ITIL v2 Foundation course

IT Service Management

Course objectives

After the course you will

- have learned about the IT Service Management processes as defined in ITIL version 2

- have learned the terminology

- have learned the scope, purpose and benefits of IT Service Management processes

- be prepared for further ITIL studies

ITSM with best practice framework

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The international Standard for IT Service Management, BS ISO/IEC 20000, recommends that service providers adopts common terminology and a more consistent approach to service management, thus increasing productivity, saving costs and improving customer service.

The benefits to be gained from implementation of best practice in service management include:

- Improved customer service
- Focused service that supports the business strategy
- Cost efficiency
- Reliable and consistent service quality
- Independent proof of service quality.

Agenda and curriculum

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Introduction	
Service Support	**Service Delivery**
- Service Desk	- Service Level Management
- Incident Management	- Capacity Management
- Problem Management	- Availability Management
- Change Management	- Financial Management for IT Services
- Release Management	- IT Service Continuity Management
- Configuration Management	- Security Management

What is ITIL®?

- ✓ Processes, standardization, and continuous improvement
- ✓ Common language
- ✓ Best practice in IT Service Management, world-wide
- ✓ Based on input from more than 1400 companies
- ✓ Developed by OGC (Office of Government Commerce) in England in the 1980s

OGC offers guidance to improve the way the public sector manages programmes and projects - making them more successful will enhance the quality of new initiatives and make UK government organisations more effective and efficient.

IT Infrastructure Library

ITIL® certification program

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Official Accreditors:

ISEB
EXIN
APMG

If you wish to be certified, please contact your local accredited certification enterprise or contact directly the above accreditors for advice. Note: for Foundation certification one does not need to have participated in an accredited Foundation course.

ITIL Framework
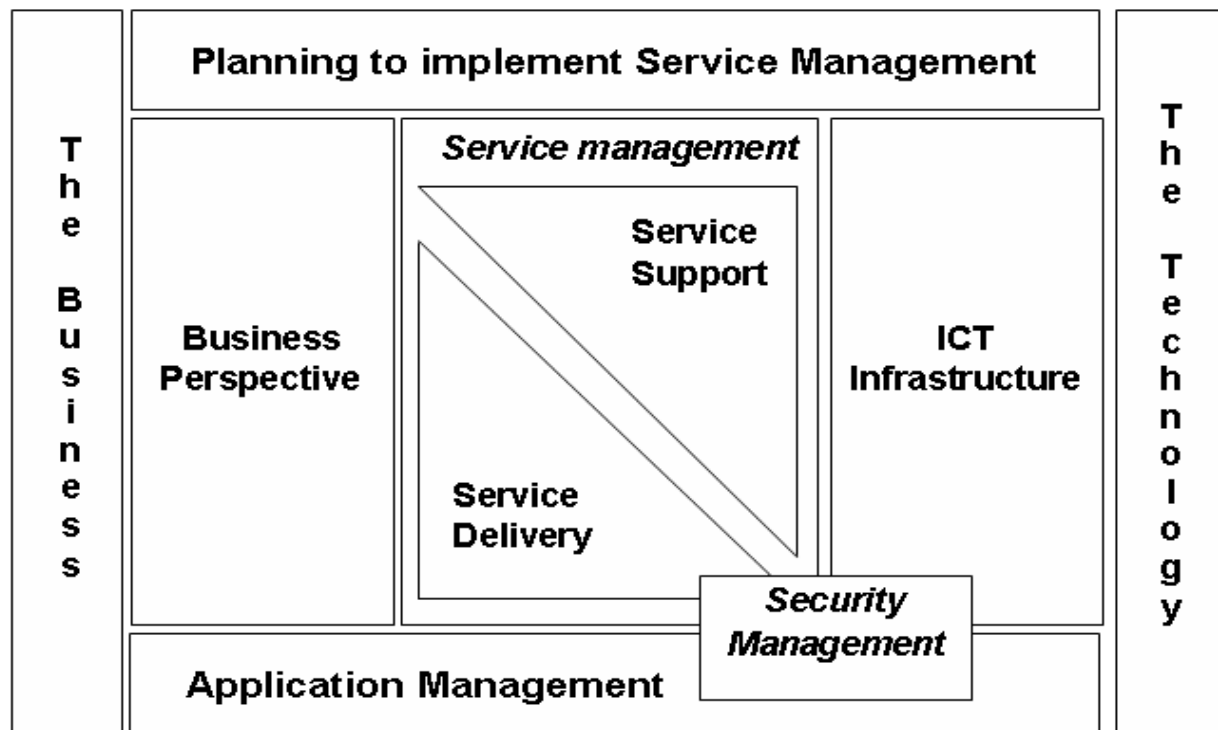
Planning to implement Service Management

Covers all aspects involved in planning, implementing and improving Service Management processes in addition to addressing cultural and organisational change.

- Usual management methods
  - What are the long term goals, vision?
  - Where are we now?
  - Where do we want to be?
  - How do we get there?
  - How do we know we are there?

Other parts

The Business Perspective
Provides help IT personnel to understand how they can contribute to the business objective and how their roles and services can be better aligned to maximise that contribution.

Application Management
Management of applications from the initial business needs, through the Application lifecycle, including retirement.

ICT Infrastructure Management
Describes ICT Infrastructure Management from identification of Business requirements through the tendering process of testing, installation, deployment and ongoing operation and the optimisation of the ICT components.

Management with continuous improvement

- Management steps:
  - plan
  - do
  - check
  - act
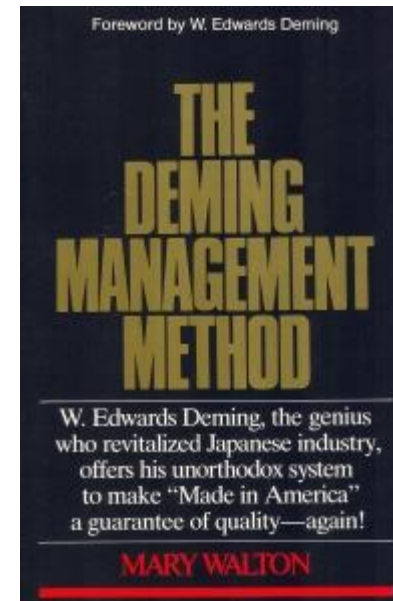
Also known as Deming Quality Circle

