University of California
San Francisco
Information Technology Service

IT ENTERPRISE PROBLEM MANAGEMENT PROCESS

VERSION 1.0 January 28, 2014

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1 Document Information

1.1 About this document

This document describes the Problem Management Process. The Process provides a consistent method to follow when working to resolve severe or recurring issues regarding services from the UCSF IT Enterprise.

1.2 Who should use this document?

This document should be used by:

IT Enterprise personnel responsible for the restoration of services and for problem root cause analysis/remediation.

IT Enterprise personnel involved in the operation and management of the Problem Process.

1.3 Summary of changes

This section records the history of significant changes to this document.

Where significant changes are made to this document, the version number will be incremented by 1.0.

Where changes are made for clarity and reading ease only and no change is made to the meaning or intention of this document, the version number will be increased by 0.1.

Version	Date	Author	Description of change
1.0	1/28/2014	Jeff Franklin	Initial version

1.4 Review and Approval Distribution List

Name	Network	Server	DNS	Application	IT Facilities

2 Introduction

2.1 Management Summary

This document provides both an overview and a detailed description of the UCSF IT Enterprise Problem Management process and covers the requirements of the various stakeholder groups.

The Problem Management process is designed to fulfil the overall goal of unified, standardized and repeatable handling of all Problems managed by UCSF IT Enterprise. Problem Management is the process responsible for managing the lifecycle of all problems. The Problem Management Process works in conjunction with other IT Enterprise processes related to ITIL and ITSM in order to provide quality IT services and increased value to UCSF.

2.2 Goal of Problem Management

The goal of Problem Management and Incident Management can be in direct conflict. Both processes aim to restore unavailable or affected service to the customer. The Incident Management function's primary goal is to restore this service as quickly as possible whereas the speed, with which a resolution for the Problem is found, is only of secondary importance to the Problem Management process. Investigation of the underlying cause of the Problem is the main concern of the Problem Management process.

Problem Management activities result in a decrease in the number of incidents by creating structural solutions for errors in the infrastructure and provide Incident Management with information to circumvent errors to minimize loss of service. The Problem Management process has both reactive and proactive aspects. The reactive aspect is concerned with solving problems in response to one or more incidents. Proactive Problem Management focuses on the prevention of incidents by identifying and solving problems before incidents occur.

The primary goals of Problem Management are to:

- Prevent problems and resulting incidents from happening.
- Eliminate recurring incidents.
- Minimize the impact of incidents that cannot be prevented.

2.3 Problem Management Mission Statement

To maximize IT service quality by performing root cause analysis to rectify what has gone wrong and prevent re-occurrences. This requires both reactive and proactive procedures to effect resolution and prevention, in a timely and economic fashion.

2.4 Benefits

Problem Management works together with Incident Management, Change Management, and Configuration Management to ensure that IT service availability and quality are increased. When incidents are resolved, information about the resolution is recorded. Over time, this information is used to reduce

the resolution time and identify permanent solutions, reducing the number of recurring incidents. This results in less downtime and less disruption to the UCSF's critical systems.

2.4.1   Benefits Overview to the Service Delivery Organizations

- Better first-time fix at the Service Desk
- Departments can show added value to the organization
- Reduced workload for staff and Service Desk (incident volume reduction)
- Better alignment between departments
- Improved work environment for staff
- More empowered staff
- Improved prioritization of effort
- Better use of resources
- More control over services provided

2.4.2   Benefits Overview to the Customer Organizations

- Improved quality of services
- Higher service availability
- Improved user productivity

Additional benefit details realized from adopting Problem Management.

2.4.3   Risk Reduction Benefit

- Problem Management reduces incidents leading to more reliable and higher quality IT services for users.

2.4.4   Cost Reduction Benefit

- Reduction in the number of incidents leads to a more efficient use of staff time as well as decreased downtime experienced by end-users.

2.4.5   Service Quality Improvement Benefit

- Problem Management helps the UCSF IT Enterprise organization to meet customer expectations for services and achieve client satisfaction.
- By understanding existing problems, known errors and corrective actions, the Service Desk has an enhanced ability to address incidents at the first point of contact.
- Problem Management helps generate a cycle of increasing IT service quality.

2.4.6   Improved Utilization of IT Staff Benefit

- Service Desk resources handle calls more efficiently because they have access to a knowledge database of known errors and corrective actions.
- Consolidating problems, known errors and corrective action information facilitates organizational learning.

2.4.7 Opportunity costs of NOT adopting a formal Problem Management Process

- Interruptions will result in unsatisfied clients and loss of confidence in the IT Enterprise organization.
- Inefficient use of support resources as senior resources spend their efforts on reacting to incidents rather than pro-actively managing the delivery and support of services.
- Reduced employee motivation as they repeatedly address incidents with similar characteristics.

2.5 Process Definition

Problem Management includes the activities required to diagnose the root cause of incidents and to determine the resolution to those problems. It is also responsible for ensuring that the resolution is implemented through the appropriate control procedures.

The Problem Management process will be based on ITIL best practices to ensure the controlled handling, monitoring and effective closure of Problems within the UCSF IT Enterprise organization. This will be achieved by using a combination of activities that are designed in-line with ITIL Best Practices.

Although the process is supported by a Problem Manager, other resources and departments are involved in the Problem Management Process.

2.6 Objectives

The primary objectives of Problem Management are to prevent problems and resulting incidents from happening, to eliminate recurring incidents and to minimize the impact of incidents that cannot be prevented. This leads to increased service availability and quality.

Problem Management is focused on implementing the appropriate corrective actions to address problems that negatively impact IT services. Problem Management seeks to implement cost effective, permanent solutions to eliminate the root cause of incidents thereby preventing reoccurrence. Problem Management differs from the IT service restoration focus of Incident Management that often uses temporary workarounds to quickly restore services.

