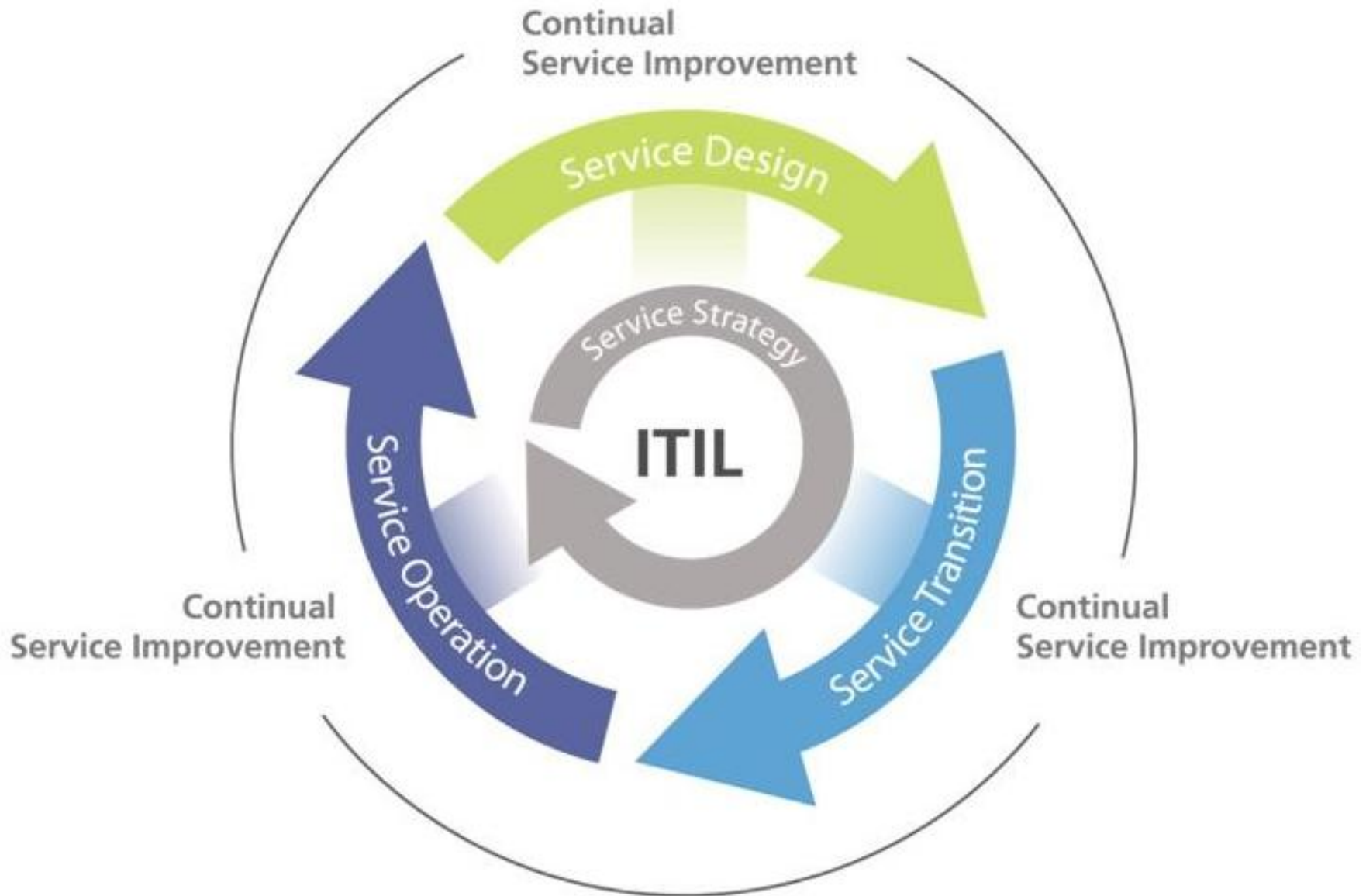


1. Continuous Service Improvement

Recap of ITIL cycle



Continual Service Improvement (CSI)

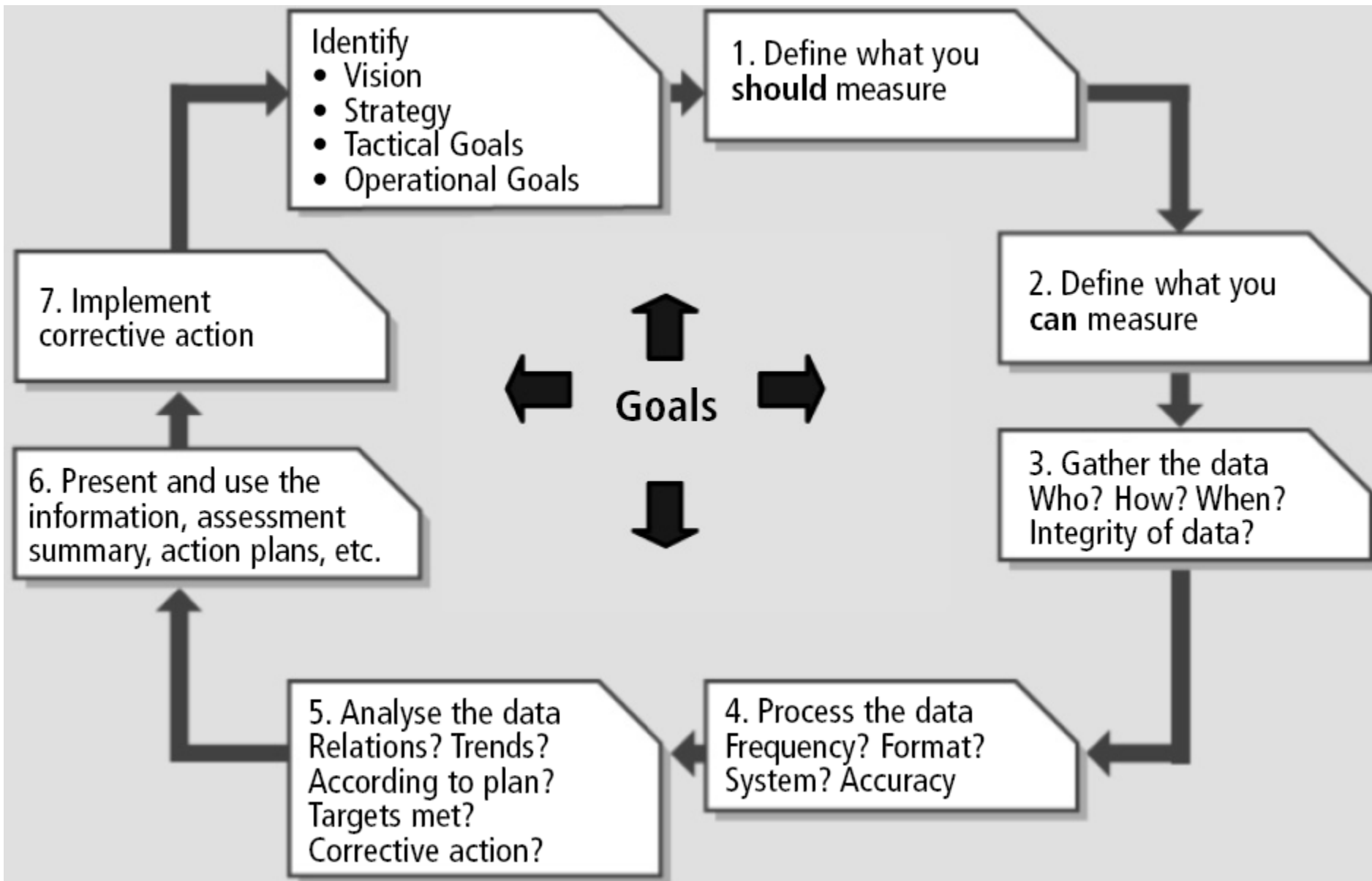
- Continually align and re-align IT services to the changing business needs by identifying and implementing improvements to IT services that support business improvements.

Service Metric

- Schedule
 - Costs
 - Defects
 - Productivity
 - Customer Satisfaction
- (Baselines are established as markers or starting points for later comparison.)

