ITIL V3 Application Support

Volume 1

Service Management
For Application Support
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INTRODUCTION

DOCUMENT PURPOSE
This book provides the reader with an introduction to the ITIL® Version 3 (V3) Service Lifecycle and Computer Aid, Inc.’s (CAI) Application Support Lifecycle. It describes how CAI’s Application Support Life Cycle processes align with ITIL V3 and can be used to manage Application Support services. The book is based upon CAI’s 18 years of experience with using a service lifecycle approach to managing the Application Support function. This book describes a clear roadmap for implementing ITIL V3 Service Management for Application Support.

“Highlighted Text” and “Yellow Boxes” represent ITIL Service Management and CAI value components within each Life Cycle Phase and Process.

DISCUSSION
IT organizations deliver a wide variety of services to the business. These services include infrastructure support, application development, and application support. Increasingly, IT organizations are seeking to improve the quality of the services that they provide to the business.

The rendering of service is a different activity than the making of products. Many approaches (CMMI, RAD Methodology, AGILE) focus on the development of software. However, ITIL is the only definitive approach that focuses exclusively on Service Management.

ITIL, the Information Technology Infrastructure Library, is the flagship standard for IT Service Management (ITSM). ITIL was developed by the Central Computer Telecommunications Agency (now called the Office of Government Commerce) in the United Kingdom in the 1980s. ITIL is considered to be a framework of ITSM good practices that covers all activities of IT service organizations. The Crown holds copyright and owns the names ITIL and Information Technology Infrastructure Library.

ITIL’s focus is on the management of services that are used to deliver value to the business. This approach differs from the product development approach that is traditionally associated with IT organizations. Service management is concerned with delivering service outcomes that are valuable to the business whereas product development focuses on the delivery of a product.

Previous versions of ITIL described processes that were primarily the responsibility of operations groups and were used to manage infrastructure services. In an effort to align with these previous versions, helpdesk software vendors began incorporating these infrastructure-focused ITIL concepts into their tools.

The current version of ITIL, version 3, introduces a service management lifecycle that highlights outcomes that must be achieved in order to successfully implement and manage IT services. This lifecycle orientation serves as a standard for managing Application Support services.
The ITIL V3 Lifecycle is made up of five phases:

- **Service Strategy** – establishes an overall strategy for the organization’s planned IT services and IT service management practices.
- **Service Design** – designs and develops new or changed services for introduction into the live environment.
- **Service Transition** – transitions new or changed services into the Production Environment while controlling the risks of failure and disruption.
- **Service Operation** – performs the day-to-day operation of the processes that manage the services. It is also where performance metrics for the services are gathered and reported and value is realized.
- **Continual Service Improvement** – identifies and implements improvements to the IT services.

Over the past 18 years, CAI has embraced and implemented a similar lifecycle approach for application support services. With CAI’s extensive Application Support Lifecycle, the prescribed outcomes of ITIL V3 can now be realized with certainty and speed.

The shared goal of CAI and its customers is not simply to embrace the latest standards and techniques – but instead, to drive measurable results in cost reductions and improvements of service quality to business constituents. With a lifecycle, outcome-based approach to service delivery, CAI has consistently delivered the following benefits for customers:

- Significant improvements in service performance defined by metrics and service level goals
- Dramatic improvement in the quality of delivered services and performed work
- Significant improvement in application support team performance (for example, throughput of work, reduction in request backlogs)
- Improved relationship between the IT organization and business users
- Typically, 30 to 50% reduction of application support costs.

**CONCLUSION**

This book shows that CAI’s lifecycle approach for managing the application support function is closely aligned with ITIL V3’s approach to managing all IT services. It provides a roadmap for improving Application Support and for implementing ITIL V3. With this book, the reader will gain a better understanding of ITIL V3, its processes, its outcomes, and its practical application for IT application support services.
IT SERVICE MANAGEMENT

IT Service Management (ITSM) is a process-based management practice that aligns the delivery of information technology (IT) services with the needs of the business by emphasizing outcomes that provide benefits to customers. IT organizations provide a wide variety of services that include infrastructure support, application development, and application support.

This section describes how an ITSM strategy will improve overall performance and effectiveness of the IT organization. A service management strategy enables the IT organization to focus on providing improved services to the business in addition to managing projects and developing software.

This section focuses on software maintenance as one of the most significant elements of an ITSM strategy. We will review the functions within a Software Maintenance organization and how they can be improved with an ITSM strategy.

In this section we introduce the IT Infrastructure Library (ITIL) Service Management lifecycle as a guide for developing an ITSM strategy. We also discuss how a service-oriented approach to software maintenance helps improve IT service capability and performance.
1.1. BUSINESS PERCEPTION OF IT

In his book, “Architecture and Patterns for IT Service Management, Resource Planning, and Governance,” Charles T. Betz notes that many problems of enterprise IT have been documented in the IT trade press. He observes that:

“Generally, IT has a reputation as a bottomless cost sink run by people who can’t explain what they’re doing (especially why they cost so much), can’t deliver what they promise, seem to feel contempt for their customers, and appear to have no understanding of business concerns. ‘Necessary Evil’ is being polite.”

Betz notes that the failures of alignment, of projects, and of mission critical systems that are widely reported in the popular press have reinforced this view of IT. He coins the following phrase as a way to characterize this sentiment:

“IT – can’t live with it, can’t live without it.”

By looking at some of these perceptions of IT, Betz identifies a few generally desirable characteristics and capabilities of an IT organization:

- Responsive, agile support for evolving business needs and strategies
- Operational effectiveness of available high-performing systems and infrastructure
- Cost effectiveness, efficiency, and transparency
- Capable risk and security management

While IT Service Management is designed to support these characteristics, the business perception of IT is based on the outcomes. The business cares about the availability, reliability, and performance of the information processing capability and the delivery of “requested” services. The infrastructure and many of the IT services operations and support services are not visible to the business.

However, the outcomes of application maintenance and support services are highly visible to the business and can have a dramatic impact on how the business perceives IT. Yet, few tools and processes have been developed to facilitate the application maintenance and support function.

