## ITIL® 2011 Foundation

ITIL® is a registered trademark of AXELOS Limited, used under permission of AXELOS Limited. All rights reserved.

## Arrangement

#### Times:

Day 1: 9:00 - 16:30 Day 2: 9:00 - 16:30 Day 3: 9:00 - 15:00

Lunch: 12 – 13

Day 1: Introduction, IT Service Management, Service Strategy, Service Design
Day 2: Service Transition, Service Operation
Day 3: a.m.: Service Operation continuation, Continual Service Improvement, mock exam

# Purpose with the course

Basic understanding for Service Management and the ITIL framework

Common terminology (Link to glossaries can be found through the Axelos portal)

Certification

## After the course

After the course, you will ...

- •Understand the Service Lifecycle
- •Understand how IT creates value
- •Know about the most important processes within ITIL® 2011
- •Be able to create additional value to Customers
- •Understand your role within the ITIL<sup>®</sup> framework

## 



### What is Service Management?

A set of specialized organisational capabilities for providing value to customers in form of services. (Based on AXELOS ITIL® material. Material is reproduced underlicence from AXELOS)

Service Management is the act of transforming resources into valuable services

**Service**: Delivering value to the customers by facilitating outcomes the customers want to achieve, without the ownership of specific costs and risks. (*Based on AXELOS ITIL® material. Material is reproduced under licence from AXELOS*)

•Capabilities: functions and processes. Coordinate, control and deploy resources.

•Function: units of organisations specialized to perform certain type work and responsible for specific outcomes

•Process: a structured set of activities designed to accomplish a specific objective

### Service Management as a practice

- Best-Practice IT service management approach
- Vendor-neutral
- Non-prescriptive
- 20 years practical experience in IT service management
- De facto international standard
- Improve effectiveness and efficiency
- Improve resource utilisation
- Be more competitive
- Decrease rework
- Common vocabulary
- Provide services that meet business, customer and user demands
- Integrate central processes
- Document and communicate roles and responsibilities in service provision
- Learn from previous experience
- There are many accredited training and consultancy organizations worldwide which can provide expert support.

## ITIL®

- Method to support Service Management
- IT Infrastructure Library ®
- 5 core books
- Describe 'best practices'
- Open, public framework, as opposed to proprietary frameworks

'Good practice' is when an organisation adopts 'best practices'. ISO 20000 – Requirements on Service Management

- ITIL<sup>®</sup> is <u>one</u> way to satisfy those requirements
- ISO 20000 does not say it has to be ITIL®

#### IT Infrastructure Library® is a registered trade mark of AXELOS Limited

## Process thinking



### Process model

Control

Process owner, documentation, policy, objectives, feedback

Process

Activities, metrics, procedures, Work Instructions, roles, improvements

Enablers

Resources, capabilities

## Definitions

(Based on AXELOS ITIL® material. Material is reproduced under

licence from AXELOS)

#### Process

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

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

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

Process practitioner -Carries out process activities -Validates / verifies inputs and outputs -Updates records

### Service Owner

#### Service Owner

- Prime customer contact for service related issues
- Initiation, transition and ongoing maintenance
- Ensure service delivery meets customer requirements
- Identify service improvements and raise RFCs
- Liaise with process owner throughout the Service Management lifecycle
- Effective reporting and monitoring
- Accountable to the IT or Service Management Director for the delivery of the service

## Terminology

(Based on AXELOS ITIL® material. Material is reproduced under licence from AXELOS)

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

### RACI

The RACI matrix is used to map roles to activities and to indicate responsibilities:

- **Responsible** the person responsible for getting the job done
- Accountable only one person can be accountable for each task
- **Consulted** the people who need to be consulted
- Informed the people who are kept up to date on progress

Step	Task	Service Desk	Security	IT Manager	Manager	System Owner
1	Complete new user access form				R, A	I
2	Review and approve request	I	C, I			R, A
3	Create new user profile on system	I	R	A	I	I
4	File supporting documentation	I	R	A	A	
5	Notify requester	R		A	I	

## Deming Quality Cycle

Pla

A

Quality

#### **Deming Quality Cycle**

1.	Plan
2.	Do
3.	Check
4.	Act

#### Diagram by Karn G. Bulsuk http://www.bulsuk.com

P

A

### Service Lifecycle Map

Portfolio Mgt	•Supplier Mgt •Information	•Transition Planning and Support	•Incident Mgt
•Demand Mgt	•Security Mgt •Service Catalogue Mgt	•Change Mgt	•Problem Mgt
•Financial Mgt	•Service Level Mgt •IT Service Continuity	•Service Asset and	•Event Mgt
•Business Relationship Mot	Mgt •Availability Met	Configuration Mgt	•Access Mgt
	Capacity Mgt	•Release and	•Request fullfilment
	•Design Coordination •.	Deployment Mgt •Service Validation and Testing •Knowledge Mgt	<ul> <li>Service Desk</li> <li>Operations Control</li> <li>Facilities Mgt</li> <li>Application Mgt</li> <li>Technical Mgt</li> </ul>
Service Strategy	Service Design	Service Transition	Service Operation
1			

#### Continual Service Improvement

### Service Lifecycle – an other view



Continual Service Improvement

## Control question

- 1. Which of the following statements is CORRECT for ALL processes?
- a) They define functions as part of their design
- b) They should deliver value for stakeholders
- c) They are carried out by an external service provider in support of a customer
- d) They are units of organizations responsible for specific outcomes

## Control questions

## Which of the following statements about processes is/are CORRECT?

- 1.All processes must have an owner
- 2.A process takes one or more inputs and turns them into defined outputs
- a) 1 only
- b) 2 only
- c) Both of the above
- d) Neither of the above

## Control questions

- 3. Which of the following activities should a Service Owner undertake?
  - 1. Representing a specific service across the organisation
  - 2. Updating the Configuration Management Data Base (CMDB) after a change
  - 3. Helping to identify service improvements
  - 4. Representing a specific service in Change Advisory Board (CAB) meetings
- a) 2, 3 and 4 only
- b) All of the above
- c) 1, 2 and 3 only
- d) 1, 3 and 4 only

## Control questions

- 4. What roles are defined in the RACI model?
  - a) Responsible, Accountable, Consulted, Informed
  - b) Responsible, Achievable, Consulted, Informed
  - c) Realistic, Accountable, Consulted, Informed
  - d) Responsible, Accountable, Corrected, Informed

## Service Strategy Lifecycle

- Strategic thinking lies in knowing what *needs* to happen. Customer outcomes, rather than specifications, are the genesis of services.
  - Customers don't buy products, they buy the satisfaction of particular needs
- Service Strategy is about ensuring that organizations are in a position to handle the costs and risks associated with their Service Portfolios, and are set up not just for operational effectiveness but also for distinctive performance.
- Maximises the value of the Service portfolio
  - Right services, right prices, optimal capacity, optimal resource allocation

### Service Strategy – Utility and Warranty



### Service Strategy – Value creation

### • Utility

The Utility effect of a service is the increase in possible gains from the perfomance of customer assets, leading to an increase in the probability of achieving outcomes.

'Fit for purpose'

### • Warranty

The Warranty effect of a service is the decrease in possible losses for the customer from variation in performance.

'Fit for use'

(Based on AXELOS ITIL® material. Material is reproduced under licence from AXELOS)

Service Strategy – Service Providers

Type I – internal service provider
 Type II – shared services unit
 Type III – external service provider

## Service Strategy – Define the market

#### - Understand the customer

- Business (what, when, how, why they do what they do....)
- Customer assets (organisation, knowledge, processes, infrastructure...)
- Understand the competition
  - Advantage, disadvantage, market position, ...
- Understand the opportunities by mapping customer outcomes (objectives) to services and service assets.

- <u>example</u>

### Service Strategy – Offerings

- Define services based on outcome,
  - to ensure all aspects of Service Management are based on value to the customer
- Create a Service Portfolio that represents the service providers' commitments across all customers and market spaces.
  - Service Pipeline, Service Catalogue and retired services

#### Market space: set of opportunities for service providers

Service Strategy – Strategic assets

Strategic assets provide the basis for

- » core competence,
- » distinctive performance,
- » durable advantage

to participate in business opportunities.

• Adjust Service Assets until the value is optimized

• Map Service Assets to Customer assets, e.g. organisation, processes, tools

### Service Strategy – Service Assets

Resources and capabilities are types of assets.

### Resources

• direct inputs for production. management, organization, people, knowledge.

### Capabilities

- an organization's ability to coordinate, control, and deploy resources to produce value.
  - » It is relatively easy to acquire resources compared to capabilities.

Service units are like business units, a bundle of service assets.

## Service Strategy – Customer assets

Assets

The assets are the means of achieving outcomes that enable or enhance value creation.

People Organisation Management Financial Assets

Processes Knowledge Information

Infrastructure Applications Tools

Service Strategy – Strategic assessment

- Which of our services or service varieties are the most
  - distinctive?
  - profitable?
- Which of our customers and stakeholders are the most satisfied?
- Which customers, channels or purchase occasions are the most profitable?

Service Strategy – Setting objectives

- What is the desired outcome?
- What constraints may prevent the customer from achieving the desired outcome? How can the provider remove these constraints?

