ITIL Foundations

IT Infrastructure Library
What is ITIL?

**Information Technology Infrastructure Library**
- Result of years of analysis and research
- Currently consists of 7 core books providing guidance on the planning, delivery and management of secure, quality IT services to support business.
- *THE* de facto *global* standard of IT Service Management best practices
ITIL is Vital! It’s not a question of whether you’re doing IT Service Management or not… it’s a question of how well - or how poorly - you’re doing it!

Poor management can increase IT costs more rapidly than any other factor. (Barry Boehm)

Do you believe that anything you don't understand must be easy to do? (Scott Adams)
Planning to Implement Service Management

The Business Perspective

Service Support

Service Delivery

Security Management
COBIT/ ISO 27001/17799

Infrastructure Management

Application Management
What is an IT Service?

“A set of related components provided in support of one or more business processes. The service will comprise of a range of Configuration Item types, but will be perceived by the customer and users as a self-contained, single, coherent entity.

- From “A dictionary of IT Service management Terms, Acronyms and Abbreviations”
“IT Services are there solely to support the business and its efficient and effective operation.”

-- itSMF ITIL Pocket Guide
Core ITIL IT Service Management Disciplines

Service Delivery
- Service Level Management
- Financial Management for IT Services
- Capacity Management
- IT Service Continuity Management
- Availability Management

Service Support
- Service Desk/Incident Management*
- Configuration Management
- Change Management
- Problem Management
- Release Management

Customer Relationship Management - Appendix
The itSMF and itSMF USA

IT Service Management Forum
The IT Service Management Forum is the only internationally recognized and *independent* organization dedicated to IT Service Management. It is a not-for-profit body, wholly owned, and principally operated, by its membership.

It was formed in the UK in 1991 & now has national chapters in Australia, Austria, Belgium, Canada, Germany, the Netherlands, South Africa, USA, Scandinavia, Japan, Venezuela, Russia, Mexico, and France.
“Enterprises will realize valuable process improvements and better measurement and reporting of process outcomes through the adoption of ITIL processes and guidelines.”

“ITIL Brings Clarity to Complex IT Processes” Gartner

“Enterprises should use ITIL as the baseline definition of service management best practice, and particularly use it to validate the integration between their own operational processes.”

“ITIL’s Service-Level Management Strength Is in Integration ” Gartner
End Introduction
Benefits of ITIL

- Improved Quality of Service
- IT Service Continuity (ITSCM) procedures more focused and more confidence in the ability to follow them when required
- Clearer view of current IT capability
- Better information on current services
- Greater flexibility for the business through improved understanding of IT support (establishing a requirements based relationship and realistic expectations)
- More motivated staff; improved job satisfaction through better understanding of capability and better management of expectations
- Enhanced customer satisfaction as service providers know and then deliver what is expected of them
- Improvements in security, availability, speed of resolution, and overall customer view of IT services
- Improved cycle time for changes, with less negative impact caused by change and a greater success rate when doing a change
Benefits of ITIL

- ITIL creates a culture that MEETS the customer needs.
  - Not the customer wants
  - Not under deliver
  - Not over deliver
    - Yes, you ARE wrong if you over deliver on the customer needs!
Service Support – The Service Desk

- Help Desk

- The delivery of world class service is often the difference between success and failure for IT departments.
- When a customer or user has a problem, complaint or question they want answers quickly. More importantly they want results and in many cases their problem(s) solved.
  - Being passed around from person to person until you find someone to help you is frustrating!