1.2. IT SERVICE MANAGEMENT AS A SOLUTION

IT Service Management (ITSM) is primarily known as a process and service-focused approach to IT Management. Its primary objective is to align IT services with the business and to improve the quality and cost-effectiveness of IT services. ITSM is a business-focused and systematic approach to managing the IT services.

In order to be successful, ITSM processes must address conflicting requirements. Scheduled services such as enhancements and projects are frequently impacted by the need to respond to unscheduled requests such as problems, consultation...
requests, and training inquiries. Additionally, since most IT organizations do not charge the business for requested services, there is no incentive for the business to manage their demand.

ITSM controls the provision and support of IT services that are tailored to meet the needs of the organization. Effective ITSM processes should minimize or eliminate the following problems that are common to many IT organizations:

- Unfavorable business experiences associated with IT delivery
- Accelerating operational expenses
- Fragmented IT management
- Lack of a unified, customer-oriented view

Betz also notes that ITSM allows IT to use the following approaches to address these problems:

- Emphasizing the business as a “customer” of IT and defining what customers are “purchasing” in business terms.
- Creating a systematic and standard management framework for operations.
- Focusing on cross-functional IT business processes such as change, incident, and configuration. 

1.3. REDEFINING SOFTWARE MAINTENANCE

But, how do we incorporate ITSM into one of IT’s main functions – software maintenance – a function that is often very narrowly defined and is usually not customer-focused? First, we must expand upon the definition of software maintenance.

The Institute of Electrical and Electronics Engineers (IEEE) provides the traditional definition for Software Maintenance as “the process of modifying a software system or component after delivery to correct faults, improve performances or other attributes, or adapt to a changed environment.”

This definition reflects the widely accepted view and makes it seem that software maintenance only comes into play after the software system has been put into the production environment. The common thought is that software maintenance starts when the system is released and includes only activities that keep the system operational, that is, fixing program bugs and mistakes.

There are many who disagree with this view and argue that software maintenance should start well before a system becomes operational and should include service-oriented activities that are much broader than simply fixing bugs and mistakes.

“Software Maintenance is the totality of activities required to provide cost-effective support to a software system. Activities are performed during the pre-delivery stage as well as the post-delivery stage. Pre-delivery activities include planning for post-delivery operations, supportability, and logistics determination. Post-delivery activities include software modification, training, and operating a help desk.”

This definition is in alignment with the software maintenance approach taken by the International Standards Organization (ISO) standard for software life cycle processes. It also dispels the perception that software maintenance is just about fixing bugs and mistakes.

1.4. A FUNCTIONAL VIEW OF THE SOFTWARE MAINTENANCE ORGANIZATION

In order to reflect Pigoski’s definition of software maintenance, software maintenance organizations must be viewed from a functional perspective. Pigoski notes that the following functions should be specified within a software maintenance organization’s charter:

- Management
- Software modification
- Software configuration management
- Training
- Documentation support
- User liaison and help desk
- Testing
- Quality assurance
- Technical assistance

With these functions a software maintenance organization can adopt a stronger focus on ITSM. For example, establishing a user liaison function reinforces the fact that software maintenance organizations are in the customer service business.

1.5. IT SERVICE MANAGEMENT AND ITIL

The flagship standard for ITSM is the United Kingdom’s Information Technology Infrastructure Library (ITIL). ITIL provides a systematic approach to the provision and management of IT services, from inception through design, implementation, operation, and continual improvement.

ITIL defines Service Management as “a set of specialized organizational capabilities for providing value to customers in the form of services. The capabilities take the
form of functions and processes that are used to manage services over their lifecycle."

ITIL serves as a source of good practice in ITSM. It is used as a reference by organizations worldwide for managing services and for establishing and improving capabilities in service management. As a result, ITIL is also a useful guide for setting up new improvement objectives for the software maintenance organization.

1.6. SUMMARY
In this section, we reviewed problems that are associated with narrowly viewing software maintenance as a discipline that focuses only on “fixing bugs and mistakes.” By viewing a software maintenance organization from a functional perspective, we can establish a stronger focus on IT Service Management. This focus allows IT organizations to improve overall performance and service delivery.

ITIL is the leading standard for ITSM. It was developed in the United Kingdom and is considered to be a framework of ITSM good practices that cover the main activities of IT services organizations. ITIL helps define the functions that are found in an ITSM-focused organization.
ITIL V3 SERVICE LIFECYCLE

The following section provides an introduction to the Information Technology Infrastructure Library (ITIL) and discusses how the ITIL service lifecycle can be used to implement IT Service Management (ITSM) within the application support function.
2.1. ITIL BACKGROUND & HISTORY

The Information Technology Infrastructure Library (ITIL) provides a systematic approach to the provision and management of IT services, from inception through design, implementation, operation, and continual improvement.

ITIL was developed by the United Kingdom’s Office of Government Commerce (OGC) in the late 1980s, and its original goal was to help improve IT Service Management in the UK central government. ITIL was not widely adopted until the mid-1990s.

Where possible, the OGC defined processes that are found in an IT service organization. Because of the broad scope covered by ITIL, it is a useful guide for setting up new service improvement objectives for all functions within the IT organization.

In June of 2007, ITIL was expanded and reorganized as an IT service management lifecycle, known as ITIL Version 3 (ITIL V3). This new version covers the initial conception, development, transition, operations, and improvement of a service. ITIL V3 views the activity of managing service as a lifecycle, which is a shift in focus from the individualized process/function view of the previous version.

2.2. ITIL SERVICE MANAGEMENT

ITIL serves as a source of good practice standards in IT Service Management (ITSM). It is used as a reference by organizations worldwide for managing and improving IT services.

ITIL defines service management as “a set of specialized organizational capabilities for providing value to customers in the form of services. The capabilities take the form of functions and processes that are used to manage services over their lifecycle.”

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2.3. **ITIL SERVICE LIFECYCLE**

ITIL contains a set of five publications, the ITIL Core, which provides structure, stability, and strength to an IT organization’s service management capabilities. The structure of the core is in the form of an iterative lifecycle, as seen in Figure 1. Each publication represents a phase of the lifecycle and is noted in the following list:

- Service Strategy
- Service Design
- Service Transition
- Service Operation
- Continual Service Improvement

![Figure 1 – The ITIL Core (source: OGC)](image-url)
2.3.1. SERVICE STRATEGY

Service Strategy is the first phase of the ITIL Service Management Lifecycle. It is the axis around which the lifecycle rotates. This phase is used to establish an overall strategy for the organization’s planned IT services and IT service management (ITSM) practices. It culminates in a strategic plan that specifies how the organization’s planned IT services and ITSM policies and processes will be used to achieve defined objectives.