Service Strategy – Prioritizing investments

• The best opportunities for service providers lie in areas where an important customer need remains poorly satisfied

#### BUT!

• There are usually strong reasons why certain needs of customers remain unfulfilled

## Service Strategy processes

- Service Portfolio Management
- Demand Management
- Financial Management
- Business Relationship Management

## Service Strategy – Service Portfolio Management

- Includes Service Pipeline, Service Catalogue, and Retired Services
- The Service Portfolio represents all the resources presently engaged or being released in various phases of the Service Lifecycle.

Copyright © Katokitsu Utbildning and AXELOS Limited 2016. All rights reserved. Material in this document has been sourced from ITIL ® 2011 publications 2011 Edition. No part of this document may be reproduced in any form without the written permission of both the Katokitsu Utbildning and AXELOS Limited. Permission can be requested at info@katokitsu.se.

## Service Portfolio


# Service Strategy

Position

Plan

Perspective

#### 1 - Define

- •Inventory of services
- •Business cases (what do we spend money on, what is the impact and the return)

Patterns of Business Activity

- 2 Analyse
- 3 Approve
- 4 Charter

vision, objectives

in a strategic model e.g. to differentiate from competitors

for achieving the perspective and position

how to maintain the position and plan

### Service Strategy – Service Catalogue

- It consists of services that are approved to be readily offered to current or prospective customers.
- It serves as a service order and demand channelling mechanism, states support terms, charging, policies, etc
- A Service Portfolio may include several Service Catalogues
- Catalogue items are clustered into Lines of Service (LOS) based on common patterns of business activity (PBA) they can support.
  - Popular services
  - Viable services
  - Items to phase out

### Service Strategy – Service Pipeline

- Services under development for a given market space or customer.
- The pipeline represents the service provider's growth and strategic outlook for the future.

## Service Strategy – Retired services

- Phasing out of services is part of Service Transition.
- Phased-out services are not available to new customers or contracts unless a special business case is made

Service Strategy – Demand Management

Purpose

• Analyse and track the activity patterns of the business processes to predict demand for services

Objectives

- Optimize services to suit demand patterns
- Adjust allocation of resources and scheduling
- Identify opportunities to consolidate demands

## Service Strategy – Demand management, 2

• Insufficient capacity has impact on the quality of services delivered and limits the growth of the service.

• Excess capacity generates cost without creating value. Customers are reluctant to pay for idle capacity - unless it has value for them.

Copyright © Katokitsu Utbildning and AXELOS Limited 2016. All rights reserved. Material in this document has been sourced from ITIL ® 2011 publications 2011 Edition. No part of this document may be reproduced in any form without the written permission of both the Katokitsu Utbildning and AXELOS Limited. Permission can be requested at info@katokitsu.se.

## Service Strategy –/ Demand Management 3

- Demand Management techniques
  - off-peak pricing
  - volume discounts
  - differentiated service levels



# Service Strategy – Demand Management 4

- The capacity of resources available to a service is adjusted according to demand forecasts and patterns.
- Some types of capacity can be quickly increased as required and released when not in use.
- The arrival of demand can be influenced using incentives or
- by constraints.
- It is not possible to produce and stock service output before demand materializes.





- 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

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 <u>for the right cost</u> (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

(Based on AXELOS ITIL® material. Material is reproduced under licence from AXELOS)

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

(Based on AXELOS ITIL® material. Material is reproduced under licence from AXELOS)

Budgeting enables an organisation to:

- Predict the money required to supply IT Services
- Enables review of cost spent
- Reduce the risk of overspending

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 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

Copyright © Katokitsu Utbildning and AXELOS Limited 2016. All rights reserved. Material in this document has been sourced from ITIL ® 2011 publications 2011 Edition. No part of this document may be reproduced in any form without the written permission of both the Katokitsu Utbildning and AXELOS Limited. Permission can be requested at info@katokitsu.se.

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...

### Service Strategy – Roles

- IT Governance (Service Portfolio Manager)
  - Strategies and objectives
    - What processes to use, strategic Business alignment, value delivery, resource management, how to handle risks, how to secure performance, etc...
- Demand manager
  - Understanding service usage
- Product Manager
  - Manage services as products
- Business Relationship Manager
  - Identifies customer needs and ensures that the service provider is able to meet them.
- Financial Manager
  - Stewardship of IT finances

### Service Design – 4 P:s Service Design

The implementation of Service Management as a practice is about preparing and planning the effective and efficient use of the four Ps:

- People,
- Processes,
- Products (technology, tools, and services),
- Partners (manufacturers, suppliers).

- Where would you find the answer to a question about how IT resources and capabilities should be allocated across the service lifecycle?
- a) Definitive media library
- b) Service portfolio
- c) Schedule of change
- d) Performance review

- 2. In which phase of the service lifecycle is it decided what services should be offered and to whom they will be offered?
- a) Continual service improvement
- b) Service operation
- c) Service design
- d) Service strategy

- 3. "Warranty of a service" means?
- a) The service is fit for purpose
- b) There will be no failures in applications and infrastructure associated with the service
- All service-related problems are fixed free of charge for a certain period of time
- d) Customers are assured of certain levels of availability, capacity, continuity and security

- 4. Which statement about value creation through services is CORRECT?
- a) The customer's perception of the service is an important factor in value creation
- b) The value of a service can only ever be measured in financial terms
- c) Delivering service provider outcomes is important in the value of a service
- d) Service provider preferences drive the value perception of a service

## Service Design Lifecycle

- Design for the whole lifecycle
- Connect to other ITSM processes

## Service Design scope

- Technical and management architecture
- Service solutions (new or changed)
- Processes
- Policies
- Documentation
- Measurement methods and metrics
- Service Management systems / tools

## Service Design – what it means to the business

### Reduced Total Cost of Ownership (TCO)

Good design – cheaper to implement, easier to maintain, easier to change

#### Improved quality of service, service performance

Less interruptions, quicker remedy

#### Improved consistency of service

Coordinated design of capacity, availability, continuity, risk management

#### Easier implementation of new or changed service

Clearly documented design

#### Improved service alignment

Input fom Service Strategy

#### More effective Service Management and IT processes

Defined processes and tools

#### Improved IT Governance

Clear Accountability, Responsibility, roles

# Service Design objectives

#### Design services

- that meet business objectives
- that are supported by IT infrastructure, applications, environment, data resources

Produce and maintain IT plans, processes, architectures, frameworks, documents, policies

Develop the skills and capability within IT

# Service Design -Input from Service Strategy

- Corporate strategies and plans, including
  - Business strategies and plans
  - Functional strategies and plans
  - Operational strategies and plans

### Service Design Package -SDP

Produce an SDP for each new or significantly changed service and for removal of a service.

- 1 Requirements
- 2 Service Design
  - A Service functional requirements
  - **B** Service Level Requirements
  - C Service and operational management requirements
  - D Service design and topology
- 3 Organisational readiness assessment
- 4 Service Lifecycle Plan

# Service Design processes

- Service Catalogue Management
- Service Level Management
- Availability Management
- Capacity Management
- Information Security Management
- IT Service Continuity Management
- Supplier Management
- Design coordination

# Service Design -Service Catalogue Management

Purpose

Provides a single source of information on all of the services.

