provides the necessary processes to comply with the new demands of the changing business environment. Conversely, these processes and procedures are new to most corporations in the domestic market and thus there were very few American case studies to substantiate the benefits of IT Service Management.

This thesis attempts to clarify the numerous interrelated processes recommended by IT Service Management through the use of research, nomenclature, and templates. The templates are in the form of flowcharts that visually identify important issues and concerns that are brought to the attention of the middle managers of the Networking Lab Practicum. With this new correlated documentation fellow students can map out a future course of action that will lead to the full implementation of ITSM for Regis University.

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1 Chapter One: Introduction

1.1 *Statement of the Problem*

The Regis University Networking Lab Practicum (NLP) is a student based organization that subscribes to the tenants of service based learning. Students are encouraged to seek out and engage in autonomous and collaborative projects that promote unity and compassion for those who are less fortunate. Service based learning objectives are achieved when students are allowed the occasion to provide all aspects of information technology network services to nonprofit organizations and to support various segments of Regis University's information technology systems infrastructure.

The pro bono services are provided by the NLP students in exchange for the opportunity to have hands on experience in meaningful real-world information technology projects prior to graduation. Therein lies the crux of the dilemma "graduation"; students are continuously moving into and out of the program making it difficult to manage the knowledge gained in a cohesive and structured format. Often times, there is a complete turnover in the leadership positions as well.

Some practicum neophytes found it difficult to navigate the nuances of a planned yet unstructured environment. In fact, I was one of those very same students; it took me several months to identify a project that complemented my long-term career objectives of managing knowledge workers. In time, I assumed a leadership position with the goal of developing a new strategic direction for the NLP program to follow. The principles

espoused by the pundits of Information Technology Service Management (ITSM) appear to provide the tactics necessary for reaching the new long-term objectives.

IT Service Management through the use of the Information Technology Infrastructure Library (ITIL) provides solutions based on the best practices utilized by businesses for dealing with the aforementioned issue. "The Information Technology Infrastructure Library (ITIL) defines the organizational structure and skill requirements of an information technology organization and a set of standard operational management procedures to allow the organization to manage an IT operation and associated IT infrastructure" (ITILlibrary.org, 2006, ITIL, ¶. 1).

The position presented in this paper is an executive overview that attempts to provide a managerial perspective that supports the longevity of the organization. Therefore, the objectives related to this thesis are:

1. To introduce the principles of IT Service Management through the structures and guidelines of the Information Technology Infrastructure Library (ITIL).
2. To enhance the mission of the Networking Lab Practicum by providing a reference model for the implementation of IT Service Management.
3. To help the Networking Lab Practicum remain on the cutting edge relevant to new nomenclature, methods and procedures in the IT field.
4. To provide relevant subject matter and further define content for new Networking Lab Practicum projects.

1.2 Relevance, significance or need for the project

In today's fast-paced global economy many organizations find it difficult to keep pace with the rapidly changing financial markets. The traditional hierarchical structure of

most companies is woefully inadequate at dealing with rapid change; the need for a more dynamic organization has emerged as a top priority among business leaders. "Similarly, emphasis within organizations has shifted from vertical functions, or departments to horizontal processes that run across the organization, and decision-making authority is increasingly granted to personnel at lower levels" (The IT Service Management Forum, 2002, p.11).

An additional unintended response to the pressures of the marketplace was for management to falsify the financial condition of their organization. The news of corporate scandals has filled the pages of every newspaper across America from the Wall Street Journal to the smallest mom-and-pop outfit. According to the comptroller from the state of New York "a string of corporate scandals emerging over the past two years has had a tremendous impact on the holdings of individuals and institutional investors" (Alvin G.Hevesi, 2003, p. 1).

According to Bueno de Mesquita "in developed equity markets with adequate legal protection for investors we believe that securities fraud (also referred to as accounting fraud) is typically the result of management trying to preserve shareholder value in order to protect their jobs in the face of poor performance rather than as a result of a desire to defraud investors per se" (Bueno de Mesquita, Bruce & Smith, Alastair, 2004, p. 2)

According to the comptroller " Unlike past scandals that involved specific sectors of Wall Street, today's scandals implicate most facets of businesses, from individual companies and their corporate officers to the accounting industry and investment banking-houses" (Alvin G.Hevesi, 2003, p. 3). The financial fallout was devastating; individual and corporate investors have lost billions of dollars. "According to the

Brookings Institution, response to the scandals reduced the national economy by \$35 billion in the first year after they were revealed (Alvin G.Hevesi, 2003, p. 1). The rapid decline of the stock market also harmed state and local economies. “The New York State economy lost \$2.9 billion because of the scandals during the same period”(Alvin G.Hevesi, 2003, p. 5) “From the fall of year 2000 continuing through to mid July of 2002 the stock market declined by almost 28%” (Alvin G.Hevesi, 2003, p.17).

The fluctuations in the stock market affected almost 50% of American households because they had holdings and investment vehicles tied to the market performance. As the financial markets gained in prosperity, individuals amassed large amounts of unrealized paper wealth which led to greater spending; this was called the wealth effect (Alvin G.Hevesi, 2003, p.14). Likewise the opposite behavior also plays into this equation; when investors feel that their perceived wealth is diminishing they alter their spending patterns. The financial markets are affected greatly by the fluctuating patterns of consumer spending which represents about two thirds of the national economy (Alvin G.Hevesi, 2003, p.14). Also, rising financial markets can increase the ease at which businesses can obtain capital and lower the cost of that capital (Alvin G.Hevesi, 2003, p.14).

To many investors the integrity of the organizations they invested in is directly linked to the confidence level they bestowed upon the CEO¹ (Bueno de Mesquita, Bruce & Smith, Alastair, 2004, pp. 1-34). Congress recognized that because of all the scandals and the propensity for its continuance an alternative methodology in the

¹ A better insight into the inside political wrangling of corporate CEOs and their political rivals is detailed quite explicitly in *The Political Economy of Corporate Fraud: An Empirical Test*: see references.

form of new legislation needed to be prescribed. This legislation took the form of the Sarbanes-Oxley Act of 2002.

"The Sarbanes-Oxley Act ("Sox Act") (officially titled the Public Company Accounting Reform and Investor Protection Act of 2002), signed into law on 30 July 2002 by President Bush, is considered the most significant change to federal securities laws in the United States since the New Deal". It came in the wake of a series of corporate financial scandals, including those affecting Enron, Arthur Andersen, and WorldCom. The law is named after Senator Paul Sarbanes and Representative Michael G. Oxley. It was approved by the House by a vote of 423-3 and by the Senate"(Soxxes Ltd., n.d., ¶1). According to the info guide for the Sarbanes-Oxley Act:

"Provisions of the Sarbanes-Oxley Act (SOX) detail criminal and civil penalties for noncompliance, certification of internal auditing, and increased financial disclosure. It affects public U.S. companies and non-U.S. companies with a U.S. presence. SOX is all about corporate governance and financial disclosure" (Sarbanes-Oxley-101.com, n.d.,¶ 2). Specific sections in the Sox Act of 2002 indirectly and directly affect the business processes of the IT departments.

The following highlights of the aforementioned Sox sections are provided by the Sarbanes-Oxley-101 web site (Sarbanes-Oxley-101.com, n.d., Summary ¶ 3-6):

"SOX Section 302 - Corporate Responsibility for Financial Reports

- a) *CEO and CFO must review all financial reports.*
 - b) *Financial report does not contain any misrepresentations.*
 - c) *Information in the financial report is "fairly presented".*
 - d) *CEO and CFO are responsible for the internal accounting controls.*
 - e) *CEO and CFO must report any deficiencies in internal accounting controls, or any fraud involving the management of the audit committee.*
 - f) *CEO and CFO must indicate any material changes in internal accounting controls.*
- (Sarbanes-Oxley-101.com, n.d., ¶3)

SOX Section 404: Management Assessment of Internal Controls

All annual financial reports must include an Internal Control Report stating that management is responsible for an "adequate" internal control structure, and an assessment by management of the effectiveness of the control structure. Any shortcomings in these controls must also be reported. In addition, registered external auditors must attest to the accuracy of the company management's assertion that internal accounting controls are in place, operational and effective. (Sarbanes-Oxley-101.com, n.d., ¶ 4)

SOX Section 409 - Real Time Issuer Disclosures

Companies are required to disclose on a almost real-time basis information concerning material changes in its financial condition or operations. (Sarbanes-Oxley-101.com, n.d., ¶ 5)

SOX Section 902 - Attempts & Conspiracies to Commit Fraud Offenses

It is a crime for any person to corruptly alter, destroy, mutilate, or conceal any document with the intent to impair the object's integrity or availability for use in an official proceeding." (Sarbanes-Oxley-101.com, n.d., ¶ 6)

With the enactment of the Sarbanes-Oxley Act corporate leaders are now held responsible for the accuracy and authenticity of their company's financial records. For the information technology departments this means that they must provide the most accurate and detailed records as technologically possible. The need for verification and authenticity of financial records has become so great that even the international community now expects this type of legitimacy.

On March 25, 2004 the Israeli Ministry of Finance issued the following press statement titled: *"Directives Resembling the American Sarbanes-Oxley Act to be Adopted in Israel for the First Time: Financial Statements of Government-Owned Companies Will be Required to Include Executive Declarations Regarding Veracity of the Statements"* (Israeli Ministry of Finance; International Division, 2004, Title). I

n the press release the Israeli government stated that their actions were motivated by corporate scandals in the U. S. and the U. S. adoption of the Sarbanes-Oxley Act to combat future incidents of malfeasance. The following is an excerpt from that Israeli Ministry of Finance press release:

"By rendering it necessary to attach manager declarations to the financial statements, the Government Companies Authority - for the first time in Israel - has adopted a

significant part of the American Sarbanes-Oxley Act, which has been applicable in the United States since 2002. The manager declaration is in line with the growing global trend regarding exposure of information that is disclosed in the financial statements, the obligation to report and the assuming of responsibility by the company and by its key executives" (Israeli Ministry of Finance; International Division, 2004, ¶. 3).

This is a clear example of the type of business environment that the graduates from the Regis University Networking Lab Practicum must be aware of. The NLP graduates should be prepared to enter and fulfill the needs of their prospective employers specific to the constraints of the SOX legislation. There is a great deal of speculation and mental trepidation amongst corporate executives concerning how their corporations and companies can address this legislation. Although Regis University is a private school, some donations are from corporate business entities. Those donors, investors and benefactors are well aware of the current climate in the business community.

The standards imposed on the business world also have major implications for private academic institutions. As an example, in order for the Regis IT department and the Networking Lab Practicum (NLP) to secure funding for future projects, current projects must be able to demonstrate a degree of financial responsibility that matches the expectations of parents and investors alike.

1.3 Barriers and/or issues

There are several major concerns at the initiation of this project in particular. First, there were no current North American implementations of IT Service Management in the business community that adhered to the standards of Information Technology

Infrastructure Library (ITIL)/Microsoft Operational Framework (MOF). ITIL provides the process framework for accomplishing every conceivable aspect of the IT department. It is based on a set of best practices implemented and tested by the British government many years ago. However, the implementation of standards and practices based on the findings of sources outside the United States presented tremendous hurdles in finding worthwhile documentation.

Second, the literature was unsupported by any worthwhile scientific research; in fact the first books that I ordered concerning the subject had to come from Australia. As mentioned earlier a number of companies/corporations misrepresented the internal workings and the financial condition of their organizations.

The methods and procedures utilized by the IT departments only enhanced the company's malfeasance. Smaller organizations did not have the manpower or the resources to adopt the ITIL/MOF processes, nor were they able to publish any worthwhile efforts of similar attempts. This led to a long drawn out learning curve, one that can only be overcome through endurance and perseverance.

A third issue arose from the fact that it was necessary to extend the duration of my commitment to the Networking Lab Practicum from one year to over three years. The extended time period combined with the psychological reluctance of individuals to alter their behavior and norms from the known to the unknown presented quite a dilemma.

The leadership under which I entered the program neither had exposure or an understanding of the concepts that I raised related to ITIL/MOF. In the timeframe of the initial analysis related to the adoption of ITSM, the practicum students that were already

engaged in the initial stages of project discovery were overwhelming reluctance to deviate from any known processes.

In order to offset my tremendous lack of knowledge I enrolled in an ITIL certification program offered over the Internet from a company in Australia. As I gained greater knowledge and expertise on the subject matter my peers and counterparts successfully completed their projects and moved on. With each new NLP group I was once again faced with educating my contemporaries while simultaneously growing in my knowledge base, which fostered a tremendous amount of confusion and lack of support. Regardless of how hard an individual tried to grasp the nuances of the ITSM processes, without current and relevant documentation it was an unachievable goal.

1.4 Elements, hypotheses, theories, or questions to be discussed/answered

The questions most relevant to the Networking Lab Practicum (NLP) are: What is the Information Technology Infrastructure Library (ITIL) and Microsoft Operational Framework (MOF)? What are the 10 ITIL processes and how can we apply them in our environment? An additional consideration for the NLP is in light of the transient nature of the participants can the organization adopt all 10 processes in a time frame relevant for a successful deployment? Furthermore, what are the steps necessary to begin such an endeavor? A supplementary element is how to coordinate the implementation effort with the other practicum disciplines and what considerations must be given to how they are organized.

An additional element concerning how to foster the psychology of change is sometime overlooked in project driven organizations; from a managerial perspective it is a subject that needs to be discussed.

1.5 *Limitations/scope of the project*

The scope of the project will be limited to research, analysis and the formulation of an action plan that recommends the initial project coordination tasks. It is difficult to delegate specific tasks to individuals within the practicum due to current ongoing projects. I can only elucidate the nuances of the 10 ITIL processes in the hopes that new entrants into the program would take up the mantle of further evaluation of specific duties to be performed. The project will also be limited to defining the advantages of ITIL to the customer and to the IT organization. In addition, the project will identify potential problems that may be incurred, thus laying the groundwork for additional research.

1.6 *Definition of terms (Source: The IT Service Management Forum, 2002, pp 35-39).*

- **Availability Management** - The process of ensuring the appropriate deployment of resources, methods and techniques, to support the availability of IT services and agreed with the customer.
- **Capacity Management** - Is the process of optimizing the cost, timing of acquisition, and deployment of IT resources, to support the agreements made with the customer.
- **Change Management** - Addresses the controlled implementation of change to the IT infrastructure with the objective of determining the required changes, and

how they can be implemented with a minimum adverse impact on the IT services, while at the same time ensuring the traceability of changes.

- **Configuration Management** - This process addresses the control of a changing IT infrastructure (standardization and status monitoring), identifying configuration items (inventory, mutual links, verification and registration), collecting and managing documentation about the IT infrastructure and providing information about the IT infrastructure to all other processes.
- **Financial Management for IT Services** - Provides Information about the Costs Incurred While Providing IT Services. This Enables a Proper Consideration of Costs and Benefits Would Be Citing on Change to the IT Infrastructure or IT Services.
- **Incident Management** - This process aimed to resolve the incident and restore the provision of services quickly.
- **IT Service Continuity Management** - This process addresses the preparation and planning of disaster recovery measures for IT services in the event of a business interruption.
- **Network Services Management** - Addresses planning and controlling communications networks to include, telephone systems and LAN and WAN networks.
- **Operations Management** - this process addresses the management of computer hardware and systems software, including mainframes and midrange systems, but also file servers, to insure that the agreed service levels are provided.

- **Problem Management** - This process aims to identify the underlying cause of an IT related problem.
- **Release Management** - Ensures the successful rollout of releases, including integration, testing and storage.
- **Service Desk** - The initial point of contact with the IT organization for users.
- **Service-Level Management**-Addresses the service provided to the customer by creating services based on the needs of the customer rather than solely on the basis of what is currently technically feasible. (The IT Service Management Forum, 2002, pp 35-39).

1.7 Definition of acronyms (Source: *The IT Service Management Forum, 2002, pp 206-207*).

“ACU	Accommodation Cost Unit
AMDB.....	Availability Management Database
BCM.....	Business Continuity Management
BSC.....	Business Continuity Management
CAB	Change Advisory Board
CAB/EC	Change Advisory Boards/Emergency Committee
CDB	Capacity Database
CFIA	Component Failure Impact Analysis
CI.....	Configuration Item
CMDB.....	Configuration Management Database
CMM.....	Capability Maturity Model
CRAMM	CCTA Risk Analysis and Management Method

CRM.....	Customer Relationship Management
CTI.....	Computer Telephony Integration
DHS.....	Definitive Hardware Store
DoS.....	Denial of Service
DSL.....	Definitive Software Library
ECU.....	Equipment Cost Unit
FSC.....	Forward Schedule of Change
FTA.....	Fault Tree Analysis
HRM.....	Human Resource Management
ICT.....	Information and Communication Technology
ISEB.....	Information Systems Examination Board
ISO.....	International Standards Organization
IT.....	Information Technology
ITIL.....	Information Technology Infrastructure Library
ITSM.....	IT Service Management
ITSMF.....	IT Service Management Forum
KPI.....	Key Performance Indicator
LAN.....	Local Area Network
MOF.....	Microsoft Operational Framework
MSF.....	Microsoft Solutions Framework
MTBF.....	Mean Time between Failures
MTBSI.....	Mean Time Between System Incidents
MTTR.....	Mean Time To Repair

NLP.....	Networking Lab Practicum
OCU	Organization Cost Unit
OLA	Operational Level Agreement
PC.....	Personal Computer
PI.....	Performance Indicator
PIR	Post-Implementation Review
RFCT.....	Request for Change
SCU.....	Software Cost Unit
SIP.....	Service Improvement Program
SLA	Service-Level Agreement
SLM	Service-Level Management
SLR	Service-Level Requirements
SOA.....	System Outage Analysis
SOX.....	Sarbanes - Oxley Act
SPOF.....	Single Point of Failure
SQP	Service Quality Plan
TCU.....	Transfer Cost Unit
UC.....	Underpinning Contract
WAN.....	Wide Area Network” (Source: The IT Service Management Forum, 2002, pp 206-207).

1.8 Chapter Summary

The Networking Lab Practicum (NLP) is a dynamic results-oriented organization that is continuously in a state of flux regarding personnel. Because of this high turnover

certain protocols and processes need to be put into place to standardize the operating procedures. However, the NLP does not operate in a vacuum; we too are subject to the influences of the rules of law governing the business community. Businesses have a moral and ethical obligation to be as forthright as possible regarding their current operating condition and to provide the best level of service possible.

The Sarbanes-Oxley Act 2002 was an attempt by government to legislate the moral standards of businesses, because when left to their own devices the business community demonstrated a severe lack of judgment and outright contempt for the investment community and the public at large. With the new congressional rules in place, the NLP must be prepared to graduate students who are capable of matriculation into the work environment fully aware of how that environment changed from when they began the academic endeavors.

IT Service Management closely ties the needs of the business to the operating functions of the information technology department. IT projects regardless of their status must be completely transparent and auditable to those who have a vested interest. We as students must grasp new methods, new procedures, and new nomenclature if we are to continue to prosper outside the academic arena. This project will give students a hands-on opportunity to be at the forefront of the operational changes sweeping across the IT landscape.

2 Chapter Two: Review of Literature / Research

2.1 Overview of all literature and research on the project

There are a number of books published regarding the subject of IT Service Management supported by the IT Service Management forum. However, most of the literature centers around problems and solutions for companies outside the United States. Microsoft® has taken the ITIL processes and reworked them into a Microsoft solution called Microsoft Operational Framework (MOF) and Microsoft Solutions Framework (MSF). While perusing Microsoft's website concerning MOF/MSF all of the literature references the ITIL processes as stipulated in their original format when issued by the British government.

Most implementations of ITIL/MOF are works in progress, there does not appear to be definitive answers related to the American business marketplace. Conversely, Hewlett-Packard® has introduced HP ITSM reference model and IBM® has introduced the IT Process Model (The IT Service Management Forum, 2002, p 11). A number of other retailers are starting to design and market applications for U. S. businesses but the literature mainly focuses on white papers that support their own product.

Additional research literature that focused on the areas of Business Process Redesign (BPR), project management, software project management, and transitional management all were used to enhance my knowledge base in relation to ITSM.

2.2 Literature and research that is specific/relevant to the project

For this particular project I attempted to narrow down the literature to that supported by the IT Service Management Forum (ITSMF), which is the purest and most accurate source. Furthermore, the processes that have been stored in the Information Technology Infrastructure Library™ (ITIL) were developed in an approach independent from any supplier. For this reason all of the literature and research relevant to this project also remains independent from vendor specific solutions. For the non-published works obtained from the Internet, once again I attempted to utilize resources that closely modeled the original intended methodology of ITIL which represents the best practices that can be substantiated in real-time.

2.3 Summary of what is known and unknown about the project topic

There is over 20 years of reference material stored in the Information Technology Infrastructure Library (ITIL) albeit with a caveat; most of it pertains to international organizations. As an example, a lot of reference material speaks to Configuration Items (CI) and the Configuration Management Database (CMDB). However, at the time of the inception of this project there were no commercially available CMDB's. When I queried Oracle, FileMaker, Access, and SQL there were no sources available to use as a model. Now, there are number of white papers and websites providing information concerning business process modeling that uses ITIL as its primary foundation.

2.4 The contribution this project will make to the Academic Research Network

The Networking Lab Practicum (NLP) and the information-technology department of Regis University will both gain from having developed an in-house IT process management solution. This project will produce a clearer definition of the organizational structure: people, partnership & resources, policy & strategies and the processes that control their use. In addition, the results will be measurable and repeatable. The user population i.e. customers will also gain in their understanding of what services are available from the NLP.

In the future when IT Service Management has been fully embraced by the NLP organization and those associated with the organization, the recognition of our professionalism will generate new business. The possibility also exists that the NLP will be able to offer Business Process Redesign in the form of IT Service Management as a new service available to our clientele. The university in the academic research programs will benefit greatly by producing graduates capable of integrating into any work situation.

