IT Service Management

Problem Management
Process Specification

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Contents

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Overview

The purpose of this document is to outline our proposed Problem Management process and to provide definitions of individual processes outlined in the Problem Management Process workflow.

Consultation and Review

Project Board

Name	Role
Mark Williams	Process Owner, ITSM Project Executive
Mike Byrne	ITSM Project Board member
Jonathan Churchill	ITSM Project Board member
Ian Willis	ITSM Project Board member

Reference Work Group

Name	Role
David Stoward	Process Coordinator
Tony Cockington	Group member - DMS
Steven Courtney	Group member – BSG
Vu Luc	Group member – BSG
Brenton Ranger	Group member – DMS
Gordon Ings	Group member – OSS
Rob Lee	Group member – DMS
Jason Cook	Group member – Security and Networks
Andrew Naismith	Group member – BSG
Damien Poirier	Group member – AV
Vanessa Burzacott	Group member – BAS
Suzanne Donaldson	Group member - BSG

The Problem Management Process in ITS

The Problem Management process aims to minimise the adverse impact of incidents and problems on the business that are caused by errors within the IT infrastructure, and prevent recurrence of incidents related to these errors.
Problem management is responsible for investigating the problem, documenting a workaround, identifying the root cause and resolving the problem.

What is a problem?

A problem is the unknown underlying cause of one or more incidents.

A problem can exist without having an immediate impact on users.

How do we Identify Problems?

The occurrence of the same incident many times.
An incident that affects many users.
The result of diagnostics revealing that some systems are not operating in the expected way.

The Benefits of Problem Management

Saves time with a standard approach.
Reduction in the number of incidents.
Will provide permanent solutions.

Better first line resolution of incidents due to knowledge base.
Improved IT service quality and customer perception.
Improved coordination of resources across ITS.
Increased transparency of problem information.

The Components of Problem Management

Problem Control

The purpose of problem control is to identify the root cause of incidents (progress an unknown error to a known error), and provide the Service Desk with information and advice on workarounds when available. Activities of problem control include:

-Investigation and diagnosis.
-Categorisation and prioritisation.
-Validating a workaround.

Error Control

Control and management of known errors, and to eliminate known errors where possible. Activities include:

-Identify and record known errors, including provision of documentation\communication to support personnel.
-Assessing prioritisation and permanent fixes.
-Generate requests for change where needed.
-Close known errors.

Problem Review

The purpose of a problem review is to improve the Incident and Problem Management processes. It is recommended that a review is conducted after a priority 1 problem.

Types of Problem Management

Reactive

Problem records are raised in response to incidents (working on a problem that is identified based on the incident logs)

Proactive

Identifying problems which have not yet generated incidents and fixing them , ideally before incidents arise. Typical inputs to proactive problem management would be:

-Structural analysis of infrastructure.
-Software reports (Analysis of trends in incidents – type, frequency etc.).
-User group meetings.

Objectives of the Problem Management Process

Resolve problems quickly.
Minimise adverse impact on business operations.
Improve the identification, ownership, tracking and escalation of problems.
Generate reports.
Proactively prevent the occurrence of incidents, problems and errors.

Rules

All problems will be logged into the Touchpaper system.
All ITS staff are able to raise potential problems with their queue owner.
Only the Problem Manager, queue owners and team leaders can log problem records.
Only the Problem Manager can close problem records.
Time spent on each problem will be recorded.
Problem records will be updated throughout the life of the problem.

The Problem Manager is responsible for monitoring problems and keeping the Service Desk informed.
Problem records will be linked to incident records

Inputs

Incident details from Incident Management.
Configuration details from Configuration Management.
Defined workarounds from Incident Management
Details from change requests.

Outputs

Known error database information.
Documented workaround information.
Requests for change.
Updated and closed problem records.
Management information.

Activities

Problem control
Error control
Proactive prevention of problems.
Trend analysis.
Obtaining management information.
Major problem reviews.

