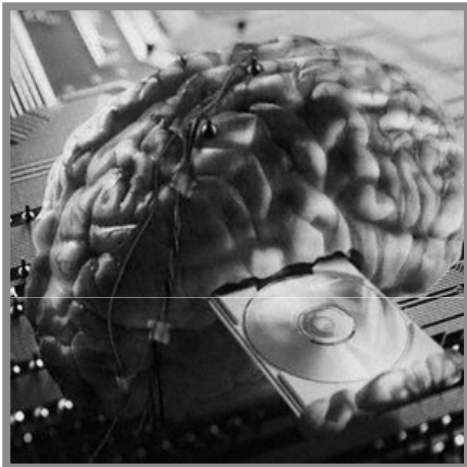


# Advanced Aspects of IT-Infrastructures in Healthcare



## Einführung

Vorlesung  
WS 2012 – 29.11.2012

Dr. Andreas Ehringfeld



INSO - Industrial Software

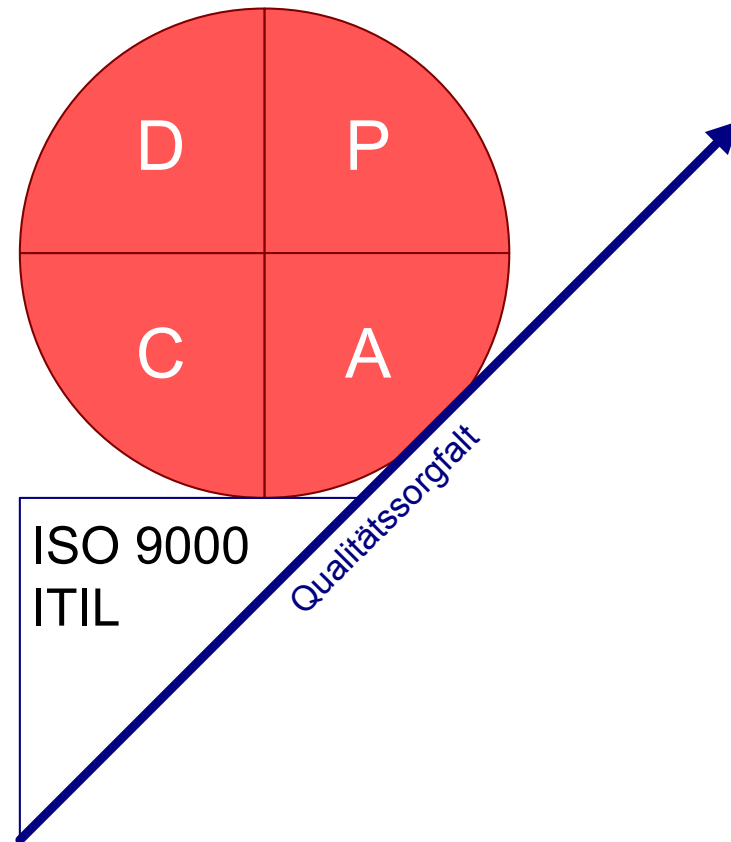
Institut für Rechnergestützte Automation | Fakultät für Informatik | Technische Universität Wien

# Key Concepts – Product vs. Service

- **Product**
- **Service**
  - Is a process between customer and service provider, a combination of production and consummation
  - Continuous dialog

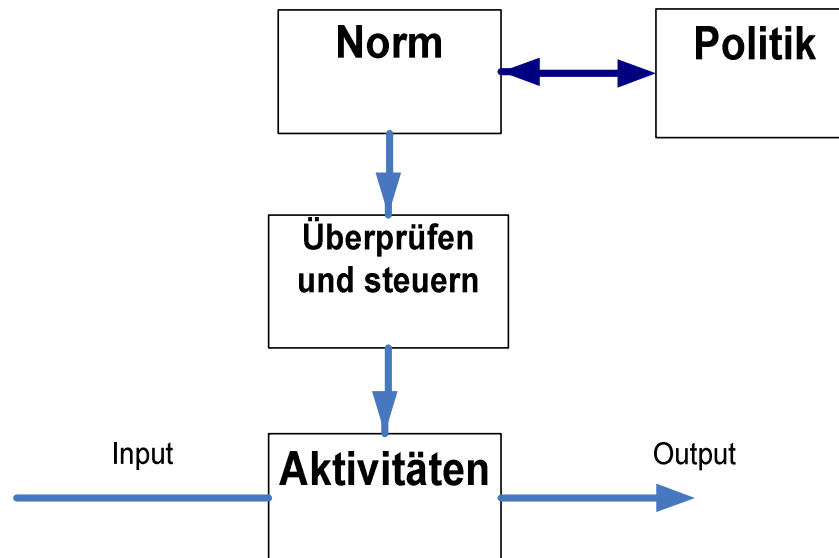
# Key Concepts – ‘Quality’

- **Quality**
- **Quality Management**
  - Plan
  - Do
  - Check
  - Act



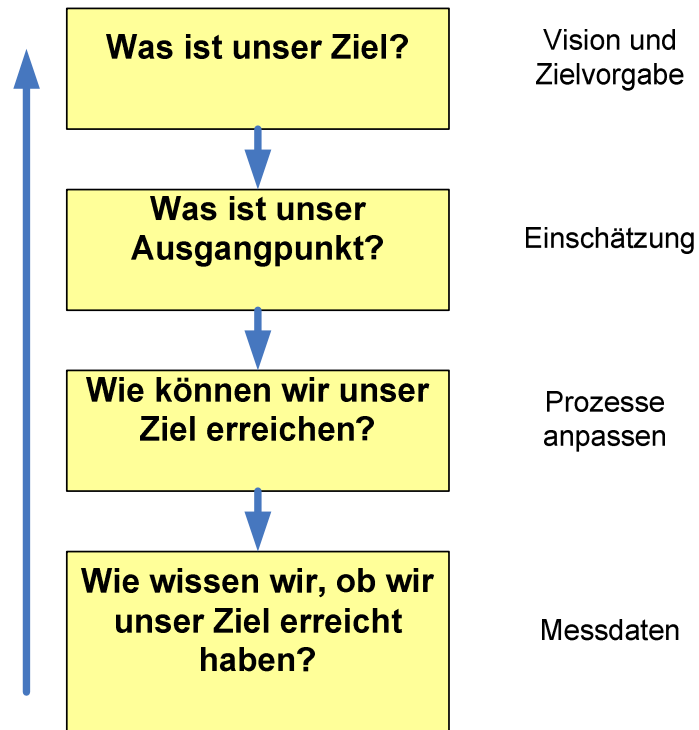
# Key Concepts – “Process”

- **Process**
  - Is a logical order of activities to reach a certain goal



# Key Concepts – “Process Improvement”

- **Process Improvement**



# What is ITIL?

**The Information Technology Infrastructure Library (ITIL), is a set of practices for IT service management (ITSM) that focuses on aligning IT services with the needs of business.**