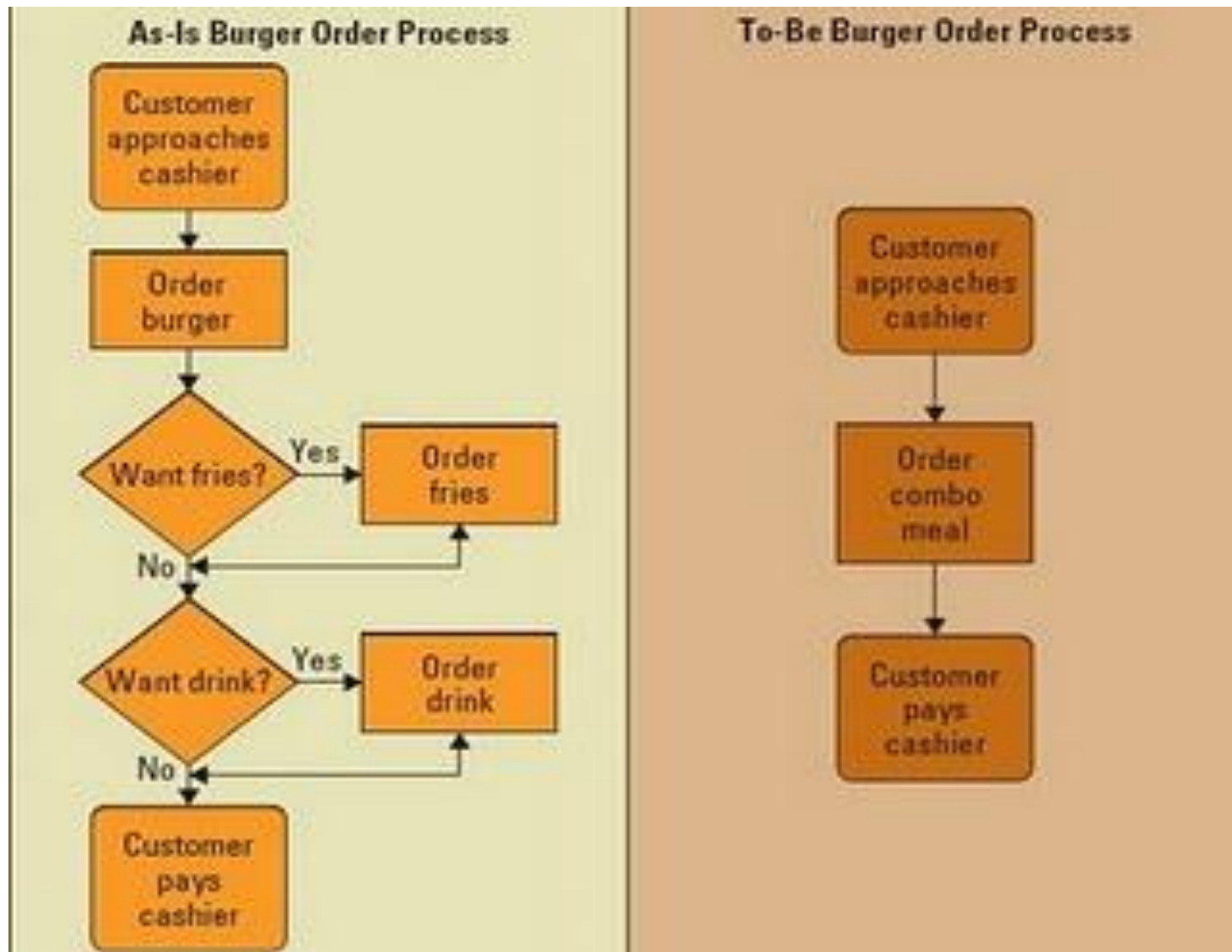
7-step Improvement Process

- Define what you should measure
- Define what you can measure
- Gather the data
- Process Data (Reporting)
- Analyze the data
- Present the information
- Implement Corrective Action
- Monitoring and data collection through the service life cycle



Underlying critical activities

- Service Measurement
 - Don't just measure at the component level; measure at the service level
- Service Reporting
 - Reporting should not be just for technical people, should be of real interest and importance to the business people
 - E.g. how IT works to improve service or innovate service; a means for IT to market its offering



2. Applying ITIL

- Cloud Computing
as an example

Why is ITSM(Service Management) Needed in the Cloud?

- It is remote, requires best practice adoption
 - Focuses on service provisioning and satisfies business needs
 - Ensures high quality, more cost effectiveness and customer experience
- ITSM ensures business-IT alignment in a cloud remote paradigm
 - Utilizes cloud computing as a way to improve a current service or implement a new service
 - CSF's, KPI's and CSI required for continued service

Service Strategy in the Cloud

- Portfolio management, demand management, and financial management
 - Portfolio management describes the cloud candidate
 - Demand Management for workload calculation
 - Financial management for costs calculation to meet workload demand
- Potential problems: inefficient service delivery, and/or ineffective charging algorithm

Service Design in the Cloud

- Services are designed based on what will best deliver on Service Strategy
- Services in the Cloud are:
 - Delivered remotely
 - Focus is typically on service level contracts
- SLAs are required
 - Service deliverables are understood by all parties
- Suppliers have to be identified and selected
- Availability and capacity to ensure services described in the portfolio and specified in the SLAs can be delivered by cloud computing suppliers
- IT service continuity management and information security management must be in place before the service goes “live”

Service Operation in the Cloud

- Service Operation requires service monitoring
 - Ensures the delivery of defined and agreed to service levels specified in SLAs
- Role/ownership of Service Operation processes or support points must be clearly defined and monitored
 - Service desks may share primary focus from incident resolution and rapid response to problem management
- Access management is critical to maintain security and satisfy any customer trust requirements

Service Transition in the Cloud

- Governance issues may need to be dealt with who owns change management
 - Internal IT or the cloud suppliers
 - Who will own and manage changes in the future
- Release and deployment management is required as Service is rolled out to ensure it is successful
- Underpinning service transition are service asset and configuration management which will detail exactly who owns the responsibility for the devices and software required to provide the new service

Continuous Service Improvement in the Cloud

- Cloud Computing requires CSI for agility, adaptability in responding quickly and effectively to changes in business condition
 - Identifying, qualifying and reporting on service success factors is mandatory for both the customer and the service provider
 - Continuous service improvement ensures the focus stays on services, business/IT alignment and measurement in a cloud remote paradigm

3. ITIL in real life

2010 – BMC Survey IT priorities

Item	Critical	Very Important	Somewhat Important	Not Very Important	Not at All Important
Reducing IT Cost	34%	49%	14%	2%	1%
Regulatory Compliance	29%	40%	22%	7%	1%
Improving Availability and Performance of Business Services	22%	50%	23%	4%	0%
Incident and Problem Management	17%	49%	24%	9%	1%
Change Management	15%	44%	30%	9%	2%
Virtualization	13%	42%	33%	10%	2%
Capacity Planning	13%	42%	32%	11%	2%
IT Budgeting and Charge Back	13%	36%	35%	12%	3%
Data Center Consolidation	13%	33%	29%	19%	5%
IT Risk Management	12%	36%	40%	10%	2%
Improving Internal User Satisfaction	11%	45%	38%	5%	0%
Service Desk Consolidation	8%	26%	35%	25%	6%
IT-Enabled Process Improvement (ITIL, COBIT, ISO/IEC 20000)	7%	38%	36%	16%	3%
Asset and Vendor Management	5%	36%	38%	17%	4%
Cloud Computing (See Virtualization above, because Cloud Computing may be part of a virtualization initiative)	4%	16%	25%	37%	18%

Item	Maintaining & Improving	Implementing	In Pilot	Planning	Not Considering
Improving IT Availability	47%	23%	7%	16%	7%
Change Management	46%	17%	7%	17%	12%
Problem Management	44%	17%	9%	18%	13%
Virtualization of Infrastructure	34%	27%	10%	17%	11%
Consolidating Service Desks	32%	20%	7%	15%	26%
Consolidating Data Centers	30%	23%	7%	15%	24%
Automating Network/Server Configuration	29%	16%	8%	19%	28%
CMDB or CMS	28%	14%	11%	19%	28%
Cloud Computing (See Virtualization)	6%	8%	7%	25%	53%

2009 ITIL survey

The 2009 “ITIL and Business Performance Management” was targeted at **EMEA** (Europe, Middle East and Africa) companies

- **26** questions
- Carried out between November and December 2009
- **20** countries are contacted (Middle East counts as one)
- **17** countries participated
- **70** persons from **11** countries answered
 - 38 from France
 - 8 from Austria
 - 5 from Norway

Five Areas

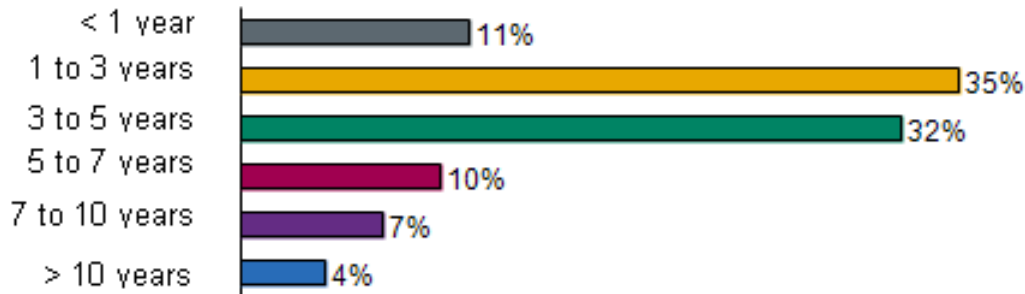
- **History and Investment** (2 questions)
 - “What is the length of investment in ITIL practices?”
- **Customers and Services** (3 questions)
 - “What is the level of customer relations management between the IT Department and its internal customers?”
- **Organization and Processes** (5 questions)
 - “What is the current positioning of ITIL projects in the IT Department”
- **Industrial Integration** (6 questions)
 - “What is the maturity of the IT Service Management?”
- **Performance Management** (10 questions)
 - “What is the maturity of IT Performance Management?”