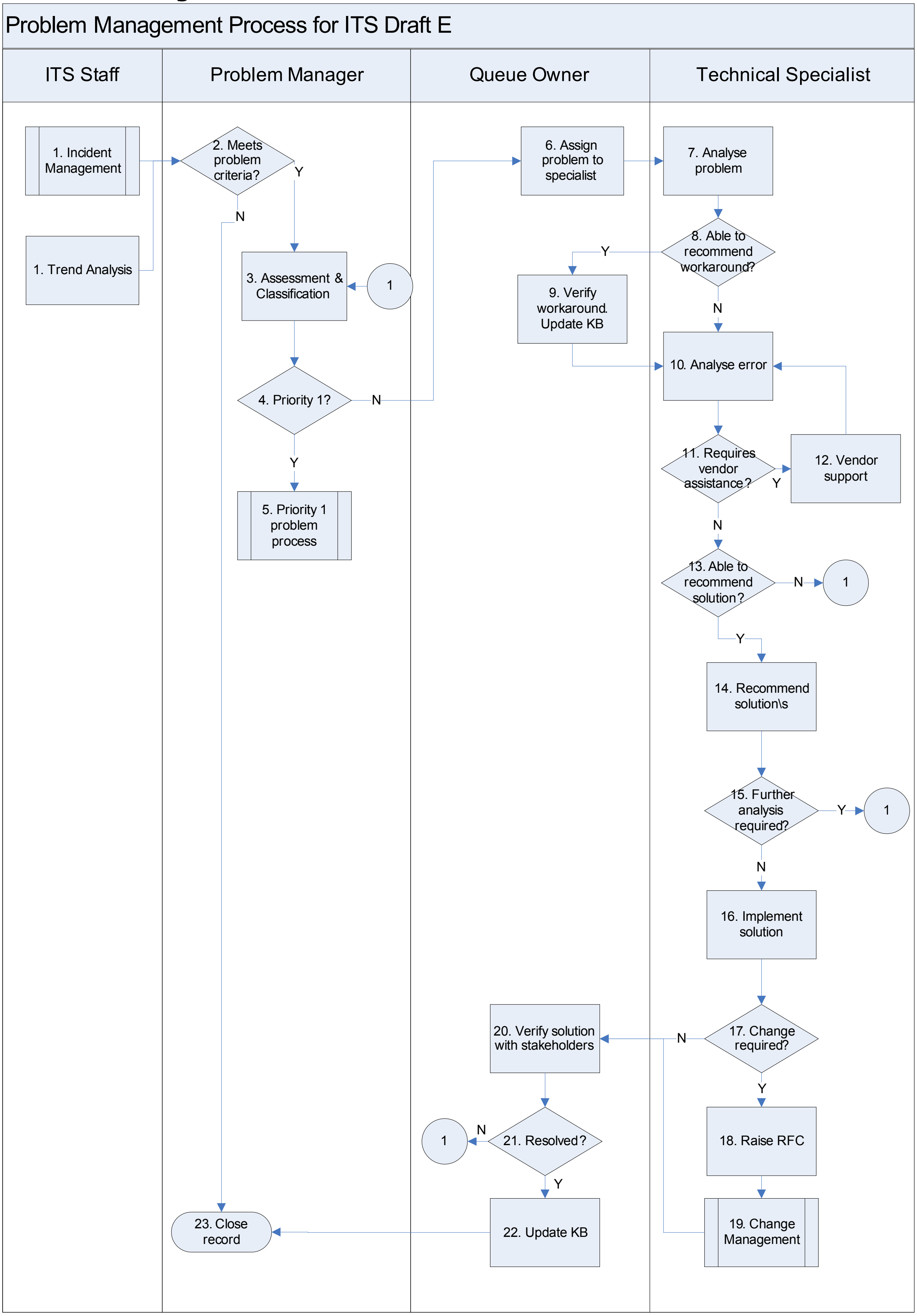
Problem record keeping

Update history details.
Modify status.
Modify problem priority.
Monitor escalation status.
Link to incident records where appropriate.

Problem Management Steps

Recognise and isolate the problem (earlier is better).
Evaluate and prioritise the problem.
Link incidents to the problem and inform Service Desk
Implement action plan.
Record events as the situation unfolds.
Re-evaluate and adapt if necessary.
Learn.

Problem Management Process Flowchart for ITS



Process Workflow Description

1. Problem Capture

ITS staff determine that a problem record needs to be raised to investigate a potential problem. This can either be in response to an incident or series of related incidents, or the result of pro-active investigation undertaken by teams within ITS. The queue owner, team leader or Problem Manager create a problem record and assign it to the Problem Management queue.