# What is ITIL?

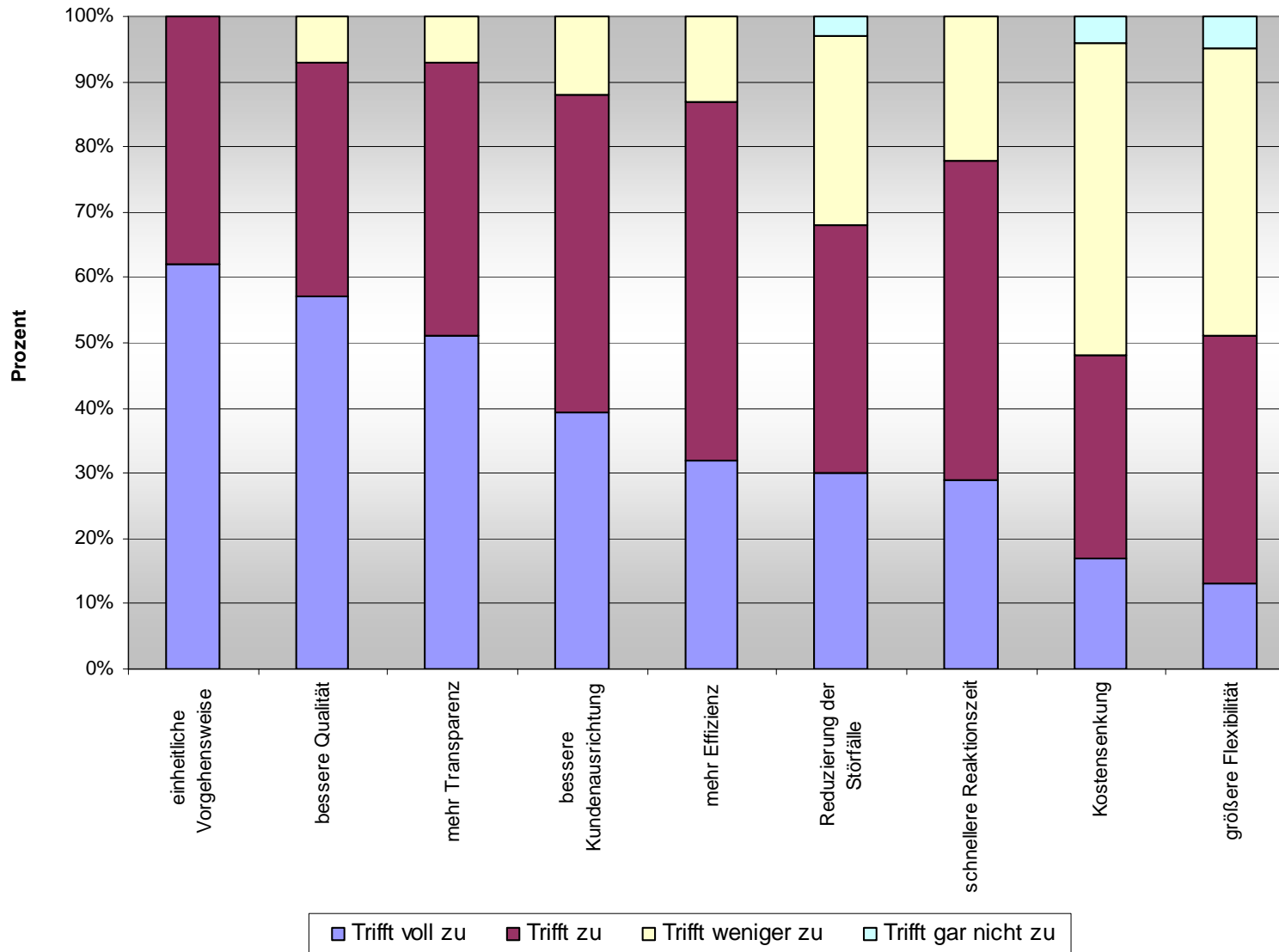
The Information Technology Infrastructure Library (ITIL), is a **set of practices** or IT **service management** (SM) that focuses on aligning **IT**  $\leftarrow \rightarrow$  of **business**

# What is ITIL?

- **ITIL - IT Infrastructure Library**
- **A series of publications**
- **Best Practices for IT Service Management**
  - Processes
  - Guidelines
  - Checklists
- **Worldwide Industry standard**
- **Management Philosophy**



# ITIL – What do you expect?



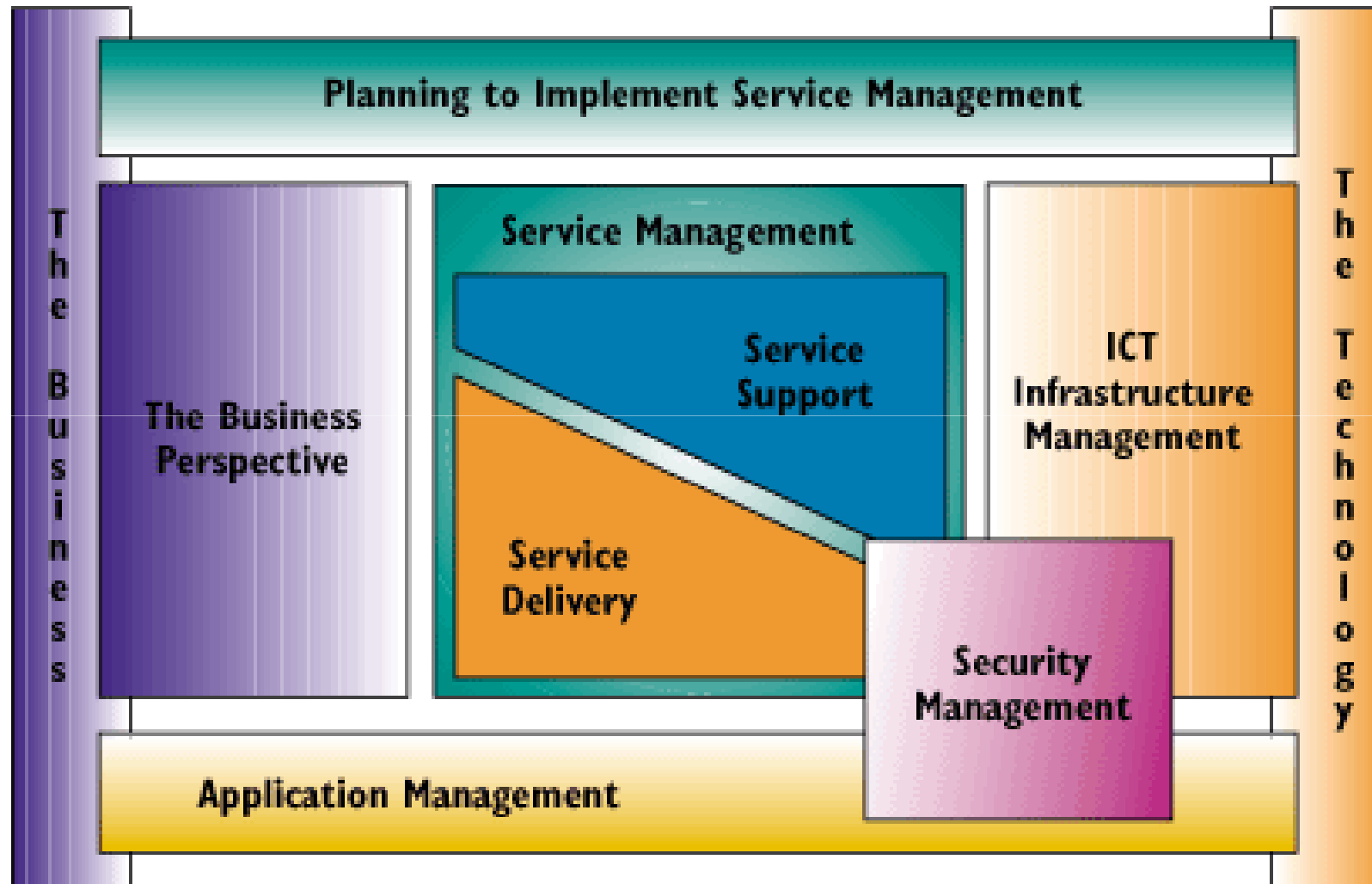
# ITIL – Motivation

- Motivation of customer
  - IT Service reflect more the needs of the customer
  - The dialog between customer and service provider improves their relationship
  - Better description of the IT Services
  - Better quality and cost control
  
- Motivation of organisation
  - IT Organization becomes simpler, more efficient and more in line with the business goals
  - Better control by the management
  - Fundament for outsourcing
  - Improved transparency especially after ITIL certifications
  - A step toward further certifications

