Computer Center Management

❑   ITIL, SERVICE Strategy and SERVICE Design

What is ITIL?

- **Systematic** approach to high quality IT service delivery

- **Documented** best practice for IT Service Management

- Provides common language with **well-defined terms**

- Developed in 1980s by what is now The Office of Government Commerce

What about v3?

- ITIL started in 80s.
    - 40 publications!
- v2 came along in 2000-2002
    - Still Large and complex
    - 8 Books
    - Talks about what you should do
- v3 in 2007
    - Much simplified and rationalised to 5 books
    - Much clearer guidance on how to provide service
    - Easier, more modular accreditation paths
    - Keeps tactical and operational guidance
    - Gives more prominence to strategic ITIL guidance relevant to senior staff
    - Aligned with ISO20000 (1st international standard for IT service management, mostly based on ITIL – 2005)

Key Concepts (1/4)

- **Service**
  - Delivers value to customer by facilitating outcomes customers want to achieve without ownership of the specific costs and risks
  - e.g. a "backup service" means that you don't have to care about how much tapes, disks or robots cost and you don't have to worry if one of the staff is off sick or leaves

Key Concepts (2/4)

- **Service Level**
  - Measured and reported achievement against one or more service level targets. E.g.:
    - Red = 1 hour response 24/7
    - Amber = 4 hour response 8/5
    - Green = Next business day
- **Key Performance Indicators (KPIs)**
  - Quantifiable measurements that reflect the critical success factors of an organization (KPIs usually are long-term considerations)
- **Service Level Agreement (SLA)**
  - Written and negotiated agreement between Service Provider and Customer documenting agreed service levels and costs

Key Concepts (3/4)

- **Configuration Management System (CMS)**
  - Tools and databases to manage IT service provider's configuration data
  - Contains Configuration Management Database (CMDB)
    - Records hardware, software, documentation and anything else important to IT provision
  - Lot of tools vendors: IBM (*Tivoli*), BMC (*Atrium*), HP, Microsoft, CA, …

- **Release**
  - Collection of hardware, software, documentation, processes or other things require to implement one or more approved changes to IT Services

Key Concepts

- Incident
  - Unplanned interruption to an IT service or an unplanned reduction in its quality
- Problem
  - Unknown (… as briefly as possible …) underlying cause of one or more incidents
- Work-around
  - Reducing or eliminating the impact of an incident without resolving it

4 P's of Service Management

- **People** – skills, training, communication

- **Processes** – actions, activities, changes, goals, improving paths

- **Products** – tools, monitors, measures, documents

- **Partners** – specialist suppliers

Service Delivery Strategies

Strategy	Features
In-sourcing	All parts internal
Out-sourcing	External resources for specific and defined areas (e.g. Contract cleaners)
Co-Sourcing	Mixture of internal and external resources
Knowledge Process Outsourcing (domain-based business expertise)	Outsourcing of particular processes, with additional expertise from provider
Application Outsourcing	External hosting on shared computers – applications on demand (e.g. Survey Monkey, Meet-o-matic)
Business Process Outsourcing	Outsourcing of specific processes e.g. HR, Library Circulation, Payroll
Partnership/Multi-sourcing	Sharing service provision over the lifecycle with two or more organisations

Service Delivery Levels

Application SW

OS & Middleware

HW & Bld Infrastructures

- **SaaS** – Software as a Service

- **PaaS** – Platform as a Service

- **IaaS** – Infrastructures as a Service

The Service Lifecycle & the 5 Lifecycle Stages

Processes & Functions

- **Process**
  - Structured set of activities designed to accomplish a defined objective
  - Inputs & Outputs
  - Measurable
- **Function**
  - Team or group of people and tools they use to carry out one or more processes or activities
  - Own practices and knowledge body

ITIL Roles (Owner vs. Manager)

- **Process Owner**
  - Ensures Fit for Purpose
- **Process Manager**
  - Monitors and Reports on Process
- **Service Owner**
  - Accountable for Delivery
- **Service Manager**
  - Responsible for initiation, transition and maintenance. Lifecycle!

