University of Applied Sciences Northwestern Switzerland
School of Business

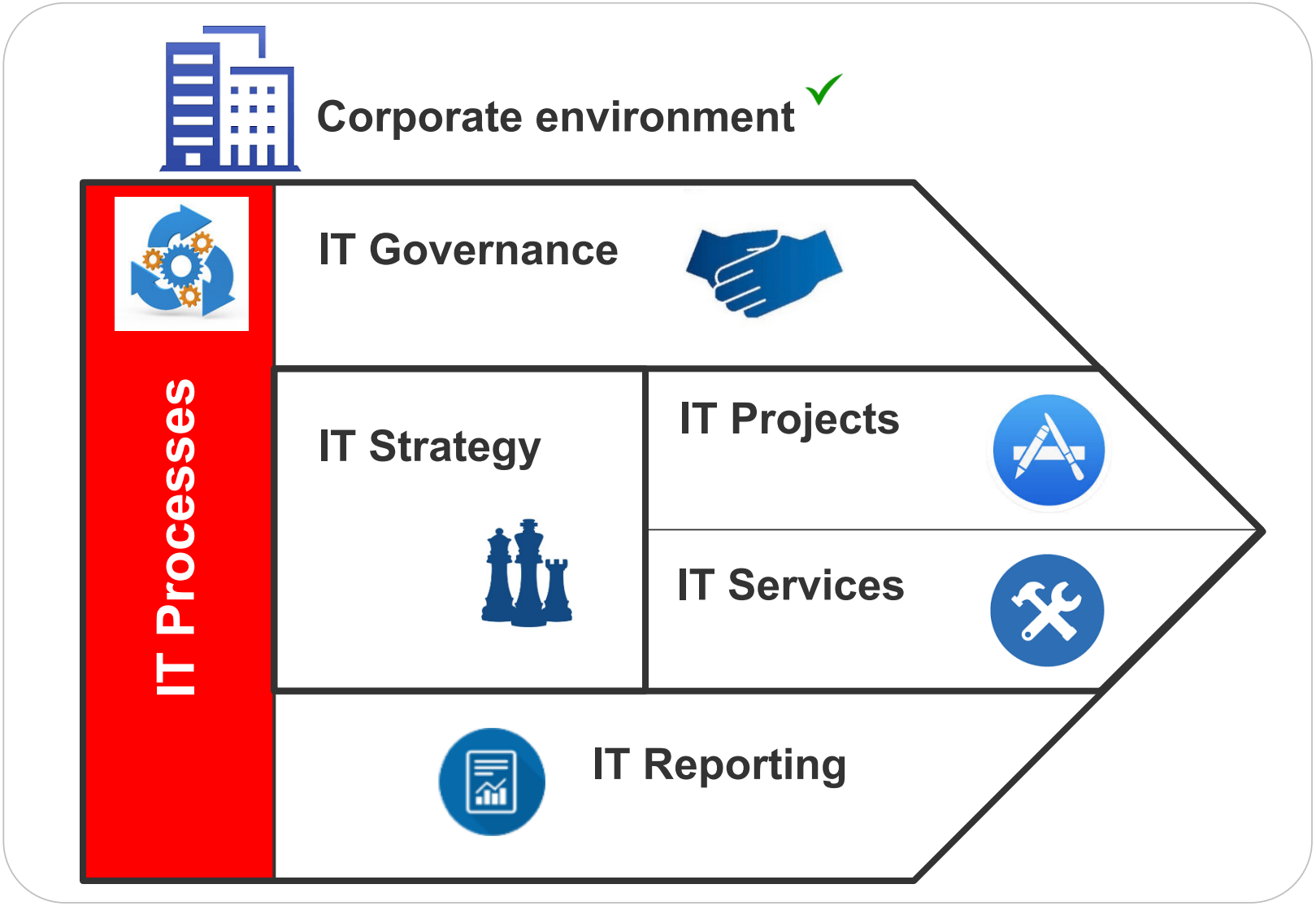
IT Management & Cloud Computing
Introduction to the Module

MSc BIS, SS 2017

IT Processes

Dr. Lionel Pilorget

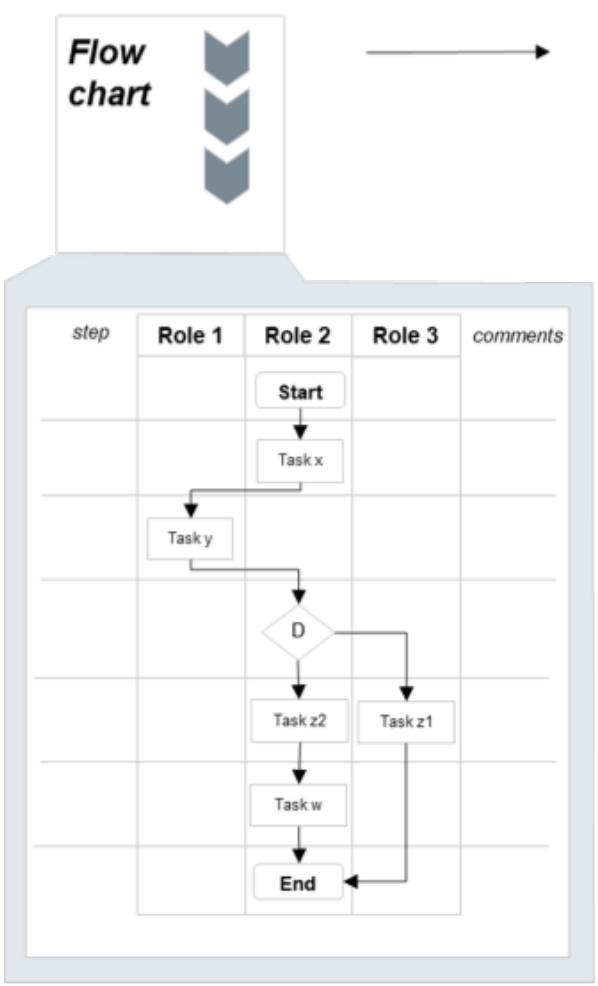
Structure of the Module

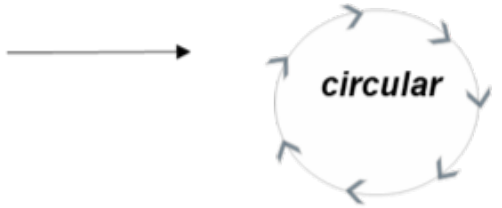


Agenda

- 5 Modeling Techniques
- Exercises
- Standards for IT Processes
- Implementing IT Processes
- Backup Slides (ITIL, COBIT)