Objective

To ensure that it is accurate and current

# Service Catalogue example

#### Framework for ICT Technical Support (FITS) Service Level Management example service catalogue

Becta | ICT Advice

Structors         Components         Components         Components         Fix time         Supported by         Hours of support         Date         Date <thdate< th="">         Date         Date         &lt;</thdate<>	Service details					Service level details							
Email server (indreamer         12 All departments         0800 · 1800 M+F         1 hour         2 hours         X/Z Hardware Maintenance         0800 1730 M+F         1 hour	Services	Components	Component unique ID	End-users	Comp availa	onent bility	Response time	Fix time	Supported by	Hours of support	Date recorded	Date last updated	
Enail server (software)         15         0800         1800 MF         3 hours         Bhours         Enail Software Lid         1400-2200 MF         11 Jul 20	Email	Email server (hardware	12	All departments	0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
File server O/S         91         0800 - 1800 M-F         1 hour         Internal ICT technichal suppor 0800-1800 M-F         10-Jul-03         11-Jul-03           Router         3         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Router         5         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Internal ICT technichal suppor 0800-1800 M-F         15 minutes         1 hour         1 hour         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03         12-Jul-03           Internet         Firewail         11         All departments         6800-1800 M-F         15 minutes         30 minutes         1 hour         1 hour         1 hour         1 hour         2 hours         2 Hours         2 Hours         1 hour         1 hours         2 Hours         1 Hours         1 Hours         1 hours         1 hours		Email server (software)	15		0800 -	1800 M-F	4 hours	8 hours	Email Software Ltd	1400-2200 M-F	11-Jul-03	12-Jul-0	
Router         3         0800 - 1800 M-F         1 hour         2 hours         XY2 Hardware Maintenance         0830-1730 M-F         10-Ju-03         11-Ju-03           Router         5         0800 - 1800 M-F         1 hour         2 hours         XY2 Hardware Maintenance         0830-1730 M-F         10-Ju-03         11-Ju-03           IAN         N/A         0800 - 1800 M-F         30 minutes         1 hour         2 hours         XY2 Hardware Maintenance         0830-1730 M-F         10-Ju-03         11-Ju-03           ISDN         22         0800 - 1800 M-F         15 minutes         4 hours         Telecoms Co         0900-1700 M-F         11-Ju-03         12-Ju-03         11-Ju-03         12-Ju-03         11-Ju-03         12-Ju-03         11-Ju-04         12-Ju-03         11-Ju-03         11-Ju-03         11-Ju-03         11-Ju-03         12-Ju-03         11-Ju-03		File server O/S	91		0800 -	1800 M-F	30 minutes	1 hour	Internal ICT technichal suppor	10800-1800 M-F	10-Jul-03	11-Jul-0	
Pouter         Pouter         Fouter         Pouter         Pouter<		Router	3		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
Fouter         5         0000 - 1800 M-F         1 hour         2 hours         XZ Hardware Maintenance         030-1730 M-F         10-Ju03         11-Ju03           ISDN         22         0800 - 1800 M-F         15 minutes         4 hours         Telecoms Co         0800-1700 M-F         11-Ju103         12-Ju103           Internet         Firewall         11         All departments         0800 - 1800 M-F         15 minutes         4 hours         XZ Hardware Maintenance         0830-1730 M-F         10-Ju103         12-Ju103           No         Souter         31         All departments         0800 - 1800 M-F         1 hour         4 hours         XZ Hardware Maintenance         0830-1730 M-F         10-Ju103         11-Ju103           Router         4         0800 - 1800 M-F         1 hour         2 hours         XZ Hardware Maintenance         0830-1730 M-F         10-Ju103         11-Ju103		Router	4		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
LAN         NA         0800 - 1800 MF         15 minutes         1 hour         1 internal ICT technichal suppor (2800 - 1800 MF         1 ol.ui-03         1 studies           ISP         23         0800 - 1800 MF         15 minutes         30 minutes         15P Co         24X7 S-S         11 - Jui-03         12 - Jui-03         13 - Jui-03 </td <td>Bouter</td> <td>5</td> <td></td> <td>0800 -</td> <td>1800 M-F</td> <td>1 hour</td> <td>2 hours</td> <td>XYZ Hardware Maintenance</td> <td>0830-1730 M-F</td> <td>10-Jul-03</td> <td>11-Jul-0</td>		Bouter	5		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
ISDN         22         0800         1800 MF         15 minutes         4 hours         Telesome Co         0900         1104/03         12-ul-03           Internet         Firewall         11         All departments         0800         1800 MF         15 minutes         10 minutes         1800 MF         10 minutes         14 minutes         12 minutes		LAN	N/A		0800 -	1800 M-F	30 minutes	1 hour	Internal ICT technichal suppor	10800-1800 M-F	10-Jul-03	11-Jul-0	
ISP         23         0800 - 1800 M-F         15 minutes         30 minutes         16 PC         24x7 S-S         11-Jul-03         12-Jul-03           Internet         Grow         91         All departments         0800 - 1800 M-F         10 hours         14 Hours <td< td=""><td>ISDN</td><td>22</td><td></td><td>0800 -</td><td>1800 M-F</td><td>15 minutes</td><td>4 hours</td><td>Telecoms Co</td><td>0900-1700 M-F</td><td>11-Jul-03</td><td>12-Jul-0</td></td<>		ISDN	22		0800 -	1800 M-F	15 minutes	4 hours	Telecoms Co	0900-1700 M-F	11-Jul-03	12-Jul-0	
Internet         Firewall         11         All departments         0800 - 1800 M-F         1 hour         4 hours         XYZ Hardware Maintenance         0830-1730 M-F         1 hour         1 hour           Router         3         30 minutes         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         1 hour         1 hour         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         1 hour         1 hour         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         1 hour         1 hour         1 hour         1 hour         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         1 hour         1 hour <td>ISP</td> <td>23</td> <td></td> <td>0800 -</td> <td>1800 M-F</td> <td>15 minutes</td> <td>30 minutes</td> <td>ISP Co</td> <td>24x7 S-S</td> <td>11-Jul-03</td> <td>12-Jul-0</td>		ISP	23		0800 -	1800 M-F	15 minutes	30 minutes	ISP Co	24x7 S-S	11-Jul-03	12-Jul-0	
O/S         O/S         OPEN and a sequence of the se	Internet	Firewall	11	All departments	0800 -	1800 M-F	1 hour	4 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
Pouter         3         0800 + 1800 M-F         1 hour         2 hours         XZZ Hardware Maintenance         0830 + 1730 M-F         10-JuL-03         11-JuL-03           Router         5         0800 + 1800 M-F         1 hour         2 hours         XZZ Hardware Maintenance         0830 + 1730 M-F         10-JuL-03         11-JuL-03           LAN         N/A         0800 + 1800 M-F         10 hours         2 hours         XZZ Hardware Maintenance         0830 + 1730 M-F         10-JuL-03         11-JuL-03           LAN         N/A         0800 + 1800 M-F         15 minutes         4 hours         Telecomo Co         0900 + 1700 M-F         10-JuL-03         11-JuL-03           Word processing         Applications file server         1         All departments         0800 + 1800 M-F         30 minutes         1 hour         2 hours         XYZ Hardware Maintenance         0830 + 1730 M-F         10-JuL-03         11-JuL-03           Word processing         Applications file server         1         All departments         0800 + 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 + 1730 M-F         10-JuL-03         11-JuL-03           Word processing         Applications file server         3         0800 + 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenan		O/S	91	/ in dopartimonito	0800 -	1800 M-F	30 minutes	1 hour	Internal ICT technichal suppor	10800-1800 M-F	10-Jul-03	11-Jul-0	
Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-33         11-Jul-33           Router         5         0800 - 1800 M-F         30 minutes         1 hour         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-33         11-Jul-33           ISDN         21         0800 - 1800 M-F         15 minutes         4 hours         Telecoms Co         0900-1700 M-F         10-Jul-33         11-Jul-33           Word processing         Applications file server         1 All departments         0800 - 1800 M-F         15 minutes         30 minutes         1800         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-33         11-Jul-33           Word processing         Applications file server         1 All departments         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-33         11-Jul-33           WP servers oftware         30         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-33         11-Jul-33           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Ju		Bouter	3		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
Bouter         5         0800 + 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0 030 - 1730 M-F         1 o-Jul-03         1 1-Jul-02           LNN         N/A         0800 - 1800 M-F         3 minutes         1 hour         Telecoms Co         0900 - 1730 M-F         1 0-Jul-03         1 1-Jul-02           Word processing         Applications file server File server O'S         1         All departments         0800 - 1800 M-F         1 hours         1 Nours         1 Nours<		Bouter	4		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
LAN         N/A         080 + 1800 M-F         30 minutes         1 hour         Internal ICT technichal support 0800 - 1800 M-F         10 Juli-03         11 Juli-03           ISDN         21         0800 + 1800 M-F         15 minutes         4 hours         Telecoms Co         990 - 1700 M-F         10 Juli-03         11 Juli-03		Bouter	5		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
ISDN         21         0800 - 1800 M-F         15 minutes         4 hours         Telecoms Co         0900-1700 M-F         10-Jul-03         11-Jul-03           Word processing         Applications file server O/S         91         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Word processing         Applications file server O/S         91         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Word processing         Router         3         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Interactive Whiteboard         Applications file server         1         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Interactive Whiteboard         Applications file server         1         0800 - 1800 M-F         1 hours         2 hours         XYZ Hardware Mainten		IAN	N/A		0800 -	1800 M-F	30 minutes	1 hour	Internal ICT technichal suppor	10800-1800 M-F	10-Jul-03	11-Jul-0	
ISP         23         0800 - 1800 M-F         15 minutes         30 minutes         ISP Co.         24x7 S-S         10-Jul-03         11-Jul-03           Word processing         Applications file server O/S         91         All departments         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           WP server software         30         0800 - 1800 M-F         4 hours         8 hours         WP Software Ld         0900 - 1730 M-F         10-Jul-03         11-Jul-03           Router         3         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Interactive Whiteboard         VNA         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Interactive Whiteboard         Q25         Classroom 1         0900 - 1600 M-F         4 hours         8 hours         WYI Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03		ISDN	21		0800 -	1800 M-F	15 minutes	4 hours	Telecoms Co	0900-1700 M-F	10-Jul-03	11-Jul-0	
Word processing File server O/S         Applications file server File server O/S         1         All departments 91         0800 - 1800 M-F         1 hour 800 - 1800 M-F         2 hours 30 minutes         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           WP Server Software Router         30         0800 - 1800 M-F         1 hour         8 hours         WP Software Ld         0900-1700 M-F         10-Jul-03         11-Jul-03           Router         3         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           LAN         N/A         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Interactive Whiteboard         Whiteboard         2         Classroom 1         0900 - 1800 M-F         4 hours         8 hours         Whiteboard Suppiler         10-Jul-03         11-Jul-03           LAN         Applications file server         1         Head Teacher         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardw		ISP	23		0800 -	1800 M-F	15 minutes	30 minutes	ISP Co	24x7 S-S	10-Jul-03	11-Jul-0	
File server O/S         91         0800 - 1800 M-F         30 minutes         1 hour         Internal ICT technichal support         0800 - 1800 M-F         10-Jul-03         11-Jul-03           WP server software         30         0800 - 1800 M-F         1 hour         8 hours         WP Software Ld         0900 - 1700 M-F         10-Jul-03         11-Jul-03           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           LAN         N/A         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Internal ICT technichal support         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1800 M-F         10-Jul-03         11-Jul-03           Internal ICT technichal support         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Internal ICT technichal support         0800 - 1800 M-F	Word processing	Applications file server	1	All departments	0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