The Service Strategy phase helps ensure that the organization is prepared to manage the costs and risks associated with initiating any new services. Within this phase, organizations perform the following:

- Define the market space for the planned IT services
- Set performance expectations for serving customers
- Identify, prioritize, and select opportunities
- Develop the policies, guidelines, and processes that will be used to manage the IT services

![Service Strategy Diagram](image)

Figure 2 – Service Strategy
SERVICE STRATEGY PROCESSES
The following four processes are described within Service Strategy:

STRATEGY GENERATION
This process is used to develop the organization’s overall strategy for IT services and IT Service Management. It results in a plan designed to achieve the business objectives. Activities within this process include:
- Define the market
- Develop the offerings
- Identify strategic assets
- Prepare for execution

FINANCIAL MANAGEMENT
Financial Management quantifies the value of a service and its underlying assets and establishes the operational financial forecasts (budget) for the service. Financial Management seeks to ensure that the business understands the costs of providing a service and knows how to manage these costs. This process implements IT accounting, budgeting, and charging processes for services, by allocating IT expenditures to services and by recovering the costs from customers to whom the services are provided.

SERVICE PORTFOLIO MANAGEMENT
Service Portfolio Management is where the service provider manages the portfolio of services being delivered. This process allows service providers to consider services in terms of the business value that is provided. Service Portfolio Management is a dynamic method for governing investments in service management across the enterprise and managing them for value.

DEMAND MANAGEMENT
Demand Management is where the service provider is responsible for understanding and influencing a customer’s demand for a service and the provision of capacity to meet the demand. In addition, patterns of business activity are analyzed to determine how they may influence demand. Once demand for a service is identified, the capacity needs must be understood in order to avoid:
- Insufficient capacity which can result in a decline in service quality
- Excess capacity which can result in cost without value.

SERVICE STRATEGY OUTCOMES
The primary output of Service Strategy is the “Service Package.” It includes the following documents:
- A detailed description of the IT service that is delivered to customers
- A Strategic Plan for achieving objectives set by the organization. The plan includes a business rationale for developing a service and a risk profile associated with the service
- Financial budget and performance plan
- A Service Level Package that defines the level of Utility (the functionality of an IT service from a customer’s perspective) and Warranty (assurance that an IT service will meet agreed requirements) for the IT Service
**SERVICE STRATEGY VALUE**
This phase allows an organization to understand the following:
- Services that will be provided
- Customers of the service
- Value of the services
- Cost/risk associated with delivering the service
- Capacity of the organization to deliver the service

### 2.3.2. SERVICE DESIGN
In the Service Design phase, new or changed services that are aligned with the business goals (defined in Service Strategy) are designed and developed for introduction into the production environment. The processes that govern the management and delivery of services are also developed in this lifecycle phase.

This phase starts with a set of new or changed business requirements and ends with the development of a service solution designed to meet the needs of the business.

![Figure 3 – Service Design](image-url)
**SERVICE DESIGN PROCESSES**
The following seven processes are described within Service Design:

**SERVICE LEVEL MANAGEMENT**
Service Level Management allows representatives of IT organizations to negotiate, agree, and document the appropriate IT service targets with representatives of the business. This process then monitors and produces reports on the service provider’s ability to deliver the agreed level of service.

**AVAILABILITY MANAGEMENT**
Availability Management is responsible for defining, analyzing, planning, measuring and improving the availability of IT services. This process ensures that all designed services are available in order to meet the business requirements.

**CAPACITY MANAGEMENT**
Capacity Management’s primary goal is to ensure that the supply of IT resources meets the customers’ demand for them. This process allows optimal and cost-effective IT services to be provided. Capacity Management optimizes the use of IT capacity.

**IT SERVICE CONTINUITY MANAGEMENT**
IT Service Continuity Management is the process that prepares IT Services for recovery and continuation in the case of a serious incident. This process takes proactive measures, rather than just reactive measures, so that the risk of disaster is minimized. When a disaster occurs, this process ensures that there is a continuance of service and that the service provider is able to meet minimum service levels.

**SERVICE CATALOG MANAGEMENT**
Service Catalog Management is the process that ensures that there is a single, comprehensive source for all services that are transitioning to, or currently in the production environment. The Service Catalog describes the services that are currently in use, the business processes that are enabled, and the customer’s service quality expectations.

**SUPPLIER MANAGEMENT**
Supplier Management is the process that manages the relationships between the IT organization and its suppliers. As part of this process, the business requirements and Service Level Agreements (SLAs) are reviewed and incorporated into all 3rd party contracts.

**INFORMATION SECURITY MANAGEMENT**
Information Security Management is the process that protects information confidentiality, integrity and availability by creating and enforcing the Information Security Policy. This process establishes security measures that meet business needs.
SERVICE DESIGN OUTCOMES
The primary output of Service Design is the “Service Design Package.” It details all aspects of the planned service and its requirements. It includes the following documents:

- Business Requirements for the planned service
- A Service Design document that is comprised of:
  - Service functional requirements
  - Service level requirements
  - Operational level requirements
- Organizational Readiness Assessment
- Service Management Plans
  - Financial plans and budgets
  - Service improvement plans
  - IT service continuity and disaster recovery plans
  - Business continuity plans
  - Capacity plan
  - Availability plan
  - Service desk, incident management, and problem management plans
- Service Lifecycle Plan
  - Service transition plan
  - Service operational acceptance plan
  - Service acceptance criteria

SERVICE DESIGN VALUE
Service Design ensures that service organizations can deliver quality, cost-effective services and meet all of the business’ requirements for the planned services. It also provides the following benefits:

- Improved consistency of service
- Easier implementation of new or changed services
- Improved service alignment with business needs
- Improved IT governance
- Improved quality of service
2.3.3. SERVICE TRANSITION