2. Meets problem criteria?

The Problem Manager reviews the problem record to ensure that the record meets the following criteria:

-a problem record relating to the issue has not already been created.
-an RFC relating to the issue has not already been created.
-a fix or workaround has not already been implemented and documented in the knowledge base.

If it does not meet any of the criteria, the problem record will be updated, the logger informed, then the record will be closed.

3. Assessment and classification

The Problem Manager reviews the problem record to ensure that:

-there is sufficient information to proceed.
-incident records are correctly related to the problem record.
-the priority is correctly set.

4. Priority 1?

If the problem has been correctly prioritised as a priority 1, proceed to the problem management priority 1 process at step 5.
If the problem is not a priority 1, assign to the problem queue of the team that owns the affected service.

6. Assign problem to specialist

The queue owner assigns the problem record to the appropriate specialist.

7. Analyse problem

The technical specialist analyses the problem and determines a workaround. This is to enable incidents to be quickly resolved pending identification of a permanent fix. If a workaround does not exist the problem specialist should attempt to find one. This workaround should be documented within the problem record, the known error database\flag set and the Service Desk Administrator advised.

8. Workaround found?

If yes, the workaround is implemented and the problem record status updated to known error. The queue owner verifies that the workaround has been successful and updates the knowledge base (step 9).
If no, the specialist should update the problem record and proceed to step 10.

10. Analyse error

The specialist attempts to identify a permanent solution.

11. Requires vendor assistance?

    The specialist contacts external support if required. If so, the record is updated with a status of <*pending external*?>.

12. Vendor support

    The vendor or external support investigates the problem.

13. Solution found?

    If a solution is found, proceed to step 14.
    If a solution cannot be found, update the problem record and inform the Problem Manager.

14. Recommend solution

    The specialist presents the solution to their team leader for authorisation.
    The team leader of the area responsible for the service is responsible for reviewing and authorising available options. Depending on the complexity of the issue, the solution may need to be discussed with other staff.

15. Further analysis required?

    The team leader and other technical staff may decide that further analysis of the problem is required. This may be because the problem has been assigned to the wrong team, insufficient technical skill, or simply that there is a need for additional assistance. If further analysis of a problem is required the Problem Manager is informed.
    If no further analysis is required, proceed to step 16.

16. Implement solution

    The specialist implements the solution and submits a knowledge base article <*to the queue owner?*>

17. Change required?

    If the solution requires a configuration change to a production system, the ITS change process is followed.
    If no change is required proceed to step 20.

18. Raise request for change

    If a change is required, log a request for change and set the status of the problem to pending change.

19. Change management

    The change process will ensure that the solution is implemented with due consideration given to resourcing, mitigation of impact and risk, and communication.

20. Verify solution with stakeholders

    Once the solution has been implemented the queue owner of the service and stakeholders review the problem to ensure the problem has been eliminated.

21. Problem resolved?

    If the problem has not been resolved, refer to the Problem Manager.
    If the problem has been resolved, proceed to step 22.

22. Update Knowledge base

    The knowledge base is updated and the problem record set to resolved.

23. Close record

    The problem record is closed.

Problem Classification

Problem classification is the process whereby problems are identified by origin, symptoms and cause, assisting problem management staff to determine what type of support the customer or user requires and also allowing reports to be generated. Classification consists of two components:

> **Prioritisation**- a priority matrix is applied to the problem which determines the timeframe and level of response required to resolve.
> **Categorisation**- provides a means of identifying what appears to have gone wrong, why it has gone wrong and what component is faulty. Categorisation assists the Problem Manager in determining what team or teams should be involved in the problem investigation.

Problems in Touchpaper will initially be categorised using the incident failure categorisation tree. Once Touchpaper is populated with configuration items (CIs), the problem record can be directly linked to the CI, doing away with the need to use the incident categories.