*Note- since Service Desk is a function and not a process the structure of this section will be different from the other ones. The Service Desk function is a critical component to the whole concept of Service Management!
Service Desk

- A large part of the Answer To The Support Problem

The Problem:

- Many IT departments are under pressure to improve service while at the same time reduce costs. IT shops in the US tend to work predominantly in reactive mode, as a loose collection of disparate groups, spending vast amounts of time fire-fighting and keeping their heads above water. In many companies:
  - There is no structured customer support mechanism
  - There is low customer confidence/perception
  - An outgrown customer support system is being used
  - Support resources are under-managed
  - Continuous fire fighting takes place
  - The same problems are resolved repeatedly
  - Interrupt driven
  - There is an over-dependency on key staff
  - There are unrecorded and uncoordinated changes taking place during the business day
  - There are little metrics or management information available
Service Desk

- To improve matters a consolidated team approach is needed. We’ve all heard it – we need time to be proactive vs reactive (fire-fighting)
- The Service Desk’s role is to be a Central point of contact for handling Customer, User and related issues. This function can be called:
  - Help Desk – primary purpose is to manage, coordinate, and resolve incidents
  - Call Center – primary purpose is to handle large call volumes and open tickets for support resources
  - Service Desk – primary purpose is to offer a range of services that allow business processes to be integrated into the Service Management infrastructure. Many call centers and help desk evolve into Service Centers when ITIL processes are implemented at an organization.
- All three of the departments bulleted above have this in common:
  - They represent the service to the Customer and to the User (both internal and external)
  - They operate on the principle that Customer Satisfaction and perception is critical
  - They depend on blending people, processes, and technology to deliver a solid IT support and delivery service.
Service Desk Benefits

- Improved customer service, both perceived and real
- Increased accessibility and tracking through a single point of contact
- Better quality and speedier turn around of customer request
- Improved teamwork and communication across the diverse IT groups
- Reduced negative business impact
- Better managed infrastructure and control
- Improved usage of IT support resources and increased productivity
- More meaningful management information for decision support
Required Service Desk Tool

In order to work the Service Desk needs an ITIL integrated tool that automates ticketing, escalating, analysis, reporting, etc. of IT Incident, Problem, Change, Support and Delivery data.
Service Support – Configuration Management (CM)

- CM covers the identification, recording and reporting of IT components, including their identifying attributes and relationships with other components.
- CM is an integral part of ALL other Service Management processes and should include Hardware, Software, and core documentation.
- CM is not asset management but the two are related disciplines.
- CM provides current, accurate, and comprehensive information about all components in the infrastructure.

The Foundation!
CM Basic Activities

- Planning – defining the:
  - Scope
  - Objectives
  - Detail depth of Configuration Items (CIs) and relationships
  - CI reporting

- Identification – selecting and identifying the configuration structures for all the infrastructure’s CIs, their attributes (IP Address, vendor, Version or model, etc.) to enter into the CMDB

- Control – ensuring that only authorized and identifiable CIs are accepted and recorded, from receipt to disposal. It ensures that no CI is added, modified, replaced or removed without following the appropriate controlling process.

- Status Accounting - reporting of all current and historical data concerned with each CI throughout its life cycle.

- Verification and Audit – A series of reviews and audits that verify the physical existence of CIs and check that they are correctly recorded in the CMDB.
CM Benefits

- Providing accurate CI information to support resources
  - Includes the relationships between CIs so that accurate impact assessments can be made

- Facilitating adherence to legal obligations
  - Illegal copies of software and unauthorized storage of data can be easily identified when discovered

- Making software and hardware changes visible
  - Insures that correct updates are made to DR planning when changes to CMDB data occurs

- Allows the organization to perform impact analysis and schedule changes safely, efficiently and effectively

- Provides Trend Analysis data for Problem Management

- Provides capability to provide detailed management reports by CI or Service type.
CM’s Tie In With Change Management

- CM provides for much more efficient and effective change management.
  - Logging and implementation of changes should be an integral part of CM
  - All Request for Change (RFCs) should be entered into the Configuration Management Database (CMDB)
  - All component changes should be reflected and their impact on relationships identified
All components should be identified at a level that makes sense for your business

- *Do you want to track Desktop/laptop devices or do you want to track the HDs, RAM chips, etc. inside of the devices. A component can also be a supported application.*

- *The components identified are called Configuration Items (CIs)*

The CMDB should be available to the entire Service Support group.

- *Allows for better resolution of incidents and problems*
The goal of Change Management is to ensure that standardized methods and procedures are used for efficient and prompt handling of all changes. So that the impact of change related incidents are minimized. Therefore improving the quality of IT services and improving the day-to-day operations of the organization.