... more Roles

- Business Relationship Manager
- Service Asset & Configuration
  - Service Asset (resources) Manager
  - Service Knowledge (capabilities) Manager
  - Configuration Manager
  - Configuration Analyst
  - Configuration Librarian
  - CMS tools administrator

The 5 Service Lifecycle Stages

- **Service Strategy**
  - Strategy generation
  - Financial management
  - Service portfolio management
  - Demand management
- **Service Design**
  - Capacity, Availability, Info Security Management
  - Service level & Supplier Management
- **Service Transition**
  - Planning & Support
  - Release & Deployment
  - Asset & Config management
  - Change management
  - Knowledge Management
- **Service Operation**
  - Problem & Incident management
  - Request fulfilment
  - Event & Access management
- **Continual Service Improvement**
  - Service measurement & reporting
  - 7-step improvement process

Stage 1 – Service Strategy

- What are we going to provide?
- Can we afford it?
- Can we provide enough of it?
- How do we gain competitive advantage?
- Perspective
  - Vision, mission and strategic goals
- Position
- Plan
- Pattern
  - Must fit organisational culture

Service Strategy has four activities

Define the Market

Develop the Offerings

Develop Strategic Assets

Prepare for Execution

Service Assets

- Resources
  - Things you buy or pay for
  - IT Infrastructure, people, money
  - Tangible Assets
- Capabilities
  - Things you grow
  - Ability to carry out an activity
  - Intangible assets
  - Transform resources into Services

Service Portfolio Management

- Prioritises and manages investments and resource allocation
- Proposed services are properly assessed
  - Business Case
- Existing Services Assessed. Outcomes:
  - Replace
  - Rationalise
  - Renew
  - Retire

Demand Management

- Ensures we don't waste money with excess capacity
- Ensures we have enough capacity to meet demand at agreed quality
- Patterns of Business Activity to be considered
  - E.g. Economy 7 electricity, Congestion Charging, …
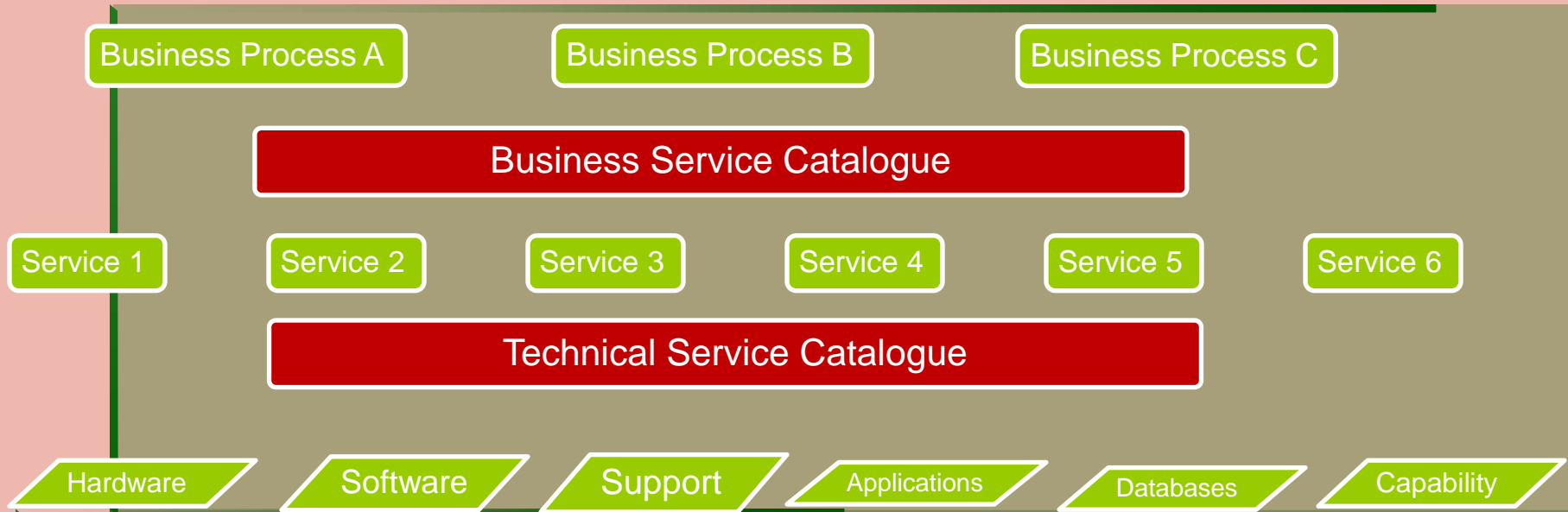
Stage 2 – Service Design

- How are we going to provide it?
- How are we going to build it?
- How are we going to test it?
- How are we going to deploy it?