Flow chart, Cycle, Swim lane





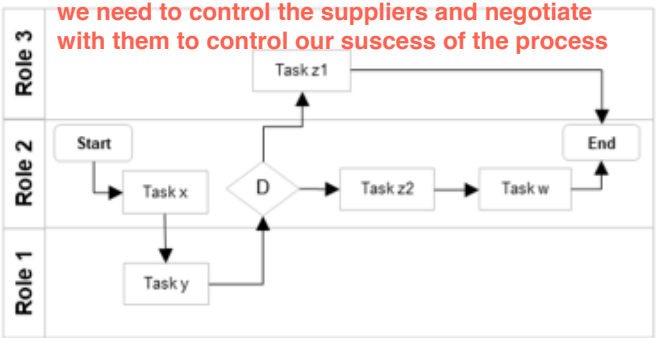
cycle

good for management presentation

Plan - Do - Check - Act

Swim lanes

Suppliers can be considered as a role because we need to control the suppliers and negotiate with them to control our success of the process



train you a clear steps of the process (predefined problems, instruction)

SIPOC = Supplier-Input-Process-Output-Customer

Case 4: Incident Management
Incident is an easy problem that can be solved in a matter of minutes
Problem is a matter which requires time and people to solve

the customer is the person of the organization who receives the output of the process





Supplier	Input	Process step	Output	Customer
User	Call	1 Check user data	Situation Ticket	Helpdesk Agent
Helpdesk Agent	Question “how can I help you’	2. Declaration	Ticket	User
HD Agent	Solve	3. Solve the problem	Close ticket	User
Usesr	Satisfaction survey	Survey	Evaluation ticket	HD Head

RACI = Responsible-Accountable-Consulted-Informed

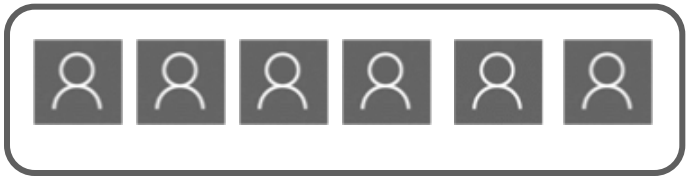
good approach to ask which steps should we take (think more about the steps)
external customer

RACI Matrix
Process Name: ……
Process Owner: ……..

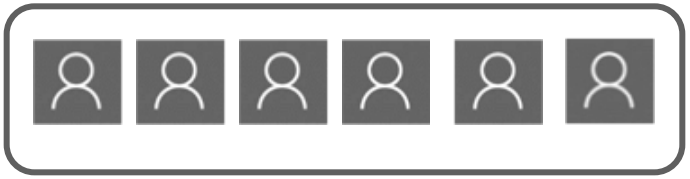
Nr.	Process step	Department / Area / Role					Inputs	Outputs	Comments
		A	B	C	D	E			
1									
2									
3									
4									
…									

R: Responsible ("doer" who performs the task and ensures that everything has been completed)
A: Accountable (person in charge, no delegation possible to another role)
C: Consulted (person who gives advice before or during a task completion, can influence a decision)
I: Informed (people or roles informed after finalisation of the task)

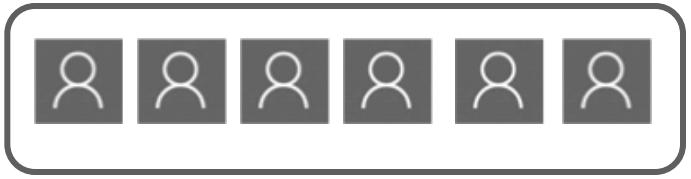
Let´s start modelling!