3 Chapter Three: Methodology

3.1 *Development methods to be used*

The original hypothesis proposed was whether or not IT Service Management could be implemented in the Networking Lab Practicum. Primary and secondary research will be used to achieve that objective. "Lorentz Consulting describes information gathered through interaction with other people. Primary research can be gathered through meetings, one-on-one interviews, focus groups, and surveys" (Lorentz Consulting, n.d., Primary Research, ¶. 1). "Secondary research describes information gathered through literature, publications, broadcast media, and other non-human sources. Secondary research is in general easier to gather than primary" (Lorentz Consulting, n.d., Secondary Research, ¶. 1). The impetus for the primary research was achieved through my pursuit of a Master's Degree in Business Administration (MBA).

The secondary research method was used to gather sufficient background material to support the original hypothesis. Various books and websites were identified and utilized to form the knowledge base foundation in the subject of software project management, project management, IT Service Management, and ITIL/MOF.

3.2 *Life-cycle models to be followed*

There will be two lifecycle models employed in this project: the iterative development model and the process improvement model. Both models have their advantages and disadvantages; the distinction is based on the nature of the particular project or projects. In the case of the iterative development model, sometimes referred to as the spiral development model, the advantage comes when working on a research project.

"The Spiral approach is most useful in a *_research_* project, i.e., a project where many options, requirements, and constraints are unknown at the beginning. If the effort is a *_development_* effort, i.e., a project where the product, options, requirements, and constraints are fairly well-understood, then the Spiral life-cycle is not as appropriate as some other life-cycle approaches" (Berard, Edward V., n.d, pp. 1-10.).

Iterative Lifecycle Model

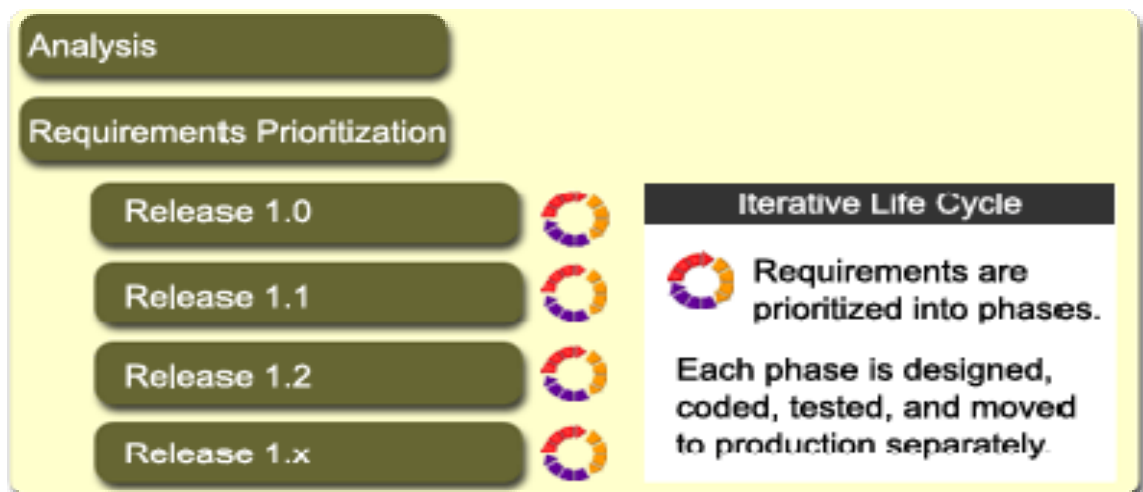


Figure 3-1 Iterative Lifecycle Model
(Source: Berard, Edward V., n.d., pp. 1-10)

Currently, commercial applications for change management databases and configuration management databases are in their infancy. It may be necessary for an in-house version of the two databases to be developed with the cooperation of the database practicum students. However, for now in order to substantiate the managerial perspective for this thesis project, only phase 1 of the iterative process; the analysis phase will be used .

According to the Pragmatic Software Inc. the advantages of the iterative software development lifecycle are:

- "The Design phase goes much faster, as designs are only done on the items in the current release (Release 1.0 for example).
- Coding and Testing go much faster because there are less items to code and test. If major design flaws are found, re-work is much faster since the functional areas have been greatly reduced.
- The client gets into production in less than 3 months, allowing them to begin earning revenue or reducing expenses quicker with their product.
- If market conditions change for the client, changes can be incorporated in the next iterative release, allowing the software to be much more nimble.
- As the software is implemented, the client can make recommendations for the next iteration due to experiences learned in the past iteration” (Pragmatic Software Inc., 2006, ¶ 3).

The process improvement model will be most effective in initializing the proper frame of reference for practicum members, by providing a methodology supported by Microsoft Operational Framework (MOF). The impetus for the diversion from ITIL's strict code of vendor nonspecific code of ethics is because for all intents and purposes the Networking Lab Practicum functions in a Microsoft environment.

Process Improvement Model

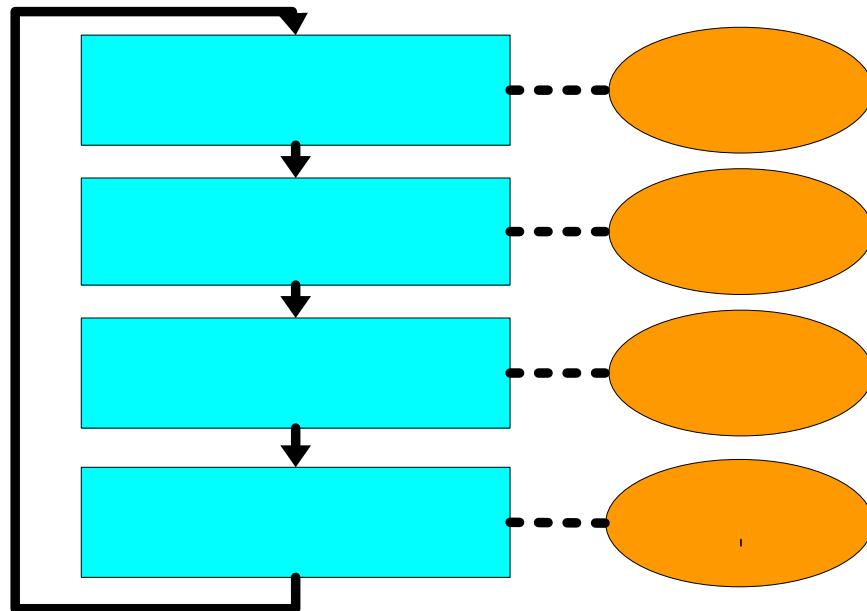


Figure 3-2 Process improvement model
(Source: Darius Taylor, 2003)

3.3 Specific procedures

Education is one of the key elements to successful implementation of IT Service Management. Therefore, all participants From the NLP should be proficient in the terminology specific to ITSM. The first procedure specific to introducing ITIL/MOF into the Networking Lab Practicum is an introduction into the nomenclature specific to ITSM

in the form of an integrated glossary covering; “Microsoft Operational Framework, Microsoft Solutions Framework , and Project Management Operations”

ITSMwatch.com. (Microsoft frameworks integrated Glossary, 2004).²

The second procedure specific ITSM is the identification and classification of the business structure and personnel of the NLP in order to facilitate the proper organizational workflow (Kerzner & NetLibrary Inc., 2003). A current organizational chart should be constructed that conforms to the structure of the NLP at its current stage of development.

The following diagram represents the organizational structure from December of 2003 and may be used as a guide (Darius D. Taylor, 2003).

² Please refer to the Appendix (A) titled Microsoft integrated Glossary

NLP 2003 Organizational Chart

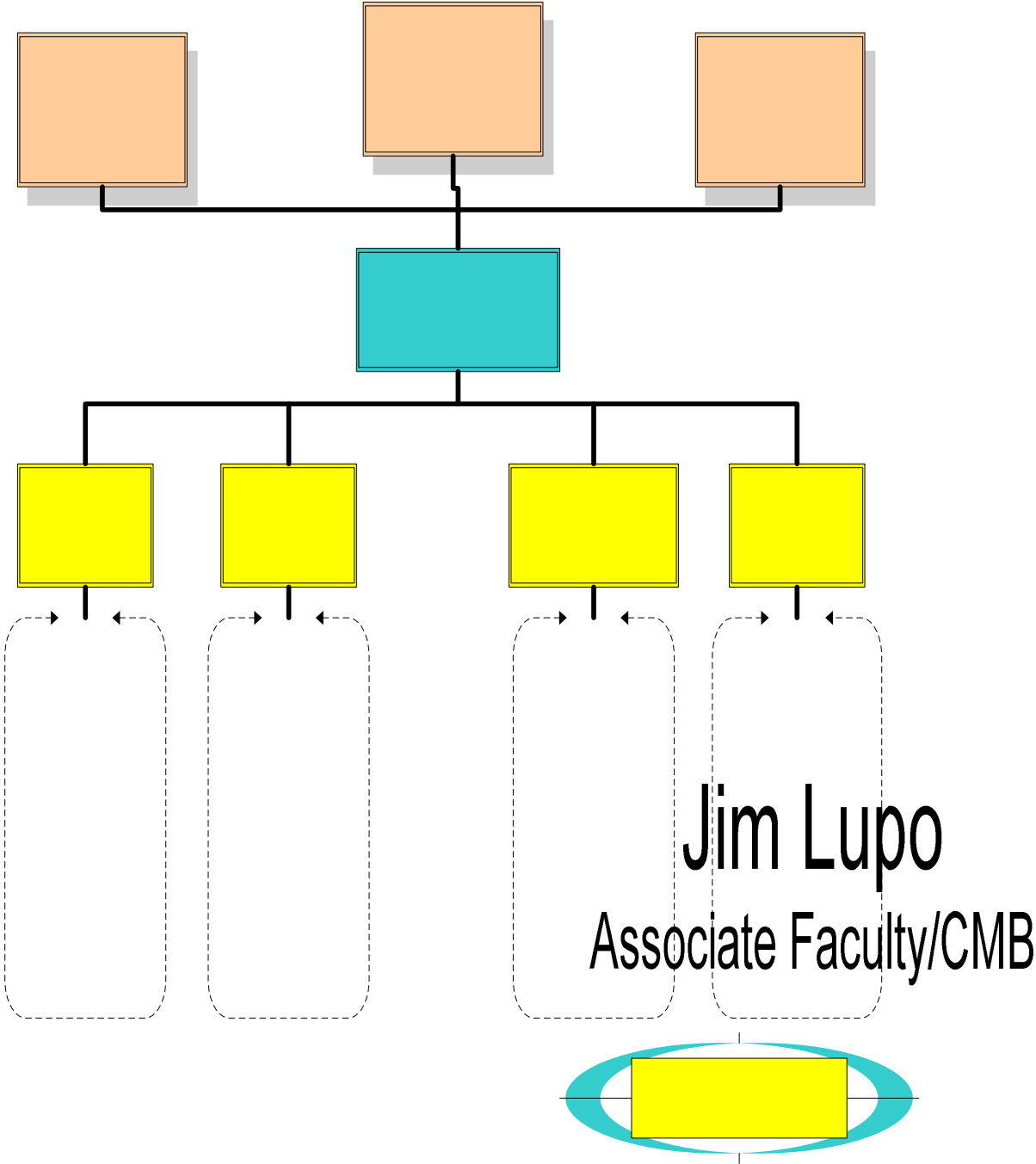


Figure 3-3 NLP Organization Chart 2003
(Source: Darius D. Taylor, 2003)

The next procedure pertains to conveying an understanding of the underlying course of actions associated with each ITSM process. The task of incident management is to diminish or completely eliminate interruptions to IT services with the least amount of impact to your user population or customers (ITILlibrary.org, 2006, Incident Management). This objective must be achieved within the boundaries and constraints of the defined Service Level Agreement (SLA). According to the ITIL infrastructure library the critical success factor (CSF) for incident management are as follows:

- "Maintaining IT Service Quality
- Resolving Incidents within Established Service Times

Key activities of incident management:

- Key Activities The key activities for this process are:
 - Detect and record incidents
 - Classify incidents
 - Provide initial incident support
 - Prioritize incidents based on impact and urgency
 - Investigate and diagnose incidents
 - Resolve incidents and recover service per agreed service levels
 - Close incidents
 - Maintain ownership, monitoring, tracking and communications about incidents
 - Provide management information about Incident Management quality and operations" (ITILlibrary.org, 2006, (ITILlibrary.org, 2006, Incident Management).

The following flowchart details how incident management is positioned amongst the other ITIL processes.

Figure 3.4 shows the input and output of the process, and its activities.

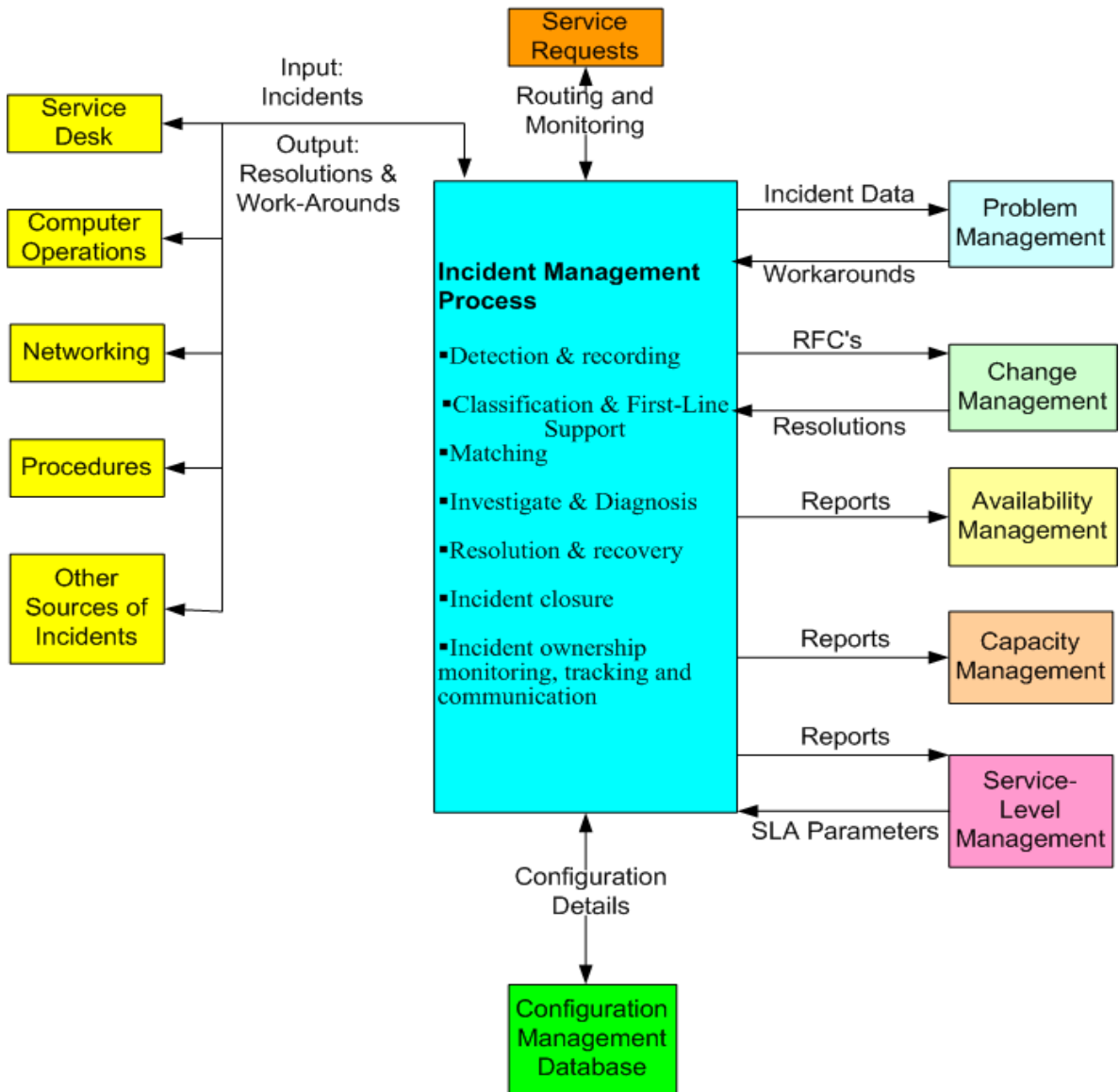


Figure 3-4 Position of the Incident Management Process
(Source: The IT Service Management Forum, 2002, p. 47)

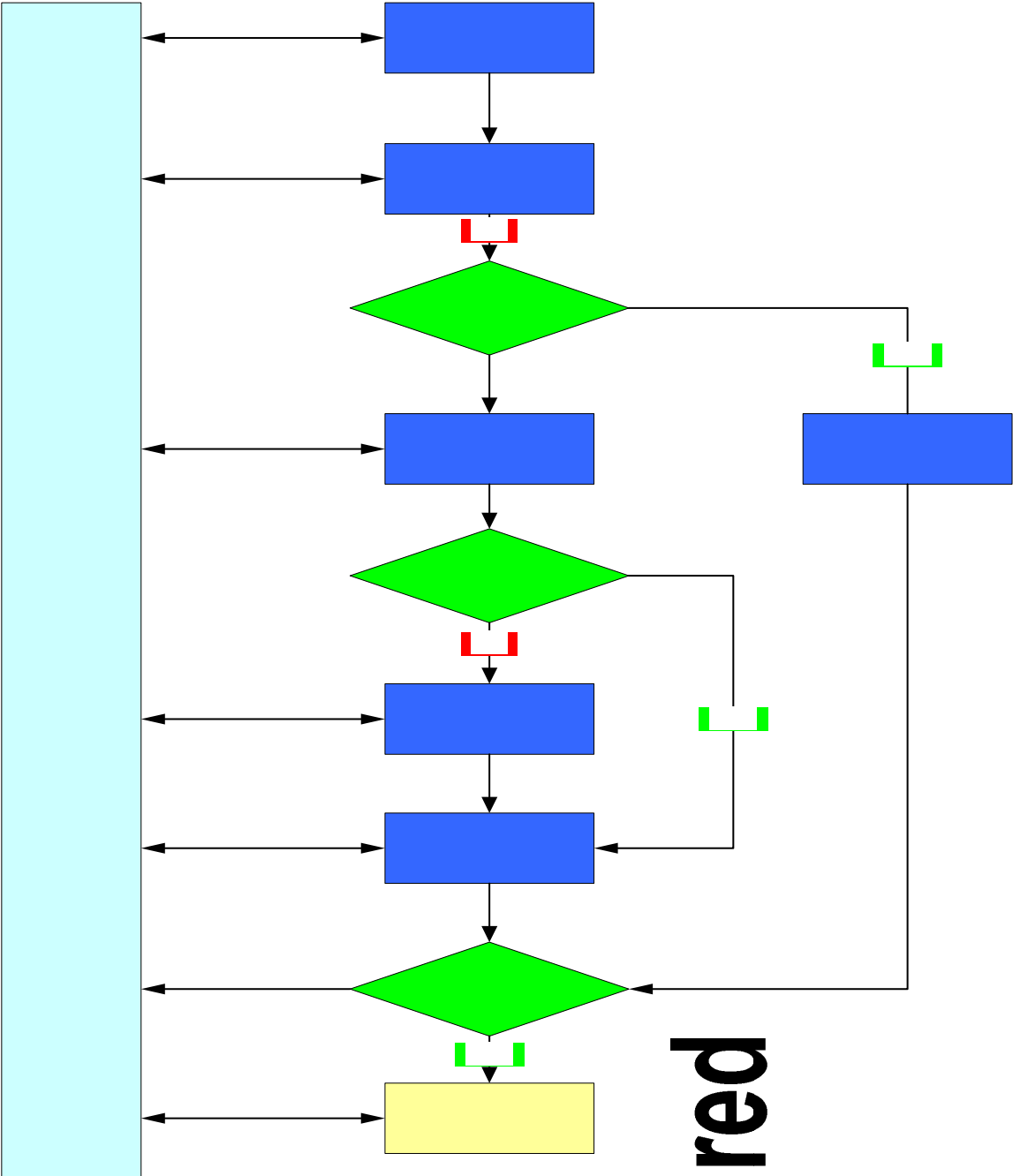


Figure 3-5 Incident Management Process
(Source: The IT Service Management Forum, 2002, p. 49)

where required

Incident management is very effective when the root cause of the incident is known. In spite of this, when the underlying factors that initiated the incident remain elusive, then problem management becomes the next ITIL process to activate. All aspects of the IT system must be investigated beginning with the infrastructure and the available registrations including the incident database (The IT Service Management Forum, 2002, p. 55). The objective of problem management is to ensure proactively that the incident does not recur. The Critical Success Factors (CSFs) include classifying the problem, developing trend reports, notifying the clients of known errors, and taking action that minimizes the impact. (ITILlibrary.org, 2006, Incident Management).

Essential to the development of any ITIL process is the initial and continuous assessment of where you are and where you want to be. Always refer back to your process improvement model. The following is a list of Key Performance Indicators (KPIs) that can be used to help gather information relevant to your current and future performance.

- "Number of repeated incidents
- Number of existing problems
- Number of existing known errors
- Average Time for Diagnosis of Problems
- Average Time for resolution of known errors
- Number of open problems
- Number of open known errors
- Number of repeat problems

- Number of major incident/problem reviews" (ITILlibrary.org, 2006, Incident Management).

Incident Management and Problem Management are intricately intertwined.

Effective incident records are essential for successful problem management as this information is used to identify problems (The IT Service Management Forum, 2002, pp. 43-66). The following figure elucidates the relationship between incident management, problem management and change management.