There are two approaches to Problem Management, proactive and reactive:

- Reactive Problem Management identifies problems based upon review of multiple events (incidents) that exhibit common symptoms or in response to a single incident with significant impact.
- Proactive Problem Management identifies problems by reviewing incident trends and non-incident data to predict that an incident is likely to (re-)occur.

The basic steps in Problem Management include:

- Detection of problems via analysis of incident data, problem data, operational data, release notes, Problem Management database and capacity or availability reports.

- Logging, classification and prioritization of confirmed problems into the Problem Management database.
- Efficient routing of classified and prioritized Problems for appropriate action.
- Determination of the root cause of the problems using industry standard techniques such as Kepner-Tregoe, Ishikawa Diagrams, Pain Value Analysis, Brainstorming, Technical Observation Post and Pareto Analysis.
- Logging and classification of known errors identified by either root cause analysis or information from other sources.
- Determination of alternative corrective actions to resolve the known errors.
- Implementation of the appropriate corrective action through Change Management.
- Provide accurate and visible Problem status reporting.
- Ensure that Problem resolutions met the SLA requirements for the customer organizations.

2.7 Definitions

2.7.1 Impact

Impact is determined by how many personnel or functions are affected. There are three grades of impact:

- 3 - Low – One or two personnel. Service is degraded but still operating within SLA specifications
- 2 - Medium – Multiple personnel in one physical location. Service is degraded and still functional but not operating within SLA specifications. It appears the cause of the Problem falls across multiple service provider groups
- 1 - High – All users of a specific service. Personnel from multiple agencies are affected. Public facing service is unavailable

The impact of the incidents associated with a problem will be used in determining the priority for resolution.

2.7.2 Incident

An incident is an unplanned interruption to an IT Service or reduction in the Quality of an IT Service. Failure of any Item, software or hardware, used in the support of a system that has not yet affected service is also an Incident. For example, the failure of one component of a redundant high availability configuration is an incident even though it does not interrupt service.

An incident occurs when the operational status of a Production item changes from working to failing or about to fail, resulting in a condition in which the item is not functioning as it was designed or implemented. The resolution for an incident involves implementing a repair to restore the item to its original state.

A design flaw does not create an incident. If the product is working as designed, even though the design is not correct, the correction needs to take the form of a service request to modify the design. The service

request may be expedited based upon the need, but it is still a modification, not a repair.

2.7.3 Knowledge Base

A database that contains information on how to fulfill requests and resolve incidents using previously proven methods / scripts.

2.7.4 Known Error

A Known Error is a problem that has an identified root cause and for which a workaround or (temporary) solution has been identified. This term is also describes a fault in the infrastructure that can be attributed to one or more faulty CI's (Configuration Items) in the Infrastructure and causes, or may cause, one or more incidents for which a work-around and/or resolution is identified.

2.7.5 Proactive Problem Management

Proactive Problem Management is one of two important Problem Management processes. It is used to detect and prevent future problems/incidents. Proactive problem Management includes the identification of trends or potential weaknesses. Proactive Problem Management is performed by the Service Operations group.

2.7.6 Problem

A Problem is an undesirable situation, indicating the unknown root cause of one or more existing or potential incidents. A problem is the underlying cause of an incident and can be identified in the following ways:

- It is identified as soon as an incident occurs that cannot be matched to existing or recorded problems for which a root cause is to be sought.

- It is identified as a result of multiple Incidents that exhibit common symptoms.

- It is identified from a single significant Incident, indicative of a single error, for which the cause is unknown, but for which the impact is significant (a Major Incident).

2.7.7 Problem Repository

The Problem Repository is a database containing relevant information about all problems whether they have been resolved or not. General status information along with notes related to activity should also be maintained in a format that supports standardized reporting.

2.7.8 Priority

Priority is determined by utilizing a combination of the Problem's impact and severity. For a full explanation of the determination of priority refer to the section of this document titled **Priority Determination**.

2.7.9 Reactive Problem Management

Reactive Problem Management is one of two important Problem Management processes. It is used to analyze and resolve the causes of

incidents. Reactive Problem Management is performed by the Service Operations group.

2.7.10 Response

Time elapsed between the time the problem is reported and the time it is assigned to an individual for resolution.

2.7.11 Resolution

A Resolution is the correction of a root cause so that the related incidents do not continue to occur.

2.7.12 Request for Change

A Request for Change (RFC) proposes a change to eliminate a known error and is addressed by the Change Management process.

2.7.13 Root Cause

A root cause of an incident is the fault in the service component which made the incident occur.

2.7.14 Service Agreement

A Service Agreement is a general agreement outlining services to be provided, as well as costs of services and how they are to be billed. A service agreement may be initiated between IT Enterprise and another agency. A service agreement is distinguished from a Service Level Agreement in that there are no ongoing service level targets identified in a Service Agreement.

2.7.15 Service Level Agreement

Often referred to as the SLA, the Service Level Agreement is the agreement between IT Enterprise and the customer outlining services to be provided, and operational support levels as well as costs of services and how they are to be billed.

2.7.16 Service Level Target

Service Level Target is a commitment that is documented in a Service Level Agreement. Service Level Targets are based on Service Level Requirements, and are needed to ensure that the IT Service continues to meet the original Service Level Requirements.   Service Level Targets should be specific, measurable, achievable, relevant, and timely.

2.7.17 Severity

Severity is determined by how much the user is restricted from performing their work. There are three grades of severity:

3 - Low - Issue prevents the user from performing a portion of their duties.

2 - Medium - Issue prevents the user from performing critical time sensitive functions.

1 - High - Service or major portion of a service is unavailable

The severity of a problem will be used in determining the priority for resolution.

2.7.18 Work Around

A workaround is a way of reducing or eliminating the impact of an incident or problem for which a full resolution is not yet available.