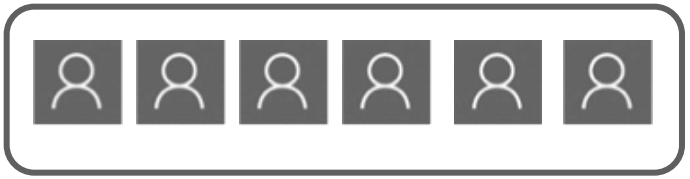
IT Quality Management => Cycle



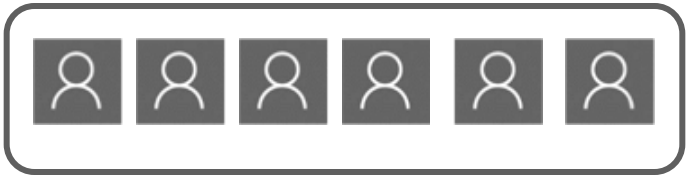
Application Development => Flow



IT Supplier Management => Swim Lane



Incident Management => SIPOC



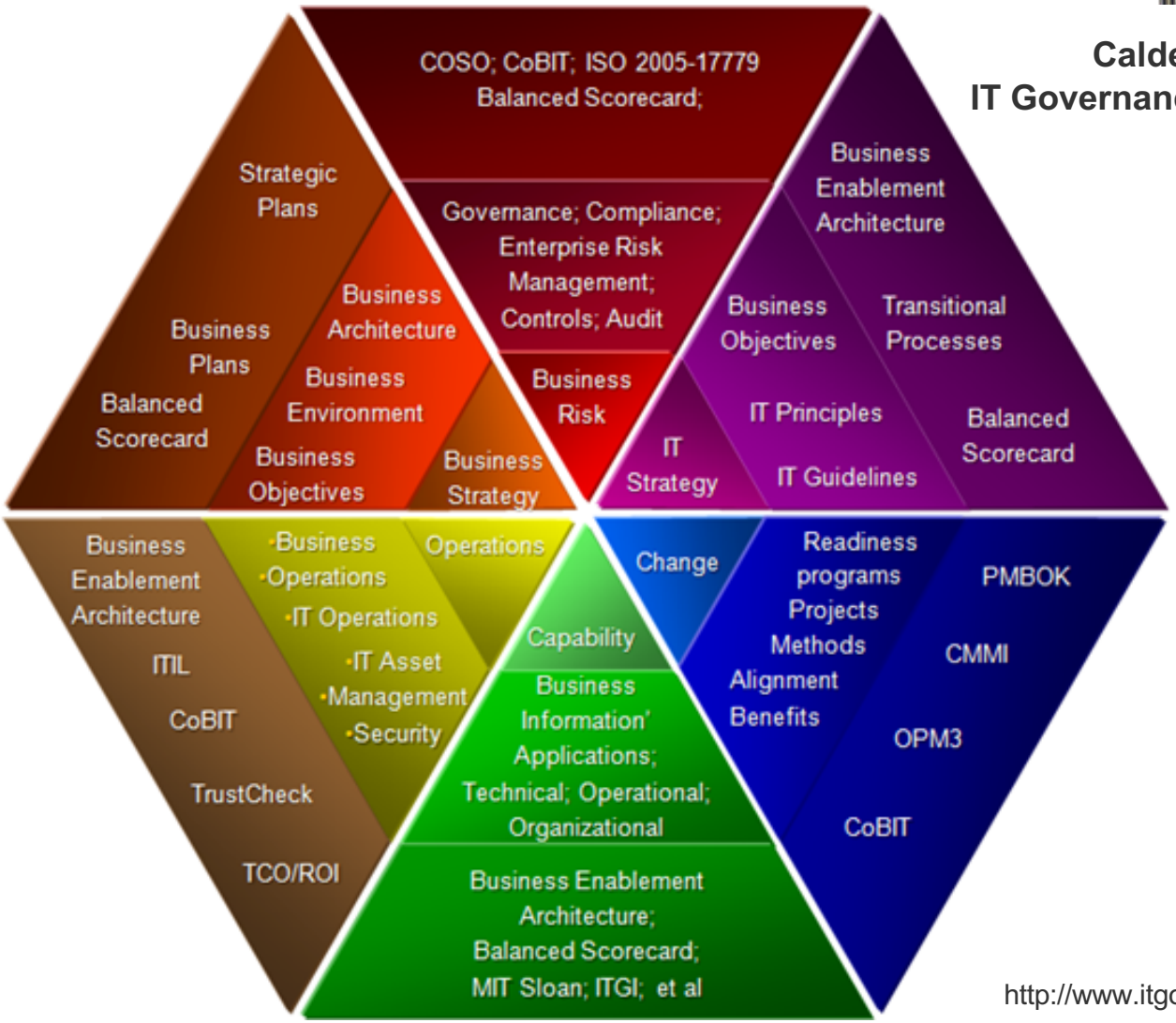
Service Management => RACI

Key questions for modelling processes

- What are the main steps?
- Which roles are needed?
- What triggers the process?
- Which dependencies to other processes?
- What is the output of the process?

- Which KPIs (Key Performance Indicators)?
- Which CSFs (Critical Success Factors)?

And of course many standards are available!



Calder-Moir
IT Governance Framework

http://www.itgovernance.co.uk

ITIL (IT Infrastructure Library) short history

Improvement of the management of IT Services in UK Central Government

1989 / 1996	2000 / 2001	2007	2011
ITIL V1 book	ITIL V2 books	ITIL V3 books	Updated ITIL books
IT Service Management, including 10 processes	Definition of Service Support & Service Delivery	5 lifecycle phases have been defined	No version anymore

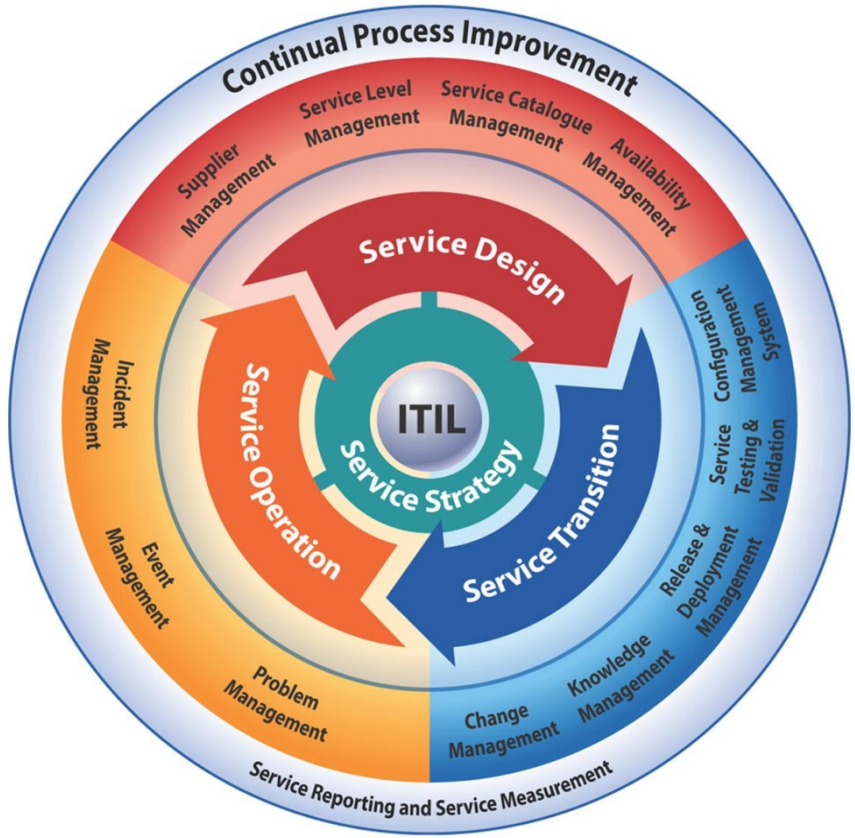
From ITIL V1 to ITIL 2011

Service Support

- Configuration Management
- Incident Management
- Problem Management
- Change Management
- Release Management