History and Investment

The question of investment is important because it's the first maturity indicator of companies about the best practices ITIL.

History and Investment

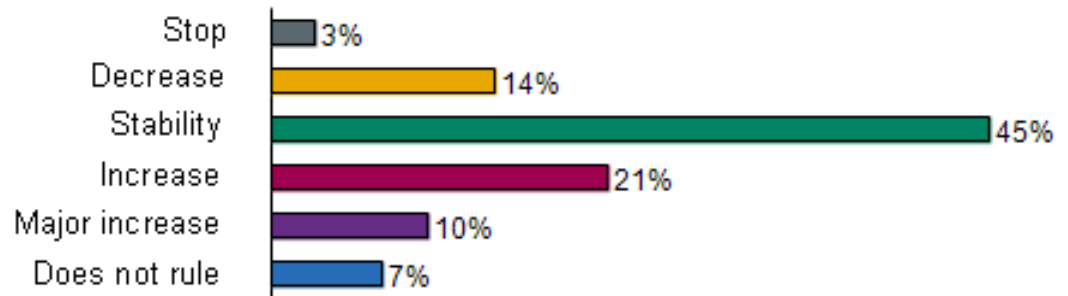
When did you start your investment into ITIL best practices?



The average time of investment in ITIL is **3.5 years** in 2009 against **2.9 years** in 2008

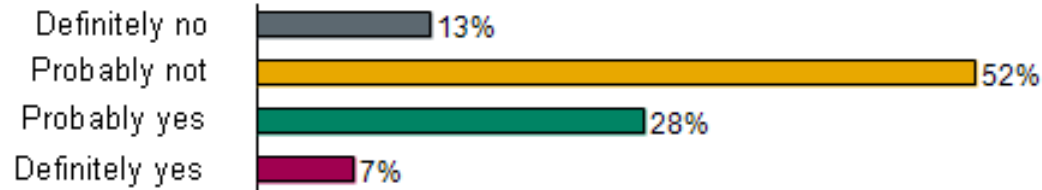
Since 2007, ITIL budgets, for the most part, have either remained stable or have grown.

What is the estimate for your ITIL budgets?



Performance Management

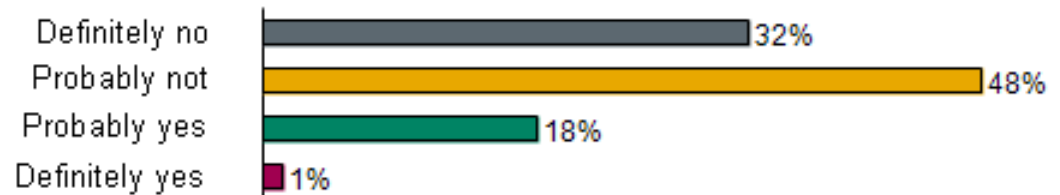
Can you measure the productivity gains obtained with the implementation of ITIL?



It's still difficult to measure the contribution of these practices about the productivity.

The innovation isn't integrated in the CSI.

Is the innovation management integrated in Continual Service Improvement?



Conclusion

- The survey confirm :
 - ITIL implementation with the Request Fulfillment Management, the service contract and service portal
 - Harmonization of processes and rationalization of tools
 - A pragmatical implementation of ITIL v3
- To ensure an optimal QoS, IT departments invest :
 - To rationalize their functioning using ITIL
 - To evaluate their performance using KPI
- The 2 key factors for deploying ITIL are:
 - organizational change management
 - sponsorship of managers

4. Other than ITIL – Service Science Research Perspective

Limitations of ITIL

- IT services delivered through a mix of structured and unstructured work activities
- ITIL focus on standardized processes (e.g. capacity management, availability management) to provide high quality IT services
- ITIL may be over-killing for small-to-medium enterprises
- Focusing only on standardization without considering support for unstructured activities misses the opportunity for vast improvement in efficiency and quality of IT service delivery

Presence of Unstructured Activities in IT services (Bailey et.al. 2007)

- Dynamic processing
- Knowledge intensive
- Customization
- Ad-hoc collaborations with colleagues

Examples of unstructured activities

- Seeking information from external sources
- Writing customer scripts
- Troubleshooting
- Discovering change impacts
- Sharing information on Demand

Challenges in modeling and designing IT services (Ramanathan et.al. 2009)

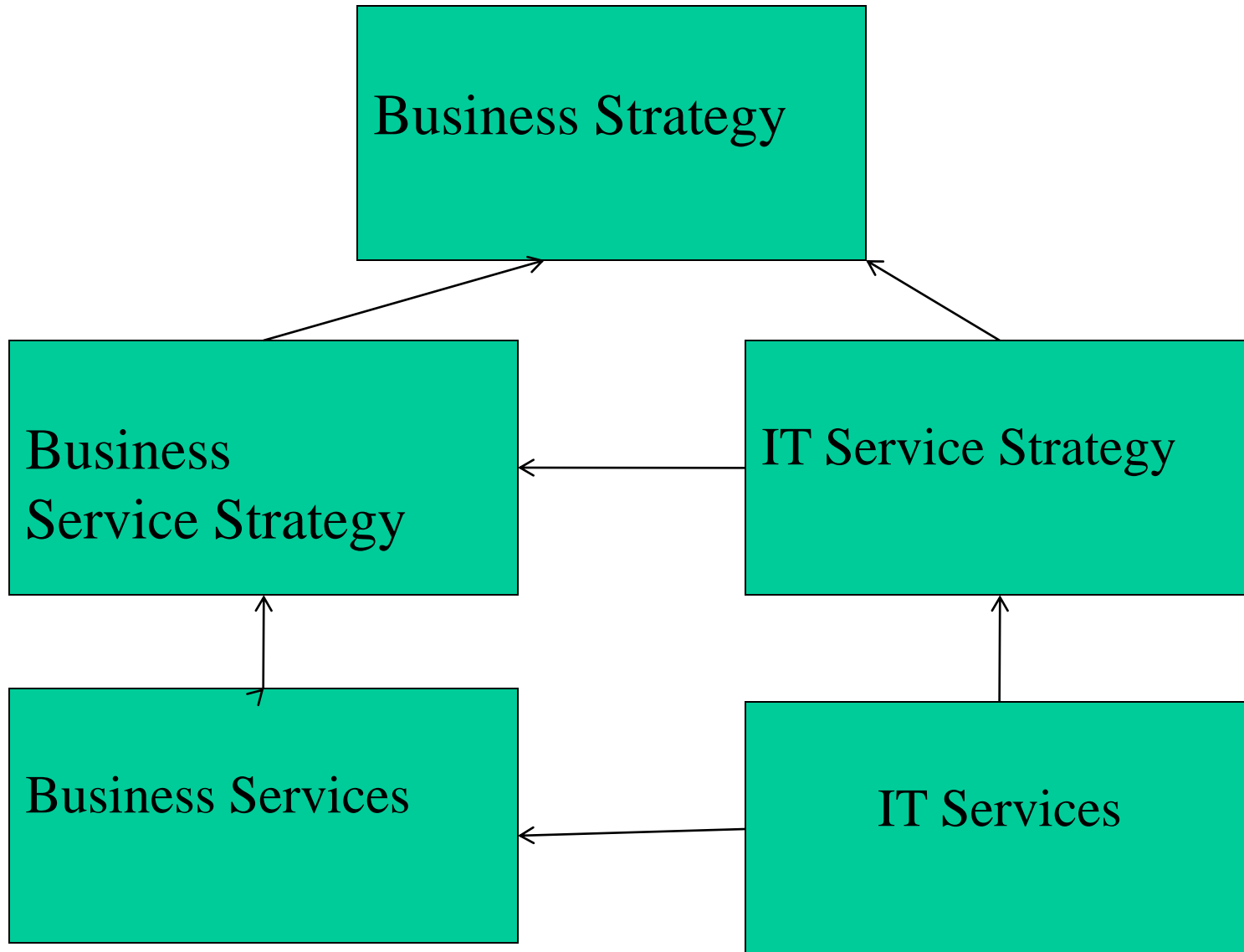
- Unstructured ad-hoc processes
- Knowledge-intensive
- Global processes co-ordination
- Shared services between multiple customers
- Mixed-mode services (e.g. delivery of PC and then installation of software)
- Many-to-many customer-provider relationship