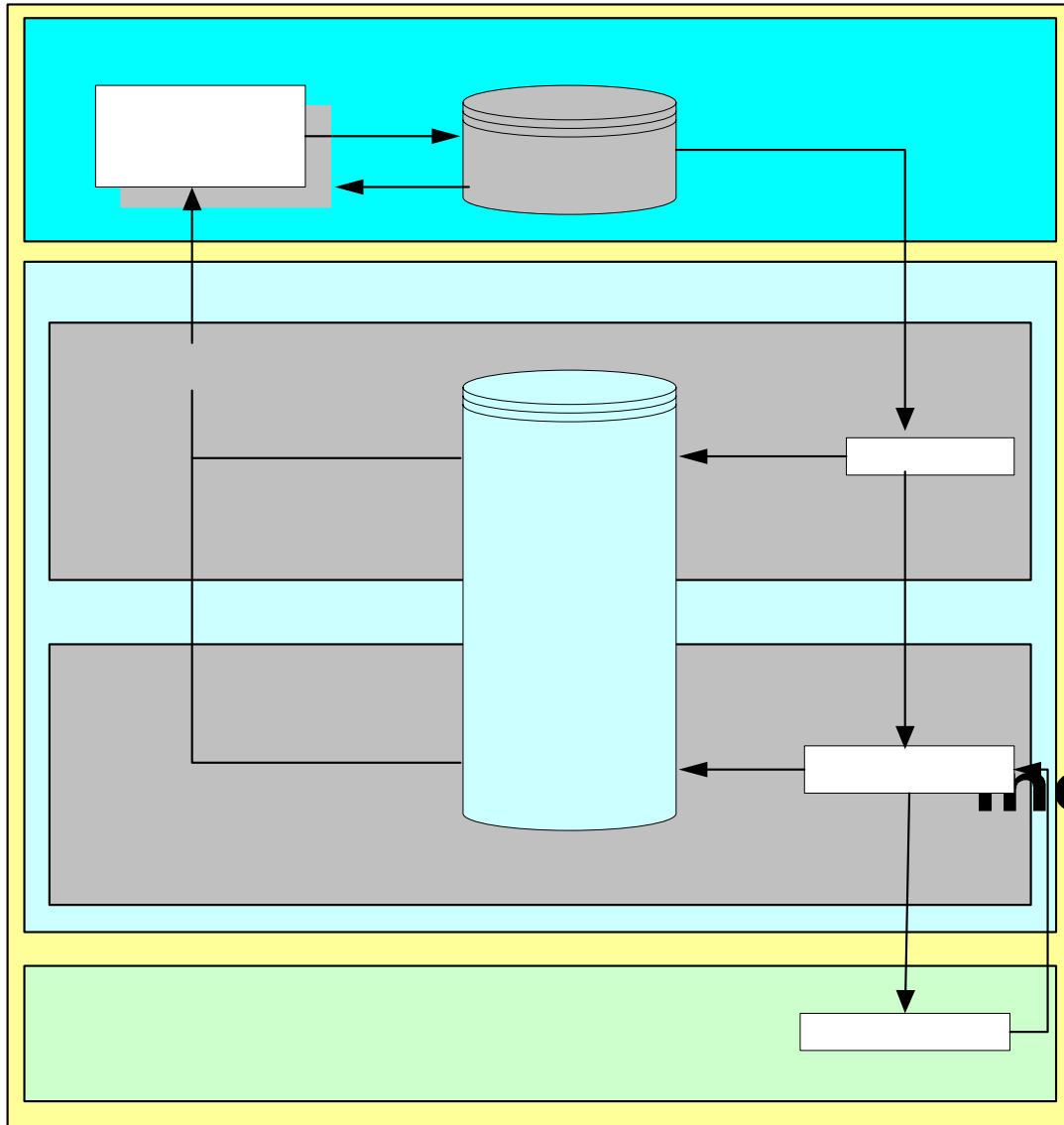


Figure 3-6 ITIL Process Interrelationships
 (Source: The IT Service Management Forum, 2002, p. 56)

Problem management can help incident management by providing quick workarounds while the problem is still being studied. The sharing of data between the two processes helps during the Post Implementation Review (PIR) phase, after which known errors can be closed by error control, and relevant (open) incident records can be closed as well. (The IT Service Management Forum, 2002, p. 62). Conversely, in order to realize the benefits of problem management, having data related to the complexity of

Matching Information

the infrastructure is a must. Problem management should be able to link to problems and known errors to configuration items (CIs) and uses the configuration Management database (CMDB) data to analyze incidents and problems (The IT Service Management Forum, 2002, pp. 59-64).

Taken as a whole the objective of configuration management is to provide timely accurate data concerning the IT infrastructure so that information can be relayed to all other processes and IT management (ITILlibrary.org, 2006, Configuration Management). Configuration management not only details specific items in the infrastructure but also analyzes how configuration items relate to one another. This in turn provides information that forms the basis for impact analysis (The IT Service Management Forum, 2002, p. 67). According to the ITSM form the key activities for configuration management are:

- "Plan For Configuration Management Databases and Activities
- Identify Configuration Items
- Control Configuration Item Information
- Perform Status Accounting
- Perform Verification and Audit of Configuration Management Databases
- Provide Management Information about Configuration Management Quality and Operations" (ITILlibrary.org, 2006, Configuration Management).

Information gleaned from the procurement process as well as data extrapolated from change management funnels into the configuration Management process. The following flowchart identifies the nature of that interchange.

Figure 3.7 Relationships between the configuration Management database and other processes

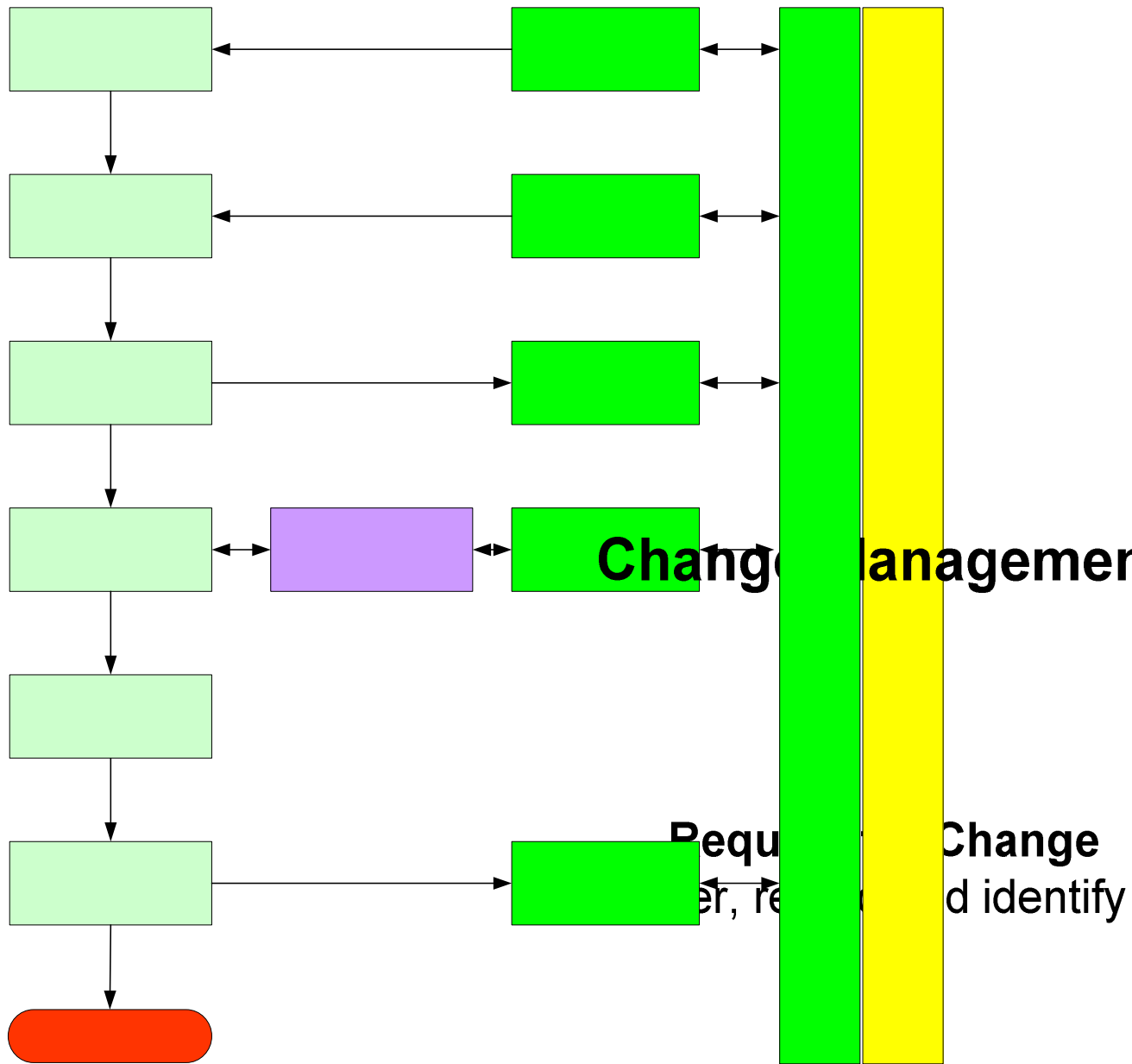


Figure 3-7 Relationships between Configuration Management and other processes
 (Source: The IT Service Management Forum, 2002, p. 70)

Classification & Planning
 prepare the change

The data from the Configuration Management Database (CMDB) is used by the change management process to estimate the impact of the changes to be implemented. (The IT Service Management Forum, 2002). According to the ITIL library's open-source guide the goal of Change Management is as follows:

"Ensure that standardized methods and procedures are used for efficient and prompt handling of all changes, in order to minimize the impact of change related to incidents upon service quality, and consequently to improve the day to day operations of the organization." (ITILlibrary.org, 2006, Change Management).

IT systems over time lose their effectiveness and become inefficient and cumbersome. Often times a change in certain parameters and or configuration items may bring about a negative incident. "The causes for such incidents are numerous: it may be caused by carelessness, a lack of resources, insufficient preparation and inadequate testing or teething problems" (The IT Service Management Forum, 2002, p. 85). Change management processes allow for an orderly and repeatable process for altering the current state of an IT system.

Request for change (RFC's) is the initiating factor for beginning the change management process. The change manager helps to facilitate the process. On the other hand, major changes are decided upon by the change advisory board (CAB). The activities of change management begin with recording the RFC followed by an assessment to determine whether should be accepted or denied. If accepted the request is classified and prioritized according to the change policy and the estimated impact on the available resources.

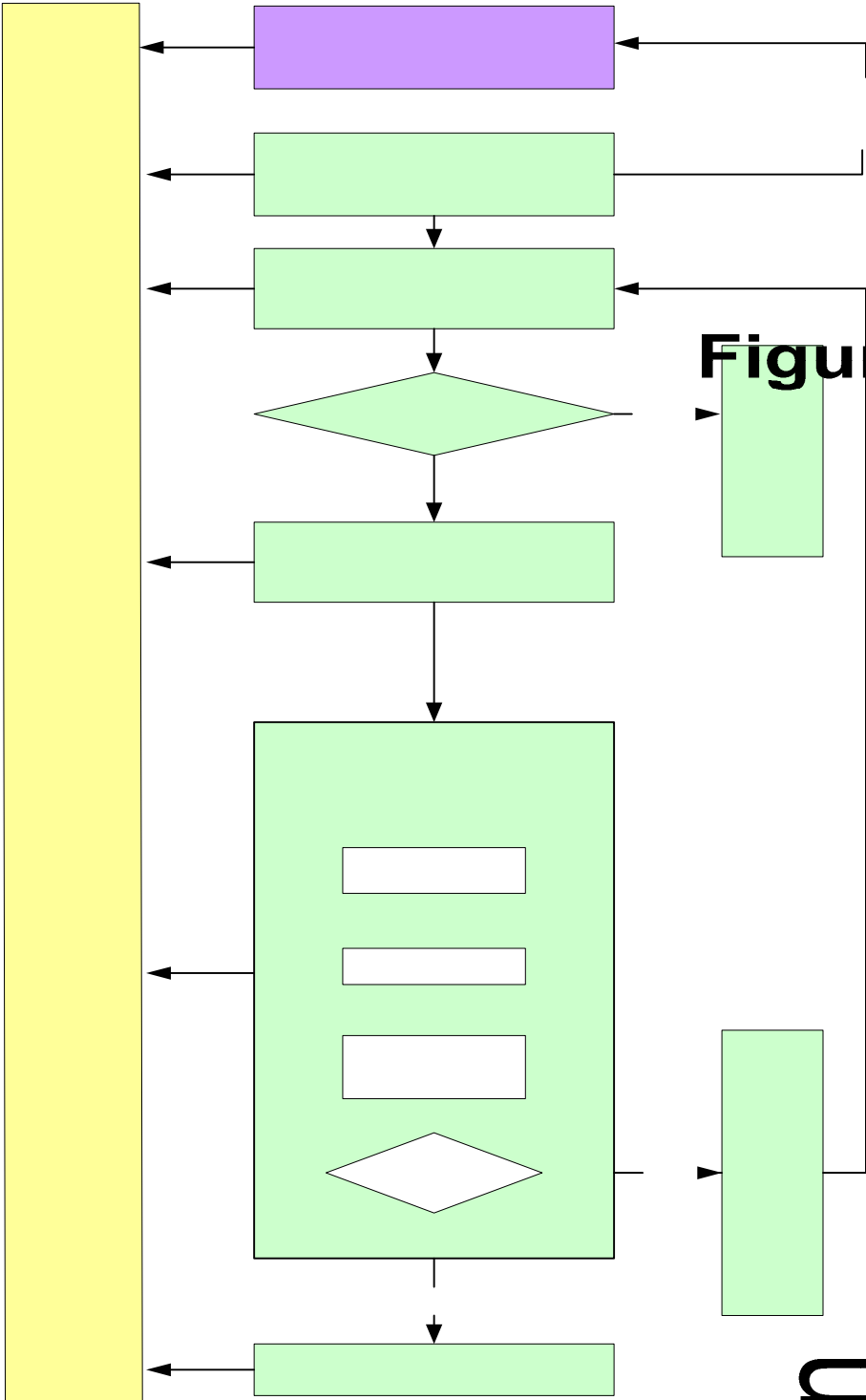


Figure 3.8 Change management activities

Figure 3-8 Change management activities (Source: The IT Service Management Forum, 2002, p. 90)

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The tail end of the change management process begins with a coordinated effort to build test and implement the change. The implementation of the change is guided by the release management process. "Release Management aims to ensure the quality of the production environment, by using formal procedures and checks when implementing new versions" (The IT Service Management Forum, 2002, p. 99). According to the ITIL infrastructure library release management achieves its process goals by implementing the following changes:

- "ITIL-aligned release management policies, processes and procedures
- Collaboration with those organizations outside of IT that impact IT services to plan and ensure impacted stakeholders are involved in that the service is appropriately tested (from a customer's perspective) following implementation
- Dedicated Release Manager
- Actions for plant releases to analyze impacts , and wherever possible, coordinate efforts (such as packaging Release Units)
- A set of standard or posit Tories for maintaining all authorized versions of software (Definitive Software Library-DSL)
- A set of recognize storage locations for spare parts and other hardware (Definitive Hardware Stores-DHS)" (ITILlibrary.org, 2006, Release Management)

The advantages of release management can only be realized with the help of Configuration Management and Change Management. The following diagram depicts how the three processes function together cohesively.

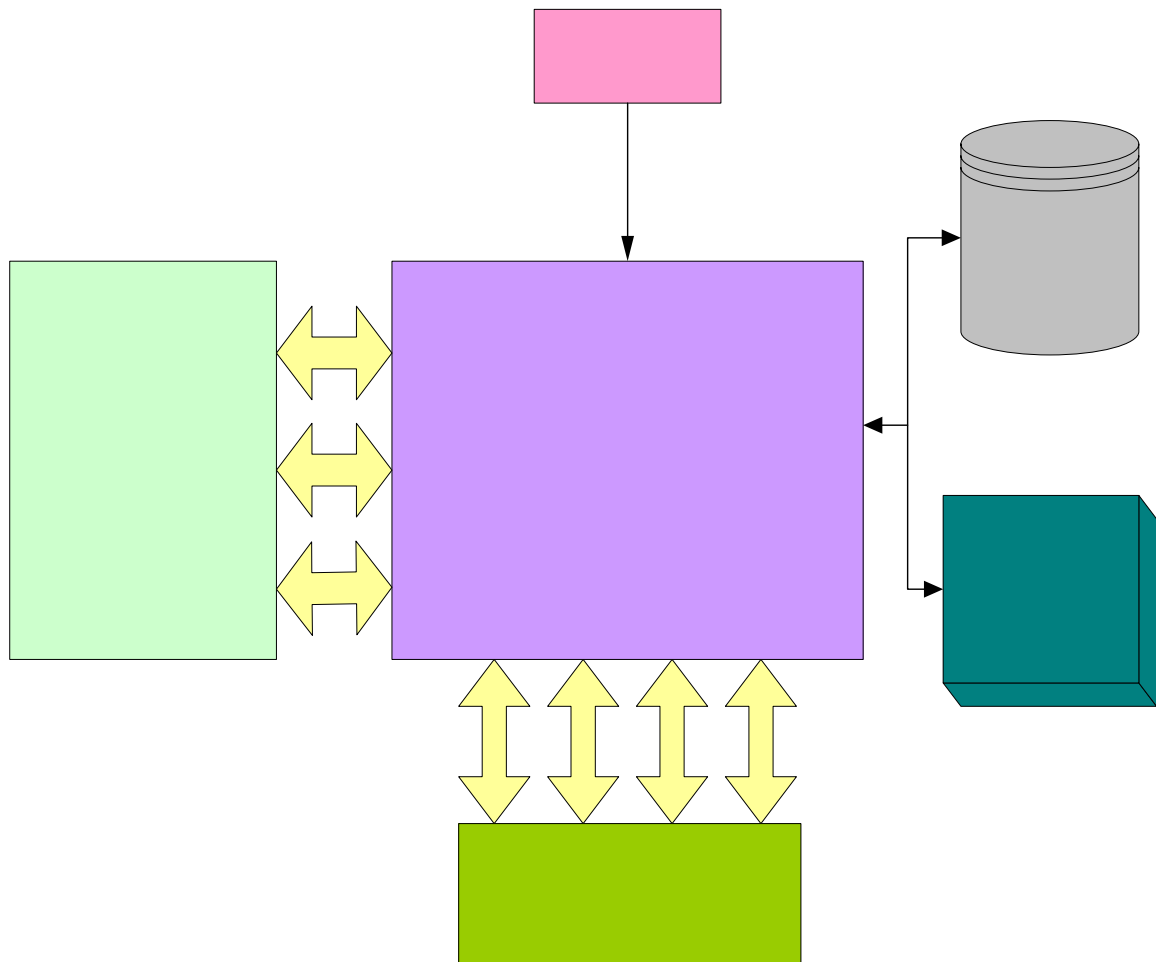
Figure 3.9 Release Management

Figure 3-9 How release management relates to other processes
 (Source: The IT Service Management Forum, 2002, p. 103)

The activities of release management are linked with the lifecycle of change. (The IT Service Management Forum, 2002, pp. 99-102). The key activities related to release management begin with the policies and planning associated with the activities. This is followed by design, building and configuration to include a satisfactory backup plan in the testing and acceptance of the release a significant amount of time is spent on implementation planning, communication, preparation and training.

Change Management

- Recording

The following diagram is a graphic representation of the release management activities.

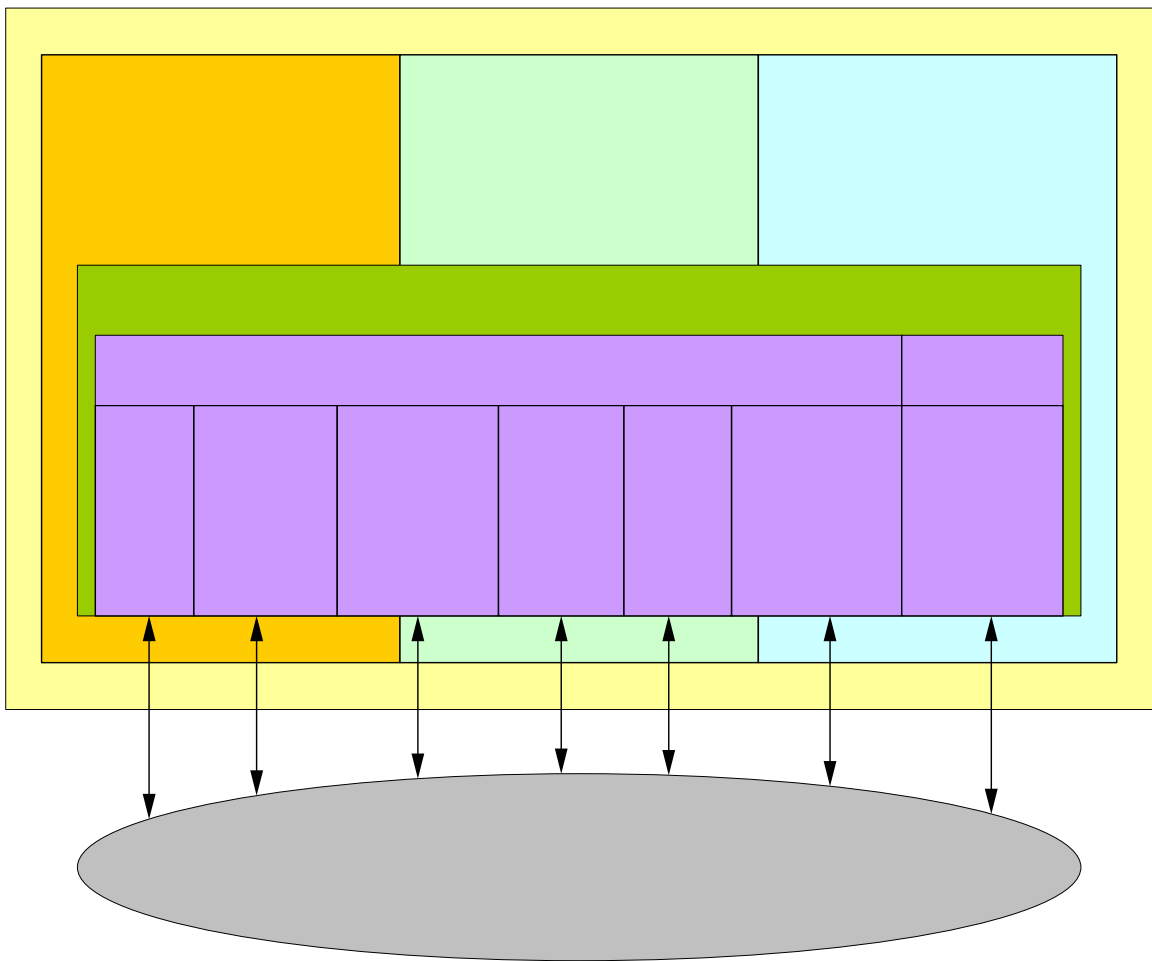


Figure 3-10 Release management activities
(Source: The IT Service Management Forum, 2002, p. 104)

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Many of the activities associated with Change Management, Configuration Management, and Release Management are initiated by a request for change that flows through the service desk. Due to the current structure of the NLP, the Service Desk and IT Financial Management processes will have to be evaluated at a later date.