Service Delivery

- Service Level Management
- Capacity Management
- Availability Management
- Continuity Management
- Financial Management



COBIT = Control Objectives for Information and Related Technology (COBIT)

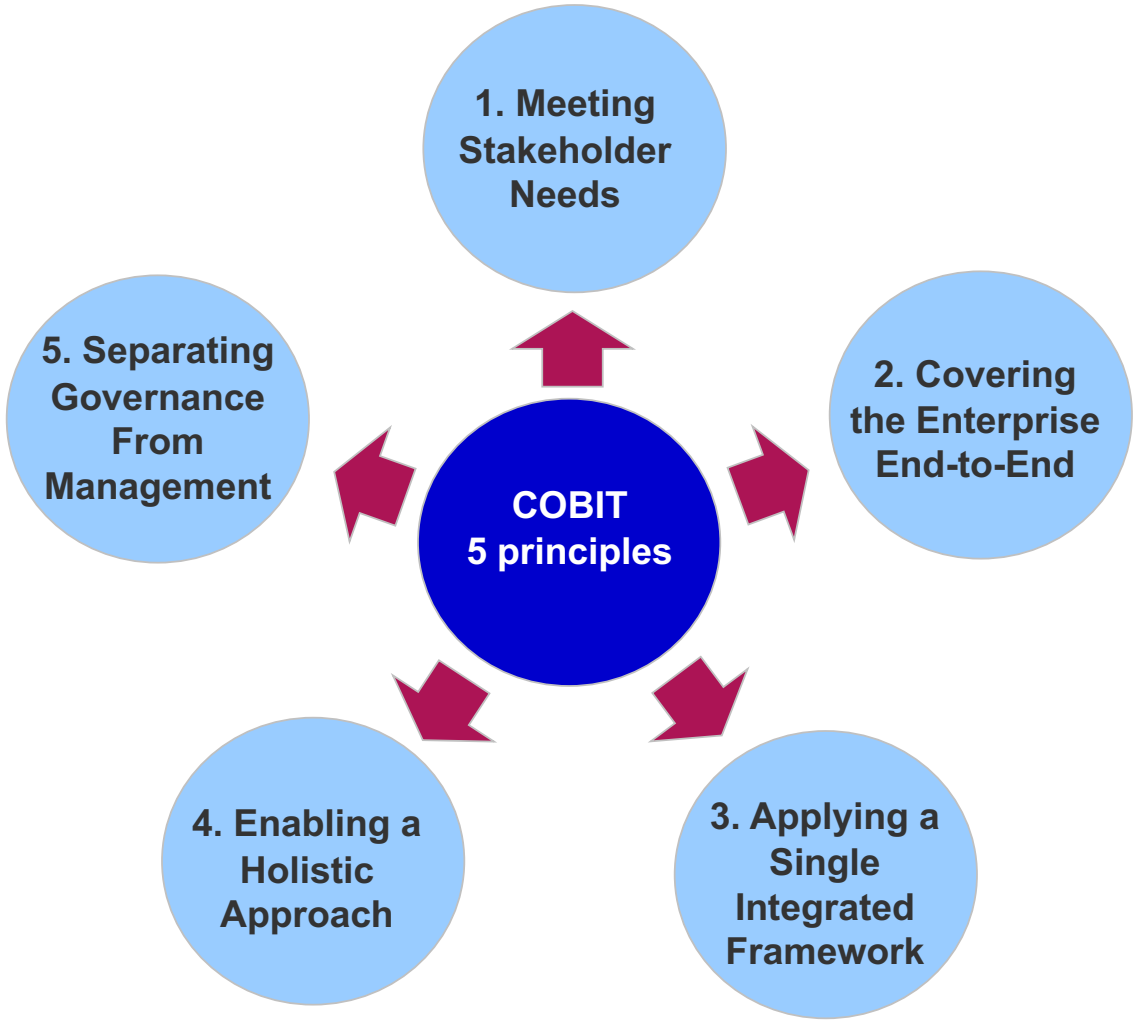
used for auditing purpose

- COBIT = framework created by ISACA for information technology (IT) management and IT governance. It is a supporting toolset that allows managers to bridge the gap between control requirements, technical issues and business risks.
- ISACA first released COBIT in 1996
- ISACA published the current version, COBIT 5, in 2012

http://www.isaca.org/cobit/pages/default.aspx https://en.wikipedia.org/wiki/COBIT