WP server software Router         30 Router         0800 - 1800 M-F (040 - 1800 M-F)         4 hours 1 hour         8 hours 2 hours         WP Software Ltd XYZ Hardware Maintenance         0900 - 1700 M-F (0830 - 1730 M-F)         10-Jul-03         11-Jul-03           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Router         5         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Interactive Whiteboard         25         Classroom 1         0900 - 1600 M-F         4 hours         8 hours         Whiteboard         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Applications file server         1         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Schools Administration         Applications file server         1         0800 - 1800 M-F         30 minutes         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Schools Administration         Applications file server         1         Head Teacher         0800 - 1800 M-F		File server O/S		/ in dopartitionto	0800 -	1800 M-F	30 minutes	1 hour	Internal ICT technichal suppor	10800-1800 M-F	10-Jul-03	11-Jul-0	
Router         3         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Router         5         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           LAN         N/A         0800 - 1800 M-F         30 minutes         1 hour         <		WP server software	30		0800 -	1800 M-F	4 hours	8 hours	WP Software I td	0900-1700 M-F	10-Jul-03	11-Jul-0	
Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           LAN         N/A         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Interactive Whiteboard         Whiteboard         25         Classroom 1         0900 - 1600 M-F         4 hours         8 hours         Whiteboard Supplier Ltd         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Interactive Whiteboard         Whiteboard         25         Classroom 1         0900 - 1600 M-F         4 hours         8 hours         Whiteboard Supplier Ltd         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Schools Administration         Applications file server         1         Head Teacher         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Schools Administration         Applications file server         1         Head Teacher         0800 - 1800 M-F <td>Bouter</td> <td>3</td> <td></td> <td>0800 -</td> <td>1800 M-F</td> <td>1 hour</td> <td>2 hours</td> <td>XYZ Hardware Maintenance</td> <td>0830-1730 M-F</td> <td>10-Jul-03</td> <td>11-Jul-0</td>		Bouter	3		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
Router         5         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Interactive Whiteboard         Whiteboard         25         Classroom 1         0900 - 1600 M-F         30 minutes         1 hour         Internal ICT technichal support 0800-1800 M-F         10-Jul-03         11-Jul-03           Interactive Whiteboard         Applications file server         1         0800 - 1800 M-F         1 hour         8 hours         Whiteboard Supplier Ltd         0830-1730 M-F         10-Jul-03         11-Jul-03           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Schools Administration         Applications file server         1         Head Teacher         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Schools Administration         Applications file server         1         Head Teacher         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Schools Administration         Applications file server         1		Bouter	4		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
LANN/A0800 - 1800 M-F30 minutes1 hourInternal ICT technichal suppor0800 - 1800 M-F10-Jul-0311-Jul-03Interactive WhiteboardWhiteboard25Classroom 10900 - 1600 M-F4 hours8 hoursWhiteboard Supplier Lid0830-1730 M-F10-Jul-0311-Jul-03Applications file server10800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Router40800 - 1800 M-F30 minutes1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Schools AdministrationApplications file server1Head Teacher0800 - 1800 M-F30 minutes2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Schools AdministrationApplications file server1Head Teacher0800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Schools AdministrationApplications file server1Head Teacher0800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Router3Admin Assistant0800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Router40800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Router50800 - 1800 M-F30 minutes1		Bouter	5		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
Interactive Whiteboard Applications file server15Classroom 105001600 M-F4 hours8 hours8 hoursWhiteboard Supplier Ltd XYZ Hardware Maintenance10-Jul-0311-Jul-03Router LAN408001800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Schools AdministrationApplications file server1Head Teacher08001800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Schools AdministrationApplications file server1Head Teacher08001800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Schools AdministrationApplications file server1Head Teacher08001800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Schools AdministrationApplications file server1Head Teacher08001800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Schools Admine Assistant08001800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Router408001800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03LANN/A08001800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-03 <td< td=""><td>IAN</td><td>N/A</td><td></td><td>0800 -</td><td>1800 M-F</td><td>30 minutes</td><td>1 hour</td><td>Internal ICT technichal suppor</td><td>10800-1800 M-F</td><td>10-Jul-03</td><td>11-Jul-0</td></td<>		IAN	N/A		0800 -	1800 M-F	30 minutes	1 hour	Internal ICT technichal suppor	10800-1800 M-F	10-Jul-03	11-Jul-0	
Applications file server         1         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03         <	Interactive Whiteboard	Whiteboard	25	Classroom 1	0900 -	1600 M-F	4 hours	8 hours	Whiteboard Supplier Ltd		10-Jul-03	11-Jul-0	
Applications includes interval40000 1000 minutes1 hour2 hoursXYZ Hardware Maintenance0000 1700 minutes11-Jul-03Router LANN/AN/A0800 - 1800 M-F1 hour1 hour<		Applications file server	1		0800 -	1800 M-F	1 hour	2 hours	XVZ Hardware Maintenance	0830-1730 M-E	10-10-03	11-Jul-0	
Router LANA0800 - 1800 M-F 0800 - 1800 M-F1 hour 30 minutes2 hours 1 hourXYZ Hardware Maintenance Internal ICT technichal suppor0830 - 1730 M-F 080 - 1800 M-F10 - Jul - 03 11 - Jul - 03Schools AdministrationApplications file server1Head Teacher0800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830 - 1730 M-F10 - Jul - 0311 - Jul - 03Schools AdministrationApplications file server1Head Teacher0800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0800 - 1800 M-F10 - Jul - 0311 - Jul - 03RouterAdmin Assistant0800 - 1800 M-F1 hour2 hoursLEA0800 - 1800 M-F10 - Jul - 0311 - Jul - 03Router40800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830 - 1730 M-F10 - Jul - 0311 - Jul - 03Router50800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830 - 1730 M-F10 - Jul - 03Printing monoPrinter server15All departments0800 - 1800 M-F30 minutes1 hour2 hoursXYZ Hardware Maintenance0830 - 1730 M-F10 - Jul - 03Printing monoPrinter server15All departments0800 - 1800 M-F30 minutes1 hour2 hoursXYZ Hardware Maintenance0830 - 1730 M-F10 - Jul - 03Laserjet400800 - 1800 M-F30 minutes1 hour2 hoursXYZ Hardware Maintenance0830 - 1730 M-F10 - Jul - 03L		reprisedente nie server			0000	1000 111	1 Hour	Eniouro			10 001 00	110010	
LANN/A0800 - 1800 M-F30 minutes1 hourInternal ICT technichal support0800 - 1800 M-F10 - Jul-0311 - Jul-03Schools AdministrationApplications file server1Head Teacher0800 - 1800 M-F1 hour1 hourInternal ICT technichal support0800 - 1800 M-F1 hour1		Bouter	4		0800 -	1800 M-E	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-E	10-Jul-03	11-Jul-0:	
Schools AdministrationApplications file server1Head Teacher0800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Schools AdministrationApplications file server1Head Teacher0800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Schools AdministrationSAS35Department Heads0800 - 1800 M-F1 hour2 hoursLEA0800-1800 M-F10-Jul-0311-Jul-03Router3Admin Assistant0800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Router40800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03LANN/A0800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Printing monoPrinter server15All departments0800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Baserjet400800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Laserjet400800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-0311-Jul-03Laserjet400800 - 1800 M-F1 hour2 hoursXYZ Hardware Maintenance0830-1730 M-F10-Jul-03<		IAN	N/A		0800 -	1800 M-F	30 minutes	1 hour	Internal ICT technichal suppor	10800-1800 M-F	10-Jul-03	11-Jul-0	
SAS         35         Department Heads         0800 - 1800 M-F         30 minutes         2 hours         LEA         0800 - 1800 M-F         10-Jul-03         11-Jul-03           Router         3         Admin Assistant         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03         11-Jul-03           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Router         5         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           LAN         N/A         0800 - 1800 M-F         1 hour         1 hour         Internal ICT technichal support         800-1800 M-F         10-Jul-03         11-Jul-03           File server O/S         91         0800 - 1800 M-F         30 minutes         1 hour         Internal ICT technichal support         0800-1800 M-F         10-Jul-03         11-Jul-03           Laserjet <td< td=""><td>Schools Administration</td><td>Applications file server</td><td>1</td><td>Head Teacher</td><td>0800 -</td><td>1800 M-F</td><td>1 hour</td><td>2 hours</td><td>XYZ Hardware Maintenance</td><td>0830-1730 M-F</td><td>10-Jul-03</td><td>11-Jul-0</td></td<>	Schools Administration	Applications file server	1	Head Teacher	0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
SAS         35         Department Heads         0800 - 1800 M-F         30 minutes         2 hours         LEA         0800 - 1800 M-F         10-Jul-03         11-Jul-03         11-Jul-03 <th< td=""><td></td><td>  + F</td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>		+ F	-										
Router         3         Admin Assistant         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         1 0-Jul-03         11-Jul-03           Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03         11-Jul-0		SAS	35	Department Heads	0800 -	1800 M-F	30 minutes	2 hours	LEA	0800-1800 M-F	10-Jul-03	11-Jul-0	
Router         4         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830 - 1730 M-F         10-Jul-03         11-Jul-03           Router         5         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03         11-Jul-03 <td>Router</td> <td>3</td> <td>Admin Assistant</td> <td>0800 -</td> <td>1800 M-F</td> <td>1 hour</td> <td>2 hours</td> <td>XYZ Hardware Maintenance</td> <td>0830-1730 M-F</td> <td>10-Jul-03</td> <td>11-Jul-0</td>		Router	3	Admin Assistant	0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
Router         5         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           LAN         N/A         0800 - 1800 M-F         30 minutes         1 hour		Bouter	4		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
LAN         N/A         0800 - 1800 M-F         30 minutes         1 hour         Internal ICT technichal support         0800 - 1800 M-F         10-Jul-03         11-Jul-03           Printing mono         Printer server         15         All departments         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03         11-Jul-03 <td>Bouter</td> <td>5</td> <td></td> <td>0800 -</td> <td>1800 M-F</td> <td>1 hour</td> <td>2 hours</td> <td>XYZ Hardware Maintenance</td> <td>0830-1730 M-F</td> <td>10-Jul-03</td> <td>11-Jul-0</td>		Bouter	5		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
Printing mono         Printer server         15         All departments         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           File server O/S         91         0800 - 1800 M-F         30 minutes         1 hour         Internal ICT technichal support         0800-1800 M-F         10-Jul-03         11-Jul-03         11-		LAN	N/A		0800 -	1800 M-F	30 minutes	1 hour	Internal ICT technichal suppor	10800-1800 M-F	10-Jul-03	11-Jul-0	
File server O/S         91         0800 - 1800 M-F         30 minutes         1 hour         Internal ICT technichal support         0800 - 1800 M-F         10-Jul-03         11-Jul-03	Printing mono	Printer server	15	All departments	0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
Laserjet         40         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Laserjet         41         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Inkiet         42         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03		File server O/S	91		0800 -	1800 M-F	30 minutes	1 hour	Internal ICT technichal suppor	10800-1800 M-F	10-Jul-03	11-Jul-0	
Laserjet         41         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03           Inkiet         42         0800 - 1800 M-F         1 hour         2 hours         XYZ Hardware Maintenance         0830-1730 M-F         10-Jul-03         11-Jul-03		Laseriet	40		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
Inkiet 42 0800 - 1800 M-F 1 hour 2 hours XYZ Hardware Maintenance 0830-1730 M-F 10-Jul-03 11-Jul-03		Laseriet	41		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	
		Inkiet	42		0800 -	1800 M-F	1 hour	2 hours	XYZ Hardware Maintenance	0830-1730 M-F	10-Jul-03	11-Jul-0	