The service desk functions as a faucet to allow the flow of information to come in from the customers. Service-Level Management is the process that forms the link between the IT organization and its customer base. (ITILlibrary.org, 2006, Service-Level Management). In an ideal situation all IT activities need to be planned, coordinated, managed, and negotiated with the customers. In the sense of IT services customers refer to any person, organization or entity that receives and benefits from products controlled by the IT department. According to the ITSM forum service-level management process has the following objectives:

- "To integrate the elements required for the provision of IT services.
 - To document the services by clearly describing the elements in various documents.
 - To describe the service provider that they can understand and can relate to.
 - To align IT strategy with the business needs.
 - To improve IT service delivery in a controlled manner"
- (The IT Service Management Forum, 2002, p. 119).

The Networking Lab Practicum functions to provide a service to our customer base. That customer base would best be served if they understood the available products without being hampered by the technical detail. Service-Level Management is the process that helps to bridge the gap between the customers and the NLP organization. The following diagram depicts the service-level process.

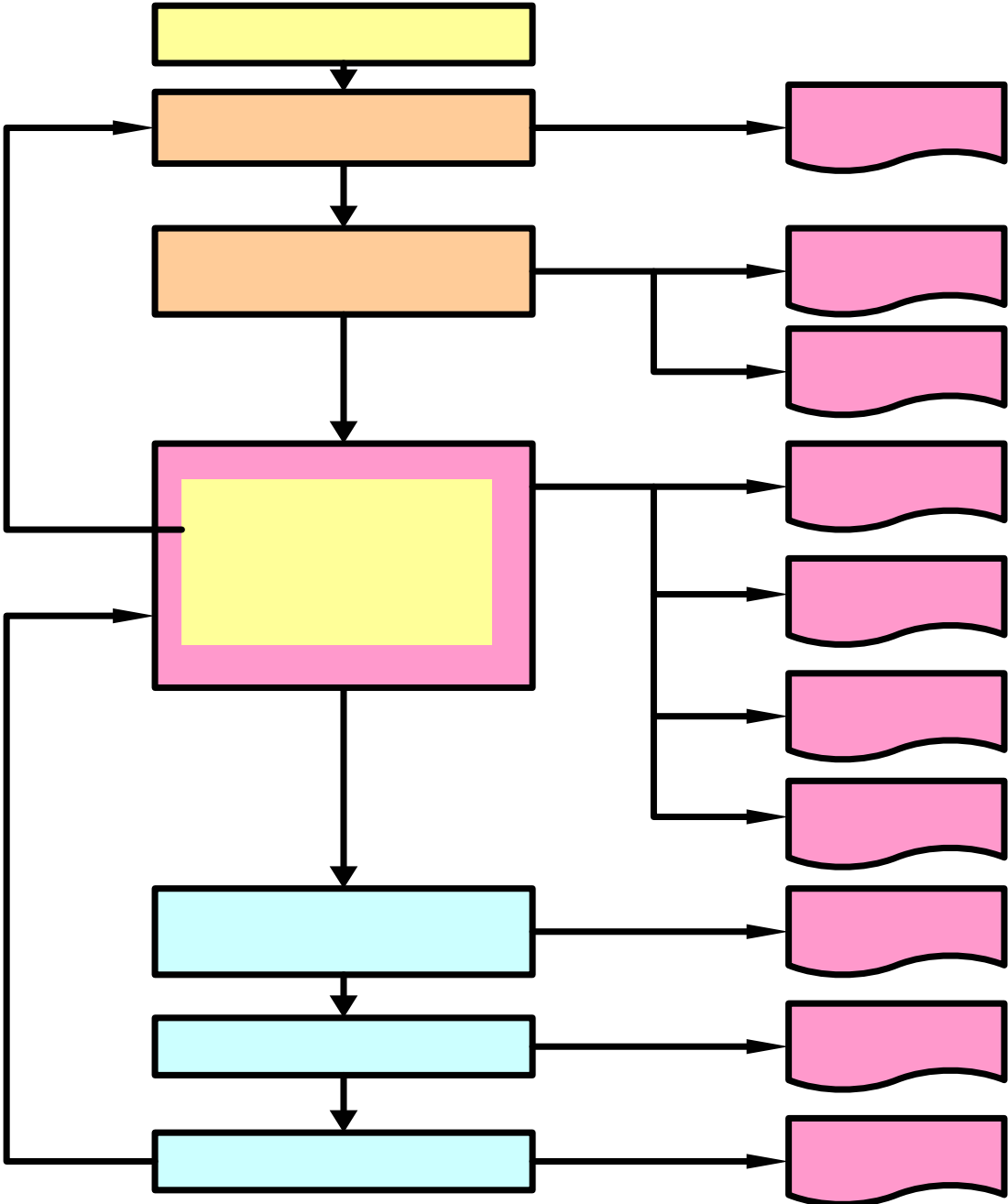


Figure 3-11 The service-level management process
(Source: The IT Service Management Forum, 2002, p. 120)

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Key elements and tools of Service-Level Management are; Service-Level Requirements (SLR), Service Specification Sheets (Spec Sheets), Service catalog, Service-Level Agreements (SLA), Service Improvement Program (SIP), Service Quality Planned (SQP), Operational Level Agreement (OLA) , and Underpinning Contract (UC) . The preceding tools are utilized to help achieve the critical success factors and are intricately intertwined with all of the processes of IT Service Management. For example, "Capacity Management advises Service-Level Management about the feasibility of service levels" (The IT Service Management Forum, 2002, p.148).

The performance levels measured by Capacity Management help to establish whether the agreed-upon service levels are being adequately met. (The IT Service Management Forum, 2002, p.146). "The aim of capacity Management is to provide the required capacity for data processing and storage, at the right time and in a cost-effective way" (The IT Service Management Forum, 2002, p. 145). Capacity Management must ensure that current and future infrastructure demands are met in order to satisfy the needs of the business. Crucial concepts that are important to capacity management are planning, modeling, application sizing , and measuring and monitoring the performance of the infrastructure components. (The IT Service Management Forum, 2002, p.145).

The three sub-processes of Capacity Management are Business Capacity Management (BCM), Service Capacity Management (SCM) , and Resource Capacity Management (RCM). Each of the three sub-processes functions to provide adequate analysis for measurement against key metrics. The following diagram details the process.

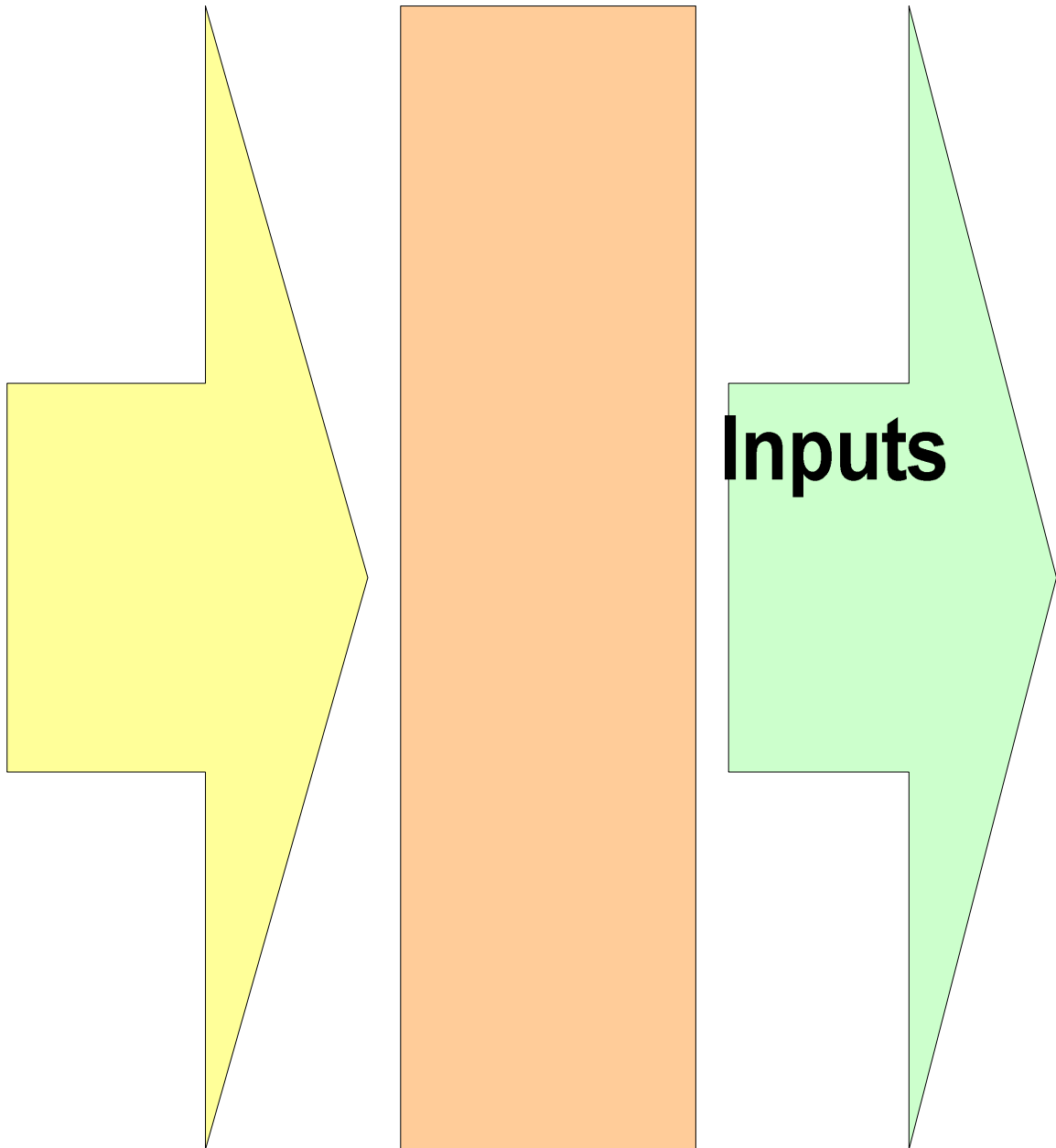


Figure 3-12 Capacity Management process
(Source: The IT Service Management Forum, 2002, p. 147)

The preceding diagram will assist the NLP students in determining which methods and procedures should be employed in future situations. Overall, Regis University will determine which IT infrastructure items have the highest priority. However, the NLP can greatly influence those decisions the service capacity and resource capacity that they are responsible for. According to the ITSM forum the critical success factors and performance indicators for Capacity Management are:

- "Accurate business forecast and expectations
- Understanding of IT strategy and planning at its accuracy
- Appreciation of technical developments
- Cooperation with other processes" (The IT Service Management Forum, 2002, p. 152).

Capacity Management specifies the minimum capacity needed to continue to service in the event of a disaster (The IT Service Management Forum, 2002, p. 146). Specifying which action should be taken in order to restore service in the event of a catastrophic incident is called Business Continuity Planning (BCM). A subsection of business continuity planning is IT Service Continuity Management (ITSCM). This support of BCM manifests itself in the form of restored IT service within a specific time.

According to the IT Service Management forum, "IT Service Continuity Management should at a minimum provide plans for emergency response, damaged assessment, recovery, vital records, and crisis management and PR plans" (The IT Service Management Forum, 2002, p. 162). The following flowchart can serve as an outline for the students of the Networking Lab Practicum follow for ITSCM.

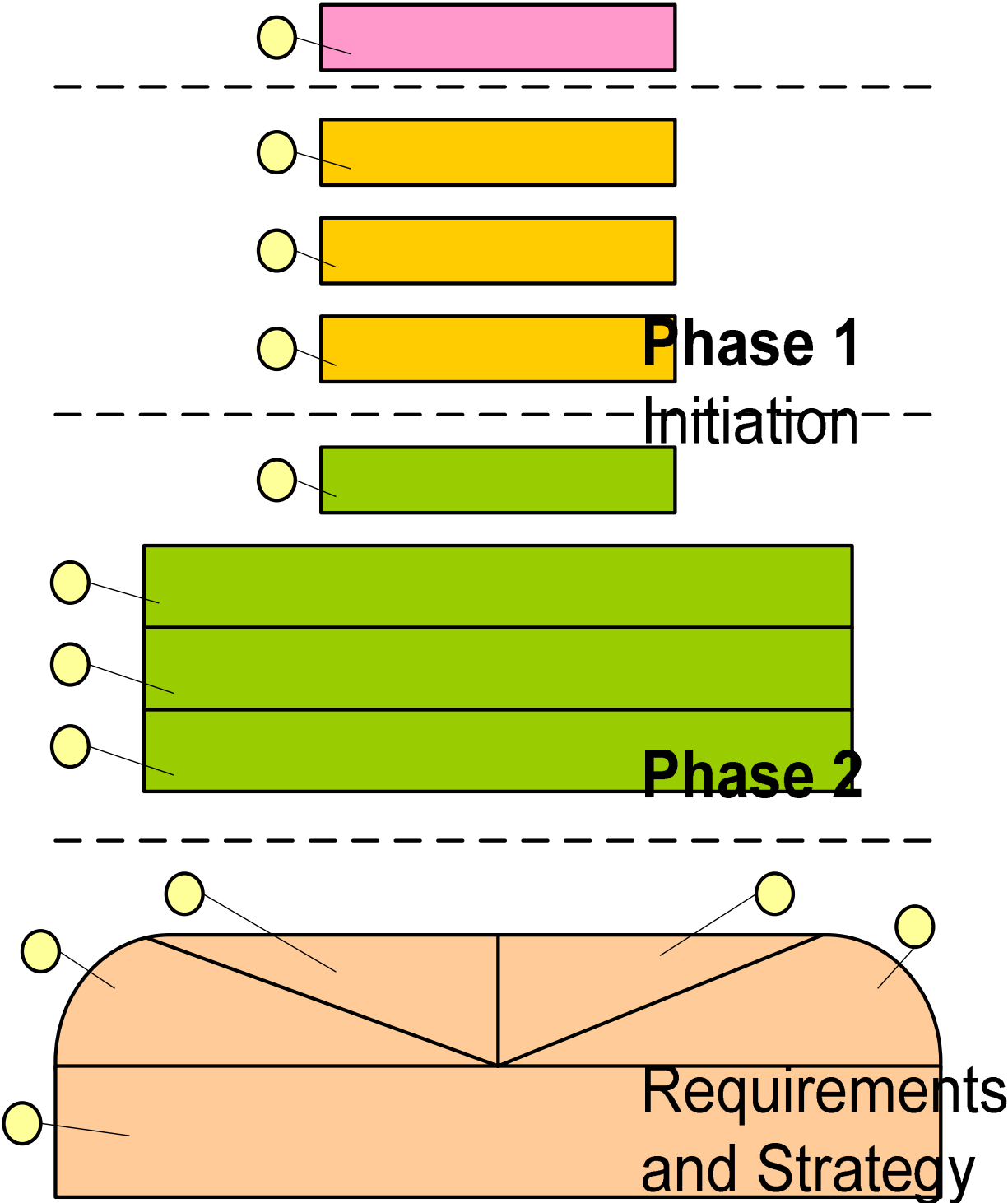


Figure 3-13 ITSM process model
(Source: The IT Service Management Forum, 2002, p. 157)

IT service continuity management helps to ensure the availability of IT resources after a disastrous service interruption. Conversely, this should not be confused with Availability Management. Availability Management attempts to align a cost-effective level of IT services that matches the forecasted long and short term business objectives. The outcomes of availability management by conducting a risk analysis to determine the availability ratio or by performing a fault tree analysis.

"Fault tree analysis is a technique used leading to the failure of an IT service" (The IT Service Management Forum, 2002, p. 176). The primary elements of Availability Management are: "serviceability, reliability, recoverability, maintainability, resilience, and security" (ITILlibrary.org, 2006, Availability Management). According to the ITIL library opened guide and the ITSM forum, the key process activities of availability management are:

- "Dedicated availability management process owner.
- Holistic management of IT service availability versus independent technical silos.
- Actions to ensure availability levels meet established service level targets.
- ITIL-aligned availability management policies, processes and procedures.
- Service Improvement Projects (SIPS) to address availability.
- Shortfalls and concerns.
- Actions to proactively seek availability of improvements were needed.
- Actions to ensure appropriate levels of availability have been built into new IT solutions"(ITILlibrary.org, 2006, Availability Management).

Figure 3.14 Illustrates the Availability Management Concept

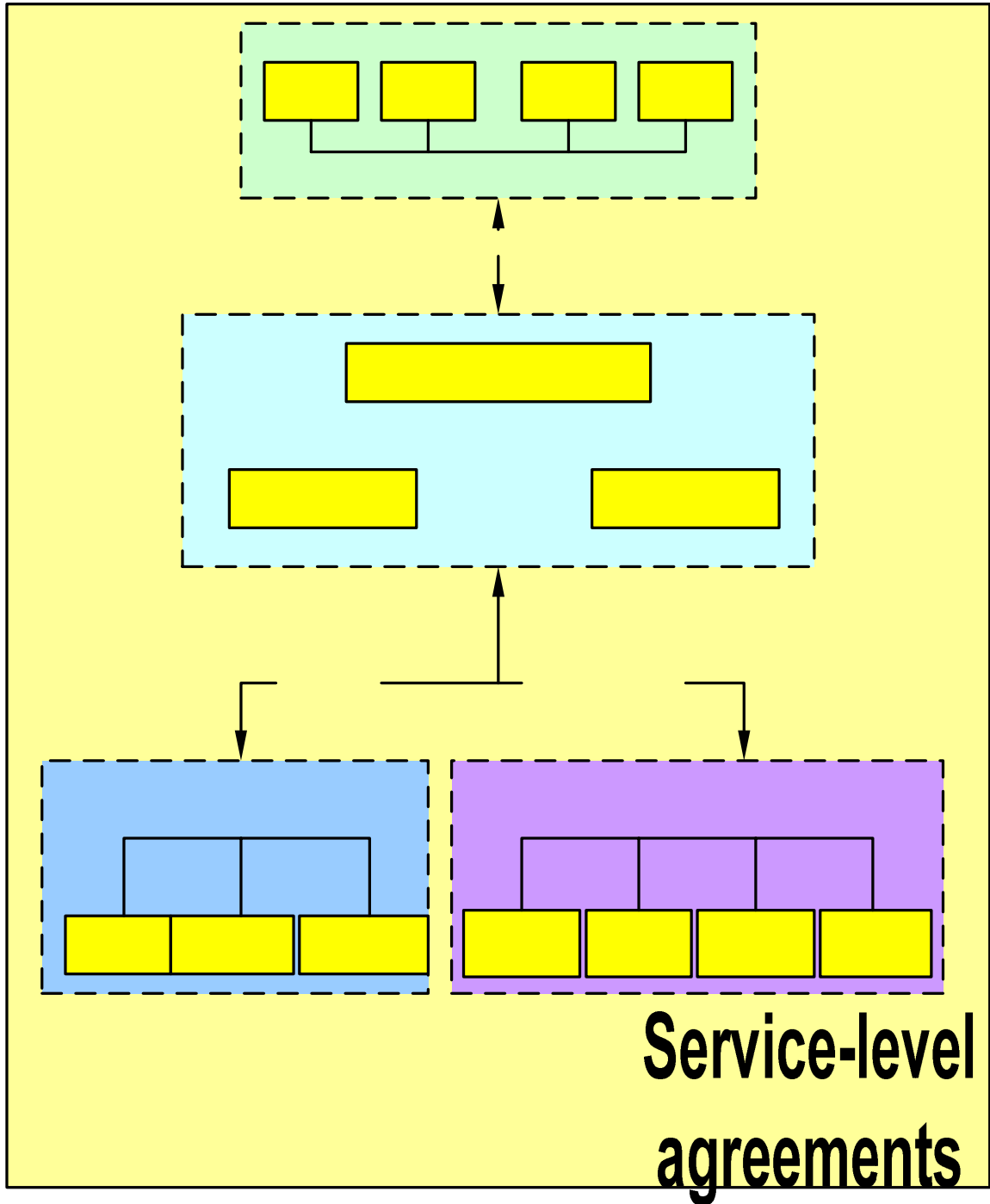


Figure 3-14 Availability Management Concept
(Source: The IT Service Management Forum, 2002, p. 167)

IT security management is a very important piece of the Availability Management process because it ensures that the IT infrastructure continues to be available for the provision of IT service (ITILlibrary.org, 2006, Availability Management). According to British standard 7799, information security refers to maintaining:

- “Confidentiality- Information is accessible only to those authorized.
 - Integrity- Safeguarding the accuracy and completeness of information.
 - Availability- Authorized users have access to information when required”
- (ITILlibrary.org, 2006, IT Security Management).