2.8 Scope of Problem Management

The scope of the Problem Management includes a standard set of processes, procedures, responsibilities and metrics that are utilized by all IT Enterprise services, applications, systems and network support teams.

Problem Management includes the activities required to diagnose the root cause of incidents and to determine the resolution to those problems. It is also responsible for ensuring that the resolution is implemented through the appropriate control procedures, especially Change Management and Release Management.

Problem Management maintains information about problems and the appropriate workarounds and resolutions, so that the organization is able to reduce the number and impact of incidents over time. In this respect, Problem Management has a strong interface with Knowledge Management, and tools such as the Known Error Database will be used for both.

Although Incident and Problem Management are separate processes, they are closely related and will typically use the same tools, and use the same categorization, impact and priority coding systems. This will ensure effective communication when dealing with related incidents and problems.

2.9 Inputs and Outputs

Inputs to the Problem Management Process include the following:

- Problem records
- Incident details
- Configuration details from the Configuration Management Database.
- Supplier details about the products used in the infrastructure.
- Service Catalog and Service Level Agreements.
- Details about the infrastructure and the way it behaves, such as capacity records, performance measurements, Service Level reports, etc.

Outputs to the Problem Management Process include the following:

- Problem records
- Known Error Database
- Requests for Change
- Closed Problem records

- Management information

2.10 Metrics

Metrics reports should generally be produced monthly with quarterly summaries. Metrics to be reported are:

- Total numbers of problems (as a control measure).
- Breakdown of problems at each stage (e.g. logged, work in progress, closed etc.)
- Size of current problem backlog.
- Number and percentage of major problems.

3 Roles and Responsibilities

The Problem Management process requires specific roles to undertake defined responsibilities for process design, development, execution and management. More than one role may be assigned to an individual. Additionally, the responsibilities of one role could be mapped to multiple individuals. One role is accountable for each process activity. With appropriate consideration of the required skills and managerial capability, this person may delegate certain responsibilities to other individuals. However, it is ultimately the job of the person who is accountable to ensure that the job gets done. Regardless of the mapping of responsibilities, specific roles are necessary for the proper operation & management of the Problem Management process.

This section lists the mandatory roles and responsibilities that must be established to execute the Problem Management process:

3.1 Problem Management Process Owner

3.1.1 Profile of the Role

The Problem Management Process Owner owns the process and the supporting documentation for the process. This includes accountability for setting policies and providing leadership and direction for the development, design and integration of the process as it applies to other applicable frameworks and related ITSM processes being used and / or adopted in the UCSF IT Enterprise organization. The Process Owner will be accountable for the overall health and success of the Problem Management Process.

The person fulfilling this role has end-to-end responsibility for the way in which the Problem Management process functions and develops. The main role of the Problem Management Process Owner is to ensure that the processes are efficient, effective, and fit-for-purpose.

The identified Process Owners will work closely together to ensure integration of the ITIL disciplines and their process-flows.

The ideal Problem Management Process Owner:

- Has been trained to ITIL v3 Expert and or Service Management Manager level

- Is positioned at Senior Manager level within the organization
- Has a strong knowledge of the Infrastructure processes
- Can coach and mentor the Problem Manager
- Understands the environment and has a strong network of contacts
- Understands the business side of the organization

3.1.2 Objective of the Role

- Take ownership of the process to establish accountability
- Be a director level escalation point regarding any Problem Management Process issues
- Ensure there is balance between the key components of a good Service Management environment: People, Process, Tools and Partners

3.1.3 Responsibilities

- Define the Business Case for the Problem Management Process
- Ensure end responsibility for the Problem Management Process
- Ensure the Problem Management process is fit-for-purpose
- Ensures that the process is defined, documented, maintained and communicated at an Enterprise level
- Ensure there is optimal fit between people, process and technology
- Ensure proper Key Performance Indicators are set
- Ensure reports are produced, distributed, and used
- Drive forward the integration of the Problem Management process with other Service Management processes
- Undertakes periodic review of all ITSM processes from an enterprise perspective and ensures that a methodology is in place to address shortcomings and evolving requirements

Segregation of duties

The role of Problem Management Process Owner is separate and distinct from that of the Problem Manager and the roles shall be separately staffed.

3.1.4 Activities

- Promote the Service Management vision to top-level / senior management
- Attend top-level management meetings to assess the impact of organizational decisions on the Problem Management environment
- Attend meetings with the Problem Management Process Manager
- Communicate changes to the Problem Management infrastructure
- Discuss report outcomes, improvements and recommendations with the Problem Manager
- Distribute reports
- Review proposed changes to the Problem Management process
- Review integration issues between the various processes
- Initiate and review Key Performance Indicators and reports design

- Initiate improvements in the tool, process, steering mechanisms, and people issues
- Initiate training
- Recruit Problem Management staff where needed (including the Problem Manager)
- Coach the Problem Manager in the correct steering of the process
- Function as a point of escalation for the Problem Manager

3.1.5 Authority

- Initiate and approve the implementation of any changes to the Problem Management Process
- Escalate any breaches in the use of the process to top-level management
- Initiate research with respect to any tools to support the execution of the process's tasks.
- Block any tool change that negatively impacts the process
- Recruit a Problem Manager
- Communicate with the relevant Process Owners when there are conflicts between inter-related processes
- Organize training for employees and nominate staff. They cannot oblige any staff to attend training, but can escalate to line management should training be required in their opinion.

3.2 Problem Manager

3.2.1 Profile of the Role

The Problem Manager reports to the Problem Management Process Owner and performs the day-to-day operational and managerial tasks demanded by the process flows.

The Problem Manager is responsible for identifying opportunities for improvement and audits the use of the process on an operational level. This ensures compliance to the process by the Support staff.