Service Transition is the phase where new or changed services are transitioned into Service Operations while controlling the risks of service failure and business disruption. Activities performed within this phase include:

- Planning and managing the capacity and resources needed to package, build, test, and deploy a release into production
- Evaluating the service capability and risk profile prior to release
- Creating repeatable build and installation mechanisms that can be used to deploy releases into test and production environments
- Ensuring that services can be managed, operated and supported in accordance with requirements established in Service Design

![Figure 4 – Service Transition](image)

SERVICE TRANSITION PROCESSES

The following four processes are described within Service Transition:

CHANGE MANAGEMENT

Change Management ensures that standardized methods and procedures are used to manage all changes to the services or production environments. This process also ensures that all changes to service management processes, service assets, and configuration items are recorded in the Configuration Management System. All changes are done in accordance with established service policies and procedures that minimize risk to the business. During this process a service provider assesses and evaluates the risks associated with a change and develops a contingency plan to follow if implementing the change yields an unexpected result.
SERVICE ASSET AND CONFIGURATION MANAGEMENT

Service Asset and Configuration Management (SACM) is composed of both Asset Management and Configuration Management. During Asset Management, the service provider tracks and reports the value and ownership of financial assets throughout their service life. Configuration Management tracks, using a Configuration Management Database (CMDB), the Configuration Items (CIs) of an IT System. CIs are the organizational elements that are used in the provision and management of IT services. The CMDB contains information that relates to CI maintenance, CI movements, and problems associated with CIs. Additional items (hardware, software, documentation, personnel) that the IT Services are dependent on are also tracked in the CMDB.

RELEASE AND DEPLOYMENT MANAGEMENT

Release and Deployment Management is the process during which service providers prepare services for release into the production environment. This includes the building, testing, and delivery of the service in an effort to provide the customer with expected results. During this process, the new or changed services are moved into Service Operations.

KNOWLEDGE MANAGEMENT

Knowledge Management is the process that service providers use to collect, analyze, and exchange information and knowledge within the organization. A key component of this process is the Service Knowledge Management System (SKMS). The SKMS stores the information and knowledge and allows it to be shared among the IT organization, its partners, and customers.

SERVICE TRANSITION OUTCOMES

The primary output of Service Transition is the “Service Transition Package.” It includes the following documents:

- An updated service portfolio consisting of all new or changed service components
- An updated service package that defines the services offered to the customer
- An updated transition plan that is used to move the planned services into operations

SERVICE TRANSITION VALUE

Effective Service Transition adds value to the business by:

- Ensuring that all changes comply with business and governance requirements
- Using contingency plans to manage the level of risk during and after the service implementation (for example, service outage, service disruption)
- Improving the consistency and quality of the implementation process for new or changed services
2.3.4. SERVICE OPERATION

Service Operation is where the value of the services being provided is first realized by the customer. During Service Operation, the day-to-day operation of the processes that manage the services takes place. It is also where performance metrics for the services are gathered and reported.

![Service Operation Diagram]

Figure 5 – Service Operation

SERVICE OPERATION FUNCTIONS

ITIL defines a function as the people and automated measures that execute defined processes/activities. A function may be broken up and performed by several groups, or it may be embodied within a single team.

ITIL states that there are four Service Operations functions that are needed to manage the operational IT environment. These four functions use the Service Operation processes described later in this section.

Following is an overview of these functions:

IT OPERATIONS MANAGEMENT

The IT Operations Management function is responsible for the daily operational activities needed to manage the IT infrastructure according to the Performance Standards defined during Service Design. Included within IT Operations Management are two unique functions that, in general, are formal organizational structures: IT Operations Control and Facilities Management.
TECHNICAL MANAGEMENT
The Technical Management function provides detailed technical skill and resources needed to support the ongoing operation of the IT Infrastructure. Technical Management also plays an important role in the design, testing, release, and improvement of IT services and is responsible for the daily operation of the IT infrastructure.

SERVICE DESK
Service Desk is the primary point of contact for users when there is a service disruption, service request, or for some categories of change request. The Service Desk provides a single point of communication between service users and the IT organization.

APPLICATION MANAGEMENT
The Application Management function is responsible for managing applications throughout their lifecycle. The Application Management function supports and maintains operational applications. It is responsible for designing, testing, and improving the applications that form part of the IT Service Portfolio.

SERVICE OPERATION PROCESSES
The following six processes are used by the operation functions described above:

EVENT MANAGEMENT
Event Management is the process of managing trigger events, which ITIL defines as alerts or notifications created by an IT service, configuration item, or monitoring tool. During this process, trigger events occur and are then detected and filtered. If the trigger events are determined to be significant, they generate an incident, problem, or change request (work events). If the trigger event is determined to be just an alert, it is assigned to responsible personnel, reviewed, and then closed.

INCIDENT MANAGEMENT
Incident Management is the process of quickly restoring normal service when there is an interruption to a service or a reduction in the quality of service. The goal of this process is to minimize any negative business impact that may result from an incident. Incident Management is also responsible for ensuring that service quality and availability are maintained according to Service Level Agreements (SLAs).

PROBLEM MANAGEMENT
Problem Management’s main goals are to detect the root cause of an incident, determine a resolution, and then ensure that the incident does not occur again. These goals can sometimes be in direct conflict with Incident Management where the primary goal is to restore service as quickly as possible rather than search for a permanent solution.
REQUEST FULFILLMENT MANAGEMENT
Request Fulfillment Management is the process that manages service requests received from the users. It is important to distinguish between incidents and service requests. Incidents are unplanned and require Change Management approval prior to resolution. A service request, on the other hand, is a request that has a standard procedure for response and is pre-approved by Change Management.

ACCESS MANAGEMENT
Access Management is the process that manages the rights that are given to users to access IT services or data. The policies created during Service Design are carried out during Access Management. Each of the four functions within the Service Operations phase has a unique role with regard to the Access Management process.