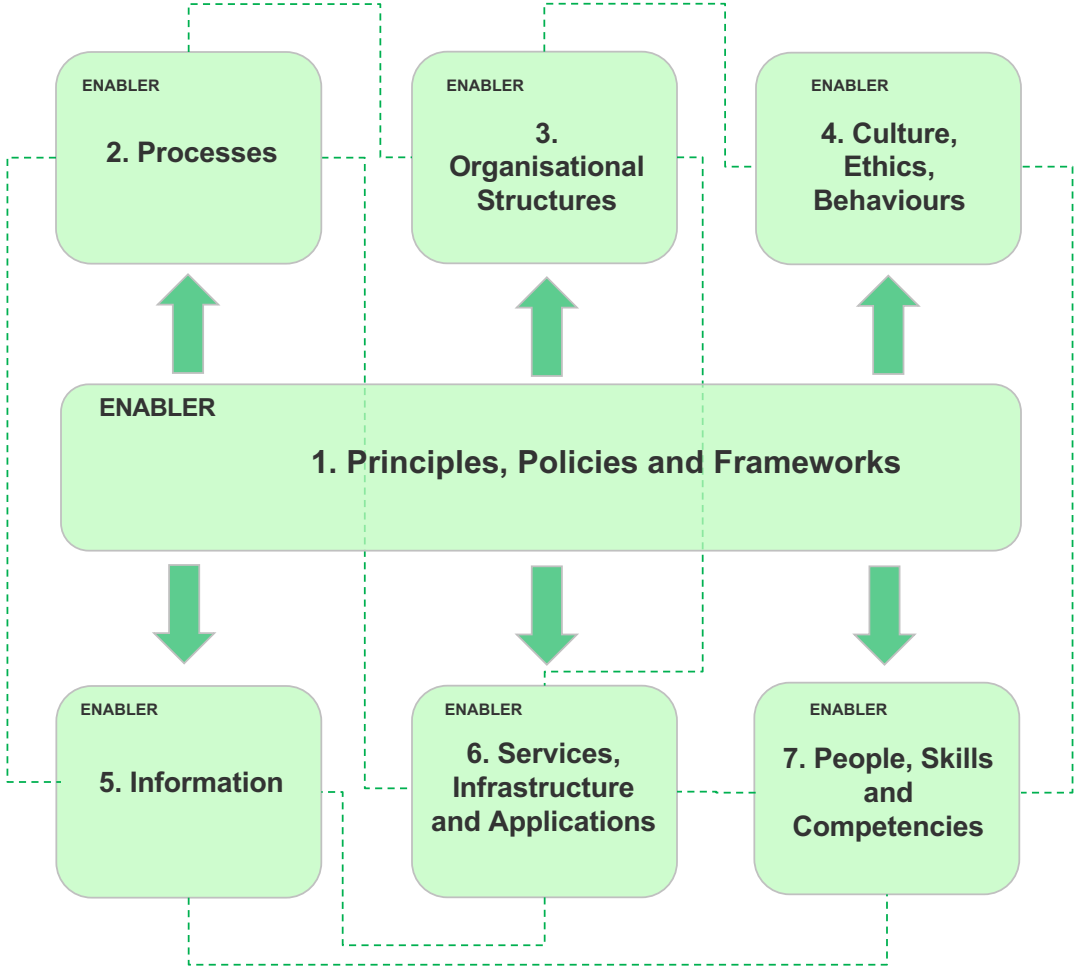
COBIT 5

COBIT Principles



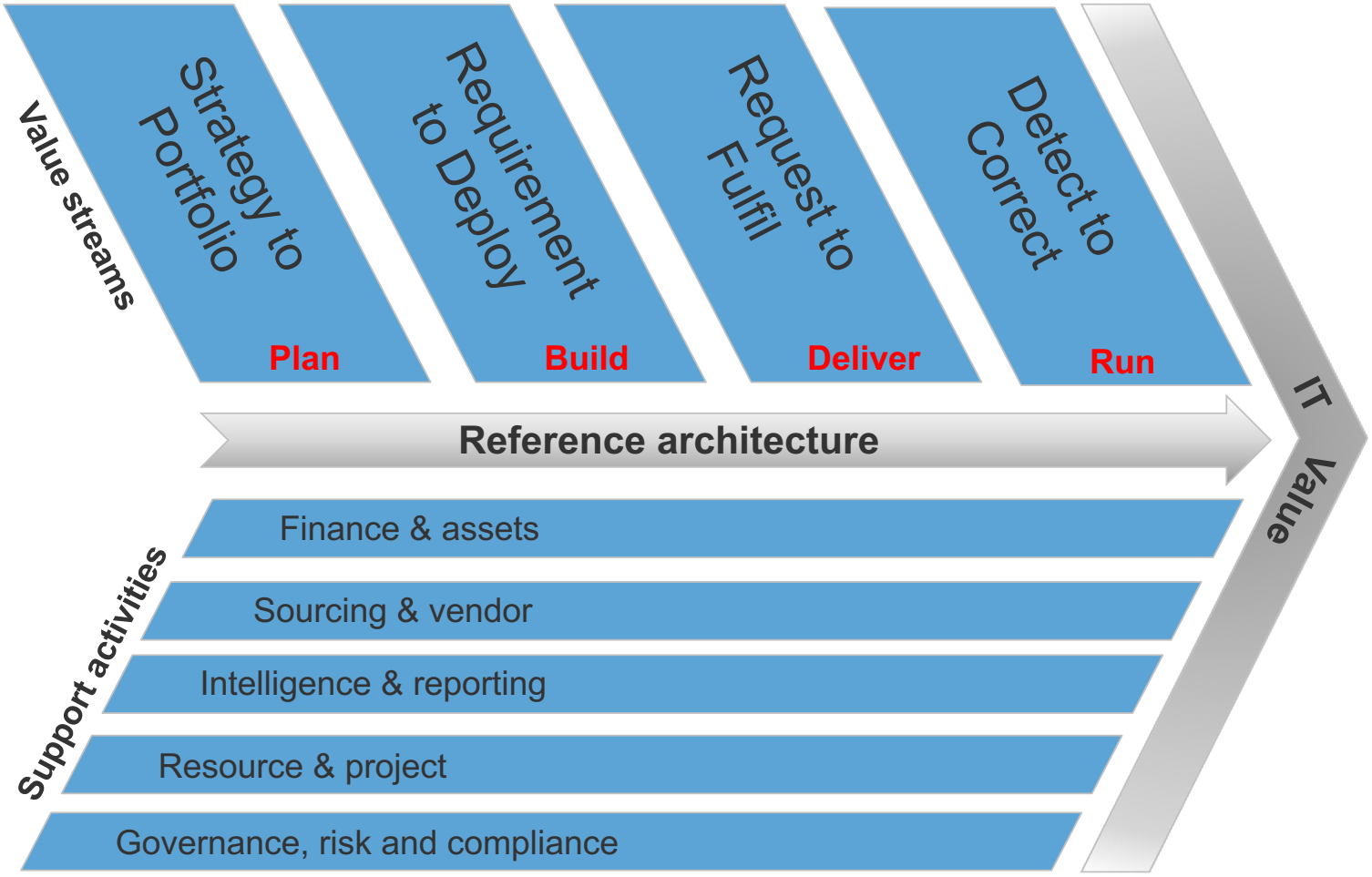
COBIT 5

COBIT Domains = PO / AI / DS / ME



IT4IT

IT Value chain



Implementing IT Processes

Checking standards

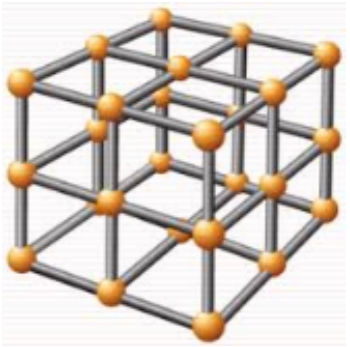
Analysing existing processes

Defining the “big picture”