The Problem Manager is responsible for liaising with and providing reports to other Service Management functions. They will also be responsible for managing the output of the process according to the Service Level Agreements. They act as a guardian of the quality of the discipline and are responsible for ensuring that processes are used correctly. The Problem Manager:

- Is a discussion partner at Functional Manager and Service Owner level within the organization
- Understands the services that are delivered to the customers
- Must be flexible as well as convincing, as often they do not have authority to enforce the use of the Process
- Possesses an ITIL Foundation certificate, and must have obtained, or must be training to obtain, the Problem Management Practitioners Certificate
- Can balance the support requirements of the business with resourcing and prioritization issues in order to ensure optimal effective business support within the available means

- Coordinates and guides activities of the Problem Management Team and Problem Owner(s)
- Provides management information and uses it proactively to prevent the occurrence of incidents and problems in both production and development environments
- Escalates the analysis and resolution of cross-functional problems to Unit and IT Enterprise levels
- Conducts 'post mortem' or Post-Implementation Reviews (PIR) for continuous improvement
- Develops and improves Problem Control and Error Control procedures

3.2.2   Objective of the Role

- Establish accountability for the day-to-day operation of the process
- Create a responsible monitoring function

3.2.3   Responsibilities

The Problem Manager manages execution of the Problem Management process and coordinates all activities required to respond to problems. The Problem Manager has the ultimate accountability for resolution of problems and is the escalation point for problem management activities.

- Ensure the Problem Management process is conducted correctly
- Ensure the Problem Management Key Performance Indicators (KPIs) are met
- Ensure the Problem Management process operates effectively and efficiently
- Ensure process, procedure and work instruction documentation is up-to-date
- Be the operational process executer
- Be the owner of registered problems
- Enter all relevant details into the Problem record, and ensure that this data is accurate
- Provide management and other processes with steering information
- Maximise the fit between people, process and technology
- Promote the (correct) use of the process
- Execute and co-ordinate Proactive Problem Management
- Execute and co-ordinate Reactive Problem Management
- Ensure correct closure and evaluation of Problems
- Ensure the Problem Management process, procedures; work instructions, and tools are optimal from a department/section point of view
- Carry out Problem Management activities according to the process, procedures, and work instructions
- Obtain the technical and organizational knowledge required to perform the activities

3.2.4   Activities

- Update the process and procedures documentation
- Initiate and update the process work instructions

- Identify problems and analyse Incidents
- Register problems
- Execute classification of problems
- Co-ordinate and plan Problem Resolution, as required
- Co-ordinate and monitor problem resolution for vendor maintained products
- Monitor Problem Resolution progress in accordance with classification
- Monitor the Error Resolution progress (Error Control)
- Monitor the hand-over of Problems to other support groups
- Monitor the process performance against Key Performance Indicators in all departments
- Monitor the Problem Management process, using Key Performance Indicators and reports
- Perform trend analysis
- Attend meetings with the Problem Management Process Owner, Functional Managers, Service Owners and Support Group staff.
- Attend Change Advisory Board (CAB) meetings concerning Problem Requests for Change (RFC)
- Assess the possibility of the approval of any RFCs generated by the Problem Management process
- Escalate to the Problem Management Process Owner where the process is not fit-for-purpose. The Problem Manager escalates to line management and the Problem Management Process Owner in case of a conflict between Process and Line Management. Escalation reports are sent to the Process Owners and line management
- Coach Support Group staff in the correct use of the process
- Identify training requirements
- Identify opportunities for improving the tools used
- Identify improvement opportunities to make the Problem Management process more effective and efficient
- Identify and improve operational alignment between various processes
- Review and evaluate closed Problems
- Identify improvement opportunities within all departments
- Produce steering information in the shape of management reports
- Produce steering information for other processes
- Promote the correct use of the Problem Management process within all departments and sections
- Communicate changes to the Problem Management process within departments and promote the use of the changed process
- Audit and review the Problem Management process periodically

3.2.5 Authority

- Monitor the Problem Management process for all departments
- Report on all Problems, specified per service, process, department, and any other Key Performance Indicator that will be established

- Escalate any issue impacting the ability of the Problem Management process to complete its objectives to Line Management, Functional Management and/or the Problem Management Process Owner
- Discuss problems relating to the process or execution of the process with the Problem Management Process Owner, Functional Management and/or Line Management
- Recommend (process) improvements to the Problem Management Process Owner

3.3   Support Group Staff

3.3.1   Profile of the Role

Support Groups are the technical staff who work on the Problem records to investigate and diagnose them, devise workarounds and work on permanent solutions to eliminate the Known Error. Due to their technical expertise, it is generally accepted that it will be these support groups that will identify Problems, both reactively and pro-actively, will populate the Knowledge systems, raise Problem records and Requests for Change (RFCs) as required.

- Objective of the Role
- Investigate and resolve problems under the co-ordination of the Problem Manager and Functional Manager
- Ensure problems are managed within their teams, providing workarounds that will resume service and devise permanent solutions to eliminate Known Errors and reduce numbers of incidents

3.3.2   Responsibilities

- Ensure they are fully conversant with and follow the Problem Management process, procedures and work instructions
- Ensure Problems and Known Errors are processed in a timely manner
- Diagnose the underlying root cause of one or many incidents
- Ensure that work on the Problem is accurately recorded in the Problem record
- Ensure that optimal solutions are devised to rectify Known Errors

3.3.3   Activities

- Follow the Problem Management process, procedures and work instructions
- Review Problems passed to them in a timely manner
- Update the Problem record with any progress made
- Use Problem Management techniques to investigate, diagnose and resolve problems in line with agreed priorities and timings
- Employ specialist tools and systems to detect and diagnose problems
- Have at least one team member monitoring for new problem records. The records will be assigned to groups, not individuals
- Update the Problem Manager on any progress made to diagnose and resolve problems
- Raise changes as required. This requires familiarity with Change Management process, procedures and work instructions