Classification	Category	Type	Item	Assignment Queue
Failure	Business Services	Calendar - Oracle	No access	DBA and Warehouse
		Student Accommodation	Site Unavailable Functionality issue\error	Online Applications Online Applications
		Finance system	Accpac Performance Database Online system Batch processing Reporting	TBA Application Support DBA and Warehouse Application Support Application Support Application Support
		HR system	Employee Services Online Performance Database Online system Batch processing Reporting	Application Support Application Support DBA and Warehouse Application Support Application Support Application Support
		Student admin system	Performance Database Online system Batch processing Reporting	Application Support DBA and Warehouse Application Support Application Support Application Support
		Research Systems	Functionality issue\error Animal Ethics Human Ethics Database	TBA Application Support Application Support DBA and Warehouse
		Records Management - Trim	Functionality issue\error Database Other	Application Support DBA and Warehouse Application Support
Failure	Business Services	MyUni	Functionality issue or error Database issue or error Access Enrolments Configuration issue	Online Applications DBA & warehouse Online Applications Online Applications Online Applications
		Email	Functionality issue or error Access	OSS OSS
		Wiki (Intranet?)	No access Functionality issue or error	Online Applications Online Applications
		Streaming Media	Unable to access stream Upload or processing issue Recording CTA or portable issue	Online Applications Online Applications Online Applications
		Student Employment	Site unavailable Update issues Functionality issue\error	Online Applications Online Applications Online Applications
		Syllabus Plus	Service	Online Applications
		University Web Site	Database-Ultrasearch Websearch Website changes\issues	DBA and Warehouse DBA and Warehouse TBA
		Access Adelaide	Student issues Academic reporting Purchasing Elections Performance Online system	TBA TBA Application Support Application Support Application Support Application Support
		Peregrine	Service	Application Support
		Maple TA	No access Functionality issue\error	Online Applications Online Applications
		Content management (Equella)	No access Functionality issue\error	Online Applications Online Applications
		Datawarehouse	*To be advised*	DBA and Warehouse
		File	Group membership Home folder access Shared folder permissions	Service Desk OSS OSS
		Authentication	Metadirectory Active Directory	Application Support OSS

Category Definitions

The category model adopted as part of the ITS Incident Management process specification comprises the following main category types. These categories are not organisation specific but are intended to represent the core services that ITS offer. Different teams can be assigned problems from the same category.

Business Services

Services provided for the specific needs of the business. (ie; not on the desktop) Examples of Business Services include:

Account management
File access
Print quotas
Maintenance of business system applications required for finance, human resources, administration and teaching such as Peoplesoft, Trim, Research Master, MyUni
Internet and Calendar access

Client Services

Services provided for the support of client hardware and software (ie; on the desktop)

PCs, Macs, printers, accessories
Operating systems, core applications, area applications
Audio Visual services

Infrastructure

Services related to servers, patching, and data protection, including:

Hosting
Server Maintenance
Server Patching
Data Backups and restores
Host database, DHCP and DNS

Data and Voice

Communications network infrastructure, such as:

Desk and mobile telephones
Voicemail
PABX changes
Network cabling and configuration
Provision of other communication devices such as PDAs

Information Security

Concerned with the security and appropriate usage of University IT systems, including:

Firewall configuration
Email filtering
Desktop patching
Appropriate usage
Viruses and other threats

Priority and SLA Matrices

Defining priority is an important aspect of managing problems. Priority identifies the relative importance of a problem, based on impact and urgency, and dictates the amount of effort put into the resolution of a problem.

Priority matrix table (Problems)

		IMPACT		
URGENCY		HIGH	MEDIUM	NORMAL
	HIGH	1*	2	3
	MEDIUM	2	3	4
	NORMAL	3	4	4**

**an immediate and sustained effort using all available resources until resolved (Priority 1 process)*
***ITIL recommends a priority of 5 here, however ITS use 5 for custom service requests only*

Urgency

Is an assessment of the speed that a problem needs resolution. When determining urgency the following factors should be taken into account:

Available functionality. If the customer is unable to do any work, then this will have a higher urgency than if some work is able to be undertaken.
Core Business Service – an activity that has a direct financial, brand or security impact on the business organization will have a high urgency.
Support Service – an activity that directly supports the execution of a core business service, medium urgency.
Non-urgent Service – an activity that does not directly support a core business service and is not time sensitive. Normal urgency.