APPLICATION LIFECYCLE MANAGEMENT
During the Application Lifecycle Management process, the service provider is responsible for developing, enhancing, maintaining, and managing applications. This process employs a lifecycle to govern all activities related to the management of applications. The stages within this lifecycle are:
- Requirements Definition
- Design
- Build and Test
- Quality Review
- Deploy
- Operate
- Optimize

SERVICE OPERATION OUTCOMES
The output of Service Operations is the “Service Performance Package” which includes:
- Technical management reports
- IT operations reports
- Service desk reports
- Application management reports
  - SLA reports
  - Work event status reports
  - Time usage reports
  - Resource performance reports

SERVICE OPERATION VALUE
Each stage in the ITIL Service Lifecycle builds value for the business and culminates in Service Operations. For example:
- In Service Strategy, the service is modeled
- In Service Design and Service Transition, the service is designed and developed, and the cost is predicted and validated
- In Continual Service Improvement, the measures for optimization are identified
Service Operation is where these plans, designs, and optimizations are executed and measured. From a customer viewpoint, Service Operation is where actual value is seen.

The Service Operation phase provides the environment for:
- The maintenance and stability of Service Operations while allowing for changes in design, scale, scope, and service levels
- Decision making in areas such as managing the availability of services, controlling demand, optimizing capacity utilization, scheduling operations, implementing changes, providing technical support to the users, and fixing problems.

2.3.5. CONTINUAL SERVICE IMPROVEMENT

Continual Service Improvement phase (CSI) is responsible for continually aligning IT services to changing business needs. CSI identifies and implements improvements to IT services that support business processes. These improvement activities support the lifecycle approach through Service Strategy, Service Design, Service Transition, and Service Operation. In effect, CSI is about looking for ways to improve process efficiency and cost effectiveness throughout the entire service lifecycle.

![Figure 6 – Continual Service Improvement](image-url)
CONTINUAL SERVICE IMPROVEMENT PROCESSES
The following four processes are described within Continual Service Improvement:

THE ITIL 7-STEP IMPROVEMENT PROCESS
The 7-Step Improvement Process requires the Continual Service Improvement phase to address the following actions, in an attempt to determine how to improve services:

1. Answer the question “What should be measured?”
2. Answer the question “What can be measured?”
3. Gather the necessary data
4. Process the data into a format that can be understood by the target audience
5. Analyze the data for trends
6. Present the information to the appropriate audience
7. Implement actions in order to improve services

SERVICE MEASUREMENT
Service Measurement defines the metrics that will be used during data analysis. It also enables IT to measure and report on service performance.

SERVICE REPORTING
Service Reporting organizes status and performance data into informational reports that are understood and useful to the IT organization and the business users (for example, service scorecard, service dashboard, SLA reports).

SERVICE IMPROVEMENT
Service Improvement is where the service provider maintains and improves the quality of the service by agreeing to, monitoring, and reporting on IT achievements. This process can be initiated by a service review and is responsible for creating a service improvement plan.

CONTINUAL SERVICE IMPROVEMENT OUTCOMES
The outputs of Continual Service Improvement can be created in any of the phases of the ITIL Lifecycle. They make up the “Improvement Package” and include the following documents:

- A service improvement plan
- Lessons learned documents that identify how each process phase can be improved
With Continual Service Improvement, organizations can identify and implement improvements to IT services and realize many benefits, including:

- Better information about current services (and possibly about areas where change would bring increased benefits)
- Improved service reliability, stability, and availability
- Improved resource allocation and utilization
- Improved metrics and management reporting
- Clearer view of current and future IT service capability
- Better working relationships between customers and IT organization
- Enhanced customer satisfaction
2.4. ITIL V3 LIFECYCLE PHASE INTERACTIONS

As discussed earlier, ITIL V3 is a cascading and iterative lifecycle for implementing IT services and improving operational performance. It is important to understand the phase interactions as well as the outcomes and how they influence each other.

The following graphic provides additional detail that illustrates the interactions between the ITIL V3 service lifecycle phases. It highlights the outcomes in the form of “service packages” that are transferred from one phase to the next. It also shows how the Service Operation’s functions and processes interact with the other lifecycle phases.

Figure 7 – ITIL V3 Lifecycle Phase Interactions and Outcomes
ITIL V3 & THE APPLICATION SUPPORT LIFECYCLE

The ITIL Service Management lifecycle is a broad service management model that can apply to any IT service-related activity. The following section will illustrate how the V3 Service Lifecycle can apply specifically to the application support function.

This section provides an overview of Computer Aid’s (CAI) lifecycle implementation approach to application support and describes:

- How each phase applies to application support
- The primary implementation resource responsible for each phase
- How each process applies to application support
- How each process outcome applies to application support
- The value of each application support lifecycle phase

In the following section, the primary CAI resource responsible for implementing each phase is discussed. Any IT organization can use this implementation approach for application support with equivalent resources. In order to be effective, the resources should have the appropriate skill set and focus for each implementation phase.
3.1. ITIL V3 ALIGNMENT TO APPLICATION SUPPORT

Businesses may have departments that are structured by geographical region, customer, or product line. These departments are often charged with providing IT services to the business and its customers.

Within these departments, teams can be devoted to the support of business software applications, business users and customers. These “application support teams” are organized in a way that allows them to focus solely on delivering IT services within agreed upon expectations.

Although application support teams are made up of technical IT people, they must maintain a strong service management orientation and an awareness of service level expectations. Their performance and activities are usually governed by service level goals that are consistent with the Service Level Agreements that the IT organization has established with its customers.

ITIL presents the IT Service Management lifecycle and processes in a way that is independent of how the IT Organization is structured. However, ITIL’s process disciplines can still be used to describe good practices for managing a service-oriented application support team.

Processes and documents that are used by an application support team can be found in all of the ITIL lifecycle phases, from Service Strategy to Continual Service Improvement.

The ITIL Service Management lifecycle is a broad service management model (see Figure 7) that can apply to any IT service-related activity. Computer Aid (CAI) has successfully used a service lifecycle approach to outsourced application support for over 18 years. The following graphic illustrates how the V3 Service Lifecycle can apply specifically to the application support function and demonstrates CAI’s lifecycle implementation approach within an application support team.
Figure 8 – CAI’s Application Support Lifecycle Phase Interactions and Outcomes
3.1.1. SERVICE STRATEGY (STRATEGY ASSESSMENT)

During Service Strategy, the relationships between the customer and application support team are identified and defined. The CAI Assessment Consultant becomes familiar with the customer’s business needs and goals in order to develop an understanding of how the application support team can achieve the required objectives while minimizing risk of service disruption.