- Work with other support groups to gather additional information, where needed, and update record with additional information
- Populate Knowledge documents
- Identify opportunities for improvement
- Obtain the technical and organisational knowledge required to perform responsibilities
- Regularly monitor the status of a problem throughout its lifecycle, updating when appropriate
- Assess how well solutions applied have restored the service or eliminated the Problem
- Every Support Group is responsible for on-going monitoring of their queue

3.3.4 Authority

- Escalate Service Level Agreement breaches for Problems, or difficulties in providing diagnoses or solutions
- Raise and update Problem Records
- Escalate or indicate any need for more training, or for technical and organisational information
- Specify diagnostics to be applied for the capture of information required to analyse the underlying root cause of a Problem
- Raise RFCs to apply workarounds or permanent solutions to Problems and Known Errors

3.4 Functional Managers

3.4.1 Profile of the Role

The Functional Managers have a key role to play in the Problem Management process. As the managers responsible for the technical resources, they need to work closely with the Problem Manager to ensure that staff is available to work on the Problems encountered within the infrastructure and allocate their time accordingly. Once the solutions to Problems have been identified, they will authorize any Changes through the Change Management process. They will also be required to attend any Major Problem Review to identify lessons learned and ensure that the Knowledge Base is populated with the required Knowledge Article.

3.5 Service Desk

3.5.1 Profile of the Role

The Service Desk is a single point of contact for users when there is a service disruption, for service requests, or even for some categories of requests for change. The Service Desk provides a point of communication to users and a point of coordination for several IT groups and processes.

3.5.2 Objective of the Role

- Ensure that all problems received by the Service Desk are recorded in CRM

- Delegates responsibility by assigning problems to the appropriate provider group for resolution based upon the categorization rules.
- Performs post-resolution customer review to ensure that all work services are functioning properly.

3.5.3   Responsibilities

- Documenting all relevant incident/service request details, allocating categorization and prioritization codes
- Providing first line investigation and diagnosis
- Utilizes the known error database in diagnosis of incidents/service requests
- Resolving incidents/service requests when first contacted whenever possible
- Escalating incidents/service requests when they cannot resolve them within a reasonable amount of time
- Closing all resolved incidents, requests and other calls
- Update incident management records with accurate incident detail and history in a common repository that is linkable to Problem and Change Management
- Provide updates to the know error database as necessary
- Communication with users, keeping them informed of incident progress

3.6   Service Owner

3.6.1   Profile of the Role

To ensure that services are managed with a business focus, a single point of accountability is essential to provide the level of attention and focus required for its delivery. The Service Owner is accountable for a specific service within the organization regardless of where the underpinning technology components, processes or professional capabilities reside. The Service Owners will need to monitor closely the activities of the Problem Management process on behalf of their customers to ensure that they get the most benefit from the activities performed. In addition they will report back on how solutions to Problems are progressing and give an indication of likely resolution times. They also have an important role in the identification of Proactive Problem Management, as any Problems and therefore any "pain" will be felt by the user community they represent. They may also be invited to attend Major Problem Reviews.

3.6.2   Objective of the Role

- Provide initiation, transition, and support of services
- Continual improvement and the management of change to the services

3.6.3   Responsibilities

- Provides input in service attributes such as performance, availability etc.
- Represents the service across the organization
- Understands the service and components

- Point of escalation and notification for major incidents
- Represents the service in Change Advisory Board meetings
- Assists the Problem Manager with identifying, prioritizing and resolving of problems

3.6.4   Activities

- Provide escalation and notification for major incidents to the key stakeholders
- Monitor Problem Management process activities
- Report on status and schedule of Problem resolutions
- Participate in proactive Problem Management
- Attend Major Problem Review sessions

3.7   Problem Owner

3.7.1   Profile of the Role

The Problem Owner has ultimate responsibility for analysis and resolution of assigned problems. A Service Owner may be assigned as the Problem Owner in many cases, but this is not mandatory. The assigned Problem Owner must possess the appropriate management skills and authority to manage activities across organizational boundaries.

3.7.2   Responsibilities

- Ensures required stakeholders are involved in the problem management activities
- Engages required support staff from other organizations, campus, vendors, etc.
- Manages and co-ordinates activities necessary to identify root cause, develop workarounds, preventative actions and long term solutions for assigned problems
- If elimination of the root cause requires modification of an item under change control, the Problem Owner ensures that an RFC with an assigned Change Owner is initiated to manage implementation of the permanent solution and informs the Problem Manager upon implementation of the solution.
- Ensures that support staff in their organization have adequate skill levels and training in ITIL and Problem Management techniques

3.8   Problem Analyst

3.8.1   Profile of the Role

The Problem Analysts provides skills and knowledge in a particular domain (technical, operational or application). The Problem Analyst will use this expertise to facilitate root cause analysis of assigned problems, and the development of workarounds and/or permanent solutions with the assistance of appropriate SME's.

3.8.2   Responsibilities

- Assists the Problem Manager in data analysis to identify suspected problems
- Assists in identifying required participants (SME's) from other groups to the Problem Owner and/or Problem Manager

- Under the direction of the Problem Owner, requests information from supporting SME's and uses standard problem analysis techniques to facilitate identification and validation of the root cause
- In collaboration with SME's and Service Owners:
- Facilitates development of workarounds and short term corrective actions for known errors
- Facilitates development and testing of permanent solution
- Records and updates problem and known error records with appropriate information
- Assists the Problem Manager in validating that the root cause has been eliminated upon implementation of the recommended solution

3.9 Problem Reporter

3.9.1 Profile of the Role

The Problem Reporter Anyone within the IT Enterprise organization can request a problem record be opened. The typical sources for problems are the Service Desk, Service Provider Groups, and other staff engaged in proactive Problem Management.

3.10 Problem Management Review Team

3.10.1 Profile of the Role

The Problem Management Review Team is determined on the services being supported. It is typically composed of the technical and functional staff involved in supporting a service such as the Service Desk, Support Group Staff, Problem Analysts, Problem Owners and other staff engaged in Problem Management.