Service Management

Service Management in the IT sector is based on a set of integrated processes that underpin core business processes by linking infrastructure management with business needs.
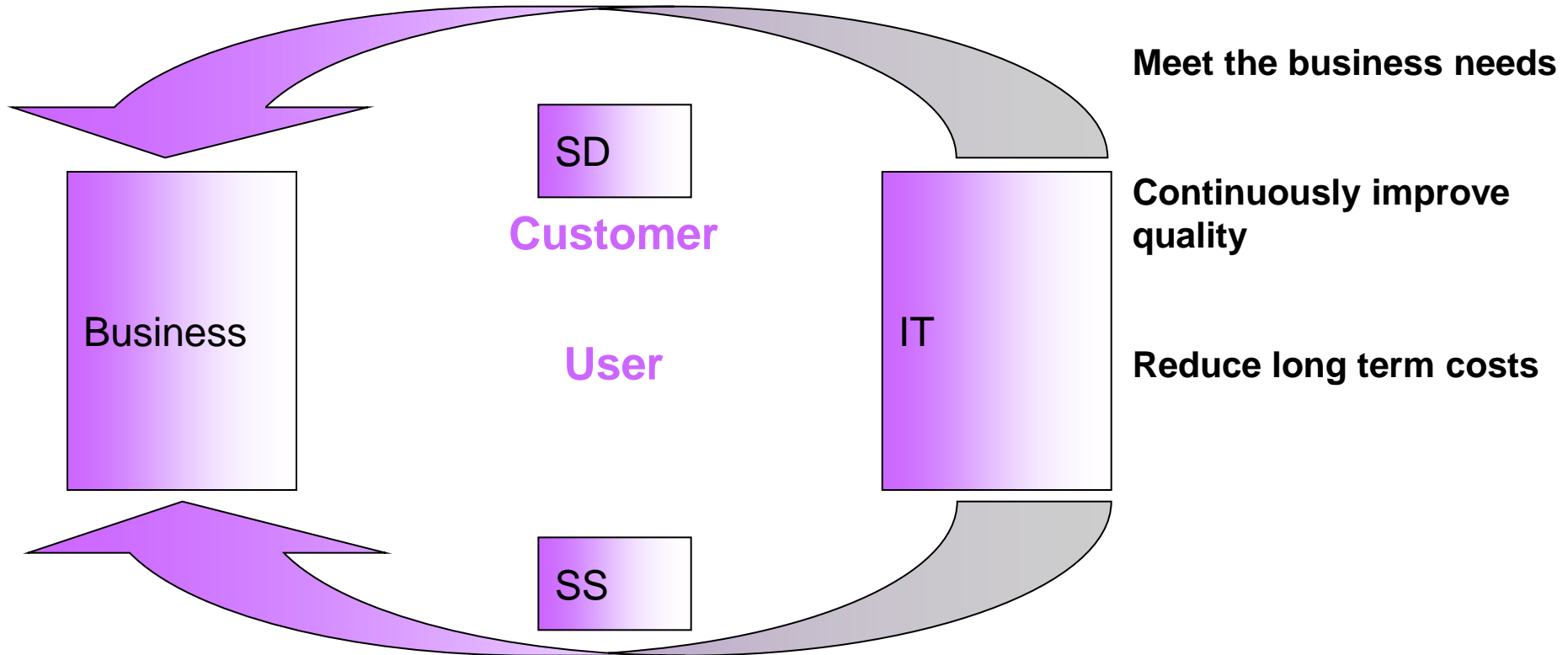
Service Support

Covers the processes associated with the day-to-day support and maintenance activities associated with the provision of IT Services.
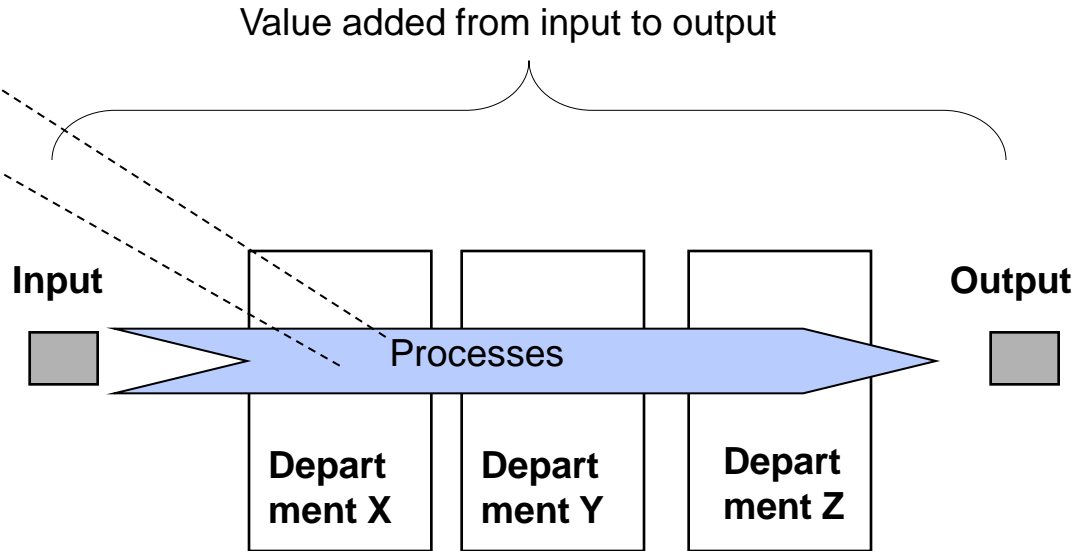
Service Delivery

Describes the processes required for planning and delivery of quality IT services and looks at the longer term processes associated with improving the quality of IT Services delivered.

SD

Customer

Business

User

IT

Meet the business needs

Continuously improve quality

Reduce long term costs

SS

Processes thinking

- **Objective**
- **Terminology**
- **Roles**
- **Resources**
- **Rules**
- **Input / output**
- **Actions**

Value added from input to output

Input

Processes

Output

Depart ment X

Depart ment Y

Depart ment Z

Terminology

Process
*A connected series of activities
performed with the intent of
satisfying a purpose or achieving
a goal*

Procedure
*A set of specific steps that describe how an
activity should be carried out and by whom.
Can be supported by work instructions*

Process owner
*Responsible for ensuring the
suitability of a process, include sponsorship,
design, operation
and quality assurance*

Process Manager
*Responsible for the execution of a process, operation
of the defined and agreed process ensuring interfaces,
target setting, process audits and managing
improvement*

14

Terminology

IT Service
One or more IT systems which enable a business process

IT Infrastructure
All of the components that are needed to deliver IT Services to customers. The IT Infrastructure consists of more than just hardware and software

Customer
A business manager authorised to negotiate with the IT supplier on behalf of the business

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

Benefits / Challenges

Benefits

– Provides information and control of the CIs, supporting other ITIL processes with information

– Describes the current and historical status of our IT Infrastructure

– Helps with impact and trend analysis for changes and problems

Challenges

– Define CI´s at the correct level

– Create and design process, database and procedures

– Must be implemented together with Change Management

Service Desk

> **Objective:**
>
> **To act as a central point of contact between the User and IT Service Management.**
>
> **To handle incidents and requests, and provide an interface to other activities (processes).**

- SPOC (Single Point of Contact)
- Handles incidents, requests and questions
- Interface for other activities, such as customer change requests, maintenance contracts, software licenses and ITIL processes
- Representation of the service provider to the User
- Mixes people, process and technology to deliver a business service

Service Desk

- SPOC (Single Point of Contact)
- Handles incidents, requests and questions
- Interface for other activities, such as customer change requests, maintenance contracts, software licenses and ITIL processes
- Representation of the service provider to the User
- Mixes people, process and technology to deliver a business service

Some other desks

Call Centre

- Handling large volumes of telephone-based transactions
- Register calls
- Distributing issues to other parts of the organisation

Help Desk

- Manage, coordinate and resolve incidents
- Uses CMDB and knowledge tools as supporting technologies
- Handles normally only incidents

Structural options

Local (distributed) Service Desk

- **Support on site**

Central Service Desk

- **All service requests are logged at a central physical location**

Virtual Service Desk

- **Be situated and accessed from anywhere in the world**

Follow the Sun

- **24h support by geographically different locations**

Responsibilities

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Most activities that Service Desk carries out are defined by the ITIL processes

Receive and record all calls
- **Handle customer complaints and requests**

Initial assessment of incidents
- **Responsible for supplying first-line support
  and for assisting in the daily use of IT Services**

Monitor and escalate incidents
- **Monitor and escalate incidents according to service levels**

Inform User / Customer
- **Confirmation, status and progress**

Produce management reports

Service Desk personnel

Knowledge requirements for Service Desk personnel are determined by mission and structure of the Service Desk:

Unskilled Service Desk

Primarily a dispatching function, requires standardized procedures for dealing with calls

Skilled Service Desk

Better knowledge, and by using documented solutions they can resolve many incidents, while some incidents are routed to support teams

Expert Service Desk

Specialists knowledge of the full IT Infrastructure and the expertise to resolve most incidents independently

Benefits / Challenges

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Benefits

– Improved user service, perception and satisfaction

– Better shared knowledge and communication

– Effective and efficient use of support resources

Challenges

– To find the correct resources and skills

– Consider user service important

– Change behaviour of staff and users

Incident Management

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Objective:

To restore the normal service operation as quickly as possible with minimum disruptions to the business, thus ensuring that the best achievable levels of availability and service are maintained.