Urgency rating table

URGENCY	DESCRIPTION
Normal	Customer is able to work. Little or no functionality is unavailable\non urgent service.
Medium	Customer is able to work. Some functionality is unavailable\support service.
High	Customers ability to work is severely impeded\ core business service

Impact

Reflects the likely effect that the problem is having\will have on the customers business. There are several factors that should to be taken into account when determining impact:

number of users effected: the higher the number, the higher the impact
financial considerations (business impact in dollars): for example, a single user needs to send an email for a research grant but cannot.
can be altered by VIP status; for example a Head of School
is there a previously known workaround?; if so, this lessens the impact
what is the affected service? - if a global issue such as email, then this is a higher impact than a local database access or application issue.

Impact rating table

IMPACT	DESCRIPTION

Normal	Does not significantly impede business\single user
Medium	Restricts ability to conduct business\group of users
High	Cannot conduct core business\entire site

Notes:

Expected effort: priority 3 and 4 problems, that require little effort in terms of resourcing\time, should be resolved immediately where possible.
Only the Problem coordinator will be able to manually override priority levels.

Problem Priority Matrix

Problem management requires a separate priority matrix to Incident management. This is because problem management can require a significant commitment of time and resources, as opposed to incident management which uses a matrix based on rapid resolution and is essentially looking for the fastest way to get the customer up and running.
These timeframes are dependent on the priority value derived from the priority matrix tables outlined previously.
Unlike incidents, the priority level can be changed by the problem coordinator, in response to factors such as numbers of incidents linked, information from problem and error control etc.

Problem priority matrix table

Priority	TARGET TIME TO RESOLVE
1	80% of problems resolved* in 1 week
2	80% of problems resolved in 2 weeks
3	80% of problems resolved in 3 weeks
4	80% of problems resolved in 4 weeks

*Resolved:

Workaround found, root cause found, knowledge base updated, fix implemented, problem record closed.
Workaround found, root cause found, but expected effort relative to benefit is too high (ie, uneconomic to implement permanent solution), knowledge base updated, problem record closed.
Root cause not able to be found, workaround provided, knowledge base updated, problem record closed

Problem re-prioritisation

The Problem Manager can manually re-prioritise problems This would be based on empirical evidence wherever possible, for example, is there an available workaround?, Has there been increase in number of linked incidents? Additionally, the cost of incidents which have underlying causes could also be determined in terms of staff time, and be used to present a case for re-prioritisation. Re-prioritisation should be as transparent as possible.

Problem Queues

Additional queues for problems will not be required as problems can be assigned into the existing incident queues.
Initially, all problems will be unassigned. The Problem Manager will run a query which will show "all problems that are not in an assignment group". From there, the Problem Manager can re-assign as required. A query can be created for Queue Owners which will show all incidents, problems and changes assigned to their queue.

Escalation

We will not use the IM model of colour changes. An SLA clock will run which can be reported on however we do not realistically know resolve timeframes at this point. As far as process adherence goes, if there are issues with problems not being actioned or process issues then these can be escalated through management as normal

Problem Status Codes

<To be defined>

Verifying Problem Closure

<To be defined>

Roles

Problem Manager

-Reviews problem records and approves the investigation of problems.
-Coordinates response to Priority 1 problems in support of Incident Management
-The Problem Manager is the queue owner for problems that require resources from more than one team.
-Keeps Service Desk informed through the Service Desk Administrator.
-Trend analysis (of incident records, notifications, etc).
-Tracks progress of problem resolution.
-Reviews workarounds.
-Management focus for Queue Owners.
-Reviews and updates knowledge base.
-Development and maintenance of the problem management process, with reference to the problem management process owner.
-Ensures adherence to the process.
-Has the authority to request resources from queue owners and team leaders required for the initial investigation of a Priority 1 problem that spans teams.

Queue Owner

-The queue owner is the problem queue owner for problems assigned to their team.
-Only the Queue Owner, team leaders or management can log problem records.
-Assigns problem records to technical specialists within their team.
-Contact point for the Problem Manager.

Technical staff

-Assigned problem records by the Queue Owner
-Able to identify, recommend and implement permanent solutions (where economically feasible)
-Identifies workarounds
-Raises requests for change
-Technical staff can be assigned both problem and incident records.

Problem Manager and Queue Owner Rules

<To be defined>

Key Performance Indicators for Problem Management

<To be defined>

Priority 1 Problems

<To be defined>