3.11 Solution Provider Group

3.11.1 Profile of the Role

The Solution Provider Group is determined on the services being supported and by the nature of the problem that needs remediation. It is typically composed of the technical and functional staff such as the Problem Analyst, Problem Owners and other SMEs engaged in Problem Management.

3.12 Integration with Other Processes

The following integration between Problem Management and other processes must as a minimum be shaped, and guarded by the Problem Management Process Owner and Manager.

3.12.1 Incident Management / Service Desk

- Provide details of Workarounds and resolution progress to Incident Management
- Arbitrate where the ownership of Incidents or Problems is unclear
- Take ownership of Major Incidents

- Make improvement recommendations on aspects of the Incident Management process as necessary

3.12.2 Configuration Management

- Make improvement recommendations on aspects of the Configuration Management process as necessary

3.12.3 Change Management

- Ensure that Requests for Change (RFCs) raised by Problem Management are correctly assessed for impact and are authorised/rejected as appropriate
- Make improvement recommendations on aspects of the Change Management process as necessary
- Attend Change Review meetings where appropriate

3.12.4 Release management

- Make improvement recommendations on aspects of the Release Management process as necessary
- Attend Release planning meetings where appropriate

3.12.5 Security Management

- Consult with Security Management where appropriate to ensure all Problem resolutions and Workarounds adhere to the Security policy
- Consult with Security Management to ensure the correct classification of Security problems

3.12.6 Business Continuity

- Ensure Problem and Major Incident information is escalated for invocation of Continuity Plans as defined within the Business Continuity policy

3.12.7 Service Level management

- Notify Service Level Management of any potential service improvements achievable through the amendment of SLAs, Operational Level Agreements (OLAs) or Under-pinning Contracts (UPCs)

3.12.8 Availability Management

- Notify Availability Management of any potential problems threatening the availability of Services

3.12.9 Capacity Management

- Consult with Capacity Management to devise Workarounds that can be implemented using Capacity Management sub-processes. (For example: Demand Management could be used to spread the throughput on a heavily loaded server, therefore improving the performance of that machine)

4 Problem Categorization and Prioritization

In order to adequately determine if SLA's are met, it will be necessary to correctly categorize and prioritize problems quickly.

4.1 Categorization

The goals of proper categorization are:

- Identify Service impacted
- Associate problems with related incidents
- Indicate what support groups need to be involved
- Provide meaningful metrics on system reliability

For each problem the specific service (as listed in the published Service Catalog) will be identified. It is critical to establish with the user the specific area of the service being provided.   For example, if it's PeopleSoft, is it Financial, Human Resources, or another area?   If it's PeopleSoft Financials, is it for General Ledger, Accounts Payable, etc.? Identifying the service properly establishes the appropriate Service Level Agreement and relevant Service Level Targets.

In addition, the severity and impact of the problem need to also be established. All problems are important to the user, but problems that affect large groups of personnel or mission critical functions need to be addressed before those affecting 1 or 2 people.

Does the problem cause a work stoppage for the user or do they have other means of performing their job? An example would be a broken link on a web page is an incident but if there is another navigation path to the desired page, the incident's severity would be low because the user can still perform the needed function.

The problem may create a work stoppage for only one person but the impact is far greater because it is a critical function. An example of this scenario would be the person processing payroll having an issue which prevents the payroll from processing. The impact affects many more personnel than just the user.

4.2   Priority Determination

The priority given to a problem that will determine how quickly it is scheduled for resolution will be set depending upon a combination of the related incidents' severity and impact.

Problem Priority		Severity		
		3 - Low Issue prevents the user from performing a portion of their duties.	**2 - Medium** Issue prevents the user from performing critical time sensitive functions	**1 - High** Service or major portion of a service is unavailable
IMPACT	**3 - Low** One or two personnel. Degraded Service Levels but still processing within SLA constraints.	**3** **Low**	**3** **Low**	**2** **Medium**
	2 – Medium Multiple personnel in one physical location. Degraded Service Levels but not processing within SLA constraints or able to perform only minimum level of service. It appears cause of incident falls across multiple functional areas.	**2** **Medium**	**2** **Medium**	**1** **High**
	1 – High All users of a specific service Personnel from multiple agencies are affected. Public facing service is unavailable Any item listed in the Crisis Response tables.	**1** **High**	**1** **High**	**1** **High**

4.3   Workarounds

In some cases it may be possible to find a workaround to the incidents caused by the problem – a temporary way of overcoming the difficulties. For example, an SQL script may be manually executed to allow a program to complete its run successfully and allow a billing process to complete satisfactorily.

In some cases, the workaround may be instructions provided to the customer on how to complete their work using an alternate method. These workarounds need to be communicated to the Service Desk so they can be added to the

Knowledge Base and therefore be accessible by the Service Desk to facilitate resolution during future recurrences of the incident.

In cases where a workaround is found, it is important that the problem record remains open and details of the workaround are always documented within the Problem Record.

4.4 Known Error Record

As soon as the diagnosis is far enough along to clearly identify the problem and its symptoms, and particularly where a workaround has been found (even though it may not yet be a permanent resolution), a Known Error Record must be raised and placed in the Known Error tables within CRM – so that if further incidents or problems arise, they can be identified and the service restored more quickly.

However, in some cases it may be advantageous to raise a Known Error Record even earlier in the overall process – just for information purposes, for example – even though the diagnosis may not be complete or a workaround found.

The known error record must contain all known symptoms so that when a new incident occurs, a search of known errors can be performed and find the appropriate match.

4.5 Major Problem Review

Each major (priority 1) problem will be reviewed on a weekly basis to determine progress made and what assistance may be needed. The review will include:

- Which configuration items failed
- Specifics about the failure
- Efforts toward root cause analysis are being taken
- Solutions are being considered
- Time frame to implement solution
- What could be done better in the future to identify the issue for earlier correction
- How to prevent recurrence
- Whether there has been any third-party responsibility and whether follow-up actions are needed.