Information security controls can be separated into three distinct sections according to NIST Special Publication 800-12. They are as follows:

- "Technical Controls which mainly addresses controls that the computer system executes. These controls are dependent upon the proper functioning of the system for the effectiveness.
- The Operational Controls address security controls the focus on controls that are, broadly speaking, implemented and executed by people (as opposed to systems). These controls are put into place to improve the security of a ticket or system (or group of systems).
- The Management Controls addresses security topics that can be characterized as managerial they are techniques and concerns that are normally addressed by management in the organization's computer security program" (NIST Special Publication 800-12, n.d., p. 5).

The ITIL security management process mainly focuses on the managerial controls of information security. The following diagram depicts the ITSM process model for security.

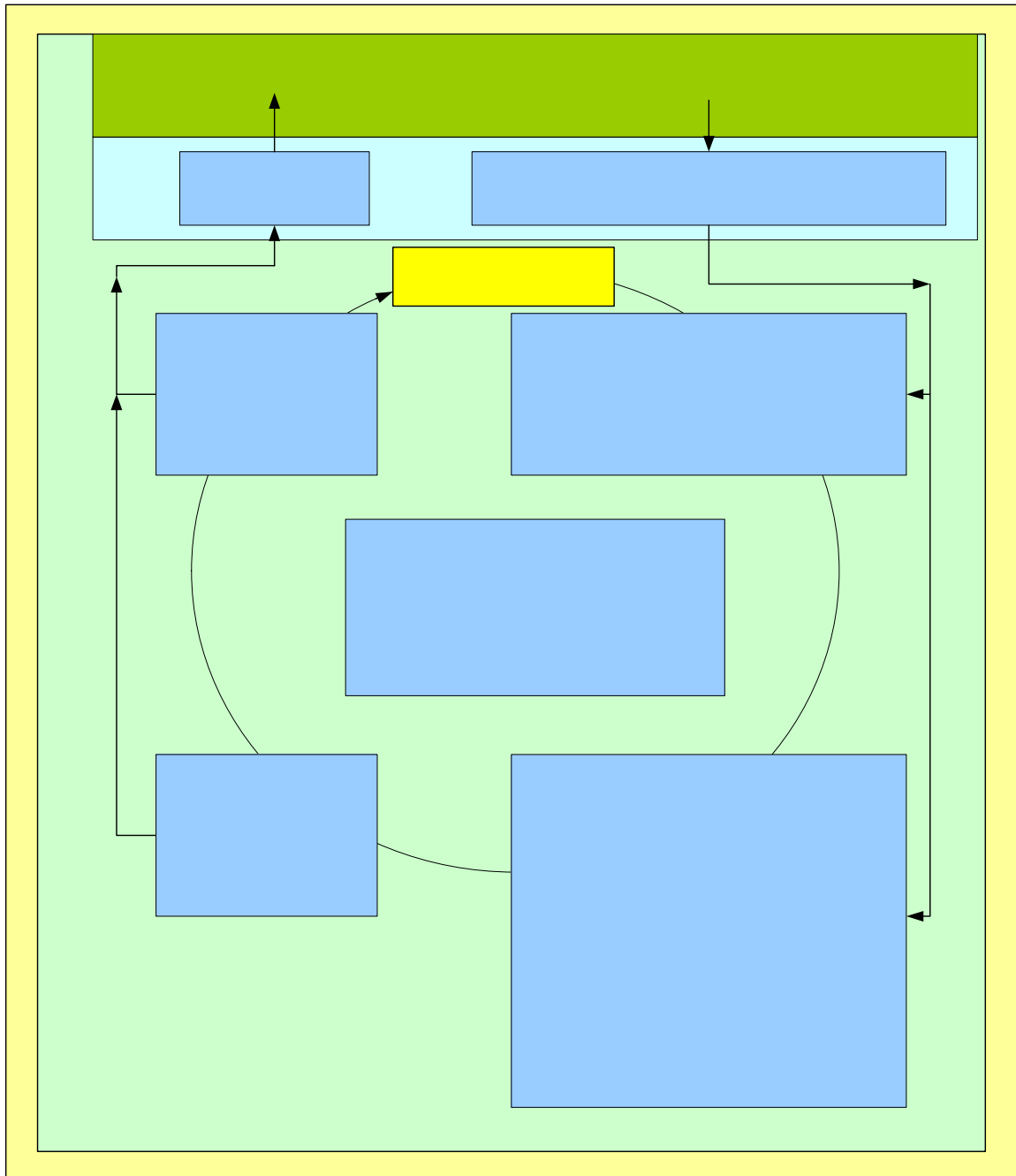


Figure 3-15 the security management process
(Source: The IT Service Management Forum, 2002, p. 183)

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It is clear that the ITIL service management processes are precise, thorough, and manageable. Manageable from the standpoint that they can be implemented into the Networking Lab Practicum in an orderly and cohesive fashion. The details of which should be worked out by the new practicum leadership.

3.4 *Review of the deliverables*

The deliverables for this project will include this thesis, the flowcharts and the appendices that define the terminology in nomenclature specific to utilization of Microsoft Operational Framework and Microsoft Solution Framework. A considerable portion of understanding IT Service Management is having a firm grasp of the language and definitions. Regardless of which implementation of IT Service Management is utilized around the world, the terminology is always the same.

3.5 *Outcomes*

The outcome of this project is to provide an executive overview for future NLP students to follow as a guideline for implementation of IT Service Management. Mid-level managers of the NLP will now have a clearer picture of the expectations and future forecast of how IT business should be handled in the future.

3.6 Chapter Summary

IT Service Management is an iterative process that dynamically flows with the needs of the business. Multiple process models were chosen because of the lack of hands-on experience by any US company or corporation. ITIL/MOF has been implemented around the world. Nevertheless, a significant amount of research needs to be done that will support the methods and tactics used within the continental United States.

This chapter attempts to identify the primary methods used to implement the proven global strategies of ITIL. A significant effort was put forth to reconstruct Visio diagrams of all of the processes associated with IT Service Management. This was done in the hopes that other students could follow the diagrams and establish priorities based on their own levels of expertise. The IT Service Management literature and references all speak of having executives that stand behind the process and are willing to become their champion. In my student leadership position, I chose to become the champion. However, unlike most executives, I chose to delve a lot deeper into the subject matter that the second-tier student managers must master. Hopefully, this chapter provides an adequate foundation for the development of new IT management skills.

4 Chapter Four: Project History

4.1 How the project began

In the spring of 2003 I joined the Networking Lab Practicum with the hopes of becoming a part of a project that was worthwhile and meaningful. However, a lot of the projects were already in full swing and my previous project had been rejected because a proprietary information contained therein. There were practicum meetings once a month that students used to present data and gather new information. For new students it was difficult to become adequately motivated because of the chaotic structure and a lack of any identifiable management process to follow.

After numerous meetings and discussions with Dan Likarish, the Project manager/faculty adviser in charge of the Networking Lab Practicum, the decision was made to vigorously pursue a greater understanding and knowledge of IT Service Management. This was done with the belief that a more structured environment would help the students perform with greater effectiveness. Also, a secondary goal was to increase the level of professionalism demonstrated by the members to our customer base.

4.2 How the project was managed

The project was managed as an academic research project that attempted to narrow the scope to an executive level point of view. In my current position in the IT industry, I happen to work under an executive who believes extensively in training. When my current work environment has a limited knowledge base on a particular subject, our executive sends us to training. I followed the same methodology for this thesis and began

with training for a certification in ITIL Service Management and to acquire a Greater knowledge in business management.

4.3 Significant events/milestones in the project

The two most significant events in this project had to do with acquiring the proper amount of training in IT Service Management to be considered a semi-subject matter expert. This was accomplished with the completion of the certification training for ITIL service management. IT Service Management dedicates a significant amount of material to business continuity management and continuity management. It was important that I developed a clear understanding of what are the needs of the business. So, the second most significant event was the completion of my masters in business administration.

4.4 Changes to the project plan

The only significant adjustments to the project plan had to do with timing. My original expectations on how long it would take to complete this project were extremely aggressive. In time, that aggressive schedule thinking had to be adjusted to fit the realities of real world time constraints.

4.5 Evaluation of whether or not the project met project goals

The original goal of this project was to provide adequate analysis of the management process of ITIL/MOF and to determine whether they could be implemented in the NLP. To that end, the project goal was met. In addition, significant amounts of ITSM knowledge is now available to the new middle managers of the Networking Lab Practicum .

4.6 Discussion of what went right and what went wrong in the project

For the most part, because this is an academic research project everything went pretty smoothly. Nevertheless, I severely underestimated the time necessary to complete the training. I was unaware that when I began this project very few US companies had actually tried to implement the business processes of ITSM. There were no successful or unsuccessful case studies to use as a guideline for directing my activities relevant to the Networking Lab Practicum . Additionally, the companies that were touting IT Service Management as a new business model spent an inordinate amount of time attempting to push their own product lines. This strategy is contrary to the core of ITIL's view of non-vendor specific solutions.

4.7 Findings / analysis results

It is my opinion that based on the research, the business processes of IT Service Management can be employed by the Networking Lab Practicum . Certain processes such as Financial Management for IT Services and the Service Desk process do not fit our current business model. We do not have adequate personnel numbers to man a full-time service desk and the financial management processes are beyond the scope of the NLP.

5 Chapter Five: Lessons Learned

5.1 What you learned from the project experience

Initially, I was of the belief that because ITIL had been around for over 20 years that I could find a mentor with practical experience domestically, I was wrong. I was also of the mindset that I could translate my book knowledge into experience that would give me an advantage in the workplace. Yes, I'm quite knowledgeable and yes, I was the only one in the IT department who understood what management was asking. In spite of this, I was unable to sufficiently make inroads into sharing my knowledge with my peers enough to get movement.

5.2 What you would have done differently in the project

When I first presented the concept to the students in the NLP in December of 2003, I thought that everything would move smoothly and aggressively towards a conclusion. What I failed to anticipate was the resistance to change. The NLP had developed a particular culture that was difficult to change. If I were to do this again, I would choose to address both psychological and political issues associated with changing the corporate mentality.

5.3 Discussion of whether or not the project met initial project expectations

Actually, I thought I could do the research and the implementation and be responsible for affecting the change. That expectation was way out of line. ITSM requires a significant time commitment and understanding of the intricacies of the various processes. One individual cannot effectively manipulate the outcome without having significant experience in managing projects of this nature.

5.4 What the next stage of evolution for the project would be if it continued

The next phase of this project would be for the current participants in the NLP to sit down and evaluate the flow charts provided in this document. Members of the NLP should use these flowcharts to compare what is being done currently as opposed to what's specified in the model of the best practices of ITSM. After having created a list of the shortcomings, the list should be prioritized and an action plan should be composed.

A work breakdown structure should then be created using project management techniques and tools. In addition, I reiterate what was said earlier. Because the NLP functions in a Microsoft shop, familiarize yourself with the nomenclature of Microsoft Operational Framework and Microsoft Solutions Framework. These can be found in Appendix A.

5.5 Conclusions / recommendations

In conclusion, I would recommend extrapolating the key performance indicators from the flowcharts and templates and use those to put together questionnaires concerning the NLP's present performance. In other words, gather the metrics to determine where we are now in order to establish a baseline to be measured against a later time. Track our progress. Adhere to the steps of the process improvement model. Then, act! Remember to do something; something happens. Do nothing; and nothing happens.

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Appendix A : Microsoft® Integrated Glossary Of ITIL/MOF Terminology
(Source: Microsoft® frameworks integrated Glossary, 2004)

A

accept

One of three key concepts in the Microsoft approach to managing project trade-offs. It refers to accepting costs and resources as a time-and-materials strategy. See also optimize and constrain.

acceptance test

A release readiness test for validating whether or not the technical solution satisfies the usability and operability requirements specified in the functional specification.

access control

Access and privileges granted to users so that they can perform certain authorized functions on a system.

activity

An element of work performed during the course of a project. An activity normally has an expected duration, expected costs, and expected resource requirements. Activities can be subdivided into tasks.

alpha testing

Testing of an early, feature-complete product by internal resources.

analysis

In conceptual design, the breaking down and examination of business and user information into use cases and scenarios documenting work processes. In logical design,

the identification of services, objects, attributes, and relationships from scenarios. In physical design, the examination of physical constraints of the infrastructure and the physical requirements of the application to select candidate implementation technologies and to draft a preliminary deployment model.

analysis baseline

The point in analysis where the project team is in consensus that the analysis deliverables are sufficient in breadth and depth to continue to the next step in conceptual design, logical design, or physical design.

analyzing risk

Converting risk data into risk decision-making information.

application

The information system component that is composed of the application software and its accompanying datasets and thus represents the functionality of the information system.

application perspective

Viewing the enterprise architecture from the point of view of the applications used to support business processes. The application perspective is represented by the **A** in the BAIT acronym.

architecture

The manner in which components are organized and integrated.

assign

The action of delegating a service event to a service group or specialist. The person accepting the assignment becomes the resolution owner.

assumption

Factors that, for planning purposes, are considered to be true, real, or certain.

Assumptions affect all aspects of project planning, and are part of the progressive elaboration of the project.

attribute

A property of an entity.

authentication

The method by which users prove to the system that they are who they claim to be.

Authentication is used in passwords, smart cards, biometrics, and so forth.

availability

The ability of a component or service to perform its required function at a stated instant or over a stated period of time. It is usually expressed as the availability ratio that is, the proportion of time that the service is actually available for use by the customers within the agreed service hours.

availability management

A MOF service management function in the optimizing quadrant. It employs the process of describing, managing, directing, and proactively maintaining the availability of information and services at a reasonable cost and in accordance with agreed service delivery levels.

Note The IT Infrastructure Library (ITIL) also uses this term to connote a similar meaning and process. MOF uses the underlying ITIL characterization as a foundation and then extends it by incorporating partner experience and Microsoft-specific features. For

the specific ITIL definition, please consult the ITIL glossary, located at the time of publication at the ITIL Web site.

availability plan

Compiled and/or refined within the availability management process. The availability plan sets out what availability is necessary in the long term. The plan contains a number of set scenarios with respect to future availability requirements.

B**baseline**

A snapshot of a project, specification, schedule, or other entity at a set point in time. A baseline consists of the original approved plan, plus or minus approved scope changes; it is used as a point of reference to measure progress. It is usually used with a modifier (a cost baseline or schedule baseline, for example). It may document IT architecture and underlying dependencies at a given point in time, or may be used to document the current status of a development or other project.

For availability management in an operations setting, the term also is used to identify an agreed set of availability definitions and targets for an IT service. Such definitions and targets normally would have been proved through modeling , and once defined, would be used as key availability design and reporting criteria.

best practices

An optimal set of procedures and functional principles, typically derived from previous experience. When followed, best practices generally result in improved results, enhanced work flow, and other benefits in completing project activities. However, following best practices does not guarantee satisfactory results from a particular project.

beta testing

Testing of a stabilized product by external end users.

bottom-up estimating

A principle of good scheduling. It means having those who do the work estimate the effort, rolling up task-level estimates, and recognizing that experience is the best estimating technique.

breakdown

An incidental, short-term interruption of automated information services.

buffer

Time added to a project schedule to help the project team accommodate unexpected problems and changes. Synonymous with PMI Body of Knowledge reserve, which may be applied to either schedule or cost. A buffer is typically created by setting an internal deadline that occurs sooner than the external one that has been publicized.

bug

Any issue arising from the use of the product.

bug classification

Making bugs actionable by determining severity, which measures its impact on the product, and by priority, which measures how important it is to fix the bug.

bug convergence

The point at which the rate of fixed bugs exceeds the rate of found bugs.

bug resolution

Addressing a bug in some fashion.

bug triaging

Evaluating and prioritizing bugs to determine their appropriate resolution.

build

The process involved in taking one or more input configuration items and processing them (building them) to create one or more output configuration items for example, software compile and load.

build strategy

One of the four strategies designed to extricate an organization from the IT abyss. The build strategy endeavors to define a long-term infrastructure target that increases flexibility while maintaining cost levels.

business consequence

In the MOF risk model, a description of the way in which the operational consequence would affect the business as a whole.

business function

The highest level of what business processes are intended to accomplish. For example, financial management is a business function; accounts receivable is a related business process. See also business process.

business need

A desire of the project customer that focuses on the business problem; its fulfillment is strategic to organization goals. See also user requirement.

business perspective

An IT project from the point of view of the associated business processes. Most commonly, this is the view taken by the project customer, sponsor, and/or product manager.

business process

A process is a structured, measured set of activities designed to produce a specified output for a particular customer or market. It implies a strong emphasis on how work is done within an organization. (Davenport, Harvard Business Review, 1993). Business processes have customers and in most cases (but not always) cross organizational boundaries.

business service

A unit of application logic that controls the sequencing and enforcing of business rules.

C

CAB

See change advisory board.

candidate components

Preliminary or proposed, before being baselined or finalized, as in candidate components, services, objects, or technologies.

candidate project list

Compiled during the planning phase of the enterprise architecture, when determining which IT projects to undertake requires complex trade-offs in uncertain situations. The candidate project list helps IT planners to balance business needs and goals against technological possibilities and risks and prioritize projects for a versioned release of the enterprise architecture.

capacity management

A MOF service management function in the optimizing quadrant. The process of describing, managing, directing, and proactively maintaining the capacity of information and supplied services in accordance with agreed quality performance levels and processing capacity at reasonable cost.

Note The IT Infrastructure Library (ITIL) also uses this term to connote a similar meaning and process. MOF uses the underlying ITIL characterization as a foundation and then extends it by incorporating partner experience and Microsoft-specific features. For the specific ITIL definition, please consult the ITIL glossary, located at the time of publication at the ITIL Web site.

capacity planning

The process of forecasting system and environment utilization and workloads and then developing plans to ensure that the system and environment will be able to support anticipated performance demands.

category

Classification of a group of configuration items, change documents, or problems.

CCTA

See Central Computer and Telecommunications Agency.

Central Computer and Telecommunications Agency

A United Kingdom government executive agency chartered with development of best practice advice and guidance on the use of information technology in service management and operations.

change

The addition, modification, or removal of approved, supported, or baselined hardware, network, software, application, environment, system, desktop build, or associated documentation.

change advisory board

A group of people representing service delivery and support functions who are responsible for assessing, planning, and authorizing changes to the IT environment. This board is a key component of a formal change management process and is likely to be made up of representatives from all areas within IT and representatives from business units.

change control

Principles and processes that facilitate the management of change without compromising the quality or integrity of an IT project or solution, through structured procedures for submitting, approving, implementing, and reviewing change requests.

change history

Auditable information records that describe what was done, when it was done, by whom, and why.

change log

A log of requests for change raised during a project, showing information on each change, its evaluation, what decisions have been made, and its current status, such as raised, reviewed, approved, implemented, or closed.

change management

A MOF service management function in the changing quadrant. It employs the practice of administering changes with the help of tested methods and techniques in order to avoid new errors and minimize the impact, if any, on the agreed IT service levels in accordance with service level agreements.

change record

A record containing details of which configuration items are affected by an authorized change (planned or implemented), and how.

changing quadrant

The first quadrant in the MOF process model where a new release is prepared and then released into production. The changing quadrant starts with a release approved review to determine if the release is ready for implementation in the target environment and culminates in the release readiness review in which the release is assessed for effective implementation.

Examples of changing quadrant activities include:

- Verifying the readiness of the release.
- Verifying the release functionality in the physical environment.
- Verifying the preparedness of the operations staff and processes.
- Creating and following through on the installation plan.

- Creating a contingency plan.
- Analyzing potential impacts on other systems.

CI

See configuration item.

CI level

The lowest level at which identifiable items can still be uniquely distinguished.

classification

Expressing the value of items by placing them in a certain order on the basis of category, impact, and urgency. Also, the process of formally grouping configuration items by type (for example, software, hardware, documentation, environment, application).

Classification can be used to support decisions based on priorities.

client manager

Synonym for MSF product manager within an engagement.

client/server

The combination of software, hardware, and network components in which one or more clients (computers) request services from one or more servers (computers) and through which the computer network functions for the user as one computer.

closure

When the customer is satisfied that an incident has been resolved.

CMDB

See configuration management database.

code review

Assessing code to improve its quality and the capabilities of the development team.

cohesion

The relationship among different internal elements of an object.

communications plan

A formal plan, usually a document, for how a project team will handle communications within the team and between the team and external entities.

component

A unit of application logic that delivers a set of specified services that can be accessed only through a published interface or interface contract.

component interface

The predefined part of a component that allows a component user to access component functions exposed at that predefined part.