Activity Analysis

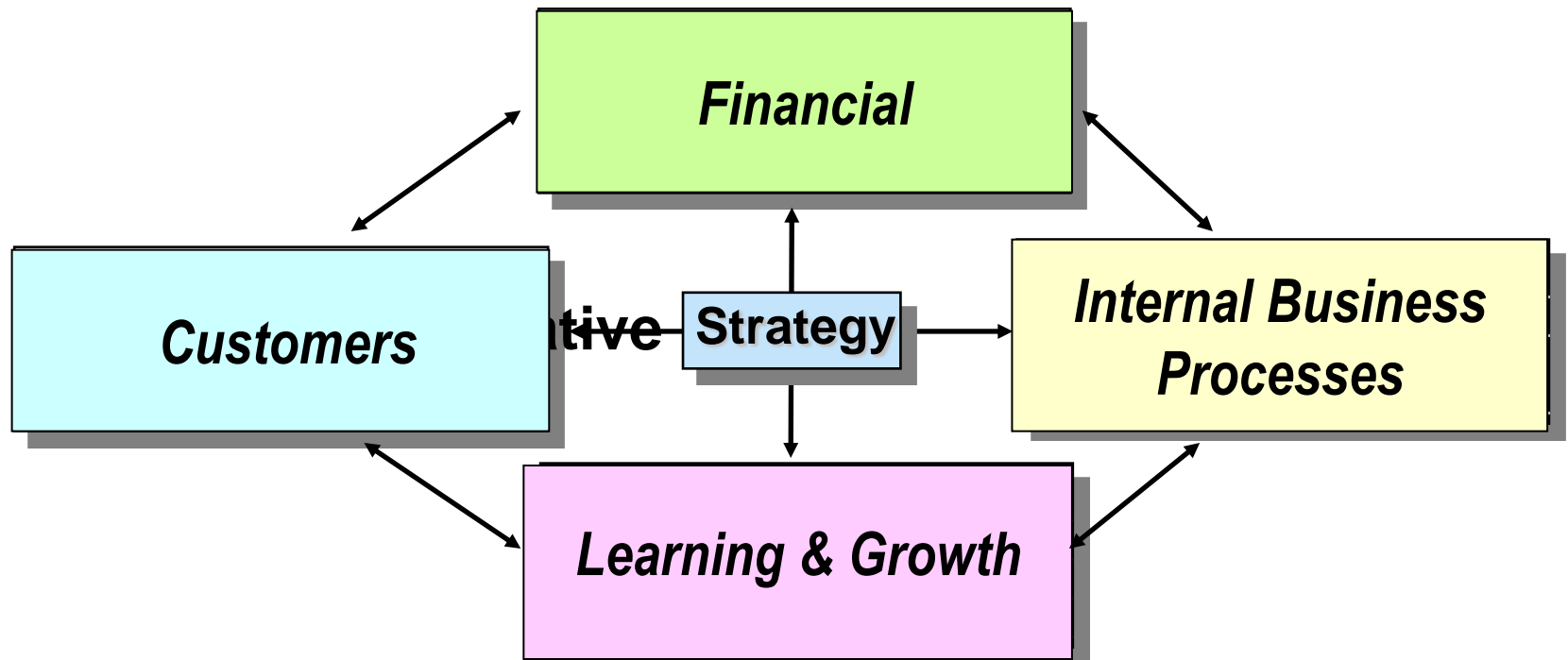
- Challenges: record and analyze unstructured activities
- Need tools to record human interaction, tool usage (maybe online chat, discussion forum, collaborative workflow can be used to record human interaction)
- Efficiency, quality and cost analyses
- Analyses can be used to build models which can be used in cost/activity planning and forecasting