Change management is the successful management of changes to CIs.

Change management depends on the accuracy of the CMDB to assess the full impacts of a change.
Scope of Change Management

- Hardware
- Communications equipment & software
- System software
- Live applications software
- The documentation and procedures for running, support, maintenance and recovery of live systems
Change Management Fundamentals

- Change Management starts with a Request For Change (RFC) ticket.
- Details of Change Management are documented in Service Level Agreements (SLAs) and Operation Level Agreements (OLAs).
- Change details must be communicated to:
  - Service Desk
  - Change Advisory Board (CAB)
  - The communities impacted by the change
  - The Forward Schedule of Change (FSC)
- Service Request or Routine Changes once identified do not need to go through Change Management. Example: setting up and delivery of a new desktop or laptop.
  - The CI still needs to be created and placed in the CMDB but the formal change process is not necessary for routine items.
Change Management Roles

- **Change Requestor**
- **Change Manager**
  - Responsible for CAB meeting minutes
  - Responsible for Change Management Reports
  - Maintains FSC
- **Change Implementer**
- **Change Approver**

The first three roles can be filled by the same person. The last role MUST be a different person(s) who is higher in the organization than the requestor.
Change Management Benefits

- Better alignment of IT services to business requirements
- Improved risk posture
- Reduction in adverse impact to service quality (customer’s perspective) caused by changes
- Better assessment of the impact to the entire infrastructure a change might cause
- Fewer backed out changes, easier to back out the change when it is necessary to do so
- Increased user productivity
- When combined with CM, PM and Incident Management there are less urgent or emergency changes and this frees up key personnel to do more productive tasks
- Increased ability to absorb a large amount of change if necessary
- Enhances business perception of IT through improved service quality
Service Support – Incident Management

- The primary goal of Incident Management is to restore normal service operation as quickly as possible and minimize the adverse impact on business operations.
  - Normal service operation is that level of operation that is agreed to in the SLA.

The Customer Point of View
An incident is any event which is not part of the standard operation of a service and which causes, or may cause, an interruption to, or a reduction in, the quality of that service.
Request For Change (RFC) and Request for Information (RFI) are not incidents but since they are handled similar to incidents (tickets opened and processed for example) they are included in the scope of Incident Management.
Incident Process

- Incidents start with the Service Desk (help desk)
- A ticket is opened either from monitoring or from a user interface (phone, form, email, etc.)
  - No incident is worked without a ticket
- The Service Desk is responsible for monitoring the incident throughout its life cycle
Incident Process

- Incidents that can’t be resolved immediately by the Service Desk (tier 1) are escalated to the appropriate specialist groups (tier 2/3).

- Tier 2/3 resources establish a work-around or resolution as quickly as possible to restore customer’s service.
  - The ticket must be updated in regards to what has been or is being done!

- After resolution the incident is sent back to the Service Desk.
  - Service Desk contacts customer to verify that service is restored to the agreed upon level. If it is, they close the incident. If service is not restored to the agreed upon level they re-escalate to tier 2/3 along with an information note to tier 2/3 management that the initial resolution was not adequate.
Critical Success Factors for Incident Management

- An up-to-date CMDB is a prerequisite for an efficiently working incident management process.
- A knowledge base (problem/error DB) should be maintained by all support personnel in particular tier 2/3 resources.
  - Greatly enhances resolution time
- An automated system for Incident Management ("tickets") is critical to the success of a Service Desk, Incident, Change, Problem Management system.
- SLAs that show the customer needs for each supported service are needed.
- An incident classification scheme:
  - Severity 1 - solved in 4 hours or less
  - Severity 2 - solved in 12 hours or less
  - Severity 3 - solved in 24 hours or less
Incidents? Problems?

- What’s the difference?

- An incident is an occurrence outside of normal expected operations.
- A problem is a re-occurring incident or an incident that needs root cause analysis to prevent future occurrences or to successfully restore the service.