Component Object Model (COM)

A language-independent, system-level object model that provides a standard way for components and applications to interoperate.

component topology

A component distribution map that indicates the location of components and their services in relation to the network topology.

conceptual design

A major stage in the design process, through which the project team translates the business requirements into a common language to be shared by users and developers, and describes the feature set and/or usage scenarios that the solution must encompass.

conceptual design baseline

The culmination of the research, analysis, and optimization steps of conceptual design.

confidentiality

A component of encryption. Confidentiality mechanisms ensure that only authorized people can see data stored on or traveling across the network.

configuration baseline

Configuration of a product or system established at a specific point in time, which captures both the structure and details of that product or system and enables that product or system to be rebuilt later.

configuration control

Activities that control changes to configuration items. They include evaluation, coordination, approval, or rejection of changes.

configuration documentation

Documents that define requirements, system design, build, production, and verification for a configuration item.

configuration item

A component of the IT environment (or infrastructure) that may impact the service level agreement if changed. A configuration item (CI) can be either a physical or a logical object and can be composed of other configuration items. CIs may vary widely in complexity, size, and type, from an entire system (including all hardware, software, and documentation) to a single software module or a minor hardware component.

configuration management

A MOF service management function in the changing quadrant. It employs the process of identifying and defining configuration items in a system, recording and reporting the status of configuration items and requests for change, and verifying the completeness and correctness of configuration items.

configuration management database

A database that contains all relevant details of each configuration item (CI) and details of the important relationships between CIs. The database can include ID code, copy and serial number, category, status, version, model, location, responsibility, historical information about the item, and so on. The level of detail employed in this depends either on the aims or on the degree to which information is to be available.

configuration management plan

A document setting out the organization and procedures for the configuration management of a specific product, project, system, support group, or service.

configuration structure

A hierarchy of all the configuration items that make up a configuration.

consensus

When everyone on the team supports the team's decision without feeling they are compromising any important needs or values.

constrain

One of three key concepts in the Microsoft approach to managing project trade offs. In the trade-off matrix, constraining costs and resources requires a not-to-exceed strategy.

constraint

A nonfunctional requirement that places a limit or dictates a limited range of possibilities.

For example, an infrastructure constraint.

context

An information source for scenarios. It provides background or a frame of reference.

contingency plan

A plan for addressing recognized risks that may arise during the course of a project. For development projects, the plan may, for instance, reallocate resources or drop features to react to an unanticipated change in schedule. For operations, a contingency plan provides details for an alternative system or manner of conducting business during an IT crisis.

continuity

Uninterrupted consistency and persistence of processes and the certainty that the processes will continue in operation. See also service continuity management.

continuum

A coherent whole characterized as a sequence or progression of elements. Hence, the design continuum describes a progression of design elements: in conceptual design, the scenarios; in logical design, the services and objects, high-level user interface, and logical database; in physical design, the components, user interface, and physical database.

control

The process of comparing actual performance with planned performance, analyzing variances, evaluating possible alternatives, and taking appropriate corrective action as needed.

control strategy

One of the four strategies designed to extricate an organization from the IT abyss.

Organizations in the IT abyss attempt to get all IT under control by setting funding targets for future application and infrastructure spending.

controlling risk

Addressing the results of risk tracking and the process as a whole.

core components

Components of the solution that are deployed at a central location, rather than at individual sites.

core team organized interim milestone

The point during the envisioning phase at which the core project team has been formed and is ready to move the project forward.

core technology deployed interim milestone

The point during the deploying phase at which the team has deployed the selected technology at the central, or core, location(s).

countermeasure

A technological or procedural response to address a single point of failure or other threat to the availability of an IT service. Two examples are the use of redundant power supplies and the implementation of a proven database backup procedure.

coupling

The relationship of an object to other objects.

coverage testing

Used primarily during the developing phase, it attempts to thoroughly test every feature of the product and the code base of the product.

critical path

The series of activities that determines the duration of a project. It is the longest continuous chain of linked activities through a project schedule; a chain of activities to which no slack or float time is assigned. Delays in any of the linked activities will delay the entire project.

critical success factors

Activities, tasks, technology, funding, and milestone requirements that must be accomplished before an organization can reach its long-term goals and objectives. Similar to dependencies.

current state assessment

An assessment of the actual present-day status of the organization's business processes, applications, information stores, and technological support made during the planning phase of the enterprise architecture.

customer

The recipient of a service (or product).

customer-focused mindset

A best practice or principle of a successful team. It means committing to understanding and solving the business problem, focusing on the alignment of business and technology, and involving the customer throughout the process.

D

daily build

Building the product in an executable form on a daily basis.

data availability

In security, the ability of authorized users to access the data they need, when they need it.

data confidentiality

In security, the ability to restrict data accessibility.

data integrity

In security, ensuring that data presented to authorized users is accurate and not improperly modified.

data service

A unit of application logic that provides the lowest visible level of detail used to manipulate data.

data topology

A data distribution map that indicates data store locations in relation to the network topology.

decomposing work

Breaking the scope of work for a complex project into more manageable parts. See also work breakdown structure.

definitive software library

A secure software library where all versions of software configuration items that the change advisory board has accepted are held in their definitive, quality-controlled form (by necessity this logical library may have to occupy one or more physical locations).

deliverable

A physical artifact created by the team, usually associated with reaching an interim or major milestone. It can be the only product or one of several products associated with that milestone. Deliverables may be internal for use by the project team, or more narrowly, may be delivered to and subject to approval by an external customer or sponsor.

delivery support

See service delivery.

deploying phase

The fourth stage of the process model, during which the project team deploys the tested solution to all planned sites. The deploying phase culminates in the deployment complete milestone.

deployment complete milestone

The point at which the deployed solution is providing the expected business value to the customer and the customer has signed off on the project. The deployment complete milestone is the culmination of the deploying phase.

design

The process of shaping the future by applying new capabilities to the current reality.

design goals

Goals set during the envisioning phase that outline, at a high level, the process of designing a software solution for a business problem.

design, conceptual

The goal in conceptual design is to identify business needs and to understand what users do and what they require. It is not the approach taken or the technologies used to build a solution. Conceptual design is analogous to the rough sketches and scenarios created when designing a house. These are easily understood models jointly created by the customer and the architect.

design, logical

Logical design organizes the details of the application that the team builds to fulfill business needs and user requirements. Logical design is created by the architect's team and lays out the structure of the solution and the communication paths among elements. Logical design corresponds to a floor plan and elevation, where elements such as spatial relationships are organized.

design, physical

Physical design addresses the technology that will be used by the end user. The goal is to apply real-world technology constraints to the logical design, such as implementation and performance considerations. Physical design corresponds to a contractor's blueprints for the physical elements of a structure-wiring, plumbing, heating, and ventilation. The contractor's plans add detail to the architect's plans and reflect real-world construction constraints.

desired architecture

The future envisioned state of the enterprise architecture.

developing phase

Within Microsoft Solutions Framework, the third of four phases within the MSF process model. Depending upon the nature of the project, all code and documentation development, and solution testing and pilots, and installation script and process creation is accomplished during this phase. The developing phase is bounded by the project plan approved (input) and release (output) milestones.

development environment set up interim milestone

The point during the planning phase at which the project team has prepared the environment in which development will take place.

development role

One of six team roles, it focuses on coding to the functional specification and on meeting customer expectations. It participates in design, focusing on physical design; estimates time and effort to complete each feature; and serves the team as a technology consultant.

digital nervous system

An obsolete Microsoft marketing term, its use is not advised. A digital nervous system is analogous to a biological nervous system in that it provides an organization with the information it needs. A digital nervous system supports basic business operations, prepares an organization to react to both planned and unplanned events, and helps to gain and/or maintain a competitive advantage.

direct costs

Costs that can be traced to a particular activity or organizational department.

directory services administration

A MOF service management function in the operating quadrant. It provides the day-to-day operations, maintenance, and support of the enterprise directory.

disaster recovery

Similar to contingency plan. However, it traditionally refers to a recovery from a natural disaster. The contingency plan may anticipate and serve the purpose of the disaster recovery plan if it is broad in scope.

distributed COM (DCOM)

Extends COM across machine boundaries, providing remote invocation of COM components in a location-transparent manner.

downtime

The unavailability of one or more configuration items (CIs). It is measured from the start of the incident to the restoration of an IT service.

DSL

See definitive software library.

E

EA plan approved milestone

The second of four major milestones, representing the culmination of the planning phase, indicating the project team, customer, and key project stakeholders agree on what will be delivered and when.

EA release milestone

The last of four major milestones, representing the culmination of the stabilizing phase, at which point responsibility for the product shifts to the operations team.

EA scope complete milestone

The third of four major milestones, representing the culmination of the developing phase, indicating all features have been completed and the product is ready for external testing and stabilization.

EA vision approved milestone

The first of four major milestones, representing the culmination of the envisioning phase, indicating team and customer agreement on project direction.

effort-driven task

A task whose duration will decrease if more resources are assigned to it (for example, more people are working on it).

element

One of the parts, substances, or principles that make up a compound or complex whole.

end user

The person who actually uses an application, as opposed to the customer, who pays for it.

endgame

The process of driving the product to a releasable state.

enterprise

A large company or corporation.

enterprise architecture

A structure that describes:

- The organization's business activities.
- The applications and automation that support those business activities.
- The information necessary to carry out those business activities.
- The technologies and infrastructure used to deliver the applications and information.

The enterprise architecture is the blueprint for integrating these key business processes and technologies.

enterprise architecture planning

The process of working from a current state to an envisioned future state of the enterprise architecture. The process anticipates and plans for the obstacles that impede progress toward initiation of projects that will move the organization forward.

enterprise architecture process

A rational way to make decisions that lead to action rather than reporting. Once this rational process is in place, the team can focus on project selection and prioritization, and plan while building rather than plan first and then build.

enterprise strategy consultant

A Microsoft Consulting Services consultant assigned to strategic consultation duties for an enterprise-caliber client.

entity

A unit of application that represents information.

environment

A collection of hardware, software, network communications, and procedures that work together to provide a discrete type of computer service. There may be one or more environments on a physical platform-for example, test and production. An environment has unique features and characteristics that dictate how they are administered in similar, yet diverse, manners.

envisioning phase

The first of four distinct phases of the MSF process model. It is the period during which the team and the customer define the business requirements and the overall goals of the project. It culminates in the vision/scope approved milestone, indicating team and customer agreement on project direction.

error control

Correcting and/or minimizing the negative consequences of existing errors in the IT infrastructure to provide the agreed service level.

error handling

The design of a system to trap all types of processing errors, with proper notification of the error condition to the end user and system administrator, and ending in a proper way that allows the system to recover state and clean up invalid data.

error (known)

An undesired situation in the IT infrastructure in which a particular configuration item is identified as the cause of a (potential) decline in the agreed service level. In general, an error is the root cause of a problem.

error management

See error control.

ESC

See enterprise strategy consultant.

escalation

The process of informing increasing levels of management when a service level is not met. This is defined according to service level management rules established in the service level agreement.

execute strategy

One of the four strategies designed to extricate an organization from the IT abyss.

Organizations eager to leave the IT abyss focus on execution, in both operations and new development to reach competitive status as soon as possible.

exposure

In the MOF and MSF risk models, the result of multiplying the probability of risk by the impact. For example, if the probability is 20 percent and the impact is 3, then the exposure is 0.6.

extend strategy

One of the four strategies designed to extricate an organization from the IT abyss. A strategy for organizations that aspire to lead and must focus their energies on identifying and testing new opportunities while continuing to drive performance.

F

facilities management

The process involved in the management of physical structures that support the operations environment. It includes property, utilities, power backup, property maintenance, and monitoring. This is often performed by external specialists.

fast tracking

Compressing the project schedule by overlapping activities that would normally be done in sequence, like design and construction.

feature team

In large projects, a multidisciplinary subteam that is responsible for a particular product feature set.

features

One of the three sides of the trade off triangle, the other two being resources and schedule, it refers to the product and its quality.

financial management

A MOF service management function in the optimizing quadrant. It provides the sound management of monetary resources in order to support organizational goals. Financial management may include cost accounting, budgeting, project investment appraisals, and in some organizations, cost recovery.

fixed ship-date mindset

A principle of good scheduling. It means treating a project's projected ship date as unchangeable and committing to a ship date because it's realistic.

forecasting

Projecting future trends through the use of historical data. For example, the forecasting of network utilization trends enables the network manager to anticipate when user performance demands are likely to reach or exceed current levels of computing capacity.

four perspectives

Together, they make up the one enterprise architecture. The MSF process model uses the acronym BAIT to refer to the four perspectives: business, applications, information, and technology.

full release

A release that replaces all components of a release unit, regardless of whether or not they have changed since the last version of the software.

function

Description of the performance of a feature, product, or component.

function team

In large projects, a multidisciplinary subteam that is responsible for a particular functional role, like product management or user education.

functional management

A process responsible for the maintenance of the functionality of an information system that is central to its use.

functional specification

A deliverable that describes a solution, product feature set, or other final project deliverable in explicit detail.

functional specification drafted interim milestone

The point during the planning phase at which the project team has drafted and baselined the functional specification.

gap analysis

A study that is conducted to discover the gap between the current state and the desired state of the enterprise architecture.

Note Also an analysis of readiness data collected to assess the gap between an organization's current state of readiness to deploy a solution compared to the recommended state of readiness.

goals

What the business intends to accomplish or attain.

golden release

Accepting a release candidate as the final release of the product.

guidelines

A recommended course of action to achieve particular ends

H - I

HIP

High-impact project, necessitating review by an opportunity review board at the local, regional, or global level before a response is made to pursue an opportunity.

identification

Any mechanism used to uniquely identify a user or a set of privileges on a system.

Identification can be likened to a key. Access control can be likened to a lock. Both the key and lock must match in order to gain access.

identification process

The iterative procedure of discovering services, objects, attributes, and relationships from scenarios. Also known as noun-verb analysis.

identifying risk

Discovering and recognizing potential problems with the project.

impact

In the MOF and MSF risk models, the degree of loss that the business consequence would cause. This is measured on a numeric scale: the higher the impact, the higher the number. This is closely related to the ITIL[®] meaning of this term: the business criticality of an incident.

impact analysis

A quantitative research method in which a study is conducted into the effects that an error or change implementation may have on the other parts of the configuration and the subsequent consequences for the service level, taking into account the risks of such an error or change implementation and the potential severity.

implementation

The process of executing the production release and stabilization of an IT change that encompasses one or more configuration items (CIs).

implementation scenario

A short overview of the organizational aspects and scheduling relating to the execution of installation work. The scenario involves a step-by-step plan that includes the various actions and tests, persons responsible, and the duration of the actions to be carried out.

implementation technologies

The programming language, application programming interface (API), and component technology.

incident

Any event that deviates from the (expected) standard operation of a system. Such an event influences the system, even though the influence may be small or even invisible to the user of the system. Every incident is assigned to a problem or a known error.

incident control

See incident management.

incident management

A MOF service management function in the supporting quadrant. It is the function that controls and manages the life cycle of all incidents from occurrence to closure.

information

What the organization needs to know to run its business processes and operations. It includes standard data models, data management policies, and descriptions of the patterns of information consumption and production in the organization.

information perspective

The enterprise architecture from the point of view of the information that the organization has stored for its use.

information stores

A database or other kind of repository where information in all of its forms is kept.

information system

The entirety of the hardware with accompanying basic software and applications software, datasets, persons, and the procedures according to which they work, for gaining knowledge of and/or directing or supporting business processes.

information systems management

The totality of the activities involved in maintaining information systems, the components from which they are constructed, and the accompanying data processing and information processes in accordance with the requirements and preconditions set for their use.

information technology

The architecture, structures, and processes that are the core of an information systems strategy. The entirety of those components (for example, computers, networks, and information systems) with which information provision is realized.

Information Technology Infrastructure Library (ITIL®)

A widely recognized collection of IT Service Management best practices and processes for the management of IT services.

information technology life cycle

The process of planning, building, and managing information technology.

infrastructure

The total set of resources necessary to support the enterprise computing environment.

These resources consist of the technologies and standards, the operational processes, and the people and organizational resources.

infrastructure deployment

The process of converting functional specifications, training, and plans into a complete, deployment-ready solution.

infrastructure role

One of six roles in the MOF team model. It is responsible for the evolving enterprise architecture and ensures that plans are in place to meet the new and changing requirements of running the business from a networking, telecommunications, hardware, and software perspective. Additionally, the infrastructure role includes responsibility for shared/common data management such as customer and product data, space, and storage planning (data centers, field and remote offices, test labs, development labs, and so forth), and the tools necessary to support the infrastructure.

initial candidate project list

See candidate project list.

integration

The degree to which consecutive types of actions or work are carried out by an organizational unit.

interface

Physical or functional interaction at the boundary between configuration items.

interface contract

The specification of how a component will allow a component user access to specific, predefined services.

internal release

The process of getting the product to a known state and incrementally building upon it.

IT

See information technology.

IT abyss

A model used to describe the gap that stands between an enterprise and its ability to maximize value from its IT investments. The IT abyss is the most prominent feature of the IT landscape and represents the present state of an organization on the IT landscape chart, situated between past and future states. An organization's position relative to the abyss on the IT landscape chart determines which of four strategies it should adopt to help it emerge from or cross the IT abyss.

IT assets

Three main areas: application portfolio, technology infrastructure, and IT organization.

IT diagnostic areas

Enterprise architecture planners can evaluate an organization's current IT environment in three key diagnostic areas: IT assets (what the organization has), IT management processes (how things are done), and IT/business performance (current performance).

IT infrastructure

The sum of an organization's IT-related hardware, software, data communication facilities, procedures, automation tools, documentation, and people.

IT Infrastructure Library

See Information Technology Infrastructure Library.

IT inventory

A quick, high-level inventory across the enterprise, looking only at the details of the areas that the vision identifies as being of interest. The IT inventory of an organization can be divided into three categories:

- **Applications.** Systems made up of executable software.
- **Information.** Computerized data stores containing information, often accessed through a database management system.
- **Technology.** Hardware, software, and electronic networks that support applications and data stores.

For analysis purposes, the inventory also includes items that are planned or under development.

IT landscape

A graphical representation of an organization's IT assets evaluation depicting past, present, and future performance. The IT abyss model describes varying levels of the IT landscape. Factors contributing to the IT abyss include IT assets, IT management processes, and IT business performance.

IT life cycle

The process of planning, building, and managing information technology.

IT management processes

Typically, an examination of five main areas in evaluating IT management processes: strategic direction-setting, technical direction-setting, funding, execution, and review.

IT service

Any hardware, software, or facility (or combination thereof) that is provided to business customers for their use and is managed by IT.

IT service management

An approach that IT organizations can utilize to plan, develop, deliver, and maintain quality IT services that are customer focused and process driven, and that meet both cost and performance targets as defined by the service level agreement or operating level agreement.

IT service provider

Any organizational units, whether internal or external, that deliver and support IT services to a customer.

IT/business performance

Has two main areas: spending and results.

iteration

One execution of a sequence of operations in a process or cycle.

ITIL[®]

See Information Technology Infrastructure Library.

J - K

job scheduling

A MOF service management function in the operating quadrant. It involves the continuous organization of jobs and processes into the most efficient sequence, maximizing system throughput and utilization to meet service level agreement (SLA) requirements.

key performance indicators

Significant metrics that indicate the level of functionality and viability of a component.

kickoff meeting

A meeting at which the sales side of the business hands over ownership of the project to the delivery side of business. It is important that this be as smooth as possible and hence it is crucial that both teams are well represented at this meeting.

KM

Knowledge management. An enterprise endeavor to consciously and comprehensively gather, organize, share, and analyze its IT system knowledge to create a complete information resource. Due to the complexity and enterprise knowledge depth that most IT organizations possess, this process is most often automated by using knowledge management (KM) tools.

Most often, KM is used to facilitate the functions that service desk and product support services provide. Knowledge repositories, usually large, indexed, and searchable databases, enable quick retrieval of the relevant possible problems and known errors that may be the root cause of a customer's incident.

The KM system collects the most common problems, questions, and general tips and tricks regarding the organization's supported products, systems, and technologies. It greatly reduces the amount of time required to identify, troubleshoot, and resolve reported incidents and problems by collating the efforts of many support personnel into a single source, enabling each support person to benefit from the knowledge of the others. The infrastructure role frequently owns the specification of these kinds of automation tools as a core service to other operations management groups.

known error

A condition in the IT environment in which a certain configuration item(s) has been identified as the cause of a (potential) degradation or disruption in the agreed service level.

L - M

lag time

The interval between the end of one project activity and the beginning of a dependent project activity.

lead time

The interval between the start of one project activity and the start of a dependent, yet concurrent activity.

life cycle

The phases an IT component goes through from the time it is conceived to the time it is retired from service. The life cycle represents an approval process for configuration items, problem reports, and change documents.

line-of-business application

A software application that is critical to the functioning of the enterprise.

living documents

Documents that are regularly updated and referred to.

LOB

See line-of-business application.

logical design

A major activity in the design process, in which the team deconstructs scenarios into basic elements and makes high-level decisions about the interaction and integration of IT components, prior to making specific technology decisions.

logical relationship

A dependency between two project activities, or between a project activity and a milestone. The four possible types of logical relationships are:

- Finish-to-start. The initiation of work of the successor depends upon the completion of work of the predecessor.
- Finish-to-finish. The completion of work of the successor cannot finish until the completion of work of the predecessor.
- Start-to-start. The initiation of work of the successor depends upon the initiation of work of the predecessor.
- Start-to-finish. The completion of the successor is dependent upon the initiation of the predecessor.

logical structure

The comprehensive organization of elements of a solution or a system, without regard to how it is implemented.

logical system hierarchy

The organization, classification, and ranking of functions into varying levels of hierarchy or nesting.

logistics management role

One of six team roles in MSF. Logistics management is responsible for ensuring smooth deployment of released products and that the product is manageable and supportable in the future. It does this by representing the operations viewpoint within the team and providing liaison between the two groups; planning and managing product deployment; participating in design and focusing on manageability, supportability, and deployability; supporting the product through beta testing; and training operations and help desk personnel for product release.

maintainability (internal focus)

The ability of a component or an IT service, under stated conditions of use, to be retained in or restored to a state in which it can perform its required functions.

maintenance

The implementation of changes in the technical infrastructure that can result from such things as errors in the application software, necessary extension of the functionality, or technical developments in the area of hardware and basic software.

master project plan

A deliverable of the planning phase for a development project. It consolidates feature

team and role plans. For MCS, the master project plan includes a budget plan, capacity plan, communications plan, deployment plan, pilot plan, purchasing and facilities plan, security plan, test plan, and training plan.

master project plan drafted interim milestone

The point during the planning phase at which the project team has assembled and baselined the master project plan.

master project schedule

A deliverable of the planning phase. It consolidates feature team and role schedules. For MCS, the master project schedule includes a development schedule, testing schedule, user education schedule, logistics management schedule, and product management schedule.

master project schedule drafted interim milestone

The point during the planning phase at which the project team has created and baselined the master project schedule.

master risk assessment document

A deliverable of the planning phase. It consolidates feature team and role risk assessments.

materials resource

Physical objects consumed during the course of a project. Generally not a large factor in IT projects.

mean time between failure

The average elapsed time between the full restoration of an IT service or supporting component and the next occurrence of a failure to the same service or component.

mean time between system incidents

The average elapsed time between the occurrence of one system failure and the next failure.

mean time to failure

The mean time expected to the first failure of a component. It is a statistical value and is meant to be the mean over a long period of time and large number of component units.

mean time to repair

The average elapsed time from the occurrence of an incident to resolution of the incident.