http://www.becta.org.uk/technicalsupport Published September 2003

# Service Design -Technical Service Catalogue

The Technical Service Catalogue shows service component relations to IT Services that shows relations to Business Services.
Service components may be: SW, HW, DBMS, Network, Data, Applications

## Service Design -Service Level Management - SLM

Purpose

Represent the IT Service provider to the business and the business to the IT Service provider.

Objectives

To negotiate, agree and document IT Service targets with the business; monitors and produces reports on the ability to deliver the agreed level of service.

## Service Design SLM

#### • SLA

- Service Level Agreement
  - Corporate level, Customer or Business Unit Level, Service Specific
- OLA
  - Operational Level Agreement

## Service Design -SLM activities and KPIs

- Design framework for SLA (template, document structure)
- Monitor and produce reports on service performance
- Measure and strive to improve customer satisfaction

Key Performance Indicators (KPIs)

- # or % of service targets being met
- # and severity of service breaches
- # of services with up-to-date SLAs
- Improvements in customer satisfaction

Service Design -Supplier Management

Purpose

- Manage supplier relationship and performance
- Negotiate and agree Underpinning Contracts (UC)
- Maintain a supplier policy and database

#### Supplier

• A third party responsible for supplying goods or services required to deliver IT services

# Service Design -Availability Management

#### Purpose

- Produce Availability Plan
- Ensure availability according to SLA
- Ensure proactive measures to be implemented

#### Objective

• To match availability with the changing needs

### **Unavailability - Availability**


# Service Design -Availability measurements

Availability	The ability of a service, component or CI to perform its agreed function when required
Reliability MTBSI MTBF	A measure of how long a service, component or CI can perform its agreed function without interruption.
Maintainability MTTRS	A measure of how quickly and effectively a service, component or CI can be restored to normal working after a failure.
Serviceability	The ability of a 3rd party supplier to meet the terms in their contract

# Service Design -Availability Management - 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

# Service Design -Availability Management – Risks - 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

## Service Design -Availability Management 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

# Service Design -Capacity Management

### Purpose

• Ensures that IT resources are planned and scheduled to provide a consistent level of service that is matched to the current and future needs of the business.

### Objectives

- Produce capacity plan
- Assist with capacity related incidents and problems
- Ensure proactive measures

### Focus lies in:

• Business performance (see also Demand Management), Service performance and Component performance

## Service Design -Capacity Management vs Demand Management

	Demand Management	Capacity Management
Purpose	Identify, analyse and influence customer demand for services and the capacity to meet this demand	Ensure that current and future capacity requirements of services are provided costeffectively, and that services are performing at the agreed level
Focus	Anticipating the demand for services based on user profiles and patterns of business activity, and identifying the means to influence that demand to achieve an optimal balance between investment and business outcome achievement	Understanding the current and future requirements for resources and capabilities and ensuring that these are designed, tested and managed to meet the demand on services
Major activities	Identifying patterns of business activity, user profiles and the resulting demand on services. Anticipating increases or decreases in demand, and identifying strategies for dealing with these. Influencing demand through incentives, penalties or differential charging	Producing a capacity plan to ensure the investment in the appropriate levels of capacity. Ensuring optimal use and performance of resources. Evaluating the impact of new or changed resources and capabilities on existing performance levels

Service Design -Information Security Management

Purpose

Align IT security with business security. Manage information security in all services.

Objectives

To protect information, the systems and the communications from failures of availability, confidentiality and integrity.

### Service Design - 1008 Information Security Management

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

## Service Design -Security control

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

- Prevention / reduction control
- Detection and repression control
- Correction and recovery control

# Service Design -Information Security – basic concepts

- Security framework, governance
- Information Security Policy
- Information Security Managements System
  Control, plan, implement, evaluate, maintain

# Service Design -ITSCM – IT Service Continuity Management

Purpose

Ensure that the recovery arrangements for IT services are aligned with identified business impacts, risks and needs

### Objective

Support the Business Continuity (BC) plan with ITSC plan Complete the Business Impact Analysis

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.

(Based on AXELOS ITIL® material. Material is reproduced under licence from AXELOS)

# Service Design -ITSCM – IT Service Continuity Management

Determine the requirements based on:

•Business Impact analysis

- •Risk assessment
- •Business & IT Continuity strategy

Recovery options must be considered for:

- People
- IT Services and their CI's
- Critical support services (power...)
- Critical assets

# Service Design -ITSCM – IT Service Continuity Management

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	Immediate 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

# Service Design – Design Coordination

### Objectives

- Single point of coordination and control
- Consistent design of appropriate services
- Coordinate all design activities across projects
- Produce service design packages (SDPs)

### Activities

- Define and maintain policies and methods
- Plan design resources and capabilities
- Coordinate design activities
- Manage design risks and issues
- Improve service design

## Service Design roles

- Service Catalogue Manager
- Security Manager
- ITSCM Manager
- Supplier Manager
- Capacity Manager
- Availability Manager
- Service Design Coordinator

## Service Design value - summary

- Reduced Total Cost of Ownership
- Improved QoS Quality of Service
- Easier implementation of new or changed services
- More effective ITSM processes

- Input from which processes could be considered by service level management when negotiating service level agreements (SLA)?
- a) All other ITIL processes
- b) Capacity and availability management only
- c) Incident and problem management only
- d) Change management, and release and deployment management only

- 2. Which process would assist with the identification and resolution of any incidents and problems associated with service or component performance?
  - a) Capacity management
  - b) Supplier management
  - c) Technology management
  - d) Change management

- 3. Which two processes will negotiate and agree the necessary contracts for the provision of recovery capability to support all continuity plans?
- a) Service level management and capacity management
- b) Supplier management and service level management
- IT service continuity management and service level management
- IT service continuity management and supplier management

- 4. Which of the following are valid elements of a service design package (SDP)?
  - 1. Agreed and documented business requirements
  - 2. A service definition for transition and operation of the service
  - 3. Requirements for new or changed processes
  - 4. Metrics to measure the service
- a) 1 only
- b) 2 and 3 only
- c) 1, 2 and 4 only
- d) All of the above

## Service Transition Lifecycle

- Change Management
- Release and Deployment
- Service Asset and Configuration Management

With other words:

- Transition Planning and Support
- Release and Deployment Management
- Service Testing and Validation
- Evaluation.
- Knowledge Management

The following slides present the purpose, goals and objectives

### Service Transition - Purpose

• Plan and manage the capacity and resources to

- package,
- build,
- test and
- deploy
- a release into production
- Provide a consistent and rigorous framework for evaluating the service capability and risk profile before a new or changed service is released or deployed
- Provide efficient repeatable build and installation mechanisms
- Provide knowledge and information

### Service Transition - Goals

- Enable the business change project or customer to integrate a release into their business processes and services
- Reduce variations in the predicted and actual performance of the transitioned services
- Reduce the known errors and minimize the risks from transitioning the new or changed services into production

Copyright © Katokitsu Utbildning and AXELOS Limited 2016. All rights reserved. Material in this document has been sourced from ITIL ® 2011 publications 2011 Edition. No part of this document may be reproduced in any form without the written permission of both the Katokitsu Utbildning and AXELOS Limited. Permission can be requested at info@katokitsu.se.