Example: a webserver goes down for the first time in 6 months and a reboot restores service in less than 3 minutes. This doesn’t happen again for 14 months. This is an incident. A webserver goes down for the first time in 6 months and a reboot restores service in less then 3 minutes. Trend analysis discovers that this happens 4 times in a 5 day period. This is a problem.
The goal of Problem Management (PM) is to minimize the impact of Incidents and Problems on the business.

- Focus is on errors within the IT infrastructure
- Prevention of recurrence of Incidents related to those errors
In order to achieve its goal, PM seeks to get to the root cause of Incidents and then initiate actions to improve or correct the situation.

The PM process has both reactive and proactive aspects.

- Reactive is concerned with solving problems in response to an incident or multiple incidents (trend analysis).
- Proactive is concerned with identifying and solving problems and Known Errors before they cause an incident. (Examples of this are: patching and vulnerability scans)
PM Inputs

- Incident details from the ticket system
- CI details from the CMDB
- Any defined work-arounds from incident management or the CMDB
PM Outputs

- Known Error DB
- RFCs
- Updated Ticket or a new Problem Record
  - Problem records are managed through their life-cycle by the Problem Manager who opened it. They are not managed by the Service Desk.

- Management Information
PM Activities

- Trend Analysis
- System scanning for patch levels, known vulnerabilities, etc.
- Maintaining the Known Error DB
- Completion of Major Problem reviews
- Opening RFCs or emergency RFCs to fully resolve a problem
**Difference between PM and Incident Management**

- PM has a main goal of discovering the underlying causes of an Incident and their subsequent resolution and prevention. In many cases this is in direct conflict with the goals of Incident Management which is to restore service to the customer as quickly as possible, often through a work-around, rather than through a permanent resolution. The speed of resolution is only of secondary importance to PM as investigation of the underlying problem can require a lot of time. When PM is done as part of Incident response it greatly impacts the Mean Time To Restore (MTTR) for a service and provides the customer with a negative view of the service quality.

*If a reboot will restore service immediately than do it!*
Critical Success Factors for Problem Management

- An automated ticketing system that maintains incident data and supports the opening of Problem Records.
- Judicious use of tier 3 resources as PMs and providing them some time each day to focus on PM work is critical.
- Good cooperation with Incident Management and a good understanding of the inherent conflict that exists between the two is necessary. A balance must be found between fast resolution and having the necessary data to recreate the outage and view critical log data is necessary.
  - When in doubt a quick resolution (Customer’s view) should win over the PM view of root cause analysis.
End of the Service Support Section
Service Delivery – Service Level Management

- Service Level Management (SLM) is concerned with maintaining and improving IT Service Quality. It does this through a continuous cycle of agreeing, monitoring, reporting and negotiating upon IT service achievements.
  - SLM will work to eradicate poor service in-line with business needs
  - SLM embraces the spirit of Kaizen
- This leads to a better relationship between IT and its customer base
The scope of SLM includes:

- SLAs
- OLAs
- Underpinning Contracts

SLM is the process of planning, co-ordinating, drafting, agreeing, monitoring and reporting on SLAs as well as the ongoing review of Service achievements to ensure that the required and cost-justifiable service quality is maintained.

SLAs provide the basis for managing the relationship between IT and its customer base.
Key Benefits of SLM

- Meet customer expectations
- Improved customer relationships
- Clearer view of roles and responsibilities
- Specific targets to aim for and measure against
- Focused IT effort on key areas to the customer and not “fun” IT things
- Service monitoring allows for identification of weak areas and then improvement of those areas
- SLA can be used as a foundation for a charging model
IT services are usually viewed as critical to the business. IT costs, because of the increased demand on the part of users, has a tendency to grow faster than the other costs that a business manages. As a result organizations are often unable or unwilling to justify expenditure to improve services, or develop new services because IT services can become viewed as high-cost and inflexible.
What customers ask for is not always what they are willing to pay for.