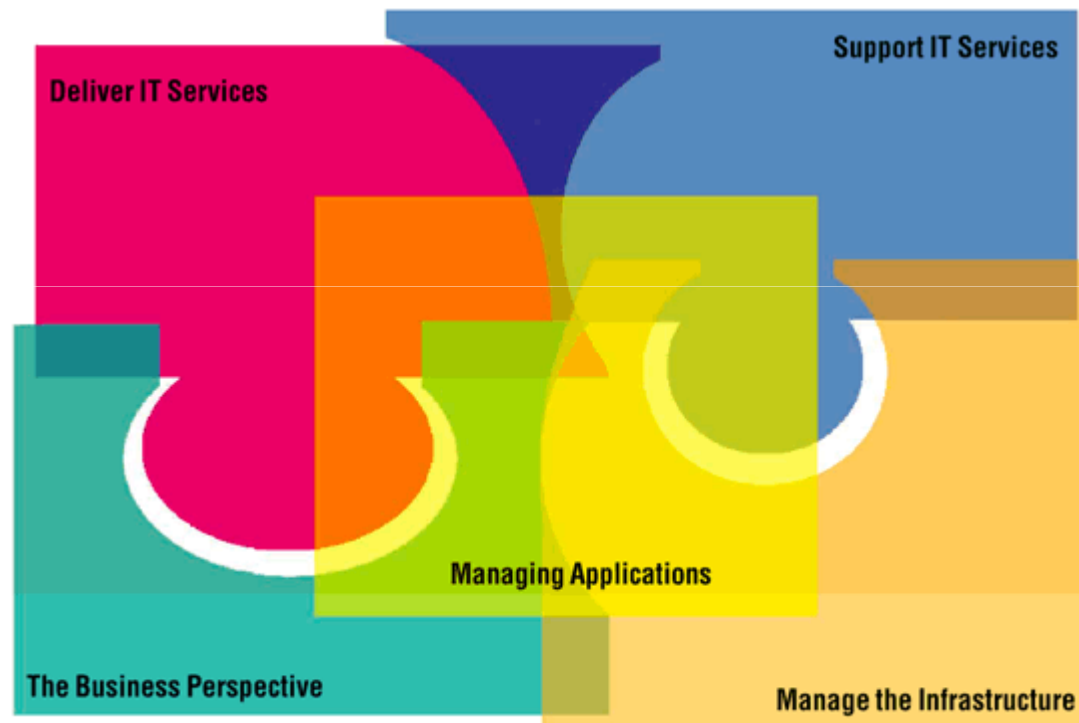
# ITIL - History

- **Developed by British government in 1980's**
- **Consists of 8 books, currently in version 2**
  - Service Support
  - Service Delivery
  - Security Management
  - Business Perspectives
  - ICT Infrastructure Management
  - Application Management
  - Planning and Implementation
  - Software Asset Management
- **Version 3 released May 30, 2007 has 5 books**

# ITIL (Version 2)



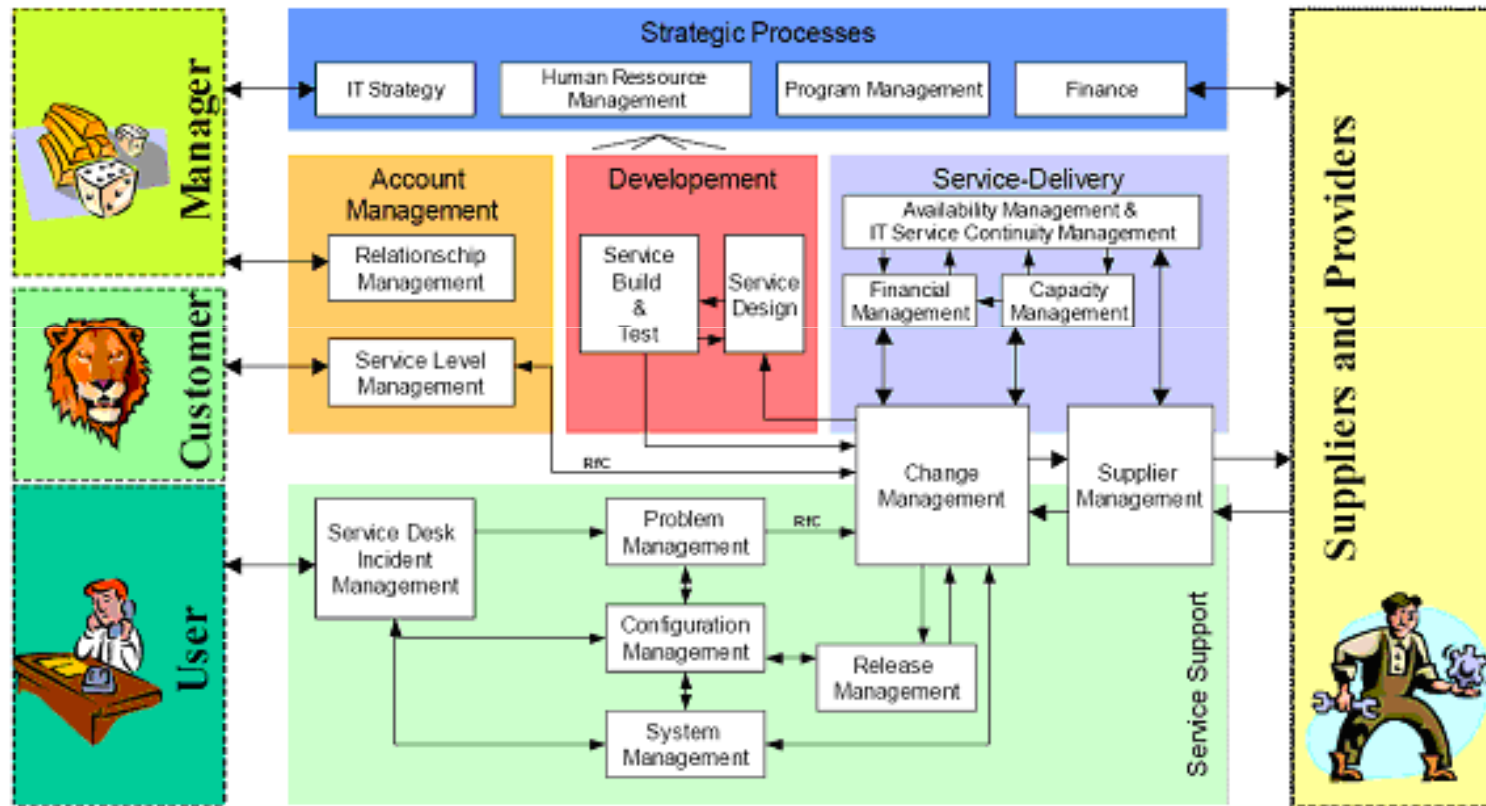
# ITIL Books (Version 2)



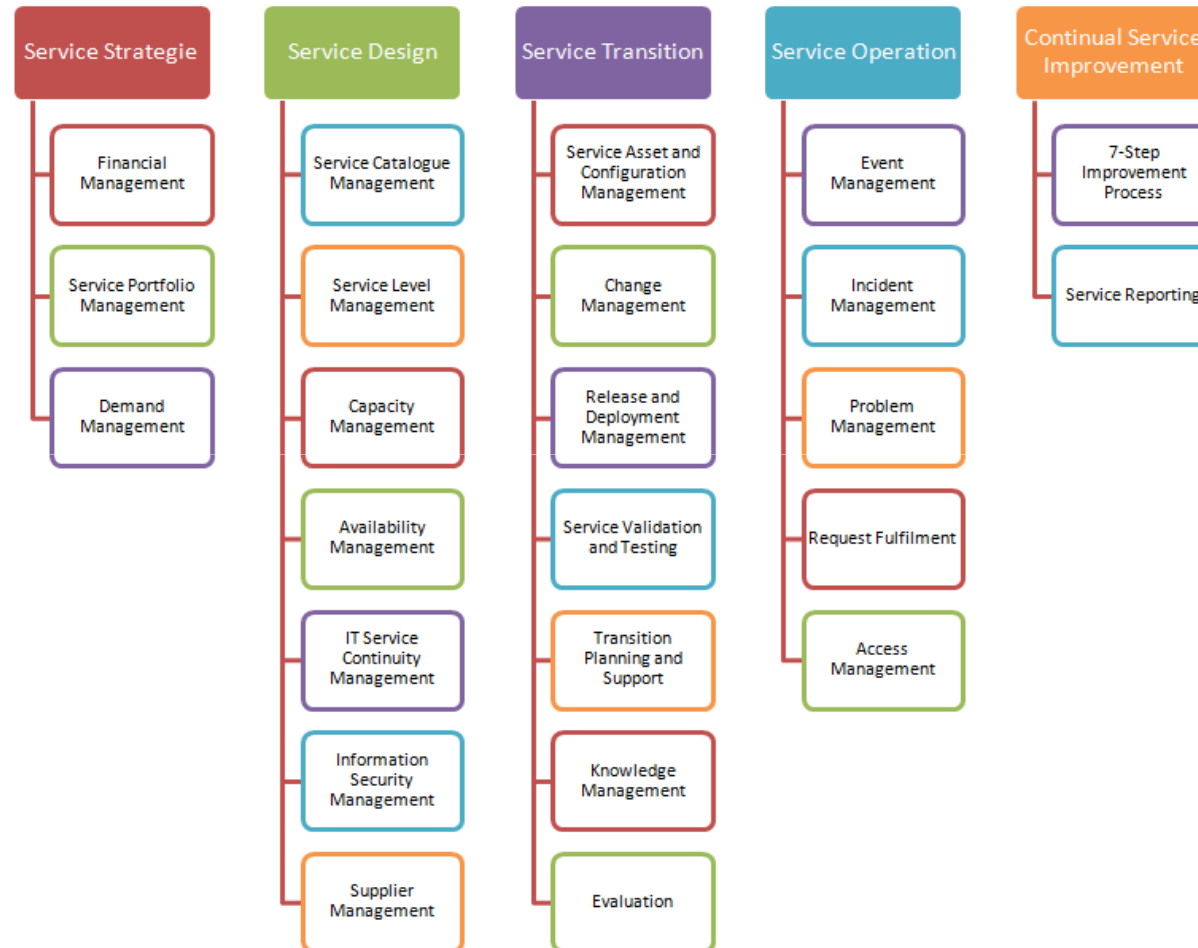
# ITIL Process Overview (Version 2)