Rolling up your sleeves

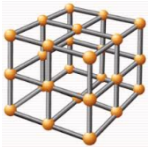
- define layers
1. strategy process: on management levels, process taking years to achieve (budgeting)
2. tactical process: takes weeks to finish
3. operational process: incidents, process to solve problems in a short term
- connect these activities in the same layers and in different layers to have an image about the big process (see example models - which can be taken as reference models)

Structuring elements to define the IT process landscape



- IT Customers (as internal customer)
- Time frame
- Suppliers

IT Customers	Time Frame	IT Suppliers
Upper management	strategic 	Partner
Middle management	tactical 	Provider
Employee	operational 	Seller



General framework

IT Clients

Strategic decision processes

IT Management Processes

Tactical processes

Development (change the bank)

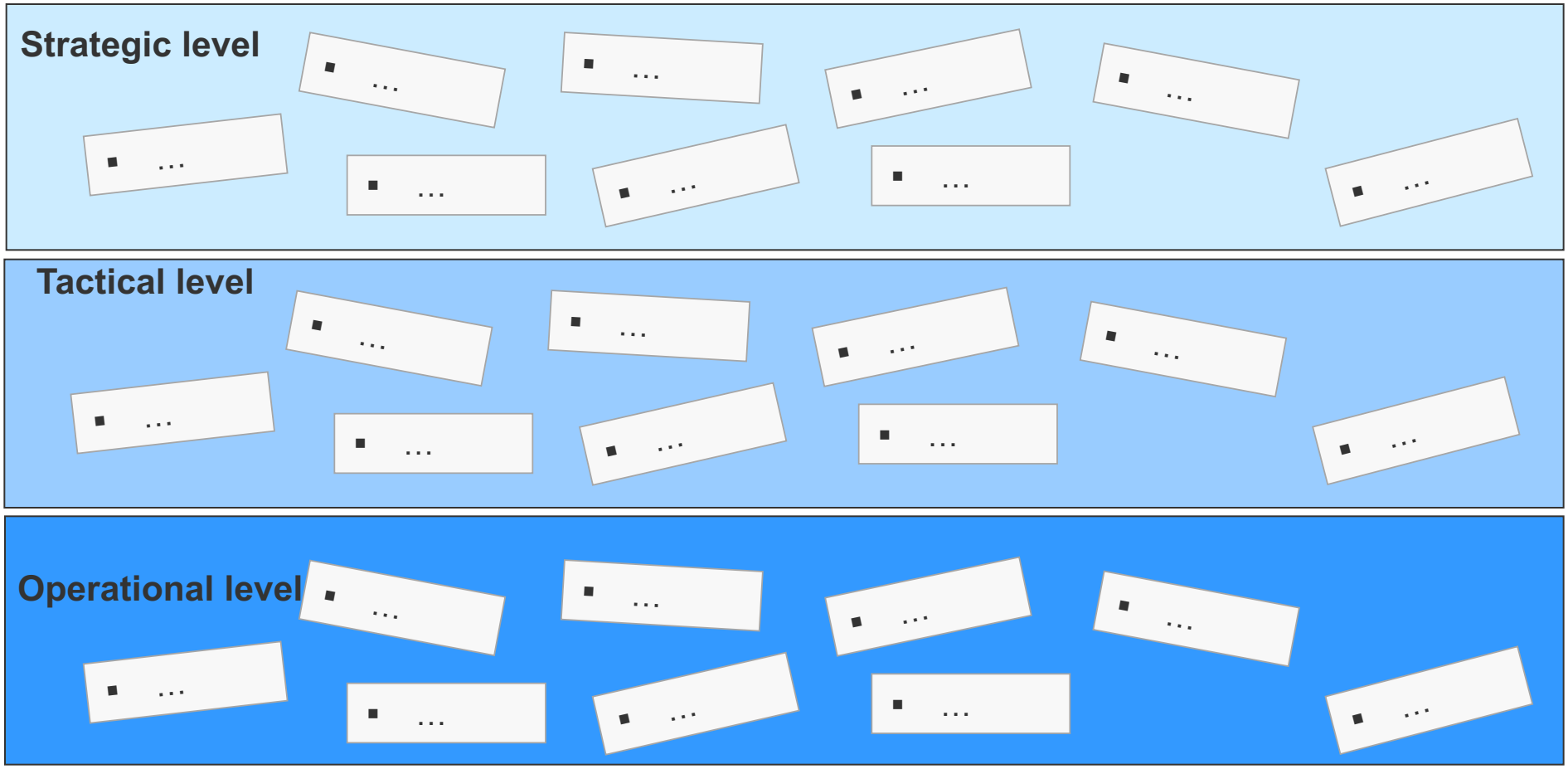
Services (run the bank)