Microsoft Operations Framework

A framework developed by Microsoft for managing, running, and maintaining distributed computing systems. To manage, run, and maintain phase within Microsoft's IT-related frameworks. MOF provides comprehensive and prescriptive technical guidance for achieving mission-critical reliability, availability, and manageability solutions and services on Microsoft technologies. MOF comprises white papers, operations guides, assessment tools, operations kits, best practices, case studies, and support tools that address the people, process, and technologies for effectively managing production systems within today's complex distributed IT environment.

Microsoft Solutions Framework

A framework developed by Microsoft for planning, building, and managing distributed computing systems. MSF is a set of proven practices for organizing software development teams and project planning that can be applied to planning and implementing almost any form of computing technology. This guidance includes white

papers, case studies, and courseware in the areas of enterprise architecture, application development, component design, and infrastructure deployment.

milestone

A point (there may be many of them) on the project schedule at which the project team assesses progress and corrects deviations from scope, specifications, or other issues. A project may have interim milestones for internal use only, as well as external or major milestones, typically at the end of major phases of work, that are associated with the completion of major deliverables.

milestone, external

A point that represents team and customer agreement to proceed and signals a transition from one phase into the next. In scheduling, these often appear as a task with a duration of zero work units. Major milestones are generally exposed on customer reports. See also milestone, major and milestone, interim.

milestone, interim

A point in time that signals a transition within a phase and helps to divide large projects into workable pieces. See also milestone, internal and milestone, major.

milestone, internal

A task with no duration (zero days) used to identify internal events, or checkpoints, within a schedule rationalized by team leads, such as team focus and motivation on key deliverables/events, a tool to manage and track progress, or synchronization points for internal/external dependencies. These milestones are usually not displayed on customer reports.

milestone, major

A point that represents team and customer agreement to proceed and signals a transition from one phase into the next. In scheduling, these often appear as a task with a duration of zero work units. Major milestones are generally exposed on customer reports. See also milestone, external and milestone, interim.

mitigation, risk

In risk management activities, an action that may be taken to reduce the probability or impact of a risk, transfer the risk to another party, or avoid the risk entirely. A given risk may have several, one, or no mitigation actions attached to it.

mode of operational failure

In reference to the MOF risk model, the four main ways in which IT operations problems can cause failure:

- **Cost.** The infrastructure can work properly, but at too high a cost, causing too little return on investment.
- **Agility.** The infrastructure can work properly, but be unable to adapt to changing circumstances.
- **Performance.** The infrastructure can fail to meet users' expectations, either because the expectations were set wrong, or because the infrastructure performs incorrectly.
- **Security.** The infrastructure can fail the business by not providing enough protection for data and resources, or by enforcing so much security that legitimate users can't access data and resources.

model

A representation of a complex, real-world phenomenon designed to help understand questions about that phenomenon.

MOF

See Microsoft Operations Framework.

MOF service management functions

Foundational-level best practices and prescriptive guidance that are the core of the MOF process model. Although no service management function (SMF) is exclusive to a given quadrant in MOF, each SMF has a home quadrant or primary planning and execution quadrant. The following are examples of SMFs:

- Configuration management
- Problem management
- Service continuity management
- Workforce management

MSF

See Microsoft Solutions Framework.

MSF enterprise architecture process model

A process model based on MSF principles that establishes the enterprise architecture process as not just a plan, but also the implementation. Planning and implementation become simultaneous activities in this model.

MSF process model

A project life cycle model that establishes the order for all development cycle activities

up to the initial release of an IT solution, or for the deployment of an existing solution into an enterprise.

MTTF

See mean time to failure.

MTTR

See mean time to repair.

N - O

narrative

A type of scenario that incorporates a day-in-the-life story in the language of the user.

network administration

A MOF service management function in the operating quadrant. It employs the process of maintaining communications systems, links, and accompanying data-processing procedures, in accordance with the requirements and preconditions arising from their use and the characteristics of the network components.

network topology

An infrastructure map that indicates hardware locations and interconnections.

noneffort-driven task

A task whose duration is independent of the number of resources assigned to complete it.

norm

An idea held by members of a group that can be expressed in the form of a rule and specifies what members are expected to do in given circumstances.

normalization

The administration of technical specifications for products, working methods, and so on, by an official, independent authority. Application of these standard specifications is not mandatory.

object

An encapsulation of an entity (data) and its corresponding services (functions) as a way of organizing them.

objectives

What an organization wants to achieve in the long term. They usually are linked with goals. See also goals.

OLA

See operating level agreement.

OLO

See operating level objective.

operating level agreement

An internal agreement between two or more IT entities that defines the responsibilities of all participating parties. An operating level agreement (OLA) binds these parties to provide a particular service (or service component, such as hardware, software, and so on) of a specific agreed-upon quality and quantity, and constrains the demands users may place upon the service (or service component) to those agreed-upon limits defined by the contract.

operating level objective

An agreed-upon, measurable service metric target between two or more IT entities, applied to the services provided to those entities and described in an operating level agreement.

operating quadrant

The second quadrant in the MOF process model It encompasses the day-to-day activities of an IT organization. Its activities ensure the smooth operation of the operations environment. Examples of these day-to-day activities include:

- System administration
- Batch processing
- Backup procedures
- Security
- Directory services

operating system

The basic software that runs on a computer system and allows application software to function.

operational consequence

In the MOF risk model, a description of the way in which the condition would affect the IT environment. The mode of failure typically influences the operational consequence.

operational level agreement

Internal agreements between departments and/or suppliers of an IT organization that allow service level agreement commitments to be fulfilled.

operations

The on-going (day-to-day) activities IT personnel perform on IT environment components to run and manage the information technology system and support the business organization. These activities emphasize execution and are particularly evident in the MOF operating quadrant.

operations review

The management review within the MOF operating quadrant. The primary goal of the operations review is to assess the effectiveness of internal operating processes and procedures and make improvements as appropriate. This evaluation is focused on internal processes and procedures utilized to meet service level requirements and in turn how those activities can be improved. The operations review assists in the retention of the corporate knowledge. It is crucial that, as the operations staff gains experience with a process, system, or application, it documents this experience and retains it in the corporate knowledge base. The operations reviews can be both release based and time based.

operations role

One of six roles in the MOF team model. It includes skilled specialists who focus on technology areas and production-systems tasks necessary to run the business on a daily basis. Enterprise operations roles include dedicated specialties such as messaging, telecommunications, networking, and database administration.

opportunity management

A formalized process for identifying, qualifying, managing, bidding, and evaluating project opportunities for IT projects.

optimization

Making a process as fully functional or effective as possible given the circumstances or inputs at present.

optimize

One of three key concepts in the Microsoft approach to managing project trade-offs. In the trade-off matrix, optimizing costs and resources means seeking their lowest possible allocation (a minimum-cost strategy).

optimizing quadrant

The fourth quadrant in the MOF process model. It evaluates the operational functionality of an IT organization.

The goal of this quadrant is to manage costs while continuously improving the level of services. The optimizing quadrant addresses two specific elements of operations:

- Business service reliability
- Cost

The objective of this quadrant is the optimization of cost, performance, capacity, and availability in the delivery of IT services. The optimizing quadrant includes the service management functions to manage costs while maintaining or improving service levels.

This includes review of outages/incidents, examination of cost structures, staff assessments, availability, and performance analysis as well as capacity forecasting.

ORB

Opportunity review board. A panel convened to review project opportunities and provide recommendations for opportunity management (for example, whether to pursue resources).

P - Q

package release

A release that includes a package of software configuration items that are introduced into the production environments.

partner role

One of six roles in the MOF team model. It includes management of a broad collection of IT partners, service suppliers, and outsource vendors who work as virtual members of the IT staff in providing hardware, software, networking, hosting, and support services.

patch

An update (commonly called a fix) to a version or release. Each patch introduced into the environment needs a corresponding version adjustment.

performance support plan

A plan drawn up by the user education role for how to support end users of a software product.

phase

A distinct division within a process model or product life cycle, typically culminating in a major or external milestone, or representing a fundamental transition in the development

of a product or service. In Microsoft Solutions Framework, process models and the product life cycle comprise four phases.

Phase in MSF correlates with "quadrant" in MOF. Phase as used in MSF infers that activities or tasks within each phase occur sequentially, with distinct demarcations between phases, although some overlap may occur. Quadrant is used in MOF to distinguish the fact that tasks or activities from each quadrant may begin nearly simultaneously and may continue concurrently for the life of the project.

physical design

The third major stage in the design process, in which the project team determines how to specifically implement the logical design.

physical environment

The geographic and workspace layout and artifacts that affect and support work.

pilot

Introduction of the solution into the production environment, and trial by installers, systems support staff, and end users; an "opening night."

pilot complete interim milestone

The point during the developing phase at which the project team has piloted the solution and is ready for deployment.

plan, build, manage IT life cycle

The fundamental IT life cycle upon which MSF is based. Enterprise architecture focuses on the planning aspects of the MSF life cycle.

planning phase

In MSF, the second phase of the four-phase process model. In this phase, the project team and other major stakeholders define the project scope, create the schedule, and prepare for the next phase. The planning phase culminates in the project plan or EA project plan approved milestone.

postmortem

A formal process of reviewing what went right and what went wrong with a project as a way of learning for the future.

predecessor task

A task or activity that must start or finish before another, dependent task

preliminary deployment model

The proposed network, data, and component topologies, determined by physical constraints of the infrastructure, physical requirements of the application, the enterprise architecture, and proofs of concept that will all still be evolving throughout the validation of physical design.

preproduction test complete interim milestone

The point during the developing phase at which the project team has tested and validated the elements created during development.

preventive maintenance

Maintenance directed at preventing errors so that they don't recur and cause future disruption in operations.

principal

A responsible party who is formally empowered to enter into service level agreements.

print and output management

A MOF service management function in the operating quadrant. It is responsible for managing the costs and resources associated with business output. The output could be printed documents, faxes, e-mail, Web pages, electronic transactions, or computer files.

priority

The sequence in which an incident or problem needs to be resolved, based on impact and urgency.

proactive analysis

An evaluation of how new and unused technologies can be applied to the organization. In this approach, planners do not treat the boundaries of current business practices as limitations, but try to change business processes through a new application of technology in a way that adds value to the organization. The proactive approach means that IT professionals have to imagine future directions that the organization might take and look for ways to apply new or unexploited old technologies to business. See also reactive analysis.

probability

In the MOF risk model, the likelihood that the condition will occur. (Note that this is not the likelihood of the consequence. It is assumed that if the condition happens, the consequence is a guaranteed result.) Probability is measured on a numeric scale, and it is never zero (because a risk that can't happen isn't something to manage) and never 100 percent (because that condition would be guaranteed: a known problem, not a risk).

problem

Underlying cause of one or more incidents.

problem diagnosis

The actions leading to the acknowledgement of an error, including the localization of the malfunction and establishment of the cause.

problem management

A MOF service management function in the supporting quadrant. Its primary objective is to effectively address the underlying/root cause of incidents in order to reduce the quantity and severity of incidents within the production IT environment. It employs the processes aimed at detecting and effecting structural improvements in the technical infrastructure and the settlement of problems arising from the use and management of information systems.

problem resolution owner

The person to whom a problem is assigned. This person owns responsibility for solving the problem, although not implementing the solution. Implementation is done by change management.

problem statement

A concise summation of the problem that the project is intended to solve.

procedure

The description of a formalized method of working (when and in what order actions are to be carried out) for a specified process or part thereof. Procedures provide for coordination between departments. Among other things, a procedure can be described as:

- The course taken through the company.
- What one department supplies to another, in what form, and at what moment.
- Rules relating to several departments.

process

A collection of activities that yield a result, product, or service; usually a continuous operation. A series of actions or operations designed to achieve an end.

process control

The process of planning and regulating, with the objective of performing a process in an effective and efficient way.

process model

See process model, MOF and process model, MSF.

process model, MOF

A spiral process model that provides a structure for the continuous assessment of all aspects of IT operations. It provides a mechanism for the rapid identification and incorporation of required changes to provide highly reliable and cost-effective services and solutions. This spiral process does not happen serially, but rather occurs in parallel across the service solutions. The MOF process model supports the successful provision of IT services by addressing four key principles: structured architecture, rapid life cycle and iterative improvement, review-driven management, and embedded risk management.

process model, MSF

The MSF project life cycle model that establishes the order for all development cycle activities up to the initial release. The model comprises four distinct phases: envisioning, planning, developing, and deploying the solution into the enterprise.

processing

The daily operation of all systems in the IT environment.

product management role

One of six team roles in MSF, this role's key contribution to lead the team to a shared vision of the requirements for meeting a customer need. The role acts as liaison between the team and customer; manages customer expectations; promotes shared project vision/scope; develops, maintains, and executes the business case; promotes features versus schedule trade-offs; and develops, maintains, and executes the communications plan.

product mindset

A best practice or principle of a successful team. It means treating all work as part of a project and treating the final deliverable of the project as a product. It is important because it focuses the team on execution rather than process, enables the team to use product development techniques such as versioned releases, and increases team identity and accountability.

product scope

The deliverables a project creates.

product-level vision

A long-term vision of what the product is intended to do.

program

A group of related projects, managed in a coordinated way. Programs usually include an element of ongoing work.

program management role

One of six team roles in MSF, it is responsible for driving the timely completion of an IT solution project. The program manager expedites critical trade-off decision-making, manages resource allocation, manages the project schedule and reports project status, manages the product specification, facilitates team communication and negotiation, and drives the development process. Conceptually, this role is roughly equivalent to the traditional project manager; however, in MSF the program manager acts as a coordinator among several peer roles, each of which has responsibility for its own set of tasks and activities. In PMO, a program manager usually directs the operations of several projects, either simultaneously or sequentially. This aspect of the MSF program manager role may be true, but it is not required. The program manager in PMO is also responsible for the success of the entire project-this is a shared responsibility in MSF.

program manager

The title for a person holding the program management role in an MSF team or the titular head of a large IT (or other) program involving several projects, ongoing projects, or other complex management activities. See also program management role.

programming model

Prescribes how to use implementation technologies, sets design guidelines as the foundation for component specification, and uses different considerations to address different aspects of the solution: stateful and stateless objects, in-process and out-of-process function calls, connected and connectionless modes, synchronicity, threading, error handling, security, and distribution.

project

A temporary endeavor undertaken to create a unique product, service, or result.

project assurance

A PMO role that provides overview, consultation, and advice on complex projects. Role typically assumed by a principal consultant, not involved in day-to-day project activities.

project closure

The definitive end point of a project, agreed upon and documented by the consultant and project sponsors. Project closure may occur due to successful project completion, loss of project viability (no longer appropriate), or risk exposures that have become unacceptably high.

project documents

One of the deliverables leading to the release milestone. They archive project artifacts for future reference.

project lead

Synonym for MSF program manager within an engagement.

project life cycle

A collection of generally sequential project phases whose name and number are controlled by the needs of the organization or organizations involved in the project.

project manager

The individual responsible for managing a project.

project phase

A collection of logically related project activities, usually culminating in the completion of a major deliverable.

project plan

A formal, approved document used to guide both project execution and project control.

The primary uses of the project plan are to document planning assumptions and decisions, facilitate communications among stakeholders, and document approved scope, cost, and schedule baselines. A project plan may be summarized or detailed.

project plan approved milestone

In MSF, the second of four major milestones. It represents the culmination of the planning phase, indicating the project team, customer, and key project stakeholders agree on what will be delivered and when.

project schedule

The planned dates for performing activities and the planned dates for meeting milestones.

project scope

The work (schedule and resources) required to create the deliverable in the product scope.

project structure document

A deliverable of the envisioning phase, leading to the vision/scope approved milestone.

project trade-off triangle

A model that displays the relationships between the three components of a project that describe the scope of work (resources, schedule, features). See also resource and trade-off triangle.

project variables

The three sides of the trade-off triangle. They include resources, schedule, and features.

project-level vision

A short-term vision of what the project team wants the current version of the product to do.

proof of concept complete interim milestone

The point in the developing phase at which the project team has deployed the selected technology in a lab environment designed to simulate the production environment.

protocol

The standardized way in which communication takes place between two components.

quadrant

The four distinct divisions of the MOF process model, culminating in a major or external review. Quadrant in MOF correlates with "phase" in PMO and MSF. Quadrant is used in MOF to distinguish the fact that tasks or activities from each quadrant may begin nearly simultaneously and may continue concurrently for the life of the project. Phase as used in PMO and MSF infers that activities or tasks within each phase occur sequentially, with distinct demarcations between phases, although some overlap may occur.

quality

The totality of those properties and characteristics of a product or service that are important in enabling the fulfillment of established or self-evident needs.

quality assurance

A role some organizations use to ensure that a quality bar is set and met; not to be confused with the testing role in the MSF team model, which is responsible for tracking the status of product development.

quality level

A measure of quality, expressed as a measurable quantity (the response time or availability percentage, for example).

R

reactive analysis

A top-down approach in which the organization initiates no action unless an event of some kind threatens the status quo. Then an individual or a team is given the task of forestalling change or attempting to control change as the organization drifts toward another-usually unplanned-for-state.

relationship

An illustration of how entities are related to each other.

release

A collection of new and/or changed configuration items that are tested and then introduced into the production IT environment.

release approved review

The first review in the MOF process cycle where the new release is reviewed to determine if it is ready for implementation in the target environment. The release approved review is typically the result of an approved modification that is being evaluated for implementation. The underlying process that supports this review is the key integration between MSF and MOF. Through this process, key attributes of a given release are assessed against standards, policies, and quality metrics as well as certain readiness factors.

release candidate

A shippable product that is suitable for final testing.

release candidate testing

Determining whether a candidate product build is suitable for release.

release management

A MOF service management function in the changing quadrant. It employs the processes of coordinating and managing the activities by which all releases to the production IT environment are planned, tested, and implemented.

release milestone

In MSF, the point at which the project team has tested and piloted the solution and is prepared to deploy it in the production environment. The release milestone is the culmination of the developing phase. Note that the release milestone is the third major milestone in Principles of Infrastructure Deployment, rather than the fourth major milestone as in other MSF courses.

release notes

One of the deliverables leading to the release milestone. They document general release information and late changes.

release readiness review

The review that completes the changing quadrant of the MOF process model. It evaluates the introduction of the release into the target environment.

release role

One of six role clusters in the MOF team model. It participates in system upgrades and ongoing revisions of software development projects. It frequently serves as the primary factor in releasing a new service offering into IT operations. The release role of the MOF team model is the point where the logistics manager role of the MSF team model intersects with MOF. This is where the handoff between development/test and production operations occurs, which is a crucial juncture for the smooth transition of the system into production.

release unit

A component or set of components packaged together as a single release unit and released into the test and production environments (for example, a full teleprocessing system, a suite, a program, a single module).

reliability

The ability of a component or IT service to perform a required function without failing, under stated conditions for a stated period of time.

request for change

A description of a proposed change, what the change entails, and which configuration item(s) it involves. On the basis of the proposal, the impacts are assessed, and if approved, the change is scheduled for implementation.

requirements

A condition necessary for the proper definition of the solution.

research

The identification and gathering of input. In conceptual design, the identification and gathering of business needs and user requirements. In physical design, the identification and gathering of physical constraints of the infrastructure and physical requirements of the application. Logical design has no research step because the input is the scenarios from conceptual design.

research baseline

The point in research where the project team is in consensus that the research deliverables are sufficient in breadth and depth to continue to the next step in conceptual design or physical design.

reserve

A provision in the project plan to mitigate cost and/or schedule risk. Often used with a modifier (management reserve, contingency reserve, for example) to provide further detail on what types of risk are to be mitigated.

resilience

The capacity of an IT service to continue to provide a required function in the event that a portion of the underlying infrastructure suffers a failure.

resolution

An action that will resolve an incident. This may be a workaround.

resolution owner

The person to whom an incident is assigned. This person owns responsibility for resolving the service event.

resource

The specific groups or individuals who complete the project work and their associated financial resources (project budget). This also includes specific equipment, such as computers and computer labs. Resources compose one side of the trade-off triangle with schedule and features being the other two.

response time

The time between the start (sending a request or command) and the end (obtaining the result) of an online transaction.

responsibility matrix

A document that explicitly calls out the individual team members who are tasked with executing, reviewing, and approving work packages within a project.

retiring risk

Eliminating risk from the risk plan. One approach to retiring a risk is to archive the risk and its management plan (successful or otherwise) into a repository for use and reference by future projects. Conversely, risks can be simply removed from the risk management process after they have occurred or been resolved.