## IT Service Management Model

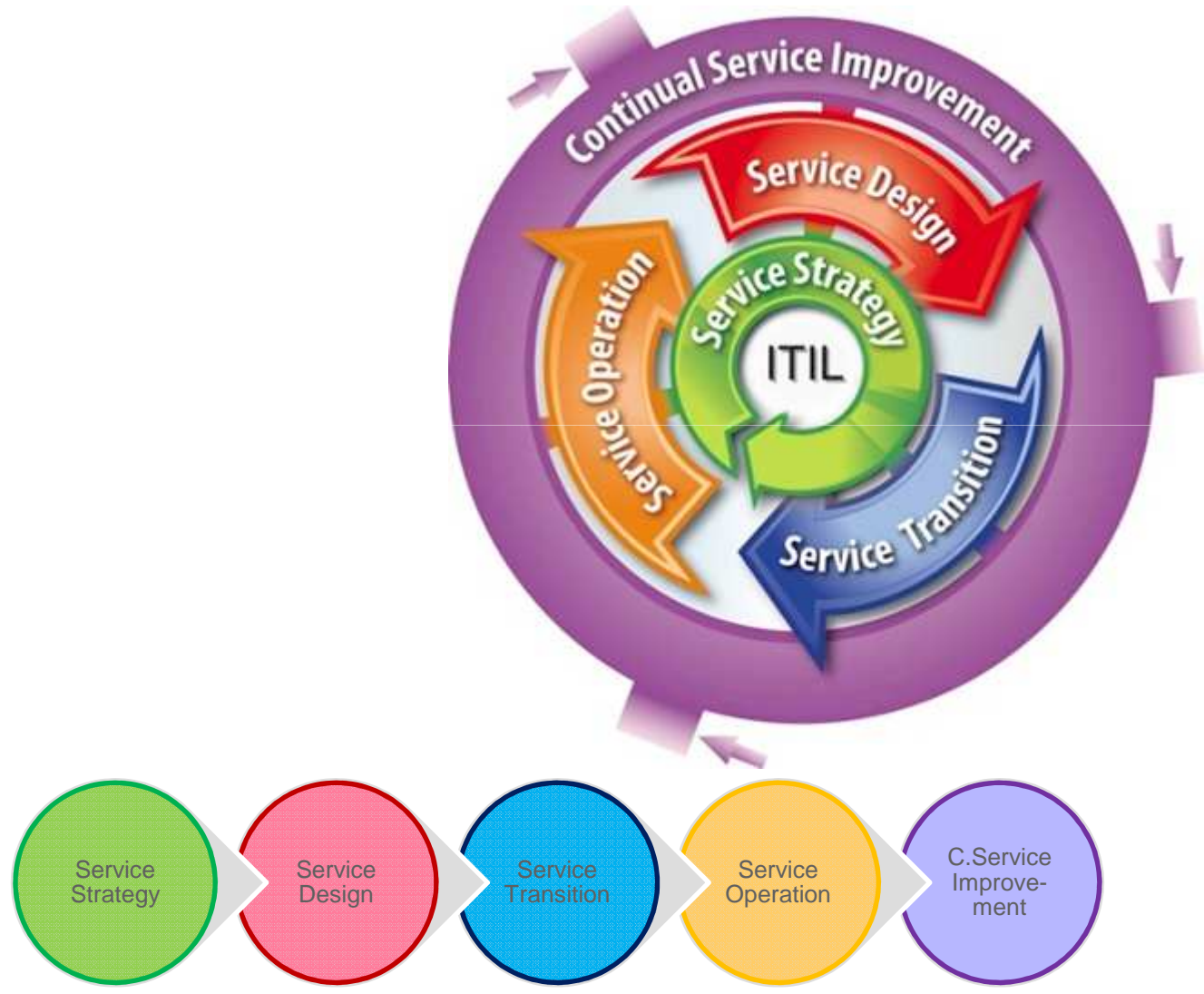
based on ITIL (IT Infrastructure Library)



# ITIL Process Overview (Version 3)



# ITIL (Version 3) – Service Lifecycle





# ITIL – Service Lifecycle

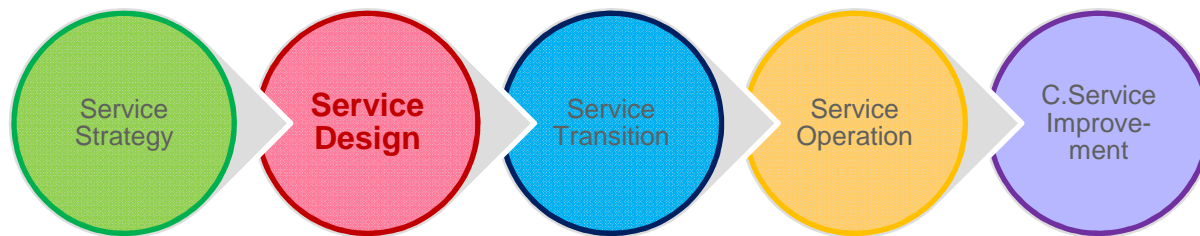
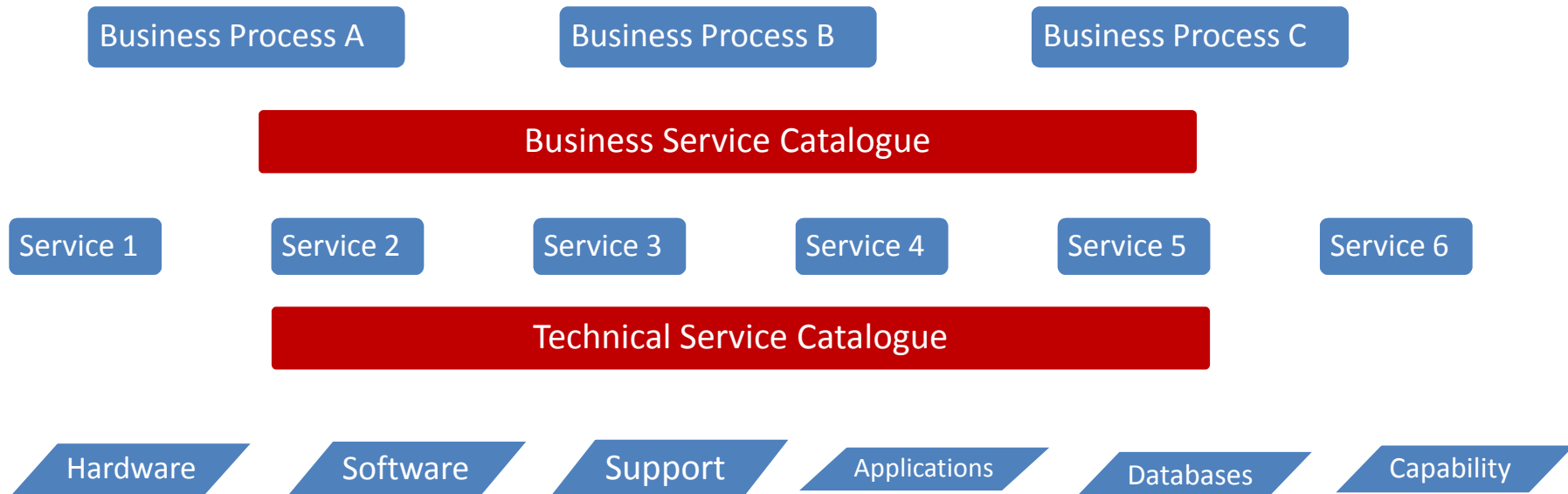
- **Service Strategy**
  - Financial management
  - Service portfolio management
  - Demand management
- **Service Design**
  - Service catalogue management
  - Service level management
  - Availability management
  - Capacity management
  - IT Service continuity management
  - Information security management
  - Supplier management
- **Service Transition**
  - Release and deployment management
  - Transition planning and support
- **Service Operation**
  - Service validation and testing
  - Service asset and configuration management
  - Change management
  - Knowledge Management
  - Evaluation
- **Continual Service Improvement**
  - Problem management
  - Incident management
  - Request fulfilment
  - Event management
  - Access management
  - Service measurement & reporting
  - 7-step improvement process