# Service Transition - Objectives

- Plan and manage the resources to establish a new or changed service into production
- Ensure there is minimal unpredicted impact on the production services
- Provide clear and comprehensive plans that enable the customer and business change projects to align their activities with the Service Transition plans.

Copyright © Katokitsu Utbildning and AXELOS Limited 2016. All rights reserved. Material in this document has been sourced from ITIL ® 2011 publications 2011 Edition. No part of this document may be reproduced in any form without the written permission of both the Katokitsu Utbildning and AXELOS Limited. Permission can be requested at info@katokitsu.se.

# Service Transition - Processes

Again, the processes:

- Transition Planning and Support
- Change Management
- Service Asset and Configuration Management
- Release and Deployment Management
- Service Validation and Testing
- Change Evaluation
- Knowledge Management (Know How Management)
- End-of-service Life Cycle

#### Excluded:

- Minor modifications to the production services and environment, e.g. replacement of a failed PC or printer, installation of standard software on a PC or server, or a new user
- Ongoing Continual Service Improvements that do not significantly impact the services or service provider's capability to deliver the services, e.g. request fulfilment activities driven from Service Operations.

# Service Transition – Planning and Support

- Plan and coordinate the resources
- Identify, manage and control the risks
- Provide support for the Service Transition teams

> 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.

(Based on AXELOS ITIL® material. Material is reproduced under licence from AXELOS)

#### 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<sup>®</sup> 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!

(Based on AXELOS ITIL® material. Material is reproduced under licence from AXELOS)

Standard

A well known, relatively risk-free Change with predefined procedure The Change may be executed 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

### Service change

'The addition, modification or removal of authorized, planned or supported service or service component and its associated documentation.'

(Based on AXELOS ITIL® material. Material is reproduced under licence from AXELOS)

- Standardized methods and procedures for efficient and prompt handling of all changes
- All changes to service assets and configuration items are recorded in the Configuration Management System
- Overall business risk is optimized.

### Service Transition – Service Change

Changing the Warranty (Fit for Use) decreases variations in the service

Changing the Utility (Fit for Purpose) increases the service's performance

Note!

- There is little gain in improving the Warranty if the service does not support Customer outcomes
- There is little gain in improving the Utility if the service is unreliable, unpredictable

Any and every change affects the provided service and its value -> therefore, the Outcome the Customer wants to achieve.

Copyright © Katokitsu Utbildning and AXELOS Limited 2016. All rights reserved. Material in this document has been sourced from ITIL ® 2011 publications 2011 Edition. No part of this document may be reproduced in any form without the written permission of both the Katokitsu Utbildning and AXELOS Limited. Permission can be requested at info@katokitsu.se.

- A standard change is a change to a service or infrastructure for which
  - the approach is pre-authorized by Change Management
  - has an accepted and established procedure to provide a specific change requirement.
    - Pre-approved
    - Known costs
    - Known risks
    - Known procedure
    - Known resources
- Some standard changes will be triggered by the Request Fulfillment Process and be directly recorded and passed for action by the service desk.

- Who RAISED the change?
- What is the REASON for the change?
- What is the RETURN required from the change?
- What are the RISKS involved in the change?
- What RESOURCES are required to deliver the change?
- Who is RESPONSIBLE for the build, test and implementation of the change?
- What is the RELATIONSHIP between this change and other changes?

Service Transition – Change Management – Inputs

> Request for Change - RFC -

and:

•Policy and strategies for change and release

•Initial Change proposal

•Plans – change, transition, release, deployment, test, evaluation and remediation plan (if a change goes wrong)

•Current change schedule and PSO – Projected Service Outage

•Current assets or configuration items, e.g. baseline, service package, release package

# Service Transition – Change Management priorities

Priority of a Change is based on business impact

Urgent

Change necessary immediately, approval by Emergency CAB (ECAB)

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

# Service Transition – Change Management – Outputs (1)

For a major change with significant organizational and/or financial implications, a change proposal may be required.

This Change Proposal is compiled during the Change process as a result of the change assessment.

- Change proposal
  - Full description of the change
  - Full justification
  - Full description of predicted timeframe, resources, costs and quality of service
  - Full risk assessment
  - Full backout plan
  - Sign-off on appropriate level
# Service Transition – Change Management – Outputs (2)

- Rejected RFCs
- Approved RFCs
- Change to the services, service or infrastructure resulting from approved RFCs
- New, changed or disposed assets or configuration items, e.g. baseline, service package, release package
- Change schedule
- Revised PSO Projected Service Outage
- Authorized change plans
- Change decisions and actions
- Change documents and records
- Change Management reports.
- Work orders to e.g. Release Management

# Service Transition – Change Advisory Board - CAB

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

# Service Transition – Change Management block diagram





# Service Transition – Change Management - Remediation

### **Remediation planning**

- All changes must address the question of what to do if the change is unsuccessful; a back-out plan is ideal
- Not all changes are reversible an alternative approach to remediation is required
- The severity of failure may require invocation of the Business Continuity Plan
- Remediation options must be considered before instigating (= urging, pressing) a change
- Risk assessment will establish that the remediation option is viable

Service Transition – SACM – Service Asset and Configuration management

Purpose

- Identify, record, control, report, audit and verify service assets and configuration items
- Protect the information
- Support other Service Management processes with information

Requires the use of a supporting system known as the Configuration Management System (CMS).

### Service Transition – SACM - 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

### Service Transition – SACM - 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

### Service Transition – SACM - Configuration items

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*)

(Based on AXELOS ITIL® material. Material is reproduced under licence from AXELOS)

A Configuration Item is (or can be):

- Needed to deliver service
- Uniquely identifiable
- Subject to change
- Manageable

# Service Transition – SACM - 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

# Service Transition – SACM - Configuration baseline

- Mark a milestone in the development of a service, e.g. Service Design baseline
- Build a service component from a defined set of inputs
- Change or rebuild a specific version at a later date
- Assemble all relevant components in readiness for a change or release
- Provide the basis for a configuration audit and back out, e.g. after a change.

Goal: The goal of Release and Deployment Management is to deploy releases into production and establish effective use of the service.

How:

- Define and agree release and deployment plans with customers and stakeholders. Optimize costs and minimize risks.
- Ensure that all release and deployment packages can be tracked, installed, tested, verified, and/or uninstalled or backed out if appropriate
- Transfer knowledge to enable the customers and users to optimize their use of the service
- Transfer knowledge to operations and support staff

### 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

**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

Part of the Release Policy

Definitive Media Library – DML:

- 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
- Protection of hardware spares and components
- One or more physical file storages
- Contains spares for recovery and components for changes

# Service Transition – Service Validation and Testing (1)

Purpose:

• Plan and implement a validation and test process that provides evidence that the new or changed service will support the customer's business requirements

• Quality assure a release

• Identify, assess and address issues, errors

Using test models will ensure that the test is repeateable and consistent Model = Step-for-step instructions in a template

Service Transition – Service Validation and Testing (2)

From the business point of view, focus on:

- Effective validation and testing focuses on whether the service will deliver as required.
- Define and agree on means for measuring the acceptability of the service
- Business needs to provide resources
- Testing executes defined business processes use of 'use cases'

# Service Transition – Service Validation and Testing (3)

From the operations point of view, validate that:

- Technological facilities are in place to deliver the new or changed service
- Staff skills, knowledge and resource are available to support the service after go-live
- Supporting processes and resources are in place, e.g. service desk, second/third line support, including third party contracts, capacity and availability monitoring and alerting
- Business and IT continuity has been considered
- Access is available to documentation and SKMS.