Terminology

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Incident

– Any event / interruption, which is not part of the standard operation of a
  Service or causes or may cause a reduction in the quality of that service

  Incident examples:

  - *Application Service not available, application bug*
  - *Hardware   System down, printer not printing*

Service request

*- When the user wants to have something done, e.g. account change,
  reset password, access to a document, synchronize PDA, Webmail,…*

Work-Around (WA)

– Method / temporary solution of avoiding an Incident,
  so that the normal standard operation can continue

Prioritization of incidents

Impact

> **- The effect upon the activities of the business**

Urgency

> **- How quickly the Incident needs to be resolve**

Priority

> **- Urgent, High, Medium, Low**

Categorization of incidents

Categorization is used for:

- **Recording incidents – as perceived by User**
- **Recording the final detected causes – may differ from perception**
- **Analysing trends to identify specific problem areas**
- **Escalating incidents to expert groups**

Investigate and diagnose incidents

Review incidents against Known Errors, problems, solutions, planned changes or knowledge base

Incident DB

■ **Contains incidents without a Work-around / solution**
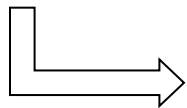
Problem DB

■ **Contains problems without a solution but maybe with a Work-around**

Known Error DB

■ **Contains Work-around and/or permanent solutions of Known Errors**
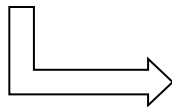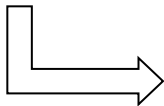
The Incident Life Cycle

Detection and recording

Classification and Support
- Categorisation
- Prioritisation

Matchning with existing solutions
- Incident solution
- Service Request procedure, routine

Resolution and recovery
- Solve incident
- Recover data, application, HW

Closure with confirmtation

Escalation

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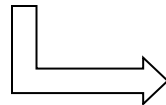
Functional escalation / Incident routing

- More or other knowledge

Incident ➡ **SLA**

Service Desk

1st line support | 2nd line support | 3rd line support
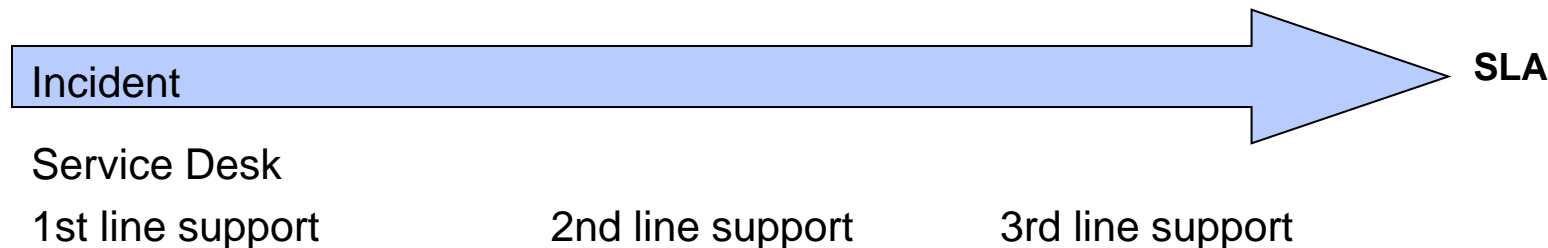
Hierarchical escalation / Vertical escalation

– Escalation to a higher hierarchical layer

– Used when SLA will not be met and for major Incident

Benefits / Challenges

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Benefits

– Reduced business impact of incidents

– Better staff utilization and therefore greater efficiency

– Elimination of lost or incorrect requests

– Improved User and Customer satisfaction

Challenges

– Gain Management commitment

– Change work procedures for Support staff

– Report and register all incidents and Requests

Problem Management

Objective:

Minimise the adverse impact on the business of incidents and problems caused by errors in the infrastructure, and to proactively prevent the occurrence of incidents, problems and Errors

Terminology

Problem

– *When the root cause (=underlying cause)
of one or more incidents is not known*

Known Error

– *An Incident or Problem for which the root cause is known and
for which a temporary Work-around or a permanent
alternative has been identified.*

Activities

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Incident →

Problem Control

Problem identification and recording

Problem classification

Find Root-cause

Problem investigation and diagnosis

Establish Known Error

Error Control

Error identification and recording

Error assessment

Find best solution

Error resolution recording (RFC) → RFC

Successful completion

Error (Record) closure

Monitoring resolution progress

← Closed Error

Proactive Problem Management

From reactive

Incidents appear and are solved

To proactive

Identify and resolve problems before an Incident occurs

Why

– **Minimise the adverse impact on the service and costs related to business**

Proactive work

Trend analysis may identify
- **Incidents of a particular type**
- **Recurring problems with a CI**
- **The need for more customer training**
- **The need for better documentation**

Results (Output)
- **RFC**
- **Feedback on testing, procedures, training, documentation**
- **Education and training**
- **Process or procedural improvement**

Benefits / Challenges

Benefits

– Improved IT Service quality

– Reduced Incident volume

– Knowledge sharing

Challenges

– Gain Management commitment

– Change work procedures for Support staff

– Create the right categorization/prioritization to make sure that information is co-ordinated

Change Management

Objective:

To ensure that

     standardised methods and procedures are used for

        efficient and

        prompt handling of all changes,

            in order to

                minimise the impact of any

                   related incidents upon

                   service.

Terminology

Change

– *The addition of…, the modification of…, or the removal of…, approved and supported CI's or baseline CI's*

Request for Change (RFC)

– *Form used to record details of a request for a Change to any CI; can be submitted from each single ITIL process*

Forward Schedule of Changes (FSC)

– *Schedule that contains details of all the changes authorized for implementation and their proposed implementation dates. It also shows the dependency of each Change!*

CAB/EC

Change Advisory Board / Emergency Committee (ECAB = ITIL v3)

Change categorization

Standard

A well known, relatively risk-free Change with predefined procedure

The change may be performed without contacting the Change Manager

Minor

Small business impact on the services

The Change Manager is entitled to authorize this RFC

Significant

Medium business impact on the services

The Change Manager requests advice from the Change Advisory Board (CAB)

Major

Major business impact on the services

Management is involved in the decision process

Priority of a Change

Priority of a Change is based on business impact

Urgent

Change necessary immediately, approval by
Emergency Committee (EC)

High

Change needed as soon as possible

Medium

Change will solve annoying errors or missing functionalities

Low

Change is necessary and justified, but can wait

Change Advisory Board, CAB

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A group of representative people responsible for assessing all RFC(s) based on:

- **Business impact**
- **Priority**
- **Resources (cost, people…)**

The CAB gives advice to Change Management

Involve the persons that are needed to asses the Change: Service Level Manager, User, Customer, Release Manager, Application Manager etc
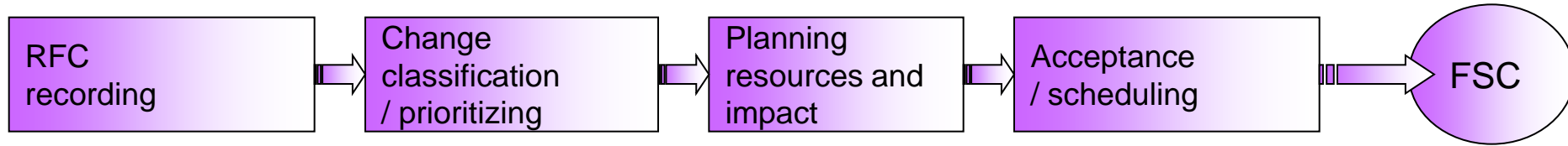
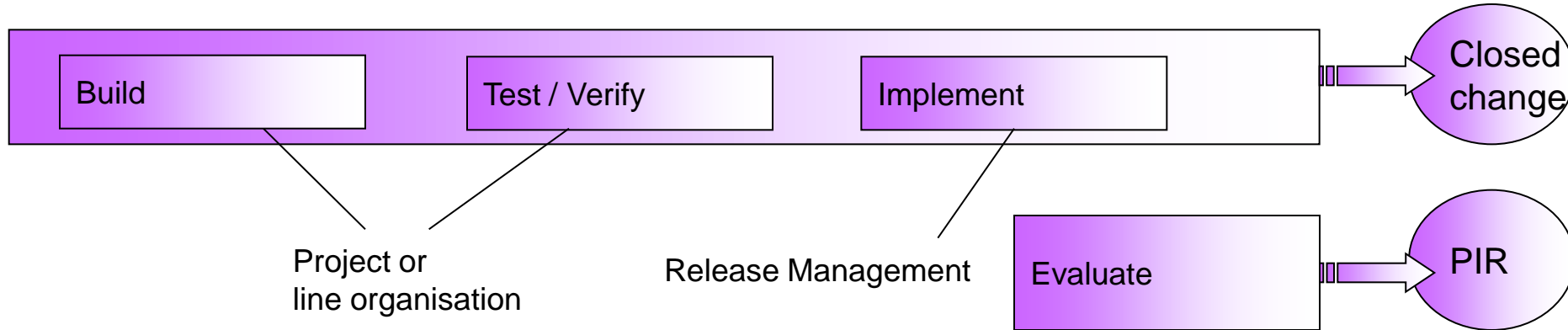# Emergency Committee, EC

Urgent Change

– **Design procedures for urgent Change**
– **Change approval is still a prerequisite**
– **Keep the number of urgent Change low**
– **Define an urgent Change and communicate roles**
– **Test as much as possible**

Involve the persons that are needed:
Decide which persons are authorized to approve urgent Change.

Change Management Activities

Post Implementation Review (PIR)

A review held after implementation of a Change to determine if the Change has been implemented successfully.

Some control criteria:
- objectives
- customer satisfaction
- no new caused incidents
- expected benefits obtained

Lessons learned should be input to future changes

Benefits / Challenges

Benefits

– Better business perception of IT through improved quality of service and a professional approach

– Improved risk and cost assessment

– Improved productivity of key IT staff, due to better planning and less disruption to repair faulty changes

Challenges

– Get understanding from staff and management

– Create process at the correct level and maintain control over urgent changes

– Maintain a correct CMDB

Release Management

Objective:

**To take a holistic view of a Change of an IT Service
and ensure that all aspects of a Release,
both technical and non-technical, are considered together**

Terminology

Release

– *A collection of new and/or changed CI's which are tested and introduced into the live environment together*

Release policy

– *Clarifies the roles and responsibilities for Release Management*

– *Describes the normal Release units, normal change content, release frequency, naming conventions, version numbering and scheduling of releases*

Release plan

– *A document that describes all of the activities, resources, responsibilities related to a particular release, and the scheduling of that release*

Definitive Software Library (DSL)

– **A physical library or storage repository where master copies of software versions are placed.**

– **A logical storage, may be one or more physical software libraries or file stores.**

– **Protection of all authorized software versions both purchased and developed**

– **Base for Releases and used for distribution**

Definitive Hardware Store (DHS)

- **Protection of hardware spares and components**

- **One or more physical file storages**

- **Contains spares for recovery and components for changes**

DSL + DHS = Definitive Media Library – ITIL v3 terminology

Activities

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1. Create Release policy and plan
2. Design and develop or purchase release tools
3. Build and configure release
4. Test and accept Releases
5. Plan Roll-out
6. Preparation Release and communicate

Distribute and install

Types of Release

Part of the Release Policy

Full release = all components within a Release unit

Delta release = only changed components within a Release unit

Package release = individual releases grouped together

"Emergency release"

Release unit

The portion of the Infrastructure that is normally released together

To consider:

- **Easiness of implementation**
- **Complexity of interfaces**
- Amount of change at each level
- Need of resources and time

Benefits / Challenges

Benefits

– Less disruption of the service to the business

– Schedule releases in advance

– No cost for licenses and support that are not used

– Detection of wrong versions and unauthorised copies of software

Challenges

– Convince staff of the benefits of new procedures

– Build restricted and representative testing environments and procedures

– Maintaining correct use of urgent procedures

Configuration Management

Objective:

To provide a logical model of the IT Infrastructure by identifying, controlling, maintaining and verifying the versions of all Configuration Items in existence.

Also:
The control of changes, including the recording thereof, that are made to the hardware, software, firmware, and documentation throughout the systems life-cycle.

Terminology

Configuration Item (CI)

– *Any component of an IT Infrastructure - or an item associated with an IT Infrastructure which is under the control of Configuration Management and therefore subject to formal change control*

Configuration Management Database (CMDB)

– *A database that contains all relevant details of each CI and details of the important relationships between CI´s*

Activities

Planning (Configuration Management Plan)

– Purpose, scope, objectives, policies, procedures and organisational and technical context

Identification

– Configuration Structure, CI's, owner, relationships, attributes

Control

– Ensure that only authorized CI's are in the CMDB

Status Accounting

– Status accounting reports on the current, previous and planned states, for all CI

Verification and audit

– Verification and audit of the physical existence of CI's

Configuration Item

Element / part of an IT infrastructure - or an item associated with an IT infrastructure which is under the control of Configuration Management.

Example: Services, Environment, HW/ SW, Relationships, Baseline Models, Documentation (*Procedures, Processes, Contracts, Manuals)*

A Configuration Item is (or can be):

- Needed to deliver service

- Uniquely identifiable

- Subject to change

- Manageable

Life cycle of a CI

Shows the planned, current and previous states of CI´s

- Planned
- Ordered
- in Test
- in Production
- Broken
- In repair

- Archived

Creating a CMDB

A **CMDB** should contain all items that influence the IT Infrastructure

Scope - Category

– **Part of the IT Infrastructure that Configuration Management controls**
– **The scope influences the categorization of incidents, Problems and changes**

Detail - Level

– **What is a CI?**
– **In how many levels these CI's should be detailed**
– **CI's vary widely in complexity, size and type**
    – **From an entire system (including all hardware, software and documentation)**
    – **To a single module or a minor hardware component**

Relationships

A relationship within the CMDB describes the dependency or connectivity between CI´s

Request for Change, Incident, Problem and Known Error
should be associated with a CI

Examples for relationships:

- **Used by**
- **Part of**
- **Connected to**
- **Resides on**

Configuration baseline

What?

   A snapshot of the state of a CI or set of CI´s established at a specific point in time, for a particular purpose

Why?

   Although the position may be updated later, the baseline remains unchanged and available and can be used as:

- Reference of the original state
- Used for the formal control of a configuration

Example

- Desktop computer **– all future installations refer to this baseline**
- Desktop computer **– "last known good configuration"**

Assets

Asset Management

- Element/part of a business / organisation accountancy process
- **Assets can include people, accommodation, computer systems, networks, paper records, fax machines etc.**
- **Asset Management DB maintains details on assets (value, business unit and location)**

A CMDB contains RELATIONSHIPS BETWEEN CI's , DOCUMENTATION and goes much further than an Asset DB