# Order of Processes invented by Companies

ITIL Prozesse	Reihenfolge												nicht im- plemen- tiert
	1	2	3	4	5	6	7	8	9	10	11	12	
Configuration Management	11,8	5,9	0	17,6	23,5	0	11,8	0	0	0	0	0	23,5
Change Management	5,9	29,4	17,6	23,5	0	11,8	0	0	0	0	0	0	5,9
Release Management	0	5,9	5,9	35,3	11,8	11,8	5,9	5,9	0	0	0	0	11,89
Incident Management	52,9	29,4	0	0	0	0	0	0	5,9	0	0	0	0
Problem Management	11,8	29,4	23,5	11,8	5,9	5,9	5,9	0	0	0	0	0	0
Service Desk	52,9	17,6	11,8	11,8	0	0	0	0	0	0	0	0	0
Capacity Management	0	5,9	0	35,3	0	5,9	0	0	5,9	0	0	0	41,2
Availability Management	0	5,9	0	35,3	5,9	0	5,9	0	0	0	5,9	0	35,3
Service Level Management	5,9	0	17,6	23,5	11,8	5,9	0	0	0	0	0	0	28,4
Financial Management for IT Services	5,9	0	0	35,3	5,9	5,9	5,9	0	0	0	0	0	35,3
IT Service Continuity Management	11,8	0	0	35,3	0	0	0	5,9	0	0	0	0	41,2
Security Management	0	0	23,5	35,3	0	0	5,9	0	0	5,9	0	0	23,5

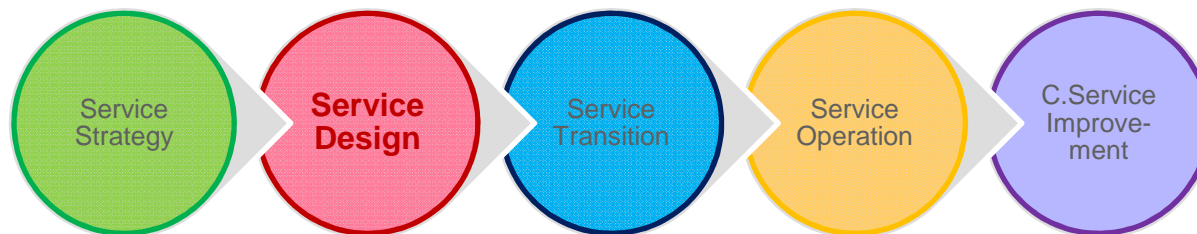
**Inventing a new  
IT-Service...**

# Service Catalogue



# Service Catalogue Management

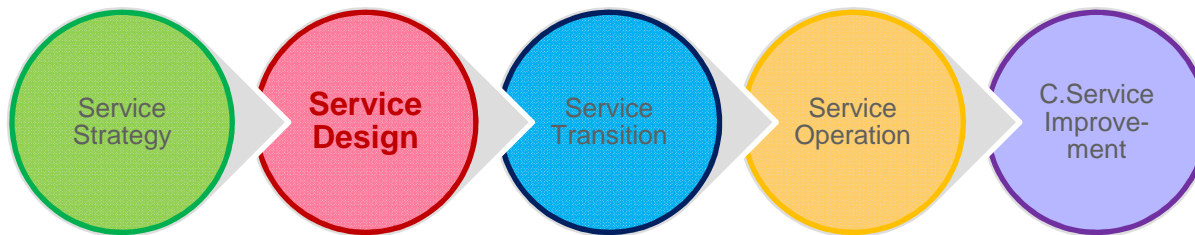
- **Service Catalogue Management aims to ensure that a Service Catalogue is produced and maintained, containing accurate information on all operational services and those being prepared to be run operationally**
- **Service Catalogue Management provides vital information for all other Service Management processes: Service details, current status and the services' interdependencies.**



**What has the  
IT-service to fulfill?**

# Service Level Management

- **Service Level**
  - Measured and reported achievement against one or more service level targets
- **Service Level Agreement**
  - Written and negotiated agreement between service provider and customer documenting agreed service levels and costs



# Service Level Management

Service  
Description

Hours of  
operation

User Response  
times

Incident  
Response  
times

Resolution  
times

Availability &  
Continuity  
targets

Customer  
Responsibilities

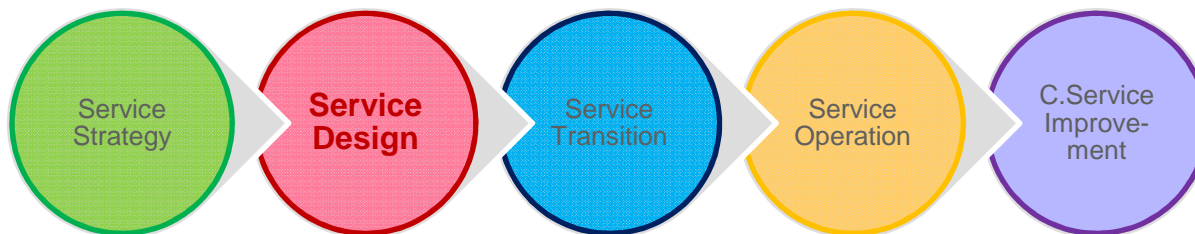
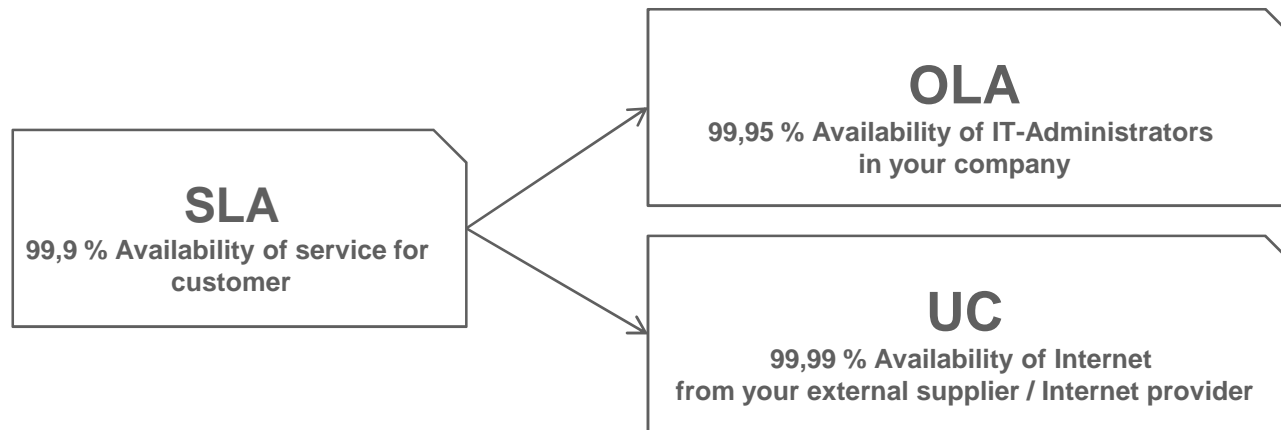
Critical  
operational  
periods

Change  
Response  
Times



# IT Service Level Management

- Aims to negotiate Service Level Agreements with the customers and to designs services in accordance with the agreed service level targets
- Ensures that all Operational Level Agreements (OLAs) and Underpinning Contracts (UC) are appropriate
- Monitors and reports on service levels.