In the Service Strategy phase, the Service Package is produced and is used to define the services and environment that will be managed by the application support team. The service package also documents the service level expectations for the team as well as the financial plan that is the budget funding the team’s activity.

![Service Strategy Diagram](image)

Figure 9 – Service Strategy

**SERVICE STRATEGY PROCESSES**

The following four processes are used by the CAI Assessment Consultant during the Service Strategy (Strategy Assessment) phase:

**STRATEGY GENERATION**

The consultant gains an understanding of the customer’s application support strategy and how it applies to the application support team. The consultant learns:

- How the team fits within the customer organization
- What applications and operational activities are within the team’s scope
- What critical success factors apply to the application support team
- What the acceptance criteria are for the customer’s requests for service
- What the customer’s application support issues and concerns are
FINANCIAL MANAGEMENT
- Reviews all revenue and cost projections associated with the application support team
- If appropriate, documents a charge-back structure that will allow costs to flow between the team and the user departments to which services are being provided
- Creates a financial model (budget vs. actual) that will show the application support team’s financial performance.

SERVICE PORTFOLIO MANAGEMENT
- Defines the services to be provided that are within the application support team’s scope
- Documents the critical success factors, identified as high value by the customer, that must be addressed by the team

DEMAND MANAGEMENT
- Defines the user departments that will be supported by the application support team
- Defines how the application support team will receive work and communicate with the user departments and steering committee
- Describes the process that the application support team will use to prioritize work
- Gains an understanding of the peak work periods, their causes, and potential impact on service levels

SERVICE STRATEGY OUTCOMES
The CAI Assessment Consultant creates a “Service Package” that is composed of:
- Budget and Financial Performance Plan
- Opportunity Analysis that describes:
  - Services to be provided
  - Proposed strategy to meet expectations
  - Customer’s critical success factors
  - CAI’s critical success factors
  - Constraints
  - Risks
- Strategy Assessment Findings that describes:
  - Scope of services provided by the application support team (Utility)
  - Commitment of the application support team to meet service level requirements (Warranty)
- Initial Operational Process Requirements documents:
  - Types of work (work events) that will be done by the application support team
  - Channels by which the application support team receives work (trigger event)
  - How the application support team will acknowledge receipt of work (respond to trigger event)
  - Work prioritization policy
3.1.2. SERVICE DESIGN (OPERATIONS ASSESSMENT)

During Service Design, the CAI Assessment Consultant and the application support team design the services that will be provided by the application support team. During this phase, the CAI Assessment Consultant and the CAI Transition Consultant also build on the service requirements that were obtained in the Service Strategy phase earlier.

During this phase, the customer’s business operating environment and the team’s technical operating environment are identified and documented. The profiles of the supported applications are documented. All services within the agreed scope are documented as well as the associated service levels and third-party contracts. Requirements for capacity, availability, continuity, and security are also identified and documented.

![Service Design Diagram]

Figure 10 – Service Design
SERVICE DESIGN PROCESSES
The following seven processes are used by the CAI Assessment Consultant and the CAI Transition Consultant during this phase:

SERVICE LEVEL MANAGEMENT
The consultants negotiate, agree to, and document the appropriate IT service level targets with representatives of the business. The consultants also define how the application support team will monitor and report on their performance against agreed service levels.

AVAILABILITY MANAGEMENT
The consultants analyze and document the availability requirements of the services and applications within the application support team’s scope. The consultants define how the application support team will measure service and application availability.

CAPACITY MANAGEMENT
The consultants analyze and document the capacity requirements of the services and applications within the application support team’s scope. These requirements include managing work scheduling commitments and ensuring application changes do not adversely impact the performance of the application.

IT SERVICE CONTINUITY MANAGEMENT
The consultants define the application support team’s role with regard to:
- Backup and restore of critical application data and components
- Disaster recovery of applications within the scope of the team’s responsibilities
- Continuous flow of business information to the application users

SERVICE CATALOG MANAGEMENT
The consultants define the Statement of Work that catalogs the services to be provided by the application support team, the business processes enabled by the applications, and the customer’s service quality expectations.

SUPPLIER MANAGEMENT
The consultants document whether the application support team will manage any third-party contracts.

INFORMATION SECURITY MANAGEMENT
The consultants define the application support team’s role with regard to:
- Security requirements for the application
- Security requirements for the technology environment
- Security policies of the organization
- Communication with the organization’s security administration
SERVICE DESIGN OUTCOMES
The CAI Assessment Consultant and the CAI Transition Consultant create a “Service Design Package” that is composed of:

- Operational Assessment Findings that describe:
  - The customer’s business operating environment
  - The team’s technical operating environment and tools
  - Supported application profiles
  - Third-party contracts

- Statement of Work that documents:
  - All services within the agreed scope
  - The capacity, availability, continuity, and security requirements
  - The application support team’s ongoing service improvement strategy

- Service Level Agreement that includes:
  - Functional service requirements documented in an operational level agreement (OLA)
  - Service level requirements

- Operational Process Requirements that document:
  - The intersection of the application support processes, the customer’s processes, and operating environment
  - Process controls that allow the team to monitor and measure the capacity, availability, continuity, and security requirements of the service and applications
  - Preliminary model of the service desk, incident management, and problem management processes

- Service Lifecycle Plan that is composed of:
  - Preliminary service transition plan
  - Preliminary service operational acceptance plan
  - Preliminary service delivery acceptance criteria

SERVICE DESIGN VALUE
Service Design ensures that the application support team delivers consistent high-quality services that meet the agreed-to business requirements. The following benefits will be delivered:

- Improved consistency of service
- Easier implementation of new or changed services
- Improved service alignment with business needs
- Improved IT governance
- Improved quality of service
- Improved performance against agreed SLAs
3.1.3. SERVICE TRANSITION (TRANSITION)

During this phase, the CAI Transition Consultant creates and uses an integrated set of transition plans to establish the operational capability and structure of the application support team. Using these plans, the consultant and the application support team also define a set of work processes to govern how work will be organized and managed as it flows through the team.

The CAI Transition Consultant then defines these work processes and team resources in CAI’s process and work event management tool, Tracer®.