Summary – Service Support

Service Level Management

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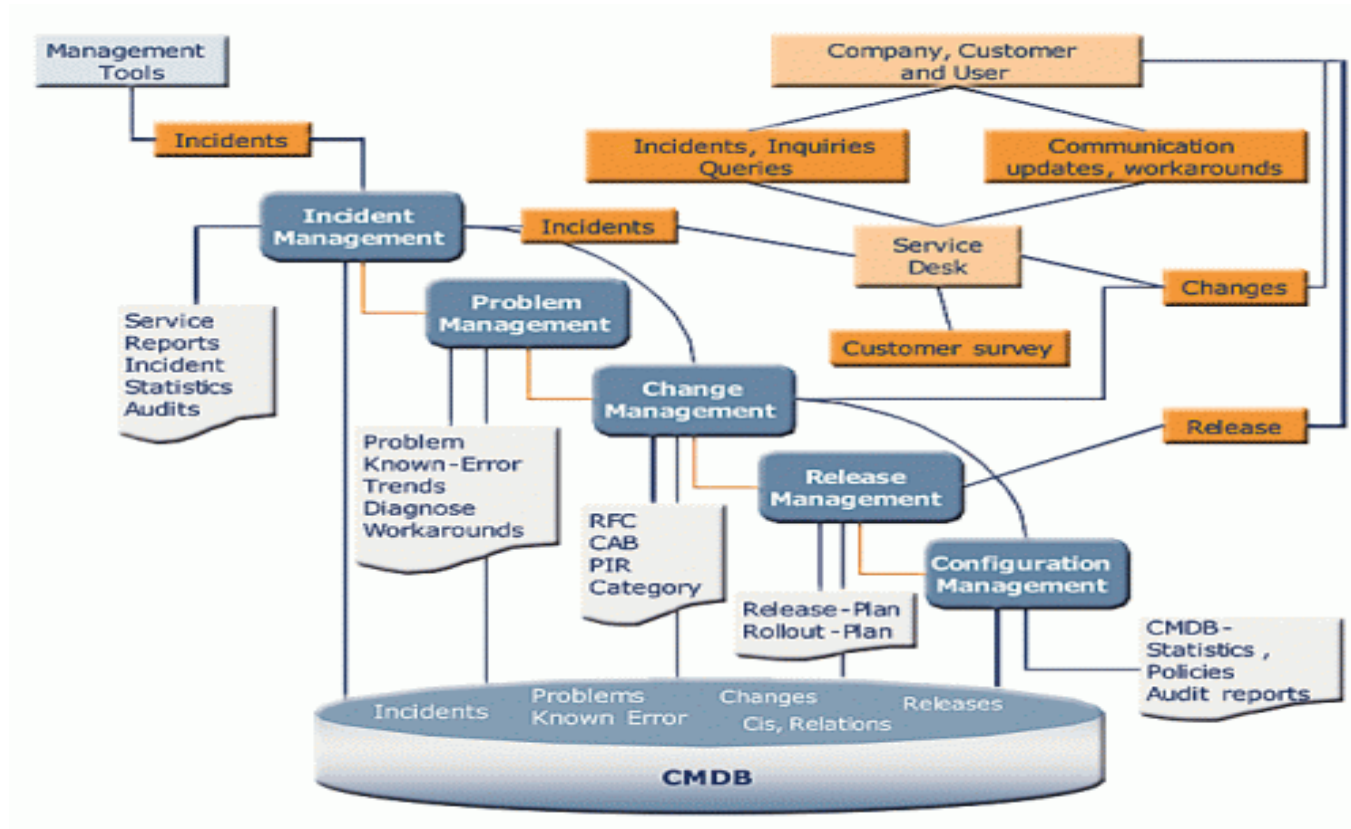
Objective:

To maintain and gradually improve business aligned IT Service quality, through a constant cycle of agreeing, monitoring, reporting and reviewing IT service achievement and through instigating actions to eradicate unacceptable levels of service.

Service Level Management

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Identify _the requirements_ of the business
Better Customer understanding of what IT Services
they require

Know _the capabilities_ of the IT organisation
More flexible and more responsiveness in IT Services
provision

Terminology

IT Service

– *One or more IT systems which enable a business process*

Service Catalogue

– *An overview of all the IT Services offered by the IT department, containing default levels and options*

Service Level Requirements

– *Customers needs that are used to develop, modify and initiate service*

Activities

Establish function

Planning
Implementation

Implement SLA   Service Catalogue

Draft
Negotiate
Review UC's and OLA's
Agree SLA´s

Manage the ongoing process

Monitor
Review
Report

Periodic Reviews

Review process
Review SLA
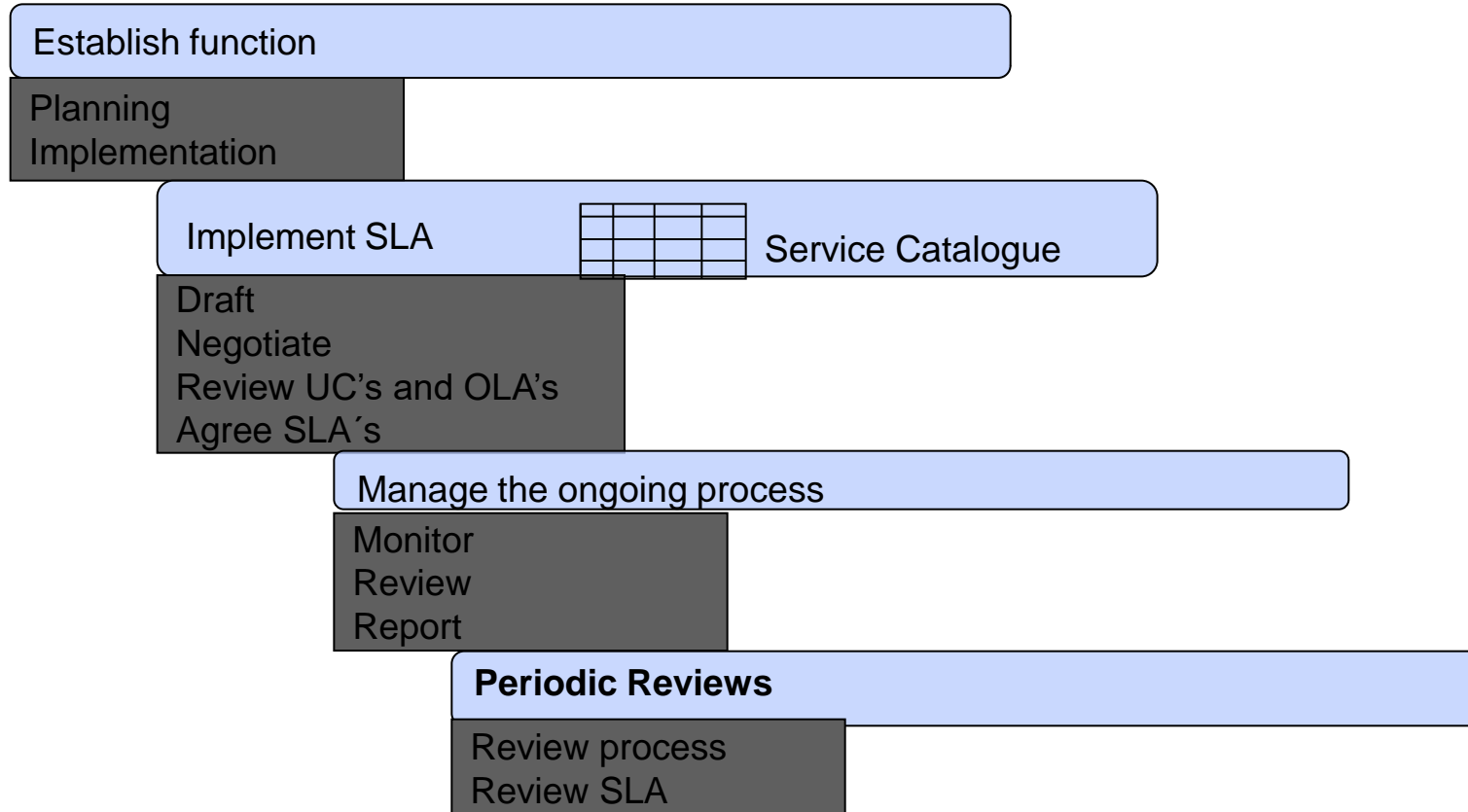
Types of agreements

- SLA – Service Level Agreement - Customer

- OLA – Operational Level Agreement - IT Organisation, internal

- (UC – Underpining Contract – 3rd party supplier – ITIL v3 orders this under Supplier Management)

Structure of agreements

Service based

– SLA covers one service, for all the Customers of that service

Customer based

– An agreement with an individual Customer group, covering all the services they use.