If we give them the high performance vehicle and charge them for the Ford Model T we will eventually fail due to:

- People constraints
- Lack of Money
- Lack of sustainability
It is critical that the customer feel and understand the real cost of IT or IT operations will be in jeopardy within an organization. (P&G customers have no concept of the costs of IT)

—Kevin McLaughlin, P&G IT Manager, 1 year prior to P&G outsourcing all IT operations to HP.
Capacity Management

- Capacity management is ensuring that the Capacity of the IT Infrastructure matches the evolving demands of the business in the most cost effective and timely manner.
- An example of Capacity Management is making sure that you don’t purchase another Unix server when you have multiple ones available that are running at 20% of their CPU and storage capacity.
The Balancing Act

● Capacity Management is a balancing act between:
  - Cost against Capacity – capacity is purchased only when cost justified by a business need or required to insure that availability measures are met
  - Supply against demand – making sure that the available supply of processing power matches the demands made on it by the business, now and in the future.
Benefits of Capacity Management

- Deferred expenditure – it is possible to defer the cost of new equipment until it is needed. Think about LAN jacks and hubs…
- Economic provision of services- Capacity is matched to the business need. Use of existing capacity is optimized and unused capacity is not sitting around waiting.
- Planned buying – always cheaper than panic buying!
- Reduced Risk through
  - Managing the resources and service performance
  - Application Sizing
  - Ensuring future capacity is available as needed
  - Reduction in emergency changes caused by capacity outages
IT Service Continuity Management

- This is known to many of you as Disaster Recovery Planning. It is important that we continue operations when something “bad” happens and ITSCM is designed to help us do that.
- The goal of ITSCM is to recover the correct services within their required and agreed upon business timescales.
ITSCM Basic Concepts

- Requires adherence to a rigorous change and configuration mgt. process in order to work
- Requires Senior Management buy in
- Requires specific user training
- Requires testing
- Requires validation/evaluation
ITSCM Benefits

- Potential for lower insurance premiums
- Fullfills many regulatory requirements
- Improves customer business relationship
- Increases organizational Credibility
- Meets the customer’s expectations even when a “bad” event happens to take down core systems.
Availability Management

To deliver a cost effective service that meets the needs of IT customers. Availability management insures that the services a customer needs in order to do their job are available as required. Things like Fault Tolerance, Security and error correction fall into this ITIL area.
Availability Management:

- Should be applied to all new IT Services and for existing services where SLAs have been established
- Should be applied to those services deemed mission critical even if a formal SLA has not been established
- Should be applied and required of suppliers (internal and external) that form the IT support for a given service
- Considers all aspects of IT Infrastructure, including but not limited to: LAN, WAN, training, processes, skills, procedures, policies, tools
- Is not responsible for Business Continuity Management in the case of a major disaster – that is ITSCM. Availability Management is responsible for keeping systems available during “normal” operations
Benefits of Availability Management

- Provides a single point of accountability
- Ensures that SLA targets are met
- Ensures that the level of Availability is cost justified to meet (not exceed) the customer’s need.
- Shortfalls in meeting SLA targets are recognized immediately and adjustments/fixes can be made quickly.
- The frequency and duration of IT service failure is reduced over time.
- Over time IT support is seen to add value in the eyes of their business customers.
Availability Mgt. Methods and Techniques

- Component Failure Impact Assessment- CFIA
- Fault Tree Analysis (FTA)- event chain assessment to see what caused the disruption
- CRAMM – ID new risks and then create mitigation plans for them
- Systems Outage Analysis (SOA)- uses a range of data sources to determine where Availability disruptions are coming from
- Continuous Service Improvement – Kaizen
- Technical Observation Post (TOP) – a traditional SWAT team approach to problem resolution and root cause discovery
Common Terms (& Examples)

- Configuration Item
- SLA
- OLA
- Underpinning Contract
- Incident
- Problem
- RFC / R / F
- MTTR
- MTBF
- BIA
- Trend Analysis
- CMDB
- CAB
- FSC
- Baseline
Common Terminology Cont.

- ISO20000
- Closure
- CMDB
- KDB
- DSL
- Service Catalog
- Version

- Known Error
- Metric
- Resolution
- Risk
- SLM
- Work Around
- Vulnerability