![Figure 11 – Service Transition](image)

**SERVICE TRANSITION PROCESSES**

The following four processes are used by the CAI Transition Consultant and the application support team during the Service Transition phase:

**CHANGE MANAGEMENT**
- Documents the standard methods and procedures that will be used to develop and implement all application changes
- Documents the procedures that will be used by the team to ensure that all changes to service management processes, service assets and configuration items are recorded in the customer’s configuration management system and CAI’s application knowledge notebook
- Documents the procedures to ensure that all changes done by the team will be performed in a way that minimizes risk to the business
- Documents the procedures that the team will use to assess and evaluate the risks associated with an application change
- Documents the procedures a team will use to develop contingency plans (back-out plans) for unexpected results from an application change implemented into the production environment

**SERVICE ASSET AND CONFIGURATION MANAGEMENT**
- Catalog Configuration Items (CIs)—application components (programs, use cases, data structures)—associated with the applications
- Document the criticality and complexity of application components
- Document additional items (hardware, software, documentation, personnel) on which the services are dependent
- Create process controls that the team will use to track Configuration Items (CIs) associated with the application changes

**RELEASE AND DEPLOYMENT MANAGEMENT**
- Creates the procedures that the team will use to build, test, and bundle application changes into a release package
- Creates the procedures that the team will use to move application enhancements into the production environment

**KNOWLEDGE MANAGEMENT**
- Create the application knowledge notebook that stores critical application knowledge used by the support team and application users
- Create the operational procedures that the team will use to collect and analyze application change information and knowledge
- The application knowledge notebook is used to:
  - Mitigate the risk of staff or application user turnover
  - Increase accuracy of development and support estimates
  - Increase speed and accuracy of problem detection and correction
  - Reduce dependency on knowledge residing solely with specific subject matter experts
  - Understand and document the critical pressure points within an application
  - Document change and incident history for the application

**SERVICE TRANSITION OUTCOMES**
The CAI Transition Consultant creates a “Service Transition Package” that is composed of:
- Transition Plan that is used to establish the application support team in the client environment
- Team Operations Documents
  - Resource management procedures
  - Team operational procedures
  - Team time reporting guidelines
  - Escalation guidelines and procedures
  - Development standards
- Application Knowledge Documents
  - Catalog of Configuration Items (CIs)
  - Document of the critical and complex application components
Document of the additional hardware, software, documentation, and personnel on which the services are dependent

- Operational Process Requirements that document:
  - How the team will implement all application changes
  - How the team will ensure that all changes to service management processes, service assets, and configuration items are recorded in the customer’s configuration management system and CAI’s application knowledge notebook
  - How the team will ensure that all application changes done by the team will be performed in a way that minimizes risk to the business
  - How the team will assess and evaluate the risks associated with an application change
  - How the team will track Configuration Items (CIs)—application components (programs, use cases, data structures)—associated with the applications
  - How the team will build, test, and bundle application changes into a release package
  - How the team will move application changes into the production environment

- Configured Tracer® tool for team operations
  - Work processes defined
  - Service level goals established
  - Resources profiled
  - Status and metrics reports configured
  - Applications profiled
  - Departmental financial chargeback structure defined
  - Time and attendance guidelines established

- Operational Work Processes
  - Work request process (application management lifecycle process)
    - Change request process
    - Problem management process
  - Support call process (request fulfillment process)
  - Incident process

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**SERVICE TRANSITION VALUE**

Service Transition ensures that an application support team is transitioned into a customer’s environment with minimal risk. Service Transition is also used to add new services to an existing team’s scope of responsibilities. The following benefits are delivered by Service Transition:

- New services are compliant with business and governance requirements
- Levels of risk during and after the Service Transition are minimized and managed
- Contingency plans are used to ensure that all disruptions are addressed quickly and effectively
- Consistency and quality of work products and services delivered by the application support team are improved
3.1.4. SERVICE OPERATION

Service Operation is directly dependent on and influenced by the outcomes of the previous lifecycle phases. The service packages from these lifecycle phases are used to set up the policies, procedures, operational documents, and work processes of the application support team.

Service Operation is where the application support team provides value by performing the services specified in the Statement of Work at the agreed-to service levels. In this phase, the application support team performs the day-to-day operational activities necessary to provide application support services. The team uses CAI’s Tracer® tool to gather and report on the status of all work and ensure compliance with agreed service level goals.

![Figure 12 – Service Operation](image)

SERVICE OPERATION FUNCTIONS

ITIL identifies four separate functions that are required to manage the service operations environment. The mission of the application support team is consistent with these functions; however, in application support, two of the functions (Service Desk and Application Management) are more dynamically interactive than indicated by the standard ITIL V3 lifecycle model.

IT OPERATIONS MANAGEMENT

IT Operations Management is responsible for the daily operational activities needed to manage the IT infrastructure. IT Operations interacts with the application support team with regard to:

- Backup and restore of applications, components, and data
- Disaster recovery coordination
- Hardware/network tuning that affect application performance
TECHNICAL MANAGEMENT
Technical Management provides the resources necessary for the scheduling, coordinating, and technical assistance to the application support team in the following areas:

- Quality control review of application release packages
- Scheduling maintenance that affects application availability
- Security management administration for application or technical access
- Database administration functions

APPLICATION SUPPORT
The application support team’s day-to-day service interaction with business users and customers is consistent with the service desk function. The team’s application management and maintenance activities are consistent with the application management function.

- SERVICE DESK
  The application support team functions as the service desk for the applications within their scope of responsibility. The team acts as the single point of contact for all work events associated with the application, such as incidents, service requests, and change requests. The team is responsible for managing all customer inquiries from receipt to resolution.

- APPLICATION MANAGEMENT
  The application support team is responsible for managing application enhancements and maintenance requests through their entire lifecycle. The team is responsible for designing, testing, and improving the applications. The team’s quality control procedures ensure that any functional changes to the application satisfy the customer’s stated quality requirements. The team ensures that the application is available to the business users during the required hours of operation.