# Service Transition –V-model

Define Customer / business requirements Validate service packages, offerings and contracts

Define Service Requirements Service

Service acceptance test

Design service solution

> Service operational readiness test

Design service release

Service release package test

Develop service Component and assembly test solution

Service component build and test

# Service Transition – Service Validation and Testing (4)

### Some test aspects:

Usability testing	Compatibility testing
Accessibility testing	Documentation testing
Process and procedure testing	Regulatory and compliance testing
Knowledge transfer and competence testing	Security testing
Performance, capacity and resilience testing	Logistics, deployability and migration testing
Volume, stress, load and scalability testing	Coexistence and compatibility testing
Availability testing	Remediation, continuity and recovery testing
Backup and recovery testing	Configuration, build and installability testing
Coherency testing	Operability and maintainability testing

# Service Transition – Change Evaluation (1)

- Compare predicted and actual service performance after change
- Compare intended and unintended effects

#### Reports:

The evaluation report contains the following sections.

Risk profile

A representation of the residual risk left after a change has been implemented and after countermeasures have been applied.

#### Deviations report

- The difference between predicted and actual performance following the implementation of a change.
- A qualification statement (if appropriate)
- A statement of whether or not the change has left the service in a state whereby it could not be qualified.
- A validation statement (if appropriate)
- A statement of whether or not the change has left the service in a state whereby it could not be validated.

#### A recommendation

> A recommendation to Change Management to accept or reject the change.

# Service Transition – Change Evaluation (2)

Upon the evaluation report, the customer can decide on:

- Accepting the change
- Rejecting the change
- Requiring new change with revised predicted performance

# Service Transition – Know How (Knowledge) Management (1)

- Stakeholders and users of services
- Current use of services
- Service Delivery constraints
- Service usage constraints
- Acceptable risk levels and performance expectations
- Uncountable peripherial knowledge, e.g. suppliers requirements and abilities, user skill levels

Service Knowledge Management System (SKMS) contains the Configuration Management System (CMS) that in turn contains CMDBs.

Knowledge transfer is key in successful Service Transition

Data – Information – Knowledge - Wisdom

Service Transition – Knowledge Management (2)

Benefits

- Reduced time for support
- Reduced time to find information
- Reduced dependency on personnel for knowledge

Service Transition – Knowledge Management (3)

Data, information – all different sources Integration – Database structure Processing - Applications Presentation – Reports, viewes, portal

# Service Transition – implementing (1)

- A formal policy for Service Transition should be defined, documented and approved by the management team, who ensure that it is communicated throughout the organization and to all relevant suppliers and partners.
  - A single point for changes to the production services minimizes the probability of conflicting changes and potential disruption to the production environment.
  - People that do not have the authority to make a change or release into the production environment should be prevented from having access.
  - Each release package will be designed and governed by a Request for Change raised via the Change Management process to ensure effective control and traceability.
  - Standardized methods and procedures are used for handling of all changes, in order to minimize the impact of change-related incidents on business continuity, service quality and re-work.
  - All updates to changes and releases are recorded against service assets and/or configuration items in the Configuration Management System.

### Service Transition – implementing (2)

Best practices:

- The definition of a change is clearly defined.
- Internal and external changes are differentiated.
- Changes are justified through the development of a clear Business Case.
- Changes to services are defined in a Service Design Package that Service Transition can use to measure the actual vs predicted progress and performance.
- The existing Change Management process may need to be standardized and enforced.
- Management commitment to enforcing the process is essential, and it must be clearly visible to all stakeholders.
- Configuration auditing aims to identify unauthorized changes.
- Do not accept late requests for changes that cannot be properly managed.

# Service Transition – implementing (3)

- Integrate the Service Transition processes into the quality management system.
  QMS = holds all processes and procedures to deliver a service or product
- Use the organization's programme and project management practices, e.g. PEJL at Swedish authorities, PROPS for Telecom, PMP

Copyright © Katokitsu Utbildning and AXELOS Limited 2016. All rights reserved. Material in this document has been sourced from ITIL ® 2011 publications 2011 Edition. No part of this document may be reproduced in any form without the written permission of both the Katokitsu Utbildning and AXELOS Limited. Permission can be requested at info@katokitsu.se.

- Which activities does service asset and configuration management ensure are performed on configuration items (Cls)?
  - 1. Cls are identified
  - 2. Baselines of configuration are kept
  - 3. Changes to CIs are controlled
  - a) All of the above
  - b) 1 and 2 only
  - c) 1 and 3 only
  - d) 2 and 3 only

- 2. What types of changes are NOT usually included within the scope of change management?
  - a) Changes to a mainframe computer
  - b) Changes to business strategy
  - c) Changes to a service level agreement (SLA)
  - d) The retirement of a service

- 3. Which of the following does service transition provide guidance on?
  - 1. Introducing new services
  - 2. Decommissioning services
  - Transfer of services between service providers
  - a) 1 and 2 only
  - b) 2 only
  - c) All of the above
  - d) 1 and 3 only

- 4. Which of the following are the purposes or objectives of the release and deployment management process?
  - 1. To define and agree release and deployment plans
  - 2. To ensure release packages can be tracked
  - 3. To authorize changes to support the process
  - a) 1 and 2 only
  - b) All of the above
  - c) 2 and 3 only
  - d) 1 and 3 only

### Service Operation

Service Operation includes the execution of all ongoing activities required to deliver and support services.

### Service Operations - Processes

### • Event Management

Management of system/service events, that may or may not require actioning

### Incident Management

Management of service interuptions

• Request fulfillment

Management of customer or user requests that are not generated as an incident from an unexpected service delay or disruption.

### Problem Management

Helping out the incident management process, initiating changes to adress root cause and handling Known Errors.

### Access Management

Granting authorized users the right to use a service, while restricting access to non-authorized users.

# Additional Service Operation functions (ITIL® 2011)

#### **Operations** Management

•<u>IT Operations Control</u> Process Objective: To monitor and control the IT services and their underlying infrastructure. The process IT Operations Control executes day-to-day routine tasks related to the operation of infrastructure components and applications. This includes job scheduling, backup and restore activities, print and output management, and routine maintenance.

•<u>Facilities Management</u> Process Objective: To manage the physical environment where the IT infrastructure is located. Facilities Management includes all aspects of managing the physical environment, for example power and cooling, building access management, and environmental monitoring.

- <u>Application Management</u> Application Management is responsible for managing applications throughout their lifecycle.
- <u>Technical Management</u> Technical Management provides technical expertise and support for the management of the IT infrastructure.

### Service Operations -Event management

**Event Management** is the process that monitors all events that occur through the IT infrastructure to allow for normal operation and also to detect and escalate exception conditions.

Events are typically notifications created by an IT service, Configuration Item (CI) or monitoring tool.

Since Event Management is the basis for monitoring the performance and availability of a service, the exact targets and mechanisms for monitoring should be specified and agreed during the Availability and Capacity Management processes (see Service Design)

**Capacity and Availability Management** define what events are significant, what appropriate thresholds should be and how to respond to them. In return, Event Management will improve the performance and availability of services by responding to events when they occur and by reporting on actual events and patterns of events to determine (by comparison with SLA targets) the aspects of the infrastructure design or operation that can be improved.
### Service Operations – Incident Management, definition

#### Incident: if something is not working as it should.

#### **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.

(Based on AXELOS ITIL® material. Material is reproduced under licence from AXELOS)

**Incident Management** concentrates on restoring the service to users as quickly as possible. Failure of a configuration item that has not yet impacted service is also an incident, for example failure of one disk from a mirror set. Process activities:

Recording, classification, initial support, diagnosis and recovery, closure.

### Service Operations – Incident Management definitions

#### 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
- Hardware

Service not available, application bug System down, printer not printing

#### Work-Around (WA)

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

### Service Operations – Incident Management, priority

Impact
- The effect upon the activities of the business

Urgency - How quickly the Incident needs to be resolve

Priority Urgent, High, Medium, Low

### Service Operations – Incident Management, categorisation

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

### Service Operations – Incident Management, matching

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

### Service Operations – Incident Management, flow



### Service Operations – Incident Management, escalation

Functional escalation / Incident routing

- More or other knowledge

Incident		SLA 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

### Service Operations – Incident Management, benefits

#### 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

### Service Operations – Request Fulfillment

Service Request: demands on IT dept. Can be information or small changes. Purpose:

- To provide a channel for users to request and receive standard services for which a pre-defined approval and qualification process exists. May require update of CMDB.
- To provide information to users and customers about the availability of services and the procedure for obtaining them.

In an organization where large numbers of Service Requests have to be handled, it may be appropriate to handle Service Requests as a completely separate (i.e. not Incident Management) work stream – and to record and manage them as a separate record type.

### Service Operations -Problem Management

#### 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.

#### 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

(Based on AXELOS ITIL® material. Material is reproduced under licence from AXELOS)

### Service Operations – Problem Management, flow



### Service Operations – Problem Management flow



### Service Operations – Problem Management

#### Problem Management involves

- root-cause analysis (RCA) to determine and resolve the cause of events and incidents,
- proactive activities to detect and prevent future problems/incidents and a
- Known Error subprocess (v2) to allow quicker diagnosis and resolution if further incidents do occur.

#### Purpose:

- to prevent problems and resulting incidents from happening,
- to eliminate recurring incidents and
- to minimize the impact of incidents that cannot be prevented.