5. IT Service Management and ITIL Revision

Strategy -> Operation



Four Perspectives of the Balanced Scorecard

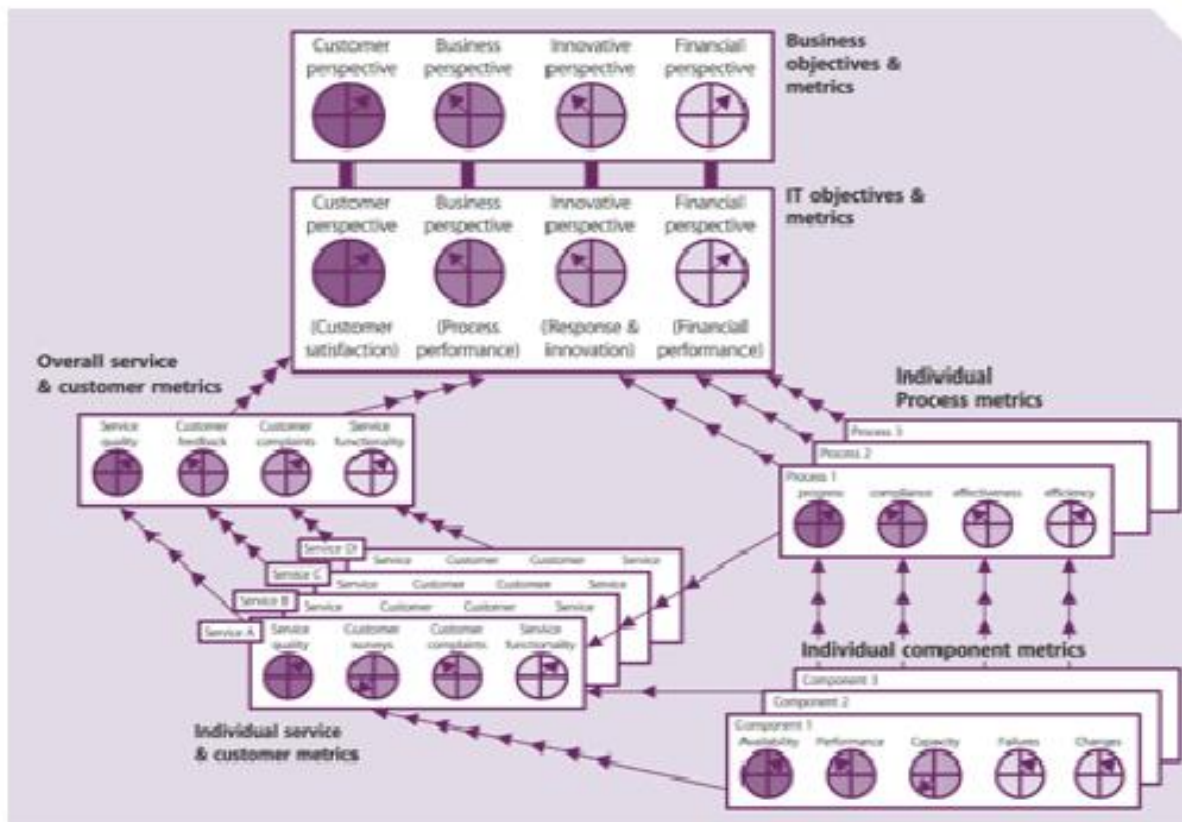


Business Balanced Scorecard vs IT Services Balanced Scorecard

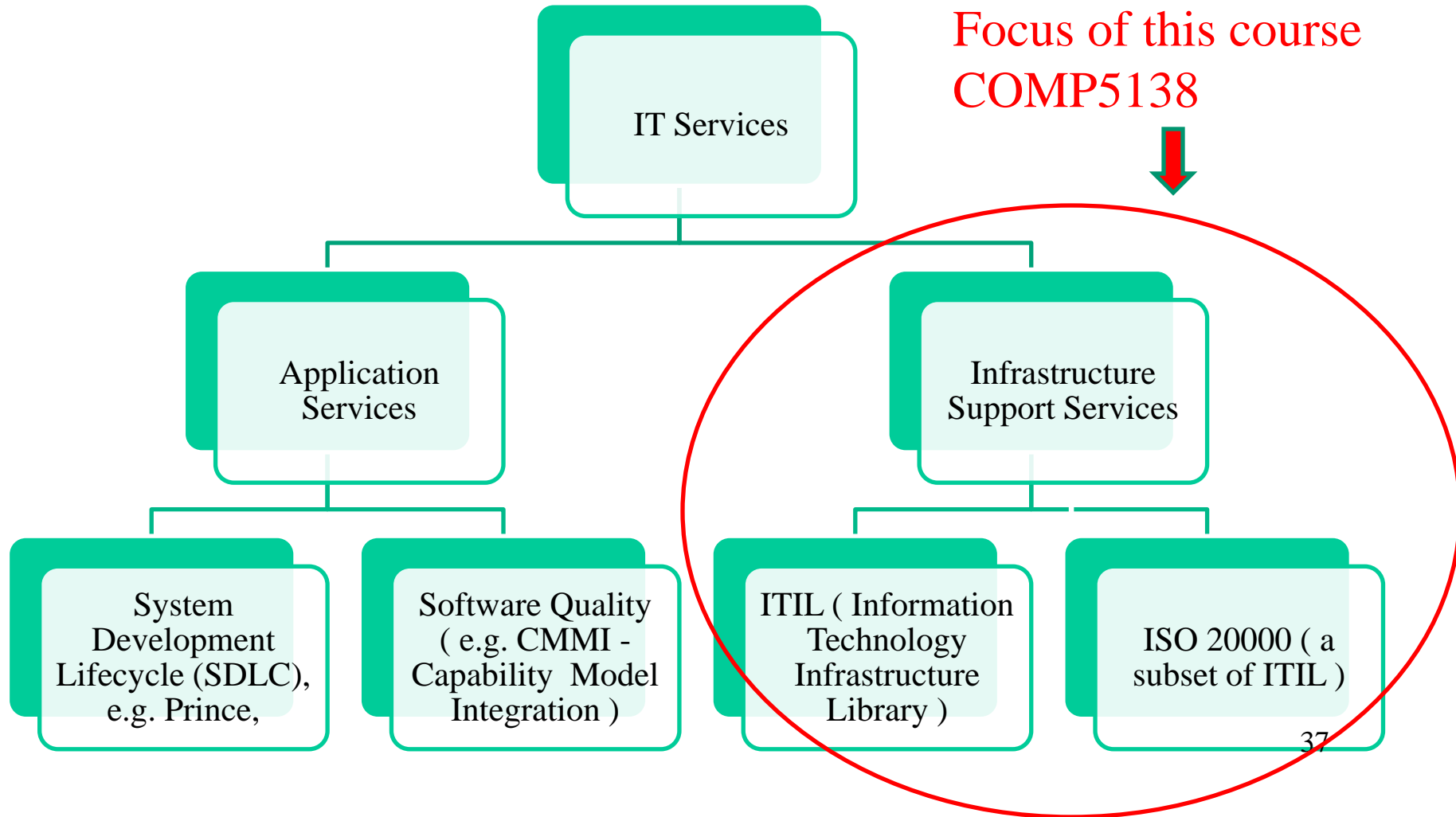
Perspective	Business Balanced Scorecard	IT services Scorecard
Customer	External customer satisfaction	External/Internal Customer Satisfaction
Financial	Revenue, Income, Profit	Cost
Internal business processes	Efficiency/reliability/ compliance of service workflow	Efficiency/reliability/ compliance of IT service workflow
Learning & Growth	Professional knowledge, Company culture	IT knowledge and certifications, IT culture

Metrics Tree

- Based on balanced scorecard
- Business Metrics -> IT metrics -> service & customer metrics -> individual process metrics -> individual component metrics

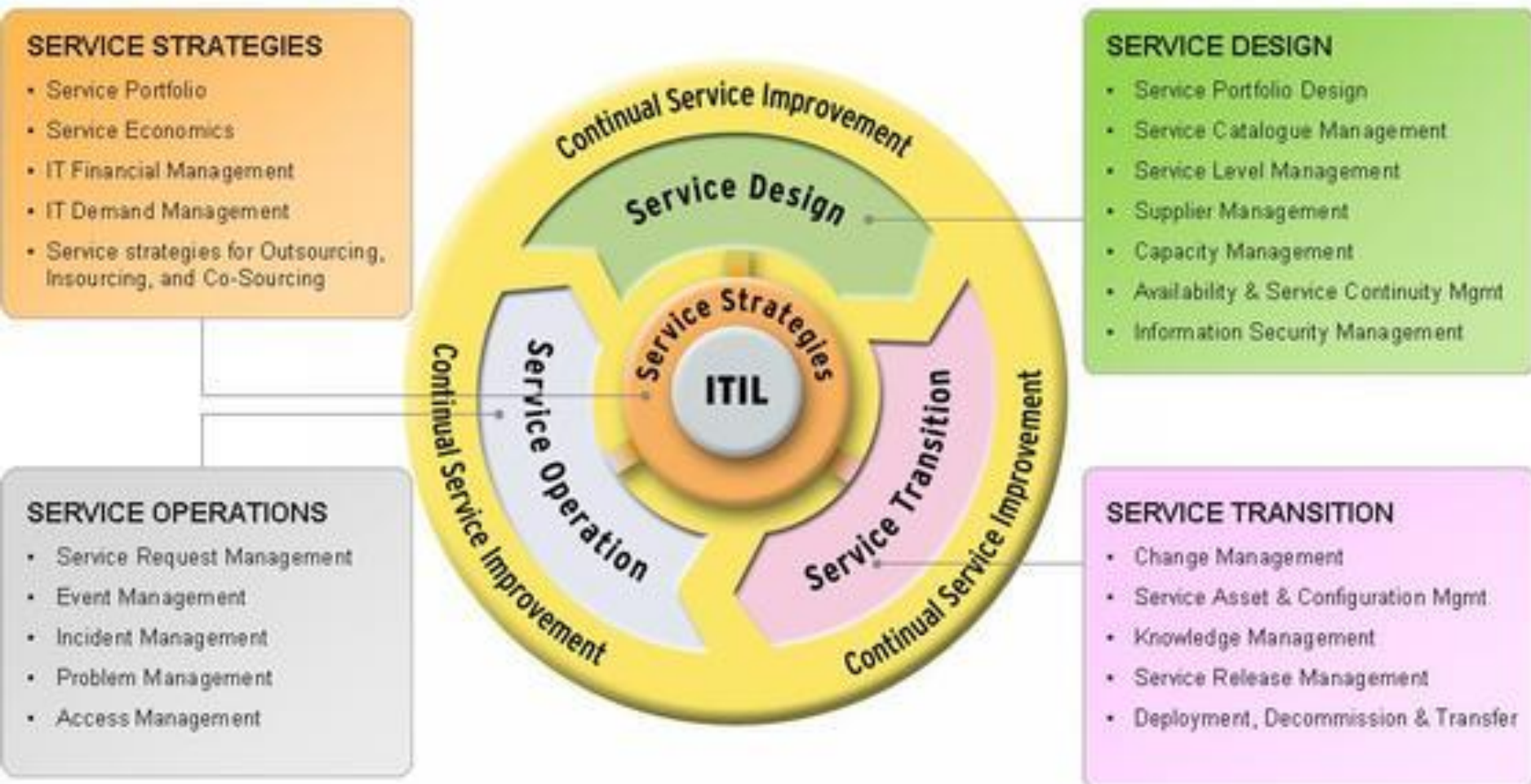


Priority in incident management refers to priority of the incidents related to infrastructure support services (e.g. hardware, user support) but not on the priority of service requests (e.g. application development).



Service LifeCycle (ITIL V3)





IT Strategies

- IT governance
 - Alignment with Business Strategy, IT Steering Committee
 - KPI (Key Performance Indicator) in IT services linked IT performance to business Strategy , e.g. IT services scorecard
 - Centralized/decentralized decision making
- Financial Management (such as internal charge-back, budgeting/accounting process)
- Demand Management
- Strategies on Service Provisioning

Service Provider Types

- Type 1: Internal Service Provider
- Type 2: Shared Service Provider
- Type 3: External Service Provider