Multi-level SLAs

– Corporate Level - issues on the generic level

– Customer Level - issues regardless of the service being used

– Service Level - issues for the specific service, in relation to this specific Customer group

Parts of an agreement

GENERAL

Introduction

- *Parties*
- *Signatures*
- *Service Description(s)*

Reporting & reviewing

- *Content*
- *Frequencies*

Incentives & Penalties

Change Procedures

SUPPORT

Service Hours

  e.g. 24/7

Special Service Hours, e.g.

  holidays

Service Calendar

Special support

  requests

Escalation

DELIVERY

Availability

Reliability

Throughput

Response times

Batch turnaround times

Contingency & Security

Charging

The SLA should not contain anything that is not measurable!

Service Improvement Program (SIP)

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Objective: Controlled improvement of the IT Service provided

Used whenever there is a need:
– Service deviation from agreed levels
– Strategic choice
– Continuous Improvement

The SLM process generates a good starting point for a SIP. SLM works in conjunction with other processes to carry out a SIP. More than one SIP can run simultaneously. *In ITIL v3, SIP is part of the Continual Service Improvement process.*

Financial Management for IT Services

Objective:

To provide efficient stewardship of the IT assets and the financial resources used in providing IT Services

Effective = To do the right thing

**Efficient = To do the right thing _for the right cost_
(being effective without wasting time or effort or expense)**

**Budgeting predicts and controls the spending of money
within the organisation and monitoring of the current budgets**

IT Accounting enables the IT organisation to fully account for the way its money is spent

Financial Management for IT Services– *ITIL v3*

Purpose

To provide the business and IT with the quantification – in financial terms -

- of the value of IT services
- The value of assets underlying the provisioning of those services
- Qualification of operational forecasting

With other words: provide (financial) visibility and control over value creation

Financial Management strategy

Financial Management generates meaningful critical performance data used to answer important questions for an organization:

■ Is our differentiation strategy resulting in higher profits or revenues, lower costs, or greater service adoption?

■ Which services cost us the most, and why?

■ What are our volumes and types of consumed services, and what is the correlating budget requirement?

■ How efficient are our service provisioning models in relation to alternatives?

■ Does our strategic approach to service design result in services that can be offered at a competitive 'market price', substantially reduce risk or offer superior value?

■ Where are our greatest service inefficiencies?

■ Which functional areas represent the highest priority opportunities for us to focus on as we generate a Continual Service Improvement strategy?

Costs by customer

The Costs-by-Customer Cost Model requires that all major cost elements in the current or proposed IT budget are identified and then attributed to the Customers who 'cause' them.

To do this, the costs first have to be identified as either Direct or Indirect:

Direct costs are those clearly attributable to a single Customer, e.g. Manufacturing systems used only by the Manufacturing division.

Indirect costs (sometimes called overheads) are those incurred on behalf of all, or a number of, Customers e.g. the network or the technical support department, which have to be apportioned to all, or a number of, Customers in a fair manner. Any Indirect Costs, which cannot be apportioned to a set of Customers (sometimes called **Unabsorbed Overheads**), have then to be recovered from all Customers in as fair a way as is possible, usually by uplifting the costs calculated so far by a set amount. This ensures that the sum of all of the costs attributed to each Customer still equals the total costs incurred by the IT organisation

Direct costs and shared resources

If costs are mainly Direct, perhaps because each Customer has independent hardware and software, the method of recording and of apportioning costs can be very simple.

For example, if Finance are the only Customers of the General Ledgers and
the system on which it runs, all costs directly associated with the General Ledgers, including purchase,
 maintenance and support, can be attributed to Finance department's code in the ledgers
(often called a cost-centre or charge-code).

However, if **Resources** are shared, for instance a mainframe running applications for more
than one Customer, the hardware costs may have to be classified as indirect and apportioned
to each Customer, say by CPU-seconds/disk storage/print volumes/etc from workload predictions.
 To do this requires a model that allows these costs to be spread across a number of Customers.

Costs by service

To calculate the Costs-by-service, the Cost Model may require more detail.
The basic approach is similar:
1. identify all those costs that can be directly attributed to the service being analysed, for instance any
dedicated hardware, software, staff or contracts
2. decide how to apportion the Indirect Costs such as Infrastructure
3. adjust the total to allow for 'hidden costs' or 'Unabsorbed overheads' such as
IT management or buildings –
this must be the same uplift figure calculated for the whole model, or used from
the Costs-by-Customer Cost Model, i.e. 89.1%.

Budgeting

Budgeting predicts and controls the spending of money within the organisation and monitoring of the current budgets

Budgeting enables an organisation to:

– Predict the money required to supply IT Services

– Enables review of cost spent

– Reduce the risk of overspending

Accounting

IT Accounting enables the IT organisation to fully account for the way its money is spent

IT Accounting enables an organisation to:

– Account for the **money spent** in providing IT Services

– **Calculate** the cost of providing IT Services (Cost models)

    – Direct or indirect cost

    – Fix or variable cost

    – etc.

– Perform **Cost/Benefit** or Return-on-Investment analyses

– Identify the **cost of changes**

Charging

**Charging is required to bill Customers for the services
supplied to them**

Charging enables an organisation to:

– Recover the costs of the IT Services from the customers of the service (Pricing)

– Operate the IT organisation as a business unit if required

– Influence user and customer behaviour

Consider the three options of charging:

– No Charging

– Notional Charging

– Actual/Real Charging

Pricing

Pricing policy for IT Services

– Determine a pricing objective

– Understand the demand for the service

– Accurate determination of Costs

– Understand the market internally and externally

Pricing options Cost, Cost plus, Market price, Fixed price…

Activities -summary

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Budgeting - IT operational plan

Business IT Requirements

Financial targets

Accounting – Cost Analysis

Costing Models
•Customer
•Service
•Location

Charging

Charging policies
•Pricing options
•Cost
•cost-plus
•Fixed price

The Financial cycle

	ANNUAL	MONTHLY
Budgeting	Agree on overall expenditures	Take actions to manage budget exceptions or changed costs
Accounting	Establish standard unit cost for each IT resource	Monitor expenditure by cost-centre, services, customer
Charging	Create pricing policy Publish price list	Compile and create bills

Benefits / Challenges

Benefits

– Recover IT costs in a fair manner, related to usage

– IT Service decisions more business-like

– More effective use of IT recourses

– Cost awareness

Challenges

– Needs proper support tools

– Change customer and staff behaviour

– Respond on changes in customer demands once cost becomes an influence

Capacity Management

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> **Objective:**
>
> **To understand the future business requirements, the organisation's operation, the IT Infrastructure, and ensure that all current and future capacity and performance aspects of the business requirements are provided cost effectively.**

Terminology

Capacity planning

– *Developing a Capacity plan that describes the current (IT Infrastructure) capacity, and expected changes on demands for IT Services*

Performance Management

– *Measuring, monitoring and tuning the performance of IT Infrastructure components*

Demand Management

– *Place and manage requirements on capacity*

Terminology

Application Sizing

– *Determining the service level, resources, hardware capacity and cost required to support new (or adapted) applications, according to the agreed SLA's*