#### Method:

• Fishbone diagram, aka Ishikawa diagram

### Service Operations – Problem Management

- Reactive Problem Management is part of Service Operation
- **Proactive** Problem Management is initiated in Service Operation, but generally driven as part of Continual Service Improvement

### Service Operations – Problem Management, proactive

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

Service Operations – Problem Management

Known Error Database:

To store problems and their temporary solutions (workarounds). To help resolve quickly any further occurrences of the incidents/problems that occur.

Known Errors can also be recorded by Service / application design and testing if the error exists even when the service / application is deployed.

Problem Management may initiate a change through raising an RFC. The error record is open until the change is implemented.

### Service Operations – Access Management

- Provides the right for users to be able to use (or not) a service or group of services. Access Management does not decide who has access to which IT services. It is the execution of policies and actions defined in Security and Availability Management (see next slide).
- Tasks may be delegated to the Service Desk

Various inputs:

- A standard request generated by the Human Resource (system). This is generally done whenever a person is hired, promoted, transferred or when they leave the company
- A Request for Change
- A Service Request submitted via Request Fulfillment

### Service Operations – Access Management

The process is responsible for allowing users to make use of IT services, data or other assets.

Access management helps to protect the *confidentiality, integrity and availability* of assets by ensuring that only authorized users are able to access or modify them.

Access management implements the policies of information security management and is sometimes referred to as rights management or identity management.

### Service Operation – the role of communication

#### Communication in general:

- •Must have an intended purpose and/or a resultant action
- •Must have a clear audience
- •Audience must know the need for communication
- •How will the audience use the information?

#### Service Operation communication types and purposes:

 Routine operational communication, Performance reporting, Communication related to changes, Communication between shifts, Communication related to exceptions, Communication related to emergencies, Training, Communication of strategy and design to Service Operation teams, Communication in projects, etc

- Which of the following activities is carried out by facilities management?
  - a) The management of IT services that are viewed as "utilities", such as printers or network access
  - Advice and guidance to IT operations on methodology and tools for managing IT services
  - c) The management of the physical IT environment such as a data centre
  - d) The procurement and maintenance of tools that are used by IT operations staff to maintain the infrastructure

- 2. Which of the following is the BEST example of a workaround?
  - A technician installs a script to temporarily divert prints to an alternative printer until a permanent fix is applied
  - A technician tries several approaches to solve an incident. One of them works, although the technician does not know why
  - After reporting the incident to the service desk, the user works on alternative tasks while the problem is identified and resolved
  - A device works intermittently, allowing the user to continue working at degraded levels of performance while the technician diagnoses the incident

- 3. Which of the following should be treated as an incident?
  - 1.A user is unable to access a service during service hours
  - 2. An authorized IT staff member is unable to access a service during service hours
  - 3.A network segment fails and the user is not aware of any disruption to service
  - 4.A user contacts the service desk about slow performance of an application
  - a) All of the above
  - b) 1 and 4 only
  - c) 2 and 3 only
  - d) None of the above

- 4. Which of the following areas would technology help to support?
  - 1. Self help
  - 2. Reporting
  - 3. Release and deployment
  - 4. Process design
  - a) 1, 2 and 3 only
  - b) 1, 3 and 4 only
  - c) 2, 3 and 4 only
  - d) All of the above

# Continual Service Improvement

Vision - objective, strategy, tactical goals, operational goals

Wish - what you should measure

Can – what you can measure

Collect – gather the data

Process – process the data->information

Analyse – information -> knowledge

Report – to CIO

Act - implement

### Continual Service Improvement – Service Automation

- Improves Utility and Warranty
- Improve quality of service
- Reduce costs
- Reduce risks by reducing complexity and uncertainty
- The following are some of the areas where service management can benefit from automation:
- Design and modelling
- Service catalogue
- Pattern recognition and analysis
- Classification, prioritization and routing
- Detection and monitoring
- Optimization

- Preparing for automation
- Applying automation indiscriminately can create more problems or increase existing ones
- > The following guidelines should be applied:
  - Do not be in a hurry to automate tasks and interactions that are neither simple nor routine
  - Simplify the service processes before automating them

### CSI Register

It is beneficial to keep track of the CSI opportunities and activities, in order to be able to make decisions and manage the improvement activities and record decisions.

A register of some kind can be implemented for the purpose, that can be a simple excel datasheet or a function of the IT Service Management toolset used.

### CSI – Critical Success Factors (CSF), KPIs

Critical Success Factor – anything that needs to happen that a process should work.

**Key Performance Indicator (KPI)** – metrics that measure the process' performance. Can be qualitativ or quantitativ. If defined well, it helps to understand service quality, performance, compliance, value. KPIs are also used to answer the question: 'where are we now' – thus creating a baseline to build on.

Measurements can focus on technology (e.g. components), processes (e.g. leadtimes, resources) or on service performance (e.g. availability, reliability, serviceability).

- Which is the first activity of the continual service improvement (CSI) model/approach?
  - a) Understand the business vision and objectives
  - b) Carry out a baseline assessment to understand the current situation
  - c) Agree on priorities for improvement
  - d) Create and verify a plan

- 2. What are the four stages of the Deming Cycle?
  - a) Plan, Measure, Monitor, Report
  - b) Plan, Check, React, Implement
  - c) Plan, Do, Act, Audit
  - d) Plan, Do, Check, Act

- 3. Which of the following does continual service improvement (CSI) provide guidance on?
  - 1.How to improve process efficiency and effectiveness
  - 2. How to improve services
  - 3.Improvement of all phases of the service lifecycle
  - a) 1 and 2 only
  - b) 1 and 3 only
  - c) 2 and 3 only
  - d) All of the above

- 4. Which of the following is NOT a type of metric described in continual service improvement (CSI)?
  - a) Process metrics
  - b) Service metrics
  - c) Personnel metrics
  - d) Technology metrics

### Service Desk function

- 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<sup>®</sup> 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

### Service Desk 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

# Service Desk responsibilities

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 / CustomerConfirmation, status and progressProduce management reports

### Key worries

- Skepticism
- Too much new terminology
- How do managers and Customers see this?
- Any known companies that have implemented ITIL®?
- Supporting tools any recommendations?
- Where is the focus, what lifecycle?
- What / where are the processes for developing the actual changes on the low level, e.g. development of an application?
- How do you implement all this?
- Sharing Knowledge technical, expert staff
- Glossary refer to <u>https://www.axelos.com/search?searchtext=glossary</u>
### After the course

Now you ...

- •Understand the main characteristics of a service's lifecycle
- •Understand how IT creates value
- •Know the most important processes in ITIL® 2011

•Are able to create additional value through more effective responses to Customer needs

•Understand your role within the ITIL® framework

## Qualification scheme

#### Do you want to know more?

This is the qualification scheme for the training:

- Foundation
- Intermediate level
- Managing across the lifecycle
- Expert level
- Master



## Credit awards for each course



#### • Incident Management

- A User discovers that he cannot access the intranet. After trying several sites he can see that only a certain HR site is not accessible, the other sites work. He asks the nearest collegaue to check if he also has problems. (Case A:Yes, Case B: No)
  - What are the main steps from the User?
  - What are the main steps from the IT department?
  - What organisational functions and processes may be involved?

### • Event Management

- The event monitoring system reports that a server disk used for backup of the main business application database is 85% full.
  - Which functions and processes are / can be involved in case of this event? How?

#### Service Level Management

- During the night, at 3 o'clock, a failure has stopped a major business application to run. The first user starts early in the morning, at 7 o'clock and discovers that the application is not working.
- The user reports the incident which will be handled promptly and the function is restored at 10 o'clock.
  - How should the Business and IT functions act thereafter?

Copyright © Katokitsu Utbildning and AXELOS Limited 2016. All rights reserved. Material in this document has been sourced from ITIL ® 2011 publications 2011 Edition. No part of this document may be reproduced in any form without the written permission of both the Katokitsu Utbildning and AXELOS Limited. Permission can be requested at info@katokitsu.se.

#### Change Management

- A server disk must be replaced because:

» A) Is nearly full

» B) Is broken

#### Task:

- A) Identify related activities, processes, lifecycle(s)
- B) Name some functions that can be involved

# Repetition for certification

ITIL public vs proprietary CSI : vision, objectives, PDCA (Deming Quality cycle) Change Management: -CAB: Advisor, Change authority -Remediation Release Mgt: - DML, including licence management Generic keyword: Agreed, Customer / Business Roles: Process owner, service owner Problem mgt: Problem closure when Change implemented, Ishikawa Incident mgt: processflow fr registration / logging until closure Security: CIA Confidentiality, Integrity, Availability Risk mgt: CRAMM : ITSCM, Availability, Security Capacity management: business-, service-, component performance (subprocesses) Service Desk, local, central, virtuel, follow-the-sun Function: Definition, Operations Control, Facility Mgt = Operations Mgt. Application Mgt, Technical Mgt. Process: delivers to stakeholders, has purpose, measurable. SLM: SLR - Service Level Requirements, SLA (Customer-IT), OLA (IT-IT) Supplier mgt: Underpinning contract, UC (3rd party), Supplier Database SDP: incl. Transition Plan Process model layers Automation: anything, everything Strategy 4Ps and Design 4Ps Knowledge Management: SKMS / CMS / CMDBs Fit for use Warranty, Fit for purpose Utility = Value 'Ensure' = already at Design