Holistic approach to determine the impact of change introduction on the existing services and management processes

Processes in Service Design

1. Service Catalogue Management
2. Service Level Management
3. Capacity Management
4. Information Security Management
5. Availability Management
6. ITSCM (disaster recovery)
7. Supplier Management

P#1 – Service Catalogue

| Business Process A | Business Process B | Business Process C |

Business Service Catalogue

| Service 1 | Service 2 | Service 3 | Service 4 | Service 5 | Service 6 |

Technical Service Catalogue

| Hardware | Software | Support | Applications | Databases | Capability |

Keeps service information away from business information
Provides accurate and consistent information enabling service-focussed working

P#2 – Service Level Management

- ***Service Level Agreement*** (**SLA**)
  - Operational Level Agreements
    - Internal
  - Underpinning Contracts ("*SLAs are for service management, contract is for the court ...*")
    - External Organisation
    - Supplier Management
  - Generally an annexe to a contract
  - Should be clear and fair and written in easy-to-understand, unambiguous language
- Success of SLM: ***Key Performance Indicators*** (**KPIs**)
  - How many services have SLAs?
  - How does the number of breaches of SLA change over time (we hope it reduces!)?

Things you might find in an SLA

Service Description	Hours of operation	User Response times
Incident Response times	Resolution times	Availability & Continuity targets
Customer Responsibilities	Critical operational periods	Change Response Times

Types of SLA

- **Service-based**
  - All customers get same deal for same services
- **Customer-based**
  - Different customers get different deal (and different cost)
- **Multi-level**
  - These involve corporate, customer and service levels and avoid repetition

SLA, an example

- ## Online Services Availability

  - **Minutes of service unavailability**
  - Period 1 definition: MON-FRI 8-18
  - Period 2 definition: other
  - Observation interval 1 YEAR:
    - "*Inappropriate*" SL: more than 523 min/year in period 1, more than 680 in period 2
    - "*Insufficient*" SL: more than 756 min/year in period 1, more than 983 in period 2
    - "*Unsuitable*" SL: more than 1.047 min/year in period 1, more than 1.361 in period 2
  - Observation interval 1 MONTH:
    - "*Inappropriate*" SL: n/a
    - "*Insufficient*" SL: n/a
    - "*Unsuitable*" SL: more than 209 min/month in period 1, more than 272 in period 2

SLA, more examples

- ## Online Services Performance
  - Transactions mean response time ≤ 2,5 sec
  - Maximum percentage of transactions ending in more than 1 sec = 5%

- ## DR Service
  - **RTO** (Recovery Time Option):
    - Applications A, B, C, ... restarting in 2 hours after the disaster formal statement
    - Applications X, Y, Z, ... restarting in 24 hours after the disaster formal statement
  - **RPO** (Recovery Point Option):
    - No data loss for applications A, B, C, ...
    - Maximum data loss for applications X, Y, Z, ... updates in the last hour before the disaster

P#3 – Capacity Management

- Right Capacity, Right Time, Right Cost!

- Balances Cost against Capacity so minimises costs while maintaining quality of service

P#4 – Information Security Management

- **Confidentiality**
  - Making sure only those authorised can see data
- **Integrity**
  - Making sure the data is accurate and not corrupted
- **Availability**
  - Making sure data is supplied when it is requested

P#5 – Availability Management

- Ensure that IT services are available … minimum at the agreed targets
- Lots of Acronyms
  - Mean Time Between Service Incidents
  - Mean Time Between Failures
  - Mean Time to Restore Service
- Resilience increases availability
  - Service can remain functional even though one or more of its components have failed

P#6 – ITSCM

- **IT S**ervice **Continuity M**anagement
- Ensures resumption of services within agreed timescale
- Business Impact Analysis informs decisions about resources
  - E.g. Stock Exchange can't afford 5 minutes downtime but 2 hours downtime probably wont badly affect a departmental accounts office or a college bursary

Standby for liftoff...

- **Cold**
  - Accommodation and environment ready but no IT equipment ➔ … WEEKS

- **Warm**
  - As cold plus backup IT equipment to receive data ➔ … 24 ÷ 48 HOURS

- **Hot**
  - Full duplexing, redundancy and failover ➔ … MINUTES ÷ COUPLE of HOURS

... not to be confused ...

- **Availability Management**
  - The process that defines SLA on IT Services availability and provides their compliance

- **Continuity Management**
  - The process by which **PROACTIVE** measures are put in place and managed to ensure that IT Services can continue **should** an incident occur

- **Disaster Recovery**
  - A set of **REACTIVE** processes activated to recover IT Services **after** a serious incident has occurred

- **Contingency Plan**
  - A set of **business** emergency procedures to be used during missing or severe defecting IT Services

P#7 – Supplier Management

- To ensure that all contracts with suppliers support the needs of the business, and that all suppliers meet their contractual commitments:
  - Providing the Supplier Management Framework
  - Evaluation of New Suppliers and Contracts
  - Establishing New Suppliers and Contracts
  - Processing of Standard Orders
  - Supplier and Contract Review
  - Contract Renewal or Termination