Modelling

– *Used to predict the performance of a specified system*

  – *Trend analysis*

  – *Simulation modelling*

  – *Baseline models*

Sub-processes = activities

Business Capacity Management

– *Ensuring that the future business requirements for IT Services are considered, planned and implemented in a timely manner*
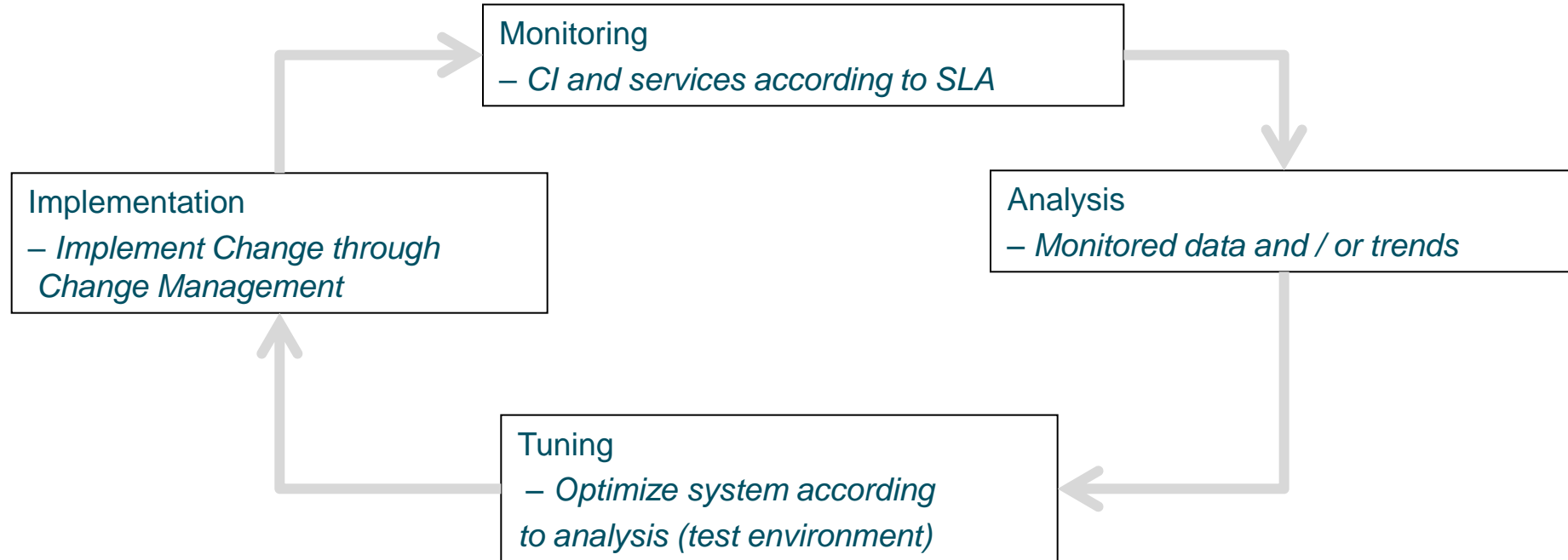
Service Capacity Management

– *Monitor, analyse, tune, and report on service performance*

Resource Capacity Management

– *Monitor, analyse, run and report on the individual components*

- **Management reports**
- **Capacity plans**
- **Technical reports**

Operational activities

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Monitoring
– *CI and services according to SLA*

Analysis
– *Monitored data and / or trends*

Implementation
– *Implement Change through Change Management*

Tuning
– *Optimize system according to analysis (test environment)*

90

Benefits / Challenges

Benefits

– Increased efficiency and cost savings resulting in more economic provisioning of IT Services

– Elimination of unnecessary spare capacity and optimizations of equipment

– Reduced risk of performance problems and failure

Challenges

– To create and achieve realistic performance figures for equipment

– To get reliable and accurate business forecasts and information

Availability Management

Objective:

To optimise the capability of the IT Infrastructure and supporting organisation

to deliver a cost effective and sustained level of availability

that enables the business to satisfy its objectives

Terminology

Availability
– *IT Service available to the Customer*

Reliability
– *IT Service is available for an agreed period without interruptions. Involves Resilience and Redundancy*

Maintainability
– *Keep IT Service in operation, maintain and restore*

Serviceability
– *Third part is responsible for support*

Security
– *Confidentiality, Integrity and Availability*

Methods

Component Failure Impact Assessment (CFIA)

– *Using a matrix to identify areas of risk in IT Services looking at the impact of Incident for CI´s*

Fault Tree Analysis (FTA)

– *Using notation to identify a chain of events that causes a disruption to IT Services*

CCTA Risk Analysis and Management Method (CRAMM)

System Outage Analysis (SOA)

– *Analyses down-time to identify improvement in IT Service up time*

CRAMM

Risk analysis	Risk Management
Value of assets	Counter measures
Threats	Planning for potential outage
Vulnerabilities	Managing an outage

CRAMM - CCTA's* Risk Analysis and Management Methodology

Activities

- **Determining availability requirements**

- **Designing for availability and recovery**

- **Security issues**

- **Developing an Availability plan**

- **Maintenance management**

Operational availability

Availability Up Time
MTBF = Mean Time Between Failures

Reliability
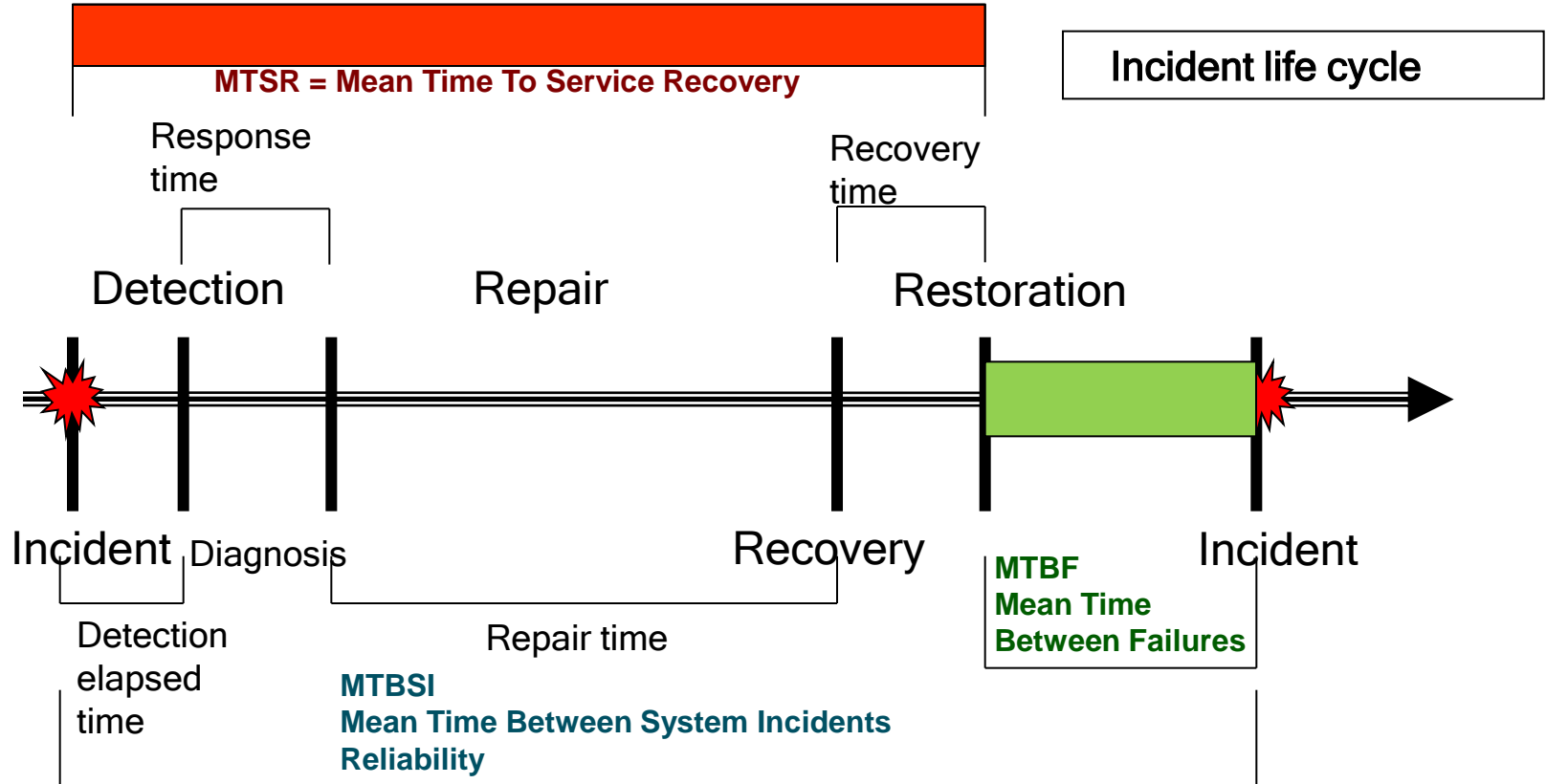MTBSI = Mean Time Between System Incidents