RFC

See request for change.

risk

An uncertain event or condition that, if it occurs, may have a positive or negative effect on a project's objectives. An inevitable known event is not a risk. Losses are relative: Failure to achieve maximum benefit may be considered a loss. Opportunities are positive risks: the possibility of achieving an unintended gain.

risk acceptance

A technique of the risk response planning process. It indicates that the project team has decided not to change the project plan to deal with a risk, or is unable to identify any other suitable response strategy.

risk assessment

Determining risk probability (the likelihood that a risk will occur) and risk impact (the severity of loss if the risk does occur).

risk assessment document

A consolidation of the team's risk management output in a single document.

risk assessment drafted interim milestone

An interim milestone of the envisioning phase, leading to the vision/scope approved milestone.

risk avoidance

Performing a task to eliminate the risk posed by another task. Risk avoidance often involves changing the project plan to eliminate the risk or to protect the project objectives from its impact. It is one of three risk mitigation strategies; see also risk reduction and risk transference.

risk condition

In the MOF risk model, a description of a possible future event that could result in a loss.

risk contingency

A predesigned plan or process for dealing with a realized risk event.

risk event

A discrete occurrence that may affect the project for better or worse.

risk exposure

A quantification of the overall threat constituted by a risk. It is calculated by multiplying probability time's impact.

risk impact

The severity or magnitude of loss if a risk occurs.

risk management

A proactive, formalized process for decision-making and actions to continuously assess what can go wrong, determine what risks are important to address, and implement strategies to deal with those risks.

risk mitigation

Reducing the probability and/or impact of a risk to an acceptable level.

risk planning

Anticipating risks with consequences that an organization cannot accept. Risk planning involves examining how much is known about the risk, and if the organization can live with the consequences, or avoid the risk entirely. The plan can include a way to reduce the likelihood the risk will occur, and determine ways to reduce the impact should the risk occur.

risk plans

Actions to address how to prevent and minimize risk and what to do if it occurs.

risk probability

The likelihood that a risk will occur.

risk reduction

Dealing with risk by minimizing the likelihood the risk will occur. One of three risk mitigation strategies; see also risk transference and risk avoidance.

risk response planning

Developing procedures and techniques to enhance opportunities and reduce threats to the project's objectives. The tools include avoidance, mitigation, transference, and acceptance.

risk sources

Where risk can originate.

risk statement

A condition-consequence statement that helps to clearly articulate risk. In the MOF risk model, the combination of risk elements recognized in the identification step: source of risk, mode of failure, condition, operations consequence, business consequence.

risk transference

Shifting the impact of a risk to a third party together with ownership of the response. One of three risk mitigation strategies; see also risk reduction and risk avoidance.

risk-driven scheduling

A principle of good scheduling that prioritizes tasks based on the level of risk involved and prioritizes features based on their importance to key stakeholders.

role

A subdivision of a role cluster. It performs specific functions within an IT organization.

Depending upon the intensity of labor involved and the size of the organization, one person can perform multiple roles within an organization, or multiple persons can perform a single role.

role cluster

Defines six general categories of activities and processes. The processes within a role cluster all support the same quality goal. It is important to recognize that the role clusters are groups of activities that share a common goal. They are not job descriptions, and they do not imply any kind of organizational chart.

roll-up

A series of patches joined consecutively.

S

scale

A way of adjusting the scope of a planned project so that it matches a fixed ratio or actual need.

scale down

To narrow the scope of a project or plan.

scale up

To expand the scope of a project or plan.

scenario

A single sequence of object interactions and interactions between objects and actors; a particular instance of a use case.

schedule

One of three sides of the trade-off triangle, the others being resources and features. It means time.

scheduling for an uncertain future

A principle of good scheduling recognizing that the future is uncertain and creating schedules that are designed to adjust to the unexpected.

scope

The sum of the products and services to be provided as a project. Negotiating the scope of a project balances customer needs and desires against technological and business constraints.

scope complete milestone

The third of four major milestones, representing the culmination of the developing phase, indicating all features have been completed and the product is ready for external testing and stabilization.

scope creep

Unmanaged scope change. The risk that additional user requirements will cause the project to expand beyond the original scope. Scope creep should be avoided when possible.

security

Comprises security policies as specified by security design and processes that address IT asset confidentiality (protection of data), integrity (accuracy of data), and availability (access to data).

security administration

A MOF service management function in the operating quadrant. It employs the process of developing, implementing, and managing security controls. Components include data confidentiality, data integrity, and data availability.

security role

One of six role clusters in the MOF team model. It is responsible for corporate data, network, and operational security. A second area of responsibility is the development and implementation of a comprehensive plan for the retention, classification, and secure disposal of data. Additionally, the security role is responsible for a sufficient plan to recover a corporate network to at least a minimum operational configuration in a short amount of time, including all critical business applications.

service

In application development and related fields (MSF), a component of an application that implements operations, functions, or transformations to data. In IT operations (MOF), a set of activities performed and/or supplied by an organizational department. Service level agreements are negotiated regarding the level of service to be supplied, which is then formally documented. Services differ from components in completeness a service provides a direct business value, a component cannot.

service catalog

A directory of all services that an IT organization offers. The service catalog should contain a page for each service and include the following:

- A description of the service
- Agreed service level
- Contact list (names phone number, e-mail address) of the service manager and the key customers

service continuity management

A MOF service management function in the optimizing quadrant. It focuses on procedures and components necessary to minimize service disruption of mission-critical systems.

service delivery

A collection of IT Service Management disciplines and processes that are directed at optimizing operational processes (service support) and that are responsible for the final service provision. The service delivery disciplines are service level management, service continuity management, availability management, capacity management, and financial management.

service desk

A MOF service management function in the supporting quadrant. It provides first-line support to the user community for incidents associated with the use of IT services. The goal of the service desk is to restore service to the user(s) as quickly as possible. The service desk is tasked with end-to-end tracking and control of incidents through

resolution. A service desk may be an organizational unit composed of multiple service groups-for example, a call center and one or more site support teams (infrastructure and/or application service providers).

service entity

A collection of service groups and specialists. There are four types of service entities: call center, infrastructure, application, and monitoring and control.

service event

An event that requires action from a support group. There are four types of service events: incident, request for information (RFI), request for change-standard (routine change), and request for change-formal (a change requiring the change management process). Requests for training (RFT) will be included in RFI.

service level

An agreed quality and quantity of services to be supplied.

service level agreement

An agreement between IT and the user community that defines the responsibilities of all participating parties and that binds IT management to provide a particular service of a specific agreed-upon quality and quantity. It constrains the demands users may place upon the service to those limits defined by the agreement.

service level management

A MOF service management function in the optimizing quadrant. It employs the processes of planning, coordinating, drafting, agreeing, monitoring, and reporting on service level agreements, and the ongoing review of service achievements to ensure that IT and business are aligned and that service quality is cost justifiable.

Note The IT Infrastructure Library (ITIL) also uses this term to connote a similar meaning and process. MOF uses the underlying ITIL characterization as a foundation and then extends it by incorporating partner experience and Microsoft-specific features. For the specific ITIL definition, please consult the ITIL glossary, located at the time of publication at the ITIL Web site.

service level objective

An agreed-upon, measurable service metric target between the IT organization and one or more of its customer communities, applied to the services provided to those communities and described in a service level agreement.

service management

A collection of people, processes, and technology through which conditions are created that ensure the continuity and quality of the agreed services. Service management includes IT operations as a practice in delivering services, but maintains a broader scope by emphasizing, supporting, and continually improving IT services.

service management architecture

A structured system of management processes, personnel, the management organization, and the supporting information system, as well as their mutual interrelationship. A well-designed architecture enables an IT management organization to supply its customers with IT functionality in a controlled manner.

service management function

See MOF service management functions.

service manager

Ultimately, the responsible entity for day-to-day provision and monitoring of an individual service across all relevant sites; responsible for providing SLA compliance measures and for ensuring that the service review is carried out. Normally there is one service manager per service.

service monitoring and control

A MOF service management function in the operating quadrant. It allows operations to observe the health of an IT organization in real time. This process ensures that service levels are always in a state of compliance.

service provider

Internal or external provider of IT service.

service request

All incidents other than failures in the IT infrastructure.

service support

A collection of operational disciplines and processes that support the management of the IT production environment; in other words, configuration management, service desk, problem management, and change management.

serviceability (external focus)

The contractual conditions with suppliers, outside of the internal IT, covering the availability of an IT service and the conditions under which the contractual conditions are valid for a configuration item or system.

shared project vision

A best practice or principle of a successful team. It means clearly understanding project goals and objectives, and understanding and buying into a vision that is held by all team members and the customer. It is important because it provides the team a uniform sense of purpose, resolves conflicting and contradictory visions, clarifies project goals and objectives, and ensures that team members are working toward the same goal.

shared project vision

A vision for the project that all members of the project team share. Shared vision unites the team in pursuit of a common goal and is vital to the success of a project.

single point of failure

Any component of an IT service that would cause downtime in the event of it failing to function correctly. Availability management aims to cost-effectively remove as many single points of failure as possible through the use of appropriate countermeasures.

site deployments complete interim milestone

The point during the deployment phase at which the project team has deployed the selected technology at all the phase sites.

SLA

See service level agreement.

SLA review

The interval-based review at the end of the MOF supporting quadrant. The operations staff, lead by the support team, reviews the SLAs and the associated metrics during this review and determines which services have met the service level requirements. The staff then takes corrective action to address those areas that fail to meet the requirements.

An SLA typically contains information and requirements on service hours, availability, workload and throughput, priorities, support levels, responsiveness, restrictions, functionality, contingency, security, costs and charges.

It is the management review that assesses the effectiveness of the IT operations group in delivery of the agreed-upon service levels contained in the approved SLA. It focuses its assessment on the delivery of services to the customer and end users and on what changes are required to address any inadequacies in these services.

The SLA review is how MOF recommends that customers, end users, and the operations staff monitor service delivery and is one method of identifying changes required in service levels, system functionality, new business requirements, and/or key process changes.

SMF

See MOF service management functions.

software environment

Software used to support the application, such as operating system, database management system, development tools, compilers, and application software.

software library

A controlled collection of software configuration. It includes all of the new, modified, or existing software configuration items that are made available for use at any given time.

solution concept

The part of the vision/scope document that outlines the approach the project team will take to solve the problem. It provides the basis for planning and scoping the analysis and investigative work required to build a specification.

solution design document

A component of the functional specification that contains technology- and product-specific information that will enable the team to move forward with project planning and schedule deployment activities.

source code and executables

A deliverable of the developing phase. These represent the physical reality of the product itself.

sources of risk

Related to the ITIL term category. There are four main sources of risk in IT operations:

- People. Even if the group's processes and technology are flawless, people make mistakes, and these mistakes can put the business at risk.
- Process. Flawed or badly documented processes can put the business at risk even if they are followed perfectly.
- Technology. The IT staff may perfectly follow a perfectly designed process, yet the business can fail because of problems with the hardware, software, and so on.
- External. Some factors are beyond the IT group's control but can still harm the infrastructure in a way that causes business failure. Natural events such as earthquakes and floods fall into this category, as do externally generated, man-made problems such as civil unrest, computer virus attacks, and changes to government regulations.

specialization

The degree by which various organization units carry out specific actions or work per product or service.

spiral life cycle model

A life cycle model that relies on iterations for creativity and continued improvement.

stabilization complete interim milestone

The point during the deployment phase at which the project team has stabilized the solution and transitioned responsibility for the technology to the production support staff.

stabilizing phase

The last of four distinct phases of the MSF process model. It is the period during which all team efforts are directed at addressing all issues, ranging from code defects to mismanaged expectations. No new development occurs during this phase. It culminates in the release milestone, at which point responsibility for the product shifts to the operations team.

standardization

The establishment of technical specifications for products, working methods, and similar components for system uniformity. Use of the standard specifications can be made mandatory for subordinate organizations.

standards

Established or prescribed course of action or procedure to be followed for specific situations, operations, or business processes.

step

The smallest level of action that cannot be decomposed any further.

storage management

A MOF service management function in the operating quadrant. It provides management of on-site and off-site data storage for the purposes of data restoration and historical archiving.

strategic management/level

Actions concerning the relationship of the organization to its environment and the basic outlines of the organization structure. Decisions on a strategic level influence the processes within the organization. Final responsibility lies with the directors, but functionaries at lower management levels have an important role as information providers. Strategic management gives direction to the business-economic, organizational, and technological aspects of management.

strengths, weaknesses, opportunities, threats

Factors in an organization that may impact proposed solutions to enterprise architecture problems. Analyzing these factors may influence IT decisions. See also SWOT analysis.

subenvironment

A logically autonomous part of a conceptual environment that belongs to a specific application or service.

successor task

A task or activity that depends upon the completion of another task, and must start or finish after it.

support role

One of six role clusters in the MOF team model. The support role includes service desk and production support functions. The goal of the service desk is to provide timely, efficient, and accurate customer support in the resolution of incidents while production support teams are typically the second level in the escalation chain of incident management.

supporting quadrant

The third quadrant in the MOF process cycle. It supports IT operations in day-to-day operations. The supporting quadrant incorporates the concepts of integrated resolution processes. These processes include a service desk, incident management, problem management, and service recovery processes. Tasks performed in the supporting quadrant are concurrent with tasks performed in the operating quadrant.

SWOT analysis

A way to evaluate strategies with respect to the organization's resources and environment.

system

An integrated composite that consists of one or more of the processes, hardware, software, facilities, and people that provides a capability to satisfy a stated need or objective.

system administration

A MOF service management function in the operating quadrant. It focuses on the day-to-day tasks associated with maintaining enterprise systems.

T

tactical management/level

Actions relating to the coordination and organization of work (in progress). Decisions on the tactical level influence the procedures employed in the various departments. Tactical management is responsible for translating the separate management sectors into actuality as well as all equipment needed for this (hardware and software) and personnel.

task

A generic term for work that is not included in the work breakdown structure, but potentially could be a further decomposition of work by the individuals responsible for that work. It is also the lowest level of effort on a project.

task sequence

A type of scenario that includes detailed steps for required activities.

team goals for success

A set of principles for successful teaming that focus on giving customers what they want, on time and within budget.

team lead

The manager of a project subteam that collectively represents a team role or team role cluster within a MOF or MSF project.

team model

An organizational work model that emphasizes the use of small, cohesive teams of interdependent, multidisciplinary role specialists who communicate on an equal basis in the accomplishment of their individual and group tasks. In MOF, the team role clusters are release, operations, support, partner, infrastructure, security. In MSF, the team role

clusters include are program management, product management, development, test, logistics, and user education.

team model for application development

A small team of peers working in interdependent, multidisciplinary roles. The team model is a starting point, not the final answer, for good project management, emphasizing a flexible approach, dependent on project scope, team size, and team member skills.

team of peers

An organizational work model that emphasizes the use of small, cohesive teams of role specialists who communicate on an equal basis in the accomplishment of their individual and group tasks. This work model contrasts to that of the traditional top-down, linear-structure work model, and has been functionally proven in a variety of different organizations, cultures, and project sizes.

team roles

The six divisions of the MSF team model, including product management, program management, development, user education, test, and logistics.

technical lead

Synonym for MSF development lead within an engagement.

technology perspective

A technology perspective views the enterprise architecture from the perspective of the technological infrastructure that supports the business processes of the enterprise architecture.

technology validation complete interim milestone

The point during the developing phase at which the project team has evaluated the technology against the functional specification in an isolated, clean environment.

test environment

An environment that corresponds as closely as possible to the production environment and within which system and user acceptance tests can be carried out.

test plan

A plan developed by the testing role that outlines how testing plans to maintain the reliability of the product and to ensure that all issues are known.

testing

Ensuring that the right things are done right at the right time.

testing elements

Deliverables of the developing phase that outline what testing plans to do (including the test plan) and are baselined at the scope complete milestone.

testing results and testing tools

One of the deliverables leading to the release milestone. They capture the bug database and test materials for future reference.

testing role

One of six MSF team roles. The testing role's responsibility is to accurately portray the status of the product or solution at any time by clearly documenting what is currently wrong and what is currently right with the product. It develops testing strategy, plans, and scripts to ensure all issues are known; manages the build process; conducts tests to

determine the status of production development accurately; and participates in setting the quality bar.

top 10 risk list

An identification of the 10 top priority risks, taken from the risk assessment document.

tracking owner

The person who tracks progress on a service incident to ensure service levels are not violated. In most cases, the tracking owner is the person who registers a service incident, although tracking ownership can be transferred in rare cases.

tracking risk

Monitoring the risks and their mitigation plans.

trade-off matrix

A technique for managing project trade-offs by portraying them in a matrix that reflects the three project variables in the context of three decisions-whether to optimize, constrain, or accept a given variable.

trade-off triangle

A triangle of project variables whose three sides are resources (people and money), schedule (time), and features (the product and its quality). It is used to make project trade-offs. A change to one of its sides requires that the team make a correction on one of the three sides to maintain project balance, including potentially the same side on which the change first occurred. For example, a decision to add a feature to a product may require that other features be removed if sufficient time and resources are unavailable to support their development.

traditional team

A team based on a hierarchical organization chart, with a manager at the top and subordinates below.

trigger

In the MOF risk model, a measurement threshold that indicates that the condition is about to occur. It is a value that is either true or false. When it shifts from false to true, the team executes the contingency plan.

trigger, risk

Indications that a risk has occurred or is about to occur. They sometimes are called risk symptoms or warning signs. Triggers may be discovered in the risk identification process and watched in the risk monitoring and control process.

trigger, risk contingency

The criterion for executing a contingency plan.

TSC

Technology strategy consultant

U-Z

underpinning contract

A contract between IT and one or more external vendors that defines the responsibilities of all participating parties. The contract binds these parties to provide a particular service (or service component, such as hardware, software, and so on) of a specific agreed-upon quality and quantity, and constrains the demands IT and/or its users may place upon the service (or service component) to those agreed-upon limits defined by the contract.

undesired architecture

The enterprise architecture that results when an organization does not attempt to plan for the future.

upgrade

An adjustment to the version or release in which the version number changes.

uptime

The time between incidents or failures when customer expectations are met as specified by the operating level agreement or the service level agreement.

urgency

The degree to which an action does not tolerate delay.

usage testing

Testing whether the product works as intended. It occurs primarily during the stabilizing phase. See also coverage testing.

use case

A behaviorally related sequence of interactions that an actor performs in a dialog with a system to provide some measurable value to the actor; a collection of scenarios.

user

The person who uses the services on a day-to-day basis.

user education role

One of six MSF team roles. It represents the end user and is responsible for optimizing the end user's performance and experience with the solution. It functions as team advocate to the end user and end-user advocate to the team, participates in defining user

requirements and designing features, designs and develops performance support systems, including training materials, and drives the usability process.

user interface

The part of the application that interacts with the people operating it.

user performance support elements

One of the deliverables leading to the release milestone. They constitute the final release of the support elements.

user profile

A description of the eventual users of the solution in terms of geography, organizational and communication structures, user functions, resource availability, and other relevant information.

user requirement

A desire of the end user of the application that focuses on the solution to the business problem; its fulfillment is necessary for day-to-day performance of work processes.

user service

A unit of application logic that provides an application with its user interface.

validation

Testing concepts through walk-throughs and prototyping.

variance

The difference between a project's baseline status and current status.

version

The status of a configuration item, consisting of one or more changes at the specification

level. The functional specifications are therefore changed in relation to the earlier version.

version identifier

A version number, version date, or version date and time stamp.

version management

A process directed at bringing and keeping under control various versions of configuration items of the technical infrastructure.

version number

A combination of xxnn in which xx is the major number and nn is the minor number.

versioned release strategy

A time and resource control strategy in which a deployment project is treated as if it were a series of versioned product releases. This strategy allows the team to deliver a deployment within the expected time frame by providing the most critical functionality in the first version and postponing other desirable features until later releases.

versioned releases

Providing the most critical functionality for a product in the first version and postponing other desirable features into later releases. See also versioned release strategy.

vision

An unbounded view of what the team wants to accomplish.

vision document

A major milestone at the end of the envisioning phase that sets forth all the projects and goals for the next versioned release of the enterprise architecture.

vision statement

A deliverable that expresses the long-term vision of the product and provides a context for decision-making.

vision/scope approved milestone

The first of four major milestones in the IT project life cycle, at which the project team and the customer have agreed on the overall direction of the project. The vision/scope approved milestone is the culmination of the envisioning phase.

vision/scope document

The primary deliverable for the envisioning phase. It expresses project goals and constraints as a business case.

vision/scope document drafted

An interim milestone of the envisioning phase, leading to the vision/scope approved milestone.

waterfall life cycle model

A project life cycle model that works well for complex projects as long as the team can easily specify requirements at the beginning. It uses milestones as transition and assessment points.

willingness to learn

A best practice or principle of a successful team. It means committing to self-improvement through gathering and sharing knowledge and institutionalizing learning through such techniques as reviews and postmortems. It is important because it allows team members to benefit from mistakes, helps team members to repeat successes, and mandates time for the team to learn.

work

The resources expended in a project, multiplied by the duration of the project.

work breakdown structure (WBS)

A deliverable-oriented group of project elements that organizes and defines the total work scope of the project. Each descending level represents an increasingly detailed definition of the project work.

work order

Provides coordination within a department. The work order indicates which function must carry out which action, in which order, and when.

work resource

The personnel and equipment required to perform project activities.

workaround

A method of avoiding an incident or problem, either from a temporary fix or from a technique, that means the customer is not reliant on a particular aspect of a service that is known to have a problem.

workflow process

A type of scenario that includes communication and coordination of discrete work processes.

workforce management

A MOF service management function in the optimizing quadrant. It recommends best practices to recruit, retain, maintain, and motivate the IT workforce.

zero-bug release

The first release to testing after all active bugs have been resolved.

zero-defect mindset

A best practice or principle of a successful team. It describes a commitment by the project team to do work at the highest quality possible at the time it is being done, and a commitment by each team member to individually help achieve the desired level of quality. As a practice, the zero-defect mindset does not require that deployed solutions be perfect with literally no defects; rather, it establishes perfection as a consistent goal for which to strive. It is important because it increases product stability, schedule predictability, and accountability.

(Microsoft® frameworks integrated Glossary, 2004)