Any lessons learned will be documented in appropriate procedures, work instructions, diagnostic scripts or Known Error Records. The Problem Manager facilitates the session and documents any agreed actions.

5 Process Flow

5.1 High Level Reactive Problem Management Flow

The following diagram is the ITL based best practice model for (Reactive) Problem Management.

Reactive Problem Management Process Flow

| Service Desk | Service Provider Group | Proactive Problem Management | Incident Management | Event Management |

1.0 Problem Detection

2.0 Problem Logging

3.0 Problem Categorization

4.0 Prioritization

Configuration Management System ←→ 5.0 Investigation & Diagnosis

6.0 Work Around? — No

Yes

Known Error Database ←→ 7.0 Create Known Error Record

8.0 Change Needed? — Yes → Change Management Process

No

9.0 Resolution

10.0 Closure

11.0 Major Problem? — Yes → 12.0 Major Problem Review

No

End

5.2 Swim Lane Flow Diagram

The following is the ITIL based Reactive Problem Management process flow represented as a swim lane responsibility chart showing the associated roles within IT Enterprise.

Problem Management Process Flow

Problem Reporter (Service Desk, Service Provider Groups)
- Service Desk
- Service Provider Group
- Proactive Problem Management
- Incident Management
- Event Management

Problem Management Review Team (Service Desk, Support Group Staff, Problem Analysts, Problem Owners)
- 1.0 Problem Detection
- 2.0 Problem Logging
- 3.0 Problem Categorization
- 4.0 Prioritization
- 12.0 Major Problem Review
- 11.0 Major Problem?
- 10.0 Closure
- End

Solution Provider Group (Problem Analyst, Problem Owners and other SMEs)
- 5.0 Investigation & Diagnosis
- Configuration Management System
- Known Error Database
- 6.0 Work Around?
- 7.0 Create Known Error Record
- 8.0 Change Needed?
- 9.0 Resolution
- Change Management Process

5.3   Process Activities

The following provides a description of each activity in the high level reactive Problem Management Process Flow diagram.

5.3.1   Problem Reporting

Role: Problem Reporter

Problems can be reported by any group within the IT Enterprise organization that has the opportunity to recognize a situation that is likely to create incidents. The Service Desk or the Service Provider Group may recognize there is a problem because of multiple related incidents. Other groups may do trend analysis to identify potential recurring issues.

5.3.2   1.0 Problem Detection

Activity: 1.0

Role: Problem Management Review Team

Analysis of incidents as part of proactive Problem Management may result in the need to create a Problem Record so that the underlying fault can be investigated further. Problems may be identified from the following activities:

It is likely that multiple ways of detecting problems will exist in all organizations. These will include:

- Suspicion or detection of an unknown cause of one or more incidents by the Service Desk, resulting in a Problem Record being raised – the Service Desk may have resolved the incident but has not determined a definitive cause and suspects that it is likely to recur, so will raise a Problem Record to allow the underlying cause to be resolved. Alternatively, it may be immediately obvious from the outset that an incident, or incidents, has been caused by a major problem, so a Problem Record will be raised without delay.

- Analysis of an incident by a technical support group which reveals that an underlying problem exists, or is likely to exist.

- Automated detection of an infrastructure or application fault, using event/alert tools automatically to raise an incident which may reveal the need for a Problem Record.

- Incident Matching

- Trend Analysis

5.3.3   Problem Logging

Activity: 2.0

Role: Problem Management Review Team

Regardless of the detection method, all relevant information relating to the nature of the Problem must be logged so that a full historical record is maintained. A cross-reference must be made to the incident(s) which initiated the Problem Record. Typically, the following details are input during Problem Logging:

- Unique reference number User details
- Service details
- Equipment details
- Date/time initially logged
- Priority and categorization details
- Cross reference to related Incidents
- Configuration Item details
- Priority and Categorization details
- Description of incident symptoms that resulted in Problem identification
- Details of diagnostic or attempted recovery actions taken

5.3.4   Problem Categorization

Activity: 3.0

Role: Problem Management Review Team

Problems must be categorized in the same way as incidents using the same codes defined in the Service Catalog, so that the true nature of the problem can be easily tied to the supported service, related incidents and for management reporting.

5.3.5   Problem Prioritization

Activity: 4.0

Role: Problem Management Review Team

Problems must be prioritized in the same way and for the same reasons as incidents – but the frequency and impact of related incidents must also be taken into account. Before a problem priority can be set, the severity and impact need to be assessed. See the section labeled "Priority Determination". Once the severity and impact are set, the priority can be derived using the prescriptive table.

5.3.6   Investigation & Diagnosis

Activity: 5.0

Role: Solution Provider Group

Properly investigate, diagnose, test and verify the root cause of the Problem and determine the associated Configuration Item (CI). The speed and nature of this investigation will vary depending upon the priority. Problem analysis, diagnosis and solving techniques should be used to facilitate finding the root cause.

5.3.7   Workarounds

Activity: 6.0

Role: Solution Provider Group

The Known Error Database (KEDB) can be searched to match the Problem against any known errors and possible workarounds. Existing workarounds should be identified and assessed as possible resolutions for Incidents related to the Problem. This activity will also define new workaround(s), if feasible, to take the place of existing workaround(s), or to define a workaround if one does not exist. In cases where a workaround is found, it is important that the problem record remains open and details of the workaround are always documented within the Problem Record.

5.3.8   Create a Known Error Record

Activity: 7.0

Role: Solution Provider Group

Once the root cause has been determined, Configuration Item (CI) has been discovered and a workaround or permanent fix is identified, a Known Error record must be raised and recorded in the Known Error database so that if further incidents arise, they can be identified and related to the problem record.