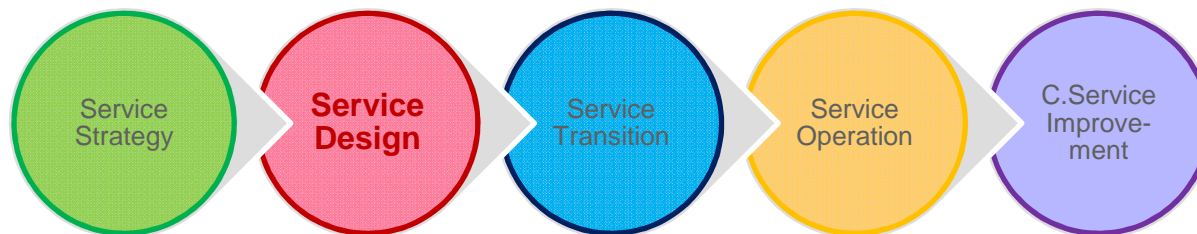


**Does it fulfill the  
requirements?**

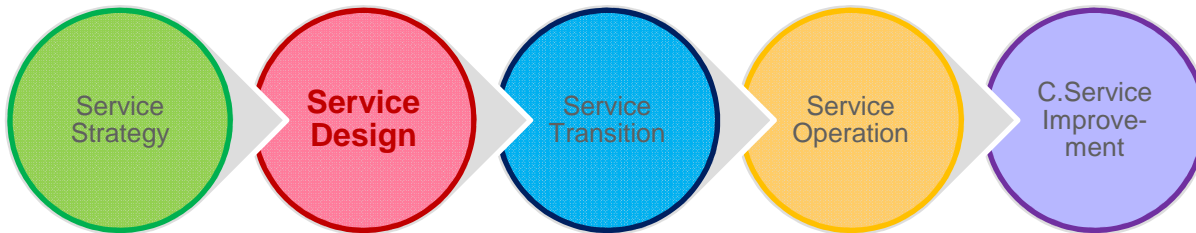
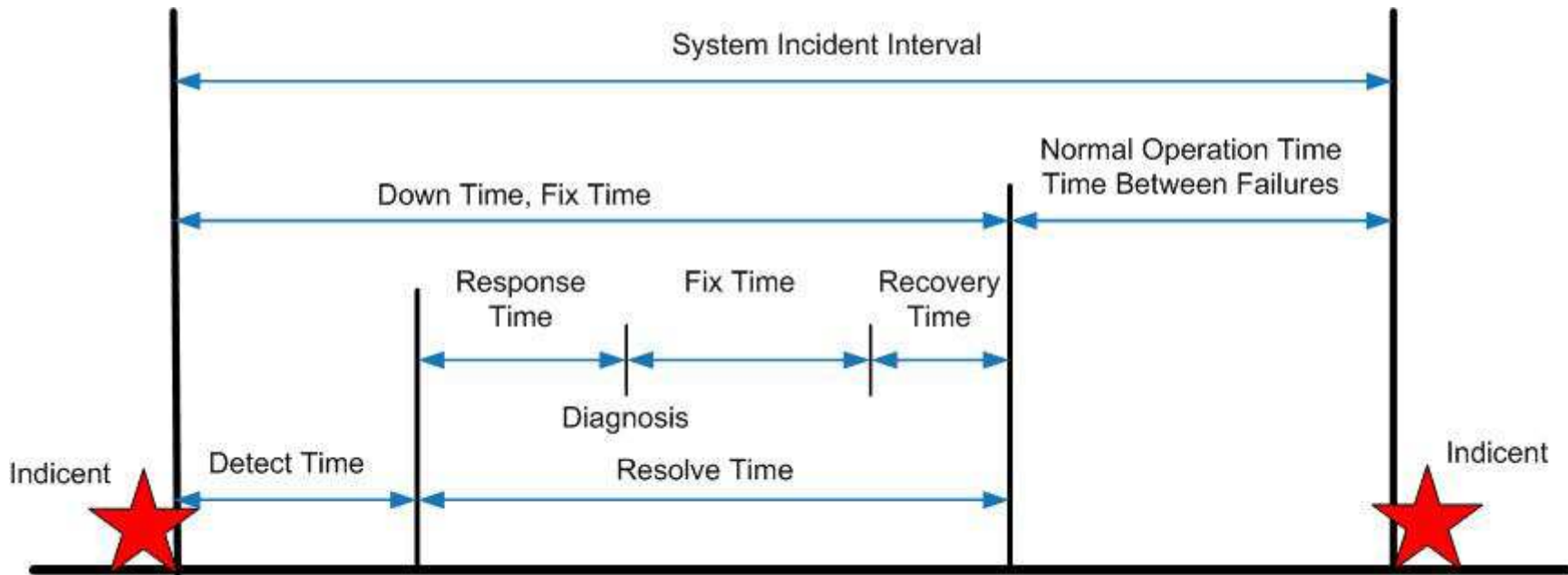
**Service has a availability of 99 %**

**The resolve time never exceeded two hours**

...

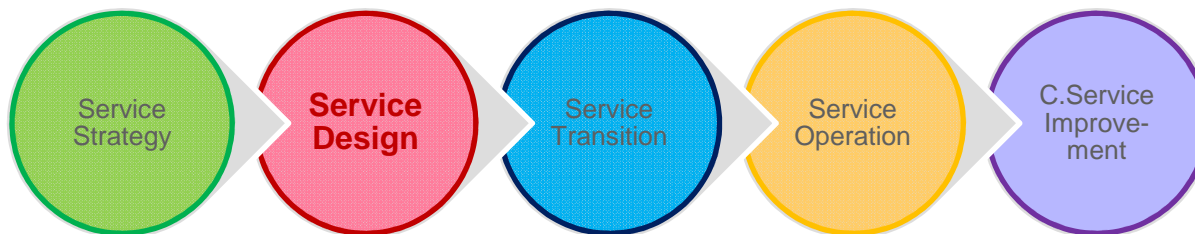


# Availability Management



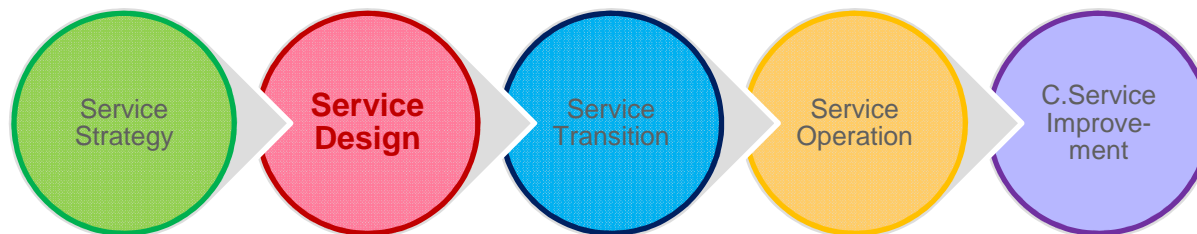
# Availability Management

- **Ensure that IT services matches or exceeds agreed targets**
- **Resilience increases availability**
  - Service can remain functional even though one or more of its components have failed
- **Balances cost against availability so minimises costs while maintaining quality of service**



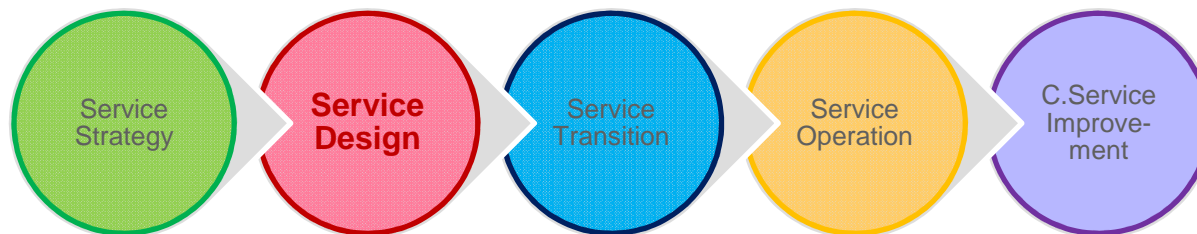
# Capacity Management

- **Monitoring of resources**
- **Right capacity, right time, right cost**
- **Capacity planning**
- **Balances cost against capacity so minimises costs while maintaining quality of service**