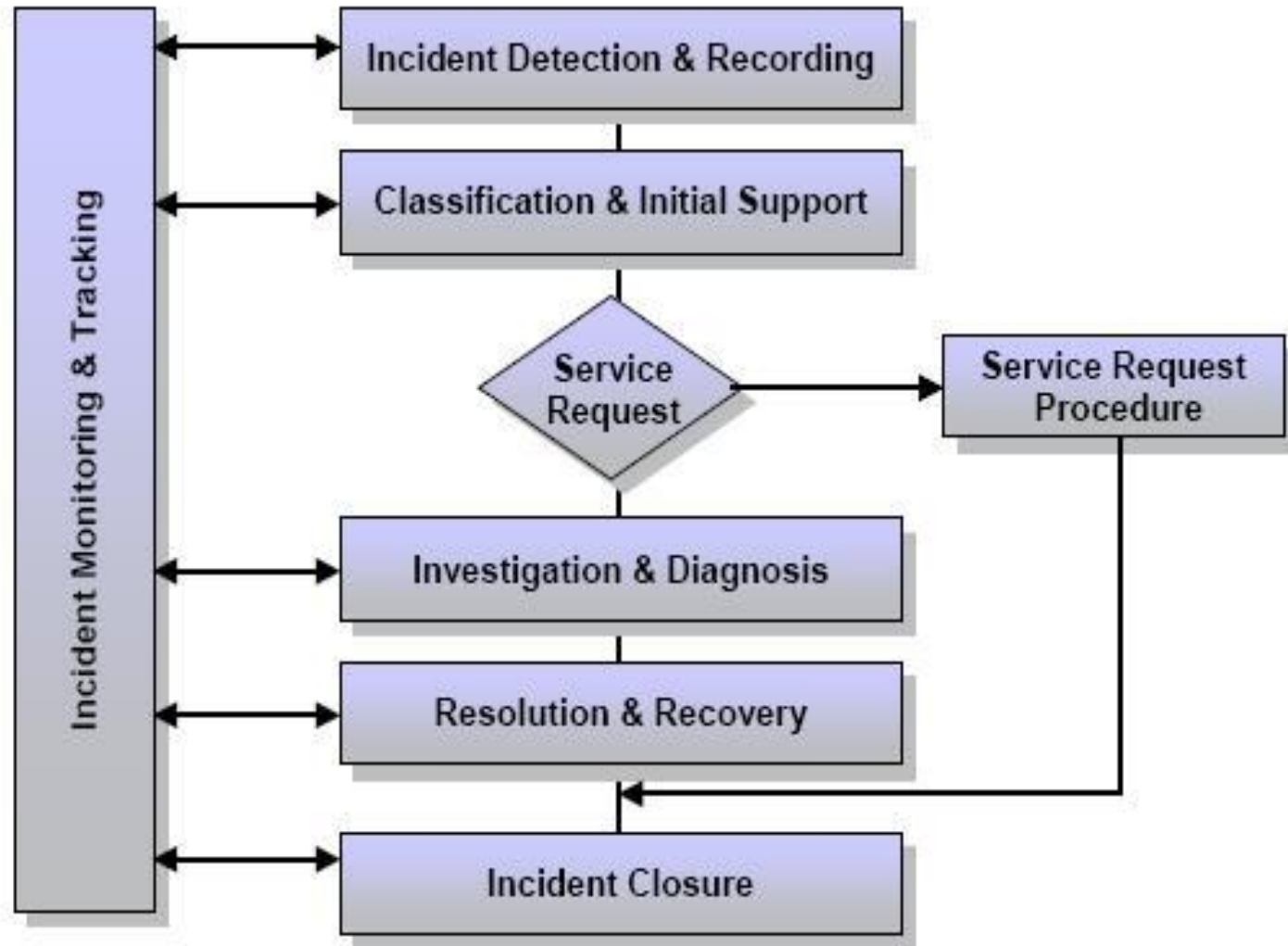
Delivery model Option /Service Delivery Strategy

- In-sourcing,
- Out-sourcing
- Co-sourcing
- Partnership or multi-sourcing

Service Operation

- Incident Management
- Problem Management
- Event Management
- Service Request Management
- Access Management