Maintainability Down Time
MTTR = Mean Time To Repair / internal

Serviceability
Availability, Reliability and Maintainability provided by third party

Unavailability - Availability

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MTSR = Mean Time To Service Recovery

Incident life cycle

Response time

Recovery time

Detection   Repair   Restoration

Incident   Diagnosis   Recovery   Incident

Detection elapsed time

Repair time

MTBF
Mean Time
Between Failures

MTBSI
Mean Time Between System Incidents
Reliability

When is a service available?

"An IT Service is *not available* to a Customer if the function(s) required during *Service Hours* at that particular *Location* can not be used."

$$\text{Availability} = \frac{(AST - DT)}{AST} \times 100\%$$

AST = Agreed Service Time

DT = Down Time

Availability Formula
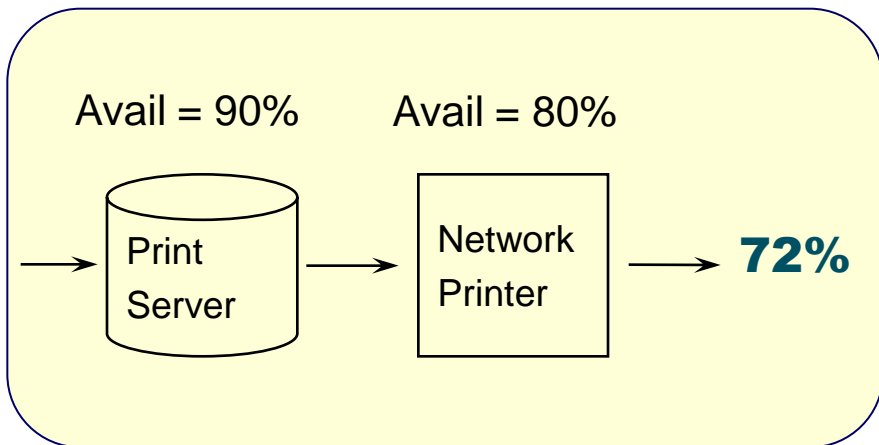
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In Series

Available only if <u>both work</u> =

A x B =

0.90 * 0.80 = 0.72 or 72%

Avail = 90%   Avail = 80%

Print Server → Network Printer → **72%**

In Parallel

Available = 1 - Not Available =

1 - <u>Both down</u> =

1 - (A Down) x (B Down) =

1- (0.1 * 0.2) = 0.98 or 98%

Disk A   Avail =90%

98%

Disk B

Avail =80%
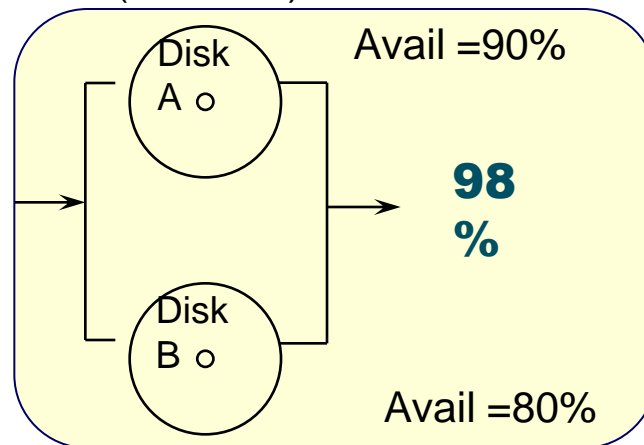
Benefits / Challenges

Benefits

– Availability levels are measured and controlled

– Predict business changes of availability levels

– Services are designed and managed to cost effectively

  meet specified business requirements

Challenges

– Define availability levels, and how to measure, together
  with the customer.

– Find a support tool to measure availability

– Gain management commitment

Security Management

Objective:

To protect, control and manage an appropriate level of security on information and IT Services, in a structured and organized manner

Information security will be cheaper and more effective when considered early in Change Management

Terminology

Confidentiality
– *Protection of sensitive information*

Integrity
– *Safeguarding of the accuracy and completeness of information*

Availability
– *Ensuring that information and vital IT Services stay available*

Right information to the right people at the right time

Terminology

Security policy
– *Defines Security for the organisation, providing guidance*
  for employees

Security plan
– *Describes how policy is implemented for IT Services*
  and departments

Security aspects

Organisational Security **Roles, responsibilities, reporting procedures**	**Physical Security** **Separated facilities on process information and restricted access**
Technical Security **Control provided within system, network, buildings**	**Procedural Security** **Who does what , when**

Control

Security measures come to play when considering or handling identified threats or real incidents

– **Preventions/reduction control**
– **Detection and repression control**
– **Correction and recovery control**

Benefits / Challenges

Benefits

– Risk assessment is "enforced"
– Management attention is focused on business value
– Creates a security awareness
– Business continuity is supported

Challenges

– Explain and justify the expenses
– Keep procedures, policies up to date
– Maintain security awareness
– Create security rules at the right level
– Gain management and staff commitment

IT Service Continuity Management

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Objective:

To support the overall Business Continuity Management process by ensuring that the required IT technical and service facilities can be recovered within required and agreed business time-scales.

Requirements and strategy

Determine the requirements based on:

- Business Impact analysis
- Risk assessment
- Business & IT Continuity strategy

Strategy: Determine and agree Risk Reduction measures and recovery options to support the requirements.

Recovery options must be considered for:

- People
- IT Services and their CI´s
- Critical support services (power…)
- Critical assets

Strategy

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Manual Standby	
Cold Standby	*Gradual Recovery > 72 h* *Usually consisting of a shell or computer room space with minimum or little equipment already on the floor. Environmentals are usually in place but not activated.*
Warm Standby	*Intermediate Recovery 24h-72h* *Computing facility that has some equipment available although it may not be powered up and running. Some special equipment may need to be procured. Systems and applications have to be setup and installed.*
HOT Standby	*Fast (24h) or Immediate (0h) Recovery e.g. through alternative site* *Computing facility that matches your hardware / software / network requirements and is loaded with your operating system. The equipment is up and running at all times and normally, secondary backup sites are available.*
Reciprocal recovery	Mutual agreement, should be in written form

Read more on: http://www.sorm.state.tx.us/Risk_Management/Business_Continuity/rec_strategy.php

Implementation

Consider the following:

– **Organisation and implementation planning**

– **Stand-by arrangements / Risk reduction measures**

– **IT recovery plans, IT Services**

– **Procedures, test and installation**

– **Initial tests**

Operational activities

Education, training & awareness	**Everybody must know what their role is, and what role to play during a crisis situation**
Review & audit	**Verify that the ITSCM plan is up to date**
Testing	**Test the plan under realistic circumstances, every 6 to 12 months**
Change Management	**Change the ITSCM plan**
Assurance	**Verify that the ITSCM process and documents meet business needs**

Benefits / Challenges

Benefits

– Create risk awareness

– Marketing value - Better customer confidence and business relationship

– Enable business continuity from IT perspective

Challenges

– Gain management commitment

– To review and test the ITSCM plan, regularly

– To make the business decide on recovery options for IT Services

– Create an IT Recovery plan for each service – needs Service Catalog