SERVICE OPERATION PROCESSES
The following six processes are used by the application support team to support operation functions described above:

EVENT MANAGEMENT
The team receives and acknowledges application support trigger events. Examples of these trigger events are notifications from:

- Users requesting assistance
- IT operations department
- System software

The team reviews all trigger events and creates an appropriate work event (incidents, service requests, change requests) in the Tracer® tool. When appropriate, the team notifies the source of the trigger event that a work event was created and then closes the trigger event.
INCIDENT MANAGEMENT
The team quickly restores normal service when there is an interruption to a service or a reduction in the quality of service. Throughout this process the application support team tracks and captures incident status data in the Tracer® tool.
Activities within this process are:
- Log the incident event in the Tracer® tool
- Classify
- Prioritize
- Diagnose
- Resolve
- Close

The goal of this process is to minimize any negative business impact that may result from an incident. The team is also responsible for ensuring that service quality and availability are maintained in accordance with Service Level Agreements (SLAs).

PROBLEM MANAGEMENT
The team identifies the root cause of an incident, determines a resolution, and then ensures that the incident does not occur again. Throughout this process the application support team tracks and captures problem status data in the Tracer® tool. Activities within this process are:
- Detect
- Log the problem event in the Tracer® tool
- Classify
- Prioritize
- Diagnose
- Resolve
- Close

The team balances the goals of Problem Management and Incident Management. The goal of Incident Management is to restore service as quickly as possible. The goal of Problem Management is to implement permanent solutions.

REQUEST FULFILLMENT MANAGEMENT
The team manages service requests (support calls) that are received from the application users. Throughout this process the application support team tracks and captures support call status data in the Tracer® tool. Activities within this process are:
- Log the call support event in the Tracer® tool
- Classify
- Prioritize
- Consult or Investigate
- Resolve
- Close

It is important to distinguish between incidents and support calls. Incidents are unplanned and require Change Management approval prior to resolution. A support
call, on the other hand, is unplanned, but is considered pre-approved by Change Management. For example, a support call may be an informational inquiry or user technical assistance on an application function.

ACCESS MANAGEMENT
The team manages the access rights that are given to users to access the applications. The process describes how the team coordinates communication between the application user and security administration regarding access to application functions.

APPLICATION LIFECYCLE MANAGEMENT
The team develops, enhances, maintains, and manages applications within their scope of responsibility. The team uses this process to govern all activities related to the management of applications. Throughout this process, the application support team tracks and captures maintenance or enhancement status data in the Tracer® tool. As defined in the Tracer® tool, this process contains the following steps:

- Requirements Definition
- Design
- Build and Test
- Quality Review
- Deploy
- Optimize

SERVICE OPERATION OUTCOMES
The output of Service Operation for an application support team is the “Service Performance Package” that is produced by the Tracer® tool and includes:

- SLA reports that measure the team’s performance against agreed service level goals
- Work event status reports that identify all work events within the team’s scope of responsibility and the current status of work events within their lifecycle
- Time usage reports that show the team’s time distribution
- Resource performance reports that depict individual resource performance against agreed service level goals
SERVICE OPERATION VALUE
Service Operation is where the value of the services provided by the application support team is realized by the customer. In this phase, the team uses the Tracer® tool to manage the workflow, report SLA compliance, and report work status to the customer. The Tracer® tool uses process controls to ensure that work processes and quality procedures are consistently followed by the team.

During Service Operation the team provides value by:
- Maintaining the stability of the applications
- Managing the availability of services
- Controlling demand
- Achieving service level goals
- Optimizing capacity utilization
- Fixing problems

3.1.5. CONTINUAL SERVICE IMPROVEMENT
During this phase, the CAI Quality Consultant works with the application support team to ensure that the team:
- Follows the approved policies and procedures
- Provides services as documented and agreed-to in the Statement of Work
- Meets the agreed service level goals
- Provides appropriate team performance and management reports that are generated from the Tracer® tool
- Identifies, tracks and resolves all team-related issues

The consultant meets with customers to ensure that services being provided are meeting their expectations. The consultant and the team collaboratively examine the team’s work performance data and seek to identify and implement improvements which are documented in Improvement Plans.
CONTINUOUS SERVICE IMPROVEMENT PROCESSES
The following four processes are used by the CAI Quality Consultant and the application support team during the Continual Service Improvement phase:

**THE ITIL 7-STEP IMPROVEMENT PROCESS**
The Quality Consultant determines how to improve the services being provided by the application support team. This process consists of the following actions:
1. Answer the question “What else should be measured?”
2. Answer the question “What else can be measured?”
3. Gather work, performance, and resource data from the Tracer® tool
4. Process the data from the Tracer® tool into a format that the target audience can understand
5. Analyze the data for trends
6. Present the information to the appropriate audience
7. Implement actions in order to improve services

**SERVICE MEASUREMENT**
The Quality Consultant and the application support team use this process to define what additional metrics, if any, should be collected and used during the improvement process.

**SERVICE REPORTING**
The Quality Consultant and the application support team review operational reports to ensure that the reports accurately reflect the services being provided and are meeting customer requirements. These reports can be used to understand team activity, performance, resource, and schedule commitments.
SERVICE IMPROVEMENT
The Quality Consultant and the application support team maintain and improve the quality of the service by agreeing to, monitoring and reporting on IT service activities. During this process the following actions are completed:
- A service improvement plan is created
- Improvement activities are assigned and scheduled
- The effectiveness of previously implemented improvements is evaluated

CONTINUAL SERVICE IMPROVEMENT OUTCOMES
The Quality Consultant and the application support team create an “Improvement Package” that includes:
- A service improvement plan
- Lessons learned documents that identify how each process phase can be improved

CONTINUAL SERVICE IMPROVEMENT VALUE
Continual Service Improvement is used to ensure that the team is performing at agreed service levels and is providing the services as documented in the Statement of Work. It provides an external view of the team’s activities and provides insight into how the team’s effectiveness and performance can be improved.

During Continual Service Improvement, the Quality Consultant and team provide value by identifying and implementing improvements to the application support services. The following benefits are realized during this phase:
- Improved reliability, stability, and availability of the supported applications
- Improved resource allocation and utilization of the application support team
- Improved metrics and management reporting procedures
- Improved working relationships between customers and the team
- Improved customer satisfaction
- Improved process compliance and consistency in the quality of work products
ENDNOTES