# ITIL Prozesse – IT Service Continuity Management (ITSCM)

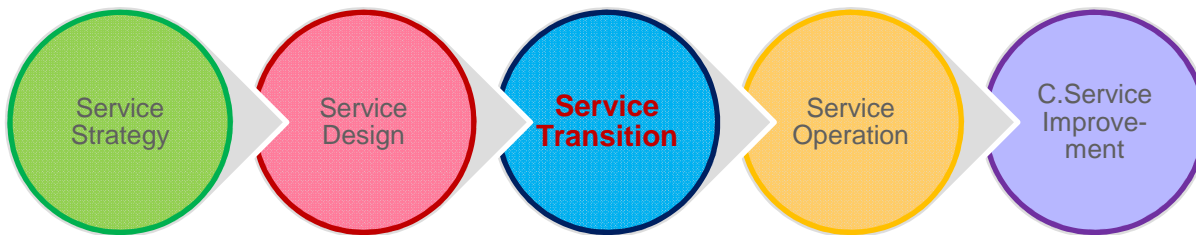
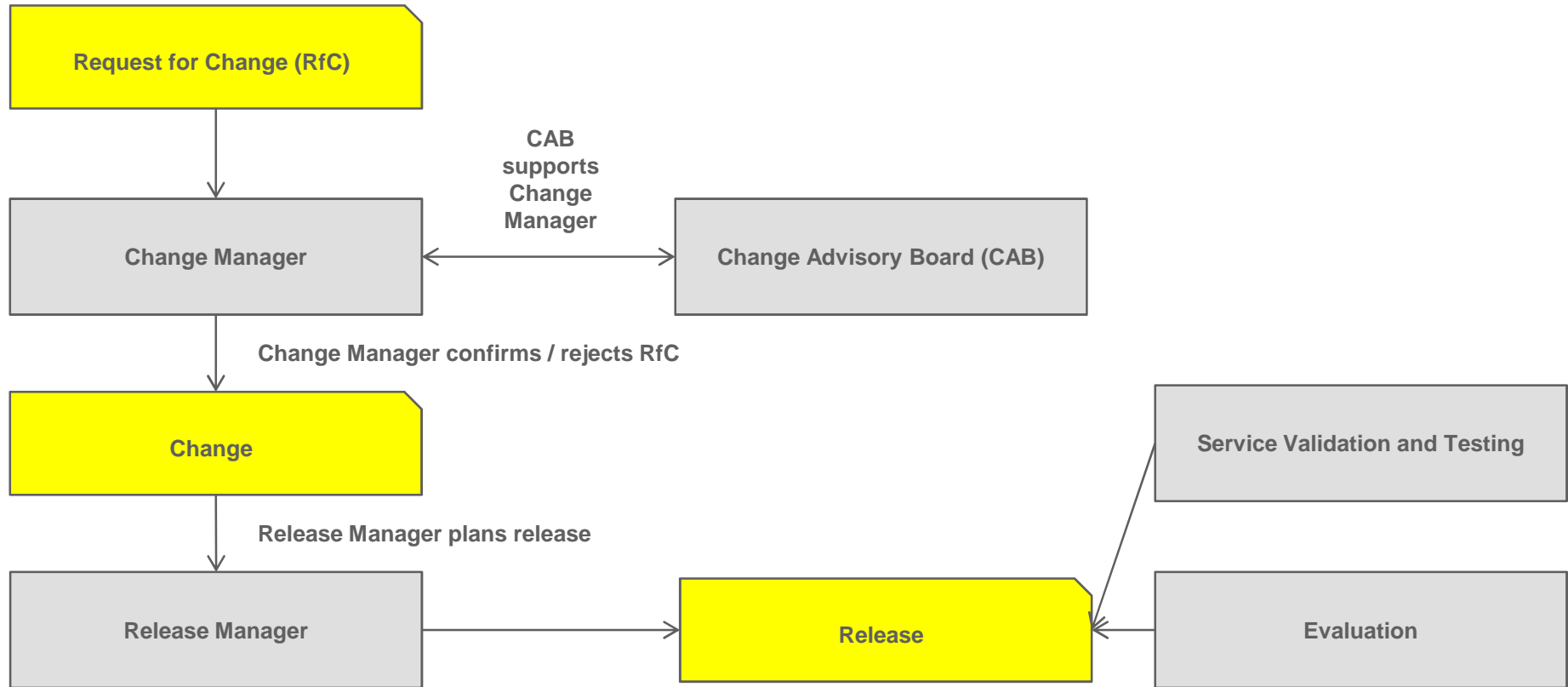
- Ensures resumption of services within agreed timescale
- Manages risks that could seriously impact IT services
- ITSCM ensures that the IT service provider can always provide minimum agreed Service Levels, by reducing the risk from disaster events to an acceptable level and planning for the recovery of IT services
- **Disaster recovery planning**
  - Business continuity planning
  - Active – Standby concepts
  - Cold- Warm- Hot standby solutions



# **How to launch a new IT-Service?**

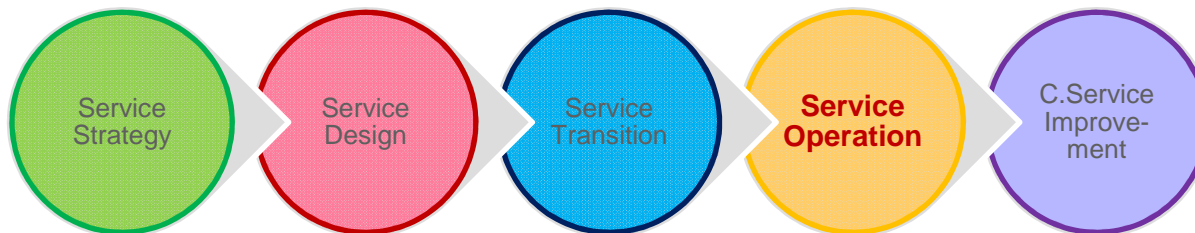
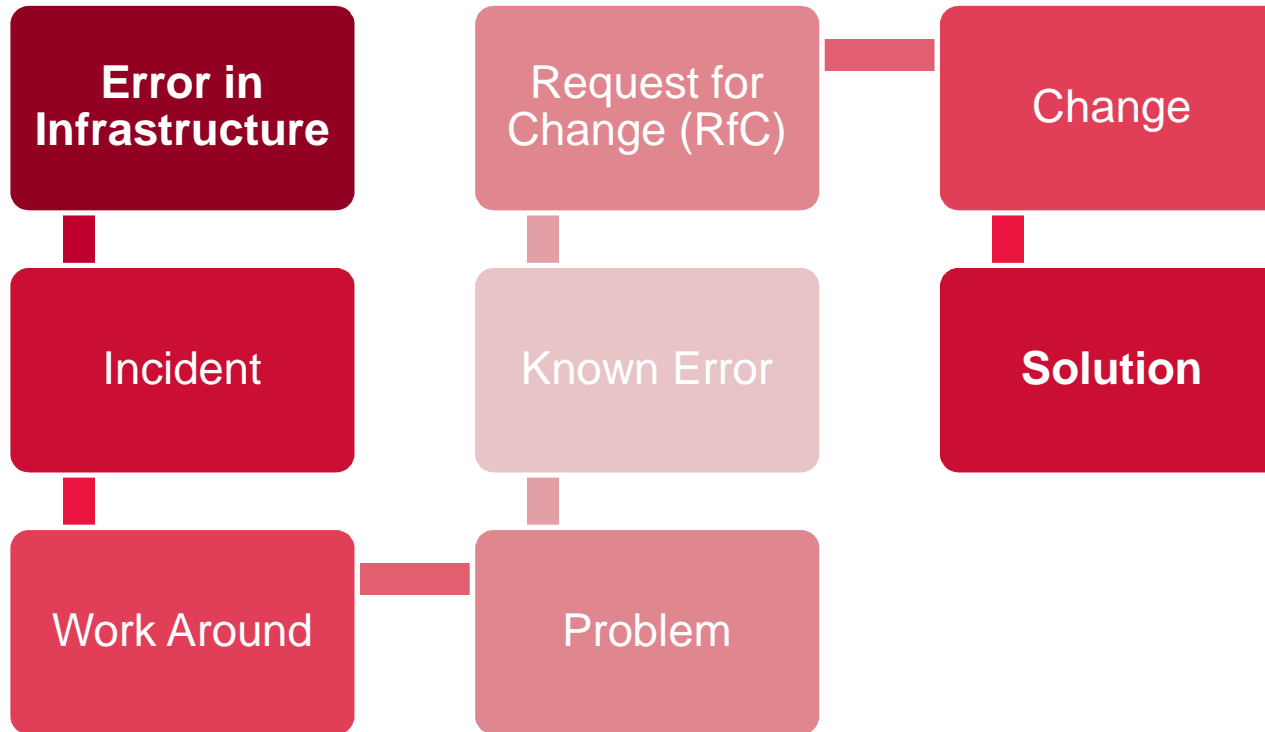