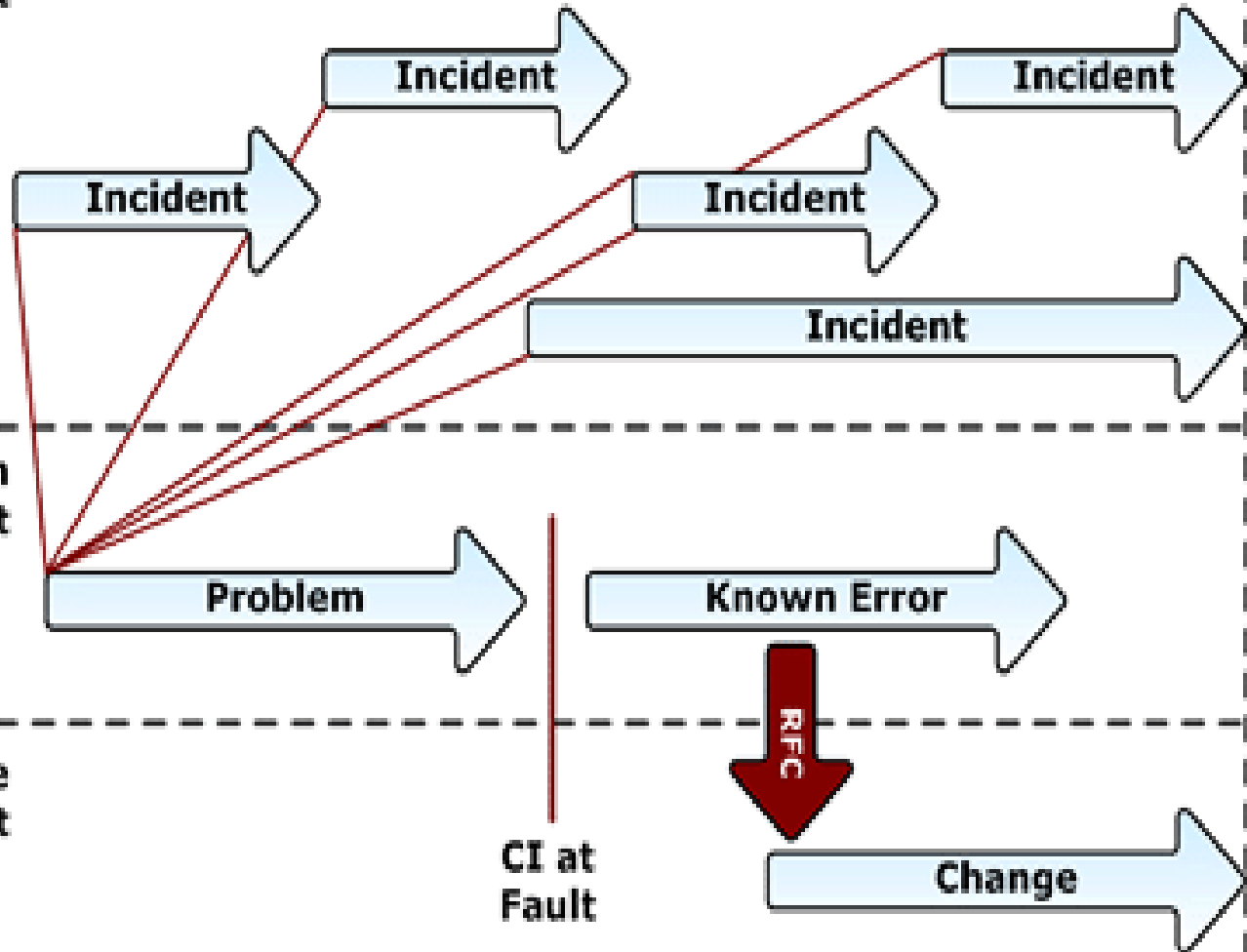
Incident Lifecycle

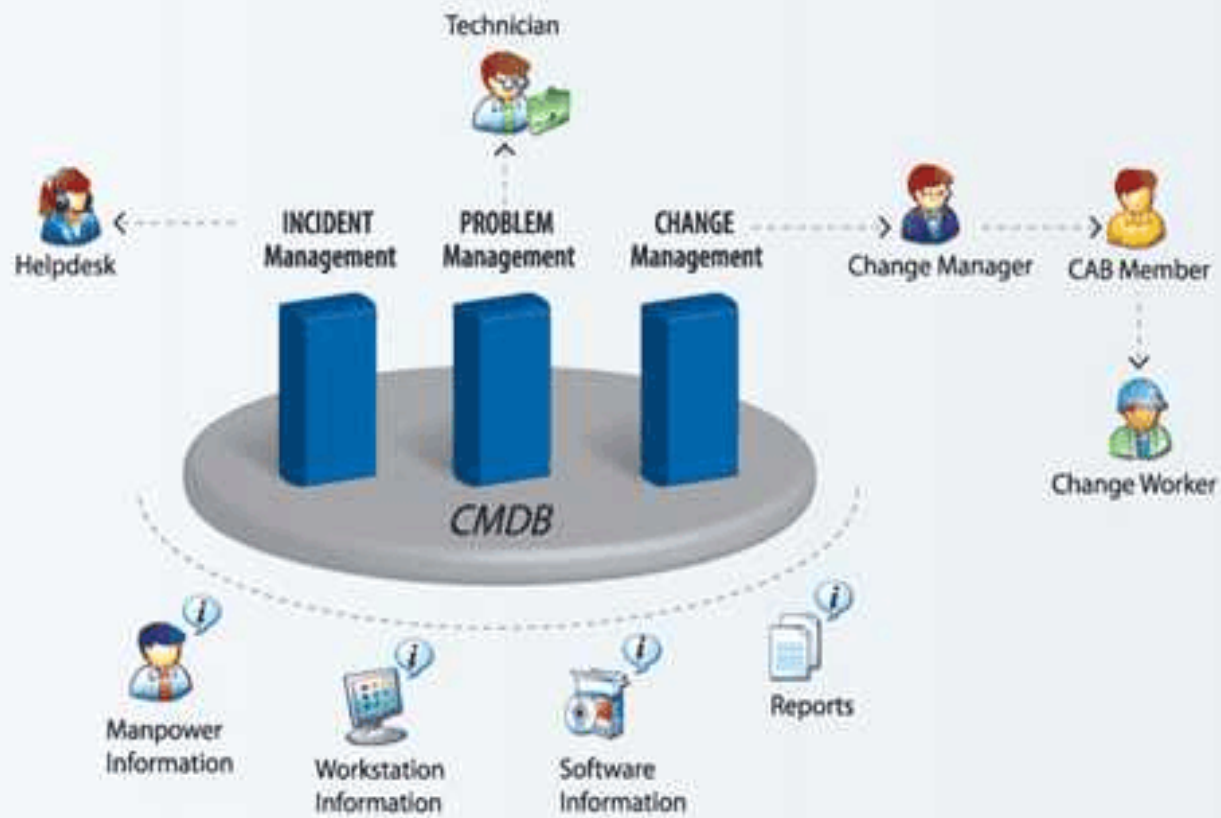


Incident Management

Problem Management

Change Management





IT Operation Management Role

- Operations Control (Console Management, Job Scheduling, Backup and Restore , Print & Output Management, Maintenance Activities)
- Facilities Management

Service Design

- Service Catalog/Service Portfolio and Service Level Management
- Availability Management
- Capacity Management
- IT Service Continuity Management
- Information Security Management
- Supplier Management

Service Design Aspects

- Design of the services (requirement, resources, capacities)
- Design of the management system and tools
- Design of the processes for IT service design, operation, transition management
- Design of the measurement methods, metrics of the services, architecture

Design process activities

- Requirements collection, analysis and engineering
- Design of appropriate services, technology, processes and process measurement
- Production and maintenance of IT policies and design documents
- Plan for the deployment and implementation of IT strategies using roadmaps, programmes
- Risk assessment

Simple example of a Service Catalogue

Service	Customer	Accounts	Legal	Sales	HR	Retail
Payroll		X	X			
E-mail		X	X	X	X	X
Invoicing		X		X		X
Internet		X	X	X	X	
Intranet		X	X	X	X	X

5 key elements of Availability Management

- Availability
- Reliability
- Maintainability
- Serviceability
- Security
- Plus – Vital Business Functions (VBF)

Calculating Availability

- $\text{Availability} = (\text{AST} - \text{DT}) \times 100 / \text{AST}$
= service or component availability (%)

Where

AST = Agreed Service Time

DT = Actual downtime during agreed service time

Formula

Reliability (MTBSI in hours) =
Agreed Service Time / number of incidents
(breaks)

Reliability (MTFB in hours)
= (Agreed Service Time – Down Time)/
number of incidents

Maintainability (MTRS in hours)
= Total Down Time / number of incidents

Availability Management

- Distinguish availability from reliability and maintainability
- Distinguish component availability from service availability (end-to-end availability)
- Calculation of end-to-end availability

Availability for a network with multiple components

- Question:

If a network has a router and a firewall, the router has availability 99% (i.e. 0.99) and the firewall has availability 98% (i.e. 0.98), what the overall availability for the whole network?

(Hints: if either component fails, the whole network fails.)

Availability for a network with multiple components

- Answer:

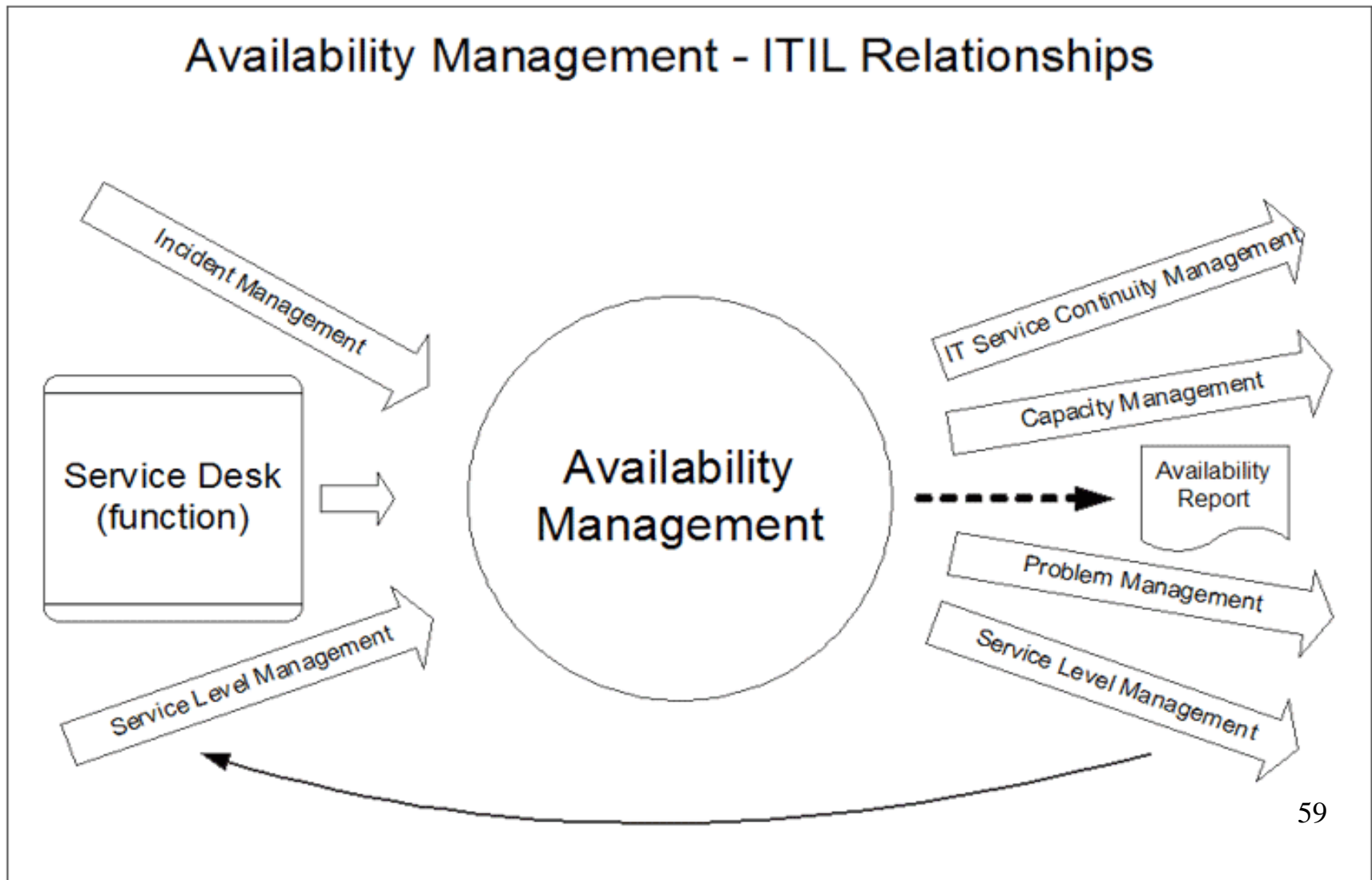
(a) $(0.99 + 0.98) / 2$

(b) 0.99×0.98

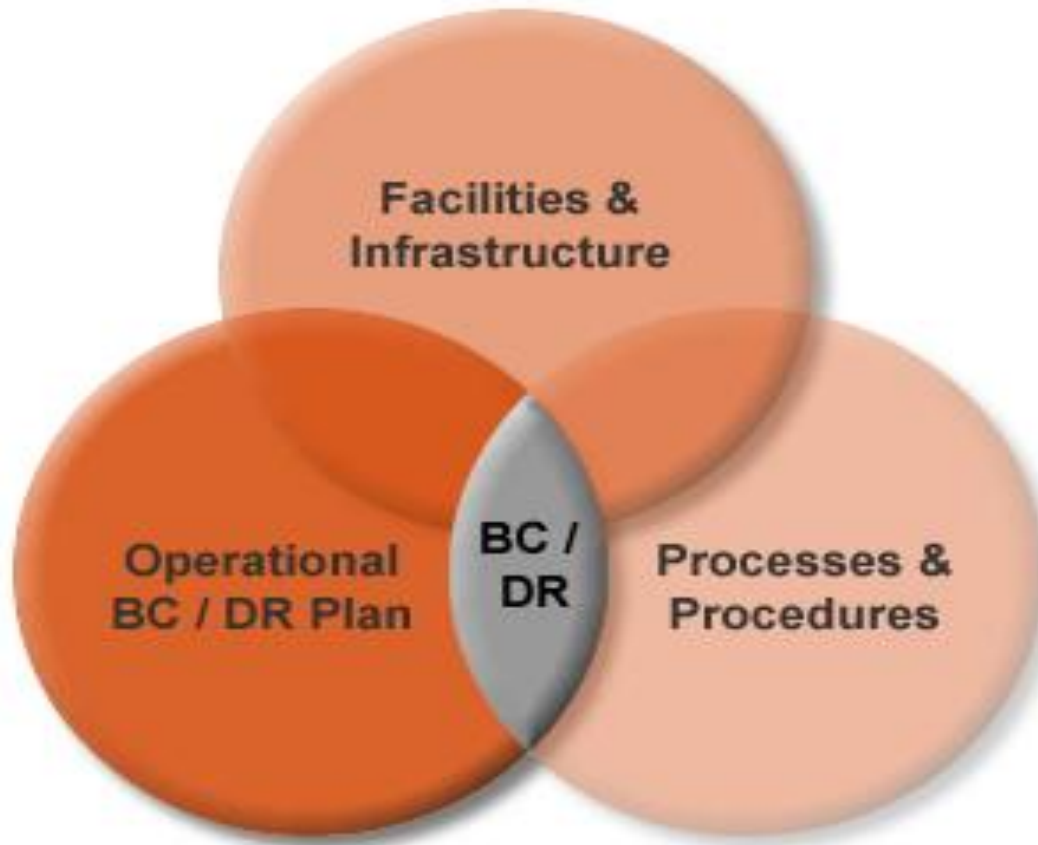
(c) $1 - (0.99 \times 0.98)$

(d) $1 - (1 - 0.99) \times (1 - 0.98)$

AM's relationship with other processes



Business Continuity /Disaster Recovery



Key Processes of IT Service Continuity Management

- **Business Continuity Management & ITSCM**
- **Stage 1 : Initiation**
 - Management sponsorship, working committee
- **Stage 2: Requirements & Strategy**
 - Vital Business Function; Recovery Option
- **Stage 3: Implementation**
- **Stage 4: Operational Management**
 - Drill; Education; invocation

Recovery Options

- Do nothing
- Manual Workaround
- Graduate Recovery(Cold Standby)
- Intermediate Recovery(Warm Standby)
- Fast/Immediate Recovery(Hot Standby)

3 key elements of Capacity Management

- Business Capacity Management (BCM)
 - Trend, forecast, model, size & document future business requirements
- Service Capacity Management (SCM)
 - Monitor, analyze and report on service performance; establish baseline & profiles
- Resource Capacity Management (RCM)
 - Monitor, analyze and report on the utilisation of components, establish baselines & profiles

Service Transition

- Change Management
- Release Management
- Asset Management
- Configuration Management
- (Knowledge Management)

Change Management

Definition

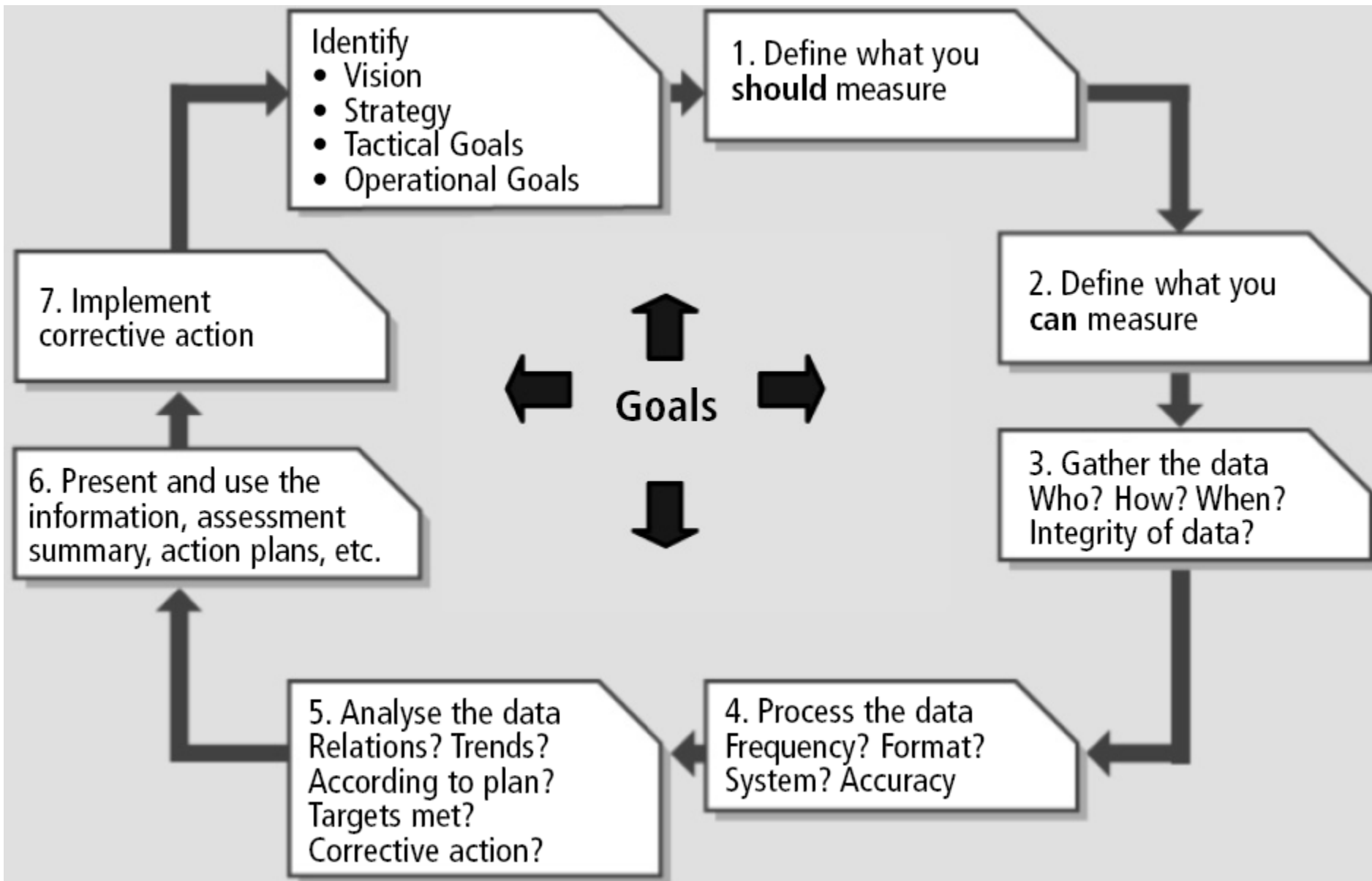
- The process of controlling Changes to the infrastructure or any aspect of services, in a controlled manner, enabling approved Changes within minimum disruption.

Goal

- Ensuring that changes are recorded, evaluated, authorized, prioritized, planned, tested, implemented, documented and reviewed in a controlled manner.

Continual Service Improvement

- 7-step improvement process
- Service measurement
- Service Reporting



You should learn how to apply ITIL and conduct gap analysis



Gap Analysis against ITIL

- Service Operation (example)

- Is there a service desk as a central contact point for reporting incidents?
- Is there a software system logging and keeping track of all incidents?
- Is the log analyzed and common underlying cause for multiple incidents is analyzed? (problem management)
- Are there metrics and measurement for incident management (e.g. measuring the total time to resolve incidents)?

Gap Analysis

- Are Known Errors/issues Database established with workaround documented?
- Are incidents categorized?
- Is priority assigned to incidents according to its impact and urgency?
- Are incidents properly closed (e.g. confirmation of the resolution with the originator)?
- Is the owner of a reported incident identified?

Gap analysis

- You should be able to demonstrate that you know the key processes and conduct gap analysis, e.g. for
 - Availability management
 - Service Level Management
 - IT service continuity management
 - Continuous service improvement

IT transforming business organizations

- IBM Global Business Services recommends a combination of
 - CMMI (Capability Maturity Model Integration) : primarily for software development process)
 - ITIL (Information Technology Infrastructure Library) : for infrastructure support service
 - Six Sigma: for general quality management
- Others: “Aligning COBIT, ITIL and ISO17799 for Business Benefits” by ISACA

What you should have learned

- Besides building quality application systems, it is also important to plan and management infrastructure and support services.
- ITIL provide a framework for infrastructure and support services
- SSME (Service Science, Management and Engineering)— research studies on IT service management are ongoing; “best practices” may evolve.

Reference

- Bailey, Kandogan, Haber & Maglio (2007), Activity-based Management of IT Service Delivery, CHIMIT 07, ACM.
- Ramanathan, Ramnath & Glassgow (2009), The People, the Process or the Technology? Using the ACE Framework to make tradeoffs in Service Delivery Improvement, SAC 09, ACM.