5.3.9   Change Needed Decision?

Activity: 8.0

Role: Solution Provider Group

Once enough information is known about the root cause of a Problem, A decision will need to be made regarding the need to create a Request For Change (RFC). If an RFC is to be created, it will need to be submitted, scheduled, and approved following the predefined Change Management procedures.

5.3.10 Problem Resolution

Activity: 9.0

Role: Solution Provider Group

As soon as a resolution is found, it should be applied to resolve the Problem. This resolution may lead to initiation of an RFC and approval through that process before the resolution can be applied. In some cases the cost and/or impact of resolving the Problem cannot be justified. In that case a decision may be made to leave the Problem open and continue to resolve subsequent Incidents using a validated workaround.

5.3.11 Problem Closure

Activity: 10.0

Role: Solution Provider Group

When a change has been implemented, confirmed resolved and the Post Implementation Review (PIR) has been conducted, the Problem Record should be formally closed.

A check should be performed at this time to ensure that the Problem record contains a full historical description of all events and if not, the Problem record should be updated.

Once a Problem record has been formally closed, any related Incident Records that are still open, should also be closed and the status of any related Known Error Records should be updated to show that the resolution has been applied.

5.3.12 Major Problem Decision?

Activity: 11.0

Role: Problem Management Review Team

Once a Problem has been resolved, a decision must be made regarding whether or not, the Problem qualifies as a Major Problem. If a Problem is identified as a Major Problem, a formal Major Problem Review will be scheduled and performed to review the existing process, any changes that may be needed and how to prevent this or similar Problems from occurring in the future.

5.3.13 Major Problem Review

Activity: 12.0

Role: Service Provider Group Managers & CTO

When a Problem warrants a Major Problem Review, a meeting will be convened to identify what was done right, what was done wrong, what could be done better next time, and how to prevent the Problem from happening again.

6 RACI Matrix

6.1 Role Description

Obligation	Role Description
Responsible	Responsible to perform the assigned task
Accountable (only 1 person)	Accountable to make certain work is assigned and performed
Consulted	Consulted about how to perform the task appropriately
Informed	Informed about key events regarding the task

6.2 Role Matrix

This section lists the mandatory roles and responsibilities that must be established to execute the Problem Management process:

Activities Within Process	Problem Management Process Owner	Problem Manager	Support Group Staff	Functional Managers	Service Desk	Service Owner	Problem Owner	Problem Analyst
1.0 Problem Detection	C	A	R	I	R	C	I	R
2.0 Problem Logging	C	A	R	R	R	R	R	I
3.0 Problem Categorization	C	A	R	R	R	R	R	C
4.0 Prioritization	I	A	R	R	I	I	R	I
5.0 Investigation & Diagnosis	I	A	C	C	C	I	R	R
6.0 Workaround Decision?	A	R	R	R	R	I	R	R
7.0 Create Known Error Record	A	R	R	R	R	C	R	R
8.0 Change Needed?	A	R	R	R	R	I	R	R
9.0 Resolution	I	A	R	R	R	C	R	R
10.0 Closure	I	A	I	I	I	C	R	R
11.0 Major Problem?	A	R	C	C	C	C	R	I
12.0 Major Problem Review	A	R	C	C	C	I	R	R

7 Reports and Meetings

A critical component of success in meeting service level targets is for IT Enterprise to hold itself accountable for deviations from acceptable performance. This will be accomplished by producing meaningful reports that can be utilized to focus on areas that need improvement. The reports must then be used in coordinated activities aimed at improving the support.

7.1 Critical Success Factors

- Improved service quality
- Minimize impact of Problems
- Reduce the cost to Users of Problems

7.2 Key Performance Indicators

- Percentage reduction in repeat Incidents/Problems
- Percentage reduction in the Incidents and Problems affecting service to Customers
- Percentage reduction in the known Incidents and Problems encountered
- No delays in production of management reports
- Percentage reduction in average time to resolve Problems
- Percentage reduction of the time to implement fixes to Known Errors
- Percentage reduction of the time to diagnose Problems
- Percentage reduction of the average number of undiagnosed Problems
- Percentage reduction of the average backlog of 'open' Problems and errors
- Improved responses on business disruption caused by Incidents and Problems
- Percentage reduction of the impact of Problems on User
- Reduction in the business disruption caused by Incidents and Problems
- Percentage reduction in the number of Problems escalated (missed target)
- Percentage reduction in the IT Problem Management budget
- Increased percentage of proactive Changes raised by Problem Management, particularly from Major Incident and Problem reviews.

7.3 Reports

7.3.1 Service Interruptions

A report showing all problems related to service interruptions will be reviewed weekly during the operational meeting. The purpose is to discover how serious the problem was, what steps are being taken to prevent reoccurrence, and if root cause needs to be pursued.

7.3.2 Metrics

Metrics reports should generally be produced monthly with quarterly summaries. Metrics to be reported are:

- Total numbers of problems (as a control measure)
- Breakdown of problems at each stage (e.g. logged, work in progress, closed etc.)
- Size of current problem backlog
- Number and percentage of major problems

7.3.3 Meetings

The Problem Manager will conduct sessions with each service provider group to review performance reports. The goal of the sessions is to identify:

- Status of previously identified problems
- Identification of work around solutions that need to be developed until root cause can be corrected
- Discussion of newly identified problems

8 Problem Policy

The Problem Management process should be followed to find and correct the root cause of significant or recurring incidents.

Problems should be prioritized based upon the severity and impact to the customer and the availability of a workaround.

Rules for re-opening problems - Despite all adequate care, there will be occasions when problems recur even though they have been formally closed. If the related incidents continue to occur under the same conditions, the problem case should be re-opened. If similar incidents occur but the conditions are not the same, a new problem should be opened.

Workarounds should be in conformance with IT Enterprise standards and policies.