# Change Management , Release and Deployment Management, ...



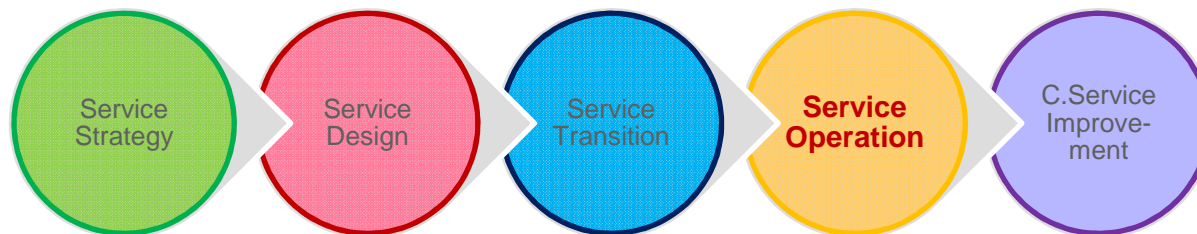
**How to operate a new  
IT-Service?**

# Incident – Problem – Known Error – RfC – Change



# ITIL Prozesse – „Service Desk“

- SPOC - Single Point of Contact
- Record and resolve incidents
- Provide work-around, escalate if not resolved
- Produce incident reports
- Keep users and customers informed of progress
- Responsible for incident life cycle

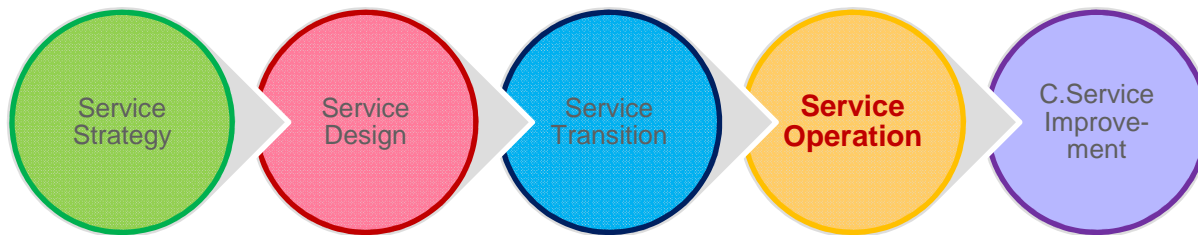
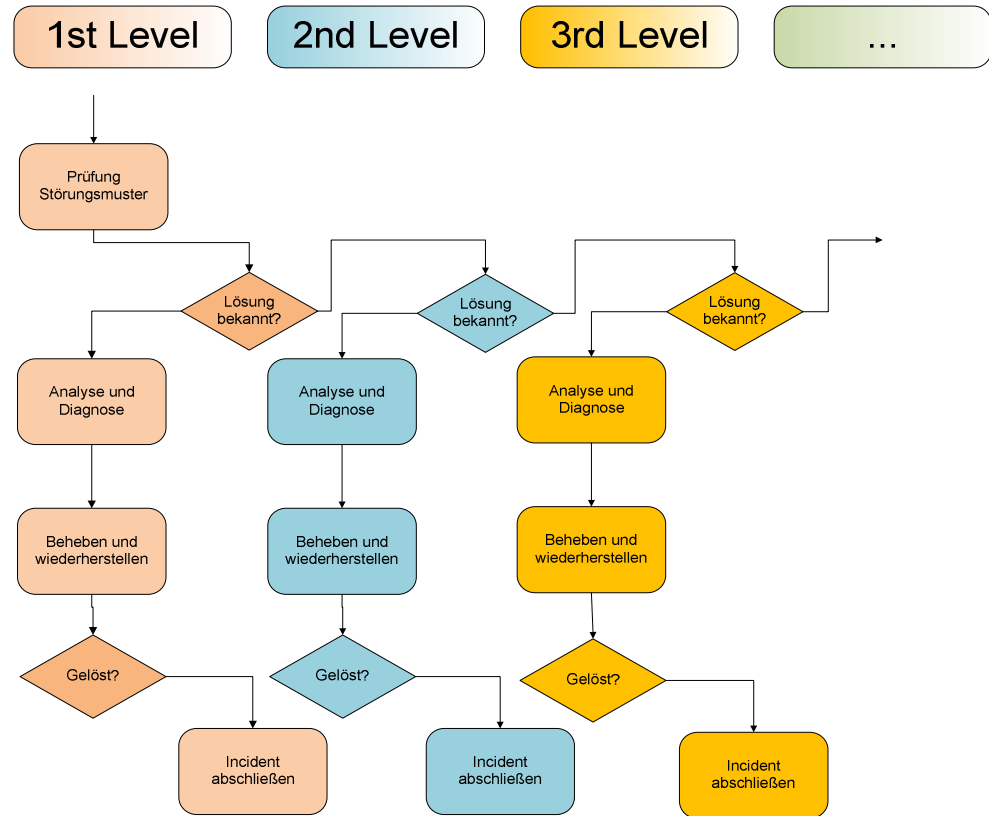


# ITIL Prozesse – Incident Management

- Return the IT service to users as quickly as possible

← Configuration Management Database (CMDB) is a set of tools and data that is used for collecting, storing, managing, updating, analyzing and presenting data about all configuration items and their relationships

← Service Knowledge Management System (SKMS) is the central repository of the data, information and knowledge that the IT organization needs to manage the lifecycle of its services. Its purpose is to store, analyze and present the service provider's data, information and knowledge.



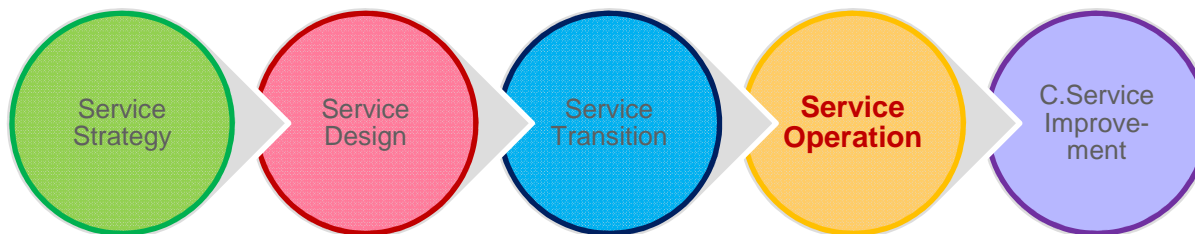
# ITIL Prozesse – Problem Management

## ■ Problem Control

- Identify, classify and solve problems
- Root cause identification
- Provide work-around to the Service Desk

## ■ Error Control

- Review and assess Known Error identified from Root Cause
- Eliminate known errors using the Change management
- Prevent incidents - trend analysis and place preventive measures



# Key Concepts – CMDB, Release

- **Request for Change (RfC)**
  - A formal proposal for a Change to be made. An RfC includes details of the proposed Change.
- **Change Advisory Board (CAB)**
  - A group of people that advises the Change Manager in the Assessment, prioritization and scheduling of Changes. This board is usually made up of representatives from all areas within the IT Service Provider, the Business and Third Parties such as Suppliers.
- **Change**
  - The addition, modification or removal of anything that could have an effect on IT Services.
- **Release**
  - Collection of hardware, software, documentation, processes or other things require to implement one or more approved changes to IT Services

# Key Concepts – Incident, Work-Around and Problem

- **Incident**
  - Unplanned interruption to an IT service or an unplanned reduction in its quality
- **Work-around**
  - Reducing or eliminating the impact of an incident without resolving it
- **Problem**
  - A cause of one or more Incidents. The cause is not usually known at the time a Problem Record is created
- **Known Error**
  - A Known Error is a problem that has a documented root cause and a Workaround



# Key Concepts – Incident, Work-Around and Problem

- **Configuration Management Database (CMDB)**
  - CMDB is a set of tools and data that is used for collecting, storing, managing, updating, analyzing and presenting data about all configuration items and their relationships
- **Service Knowledge Management System (SKMS)**
  - SKMS is the central repository of the data, information and knowledge that the IT organization needs to manage the lifecycle of its services. Its purpose is to store, analyze and present the service provider's data, information and knowledge.

# Conclusio

- **ITIL is a best practice framework**
    - ... shows you how you can do it
    - ... does not show you how you have to do it
  - **ITIL found it's way into various standards like ISO 20000**
  - **Common terms such as „incident“, „CMDB“, ...**
- 
- **Management gets control over IT**
  - **Cost and quality control**
  - **Standardization / Outsourcing**

**Thanks**