Operational processes

IT Operations

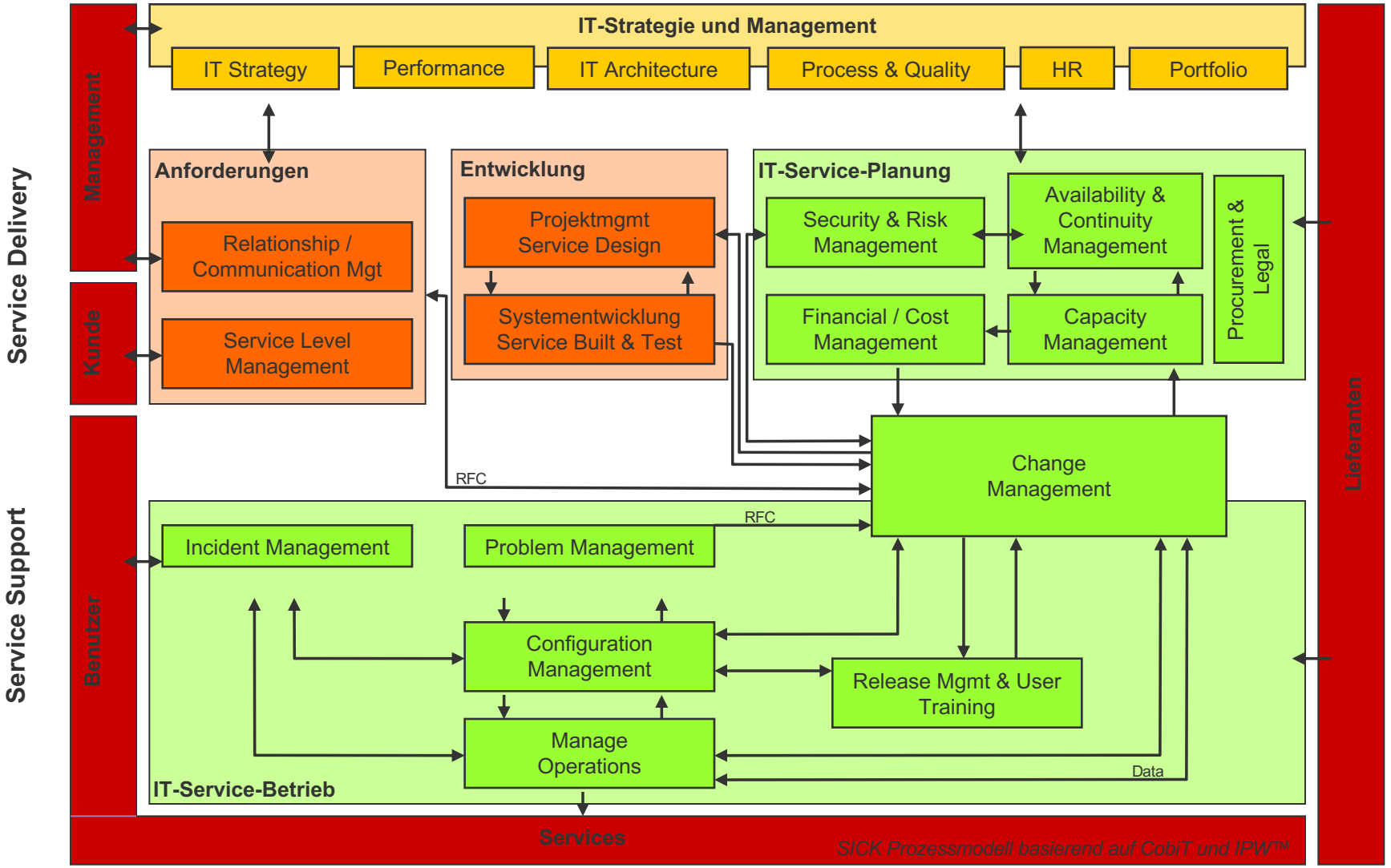
IT Suppliers

Positioning processes and defining the Big Picture



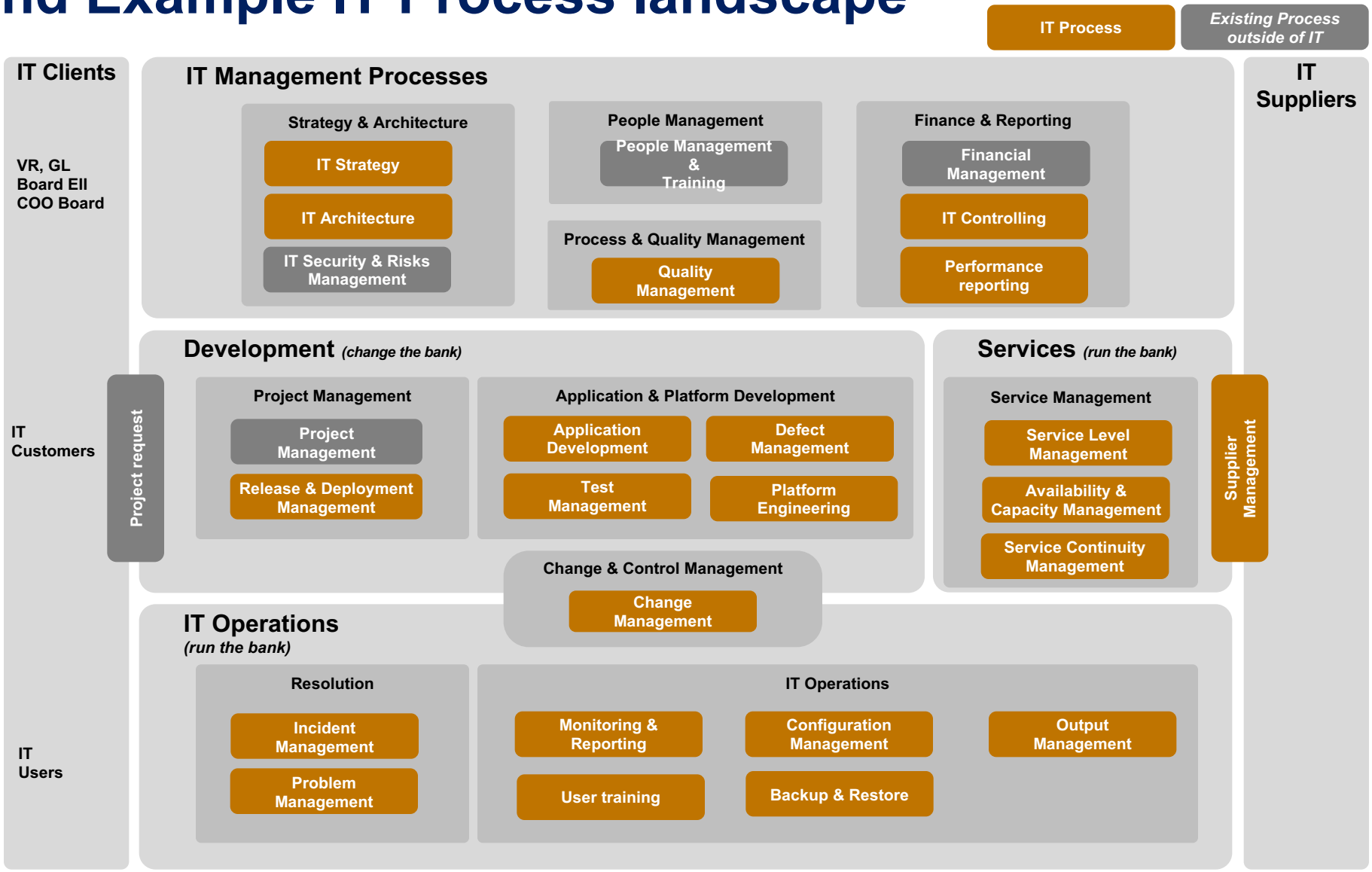
EXAMPLE

1st Example IT Process landscape



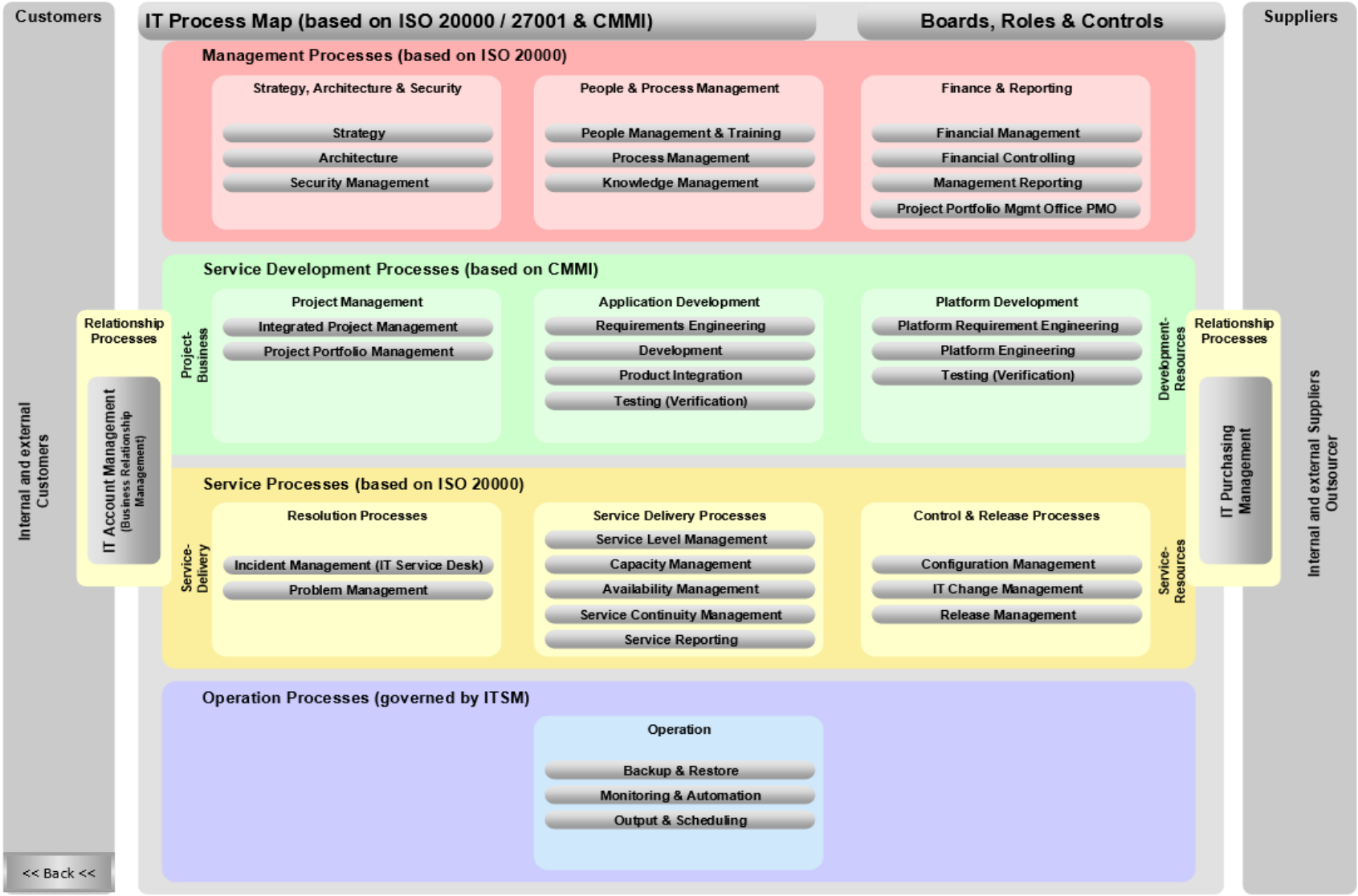
EXAMPLE

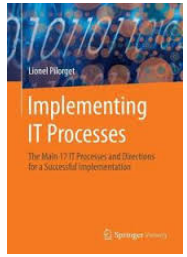
2nd Example IT Process landscape



EXAMPLE

3rd Example IT Process landscape





IT Process landscape proposed

Board

Strategic Decision Processes

- **P01-** IT Strategy
- **P02-** HR Management (IT Staff)
- **P03 -** IT Standards & Architecture
- **P04 -** IT Financial Management
- **P05 -** IT Quality Management

IT Customer

Account Management

- **P09 -** IT Service Management
- **P10 -** Business Relationship Management

Planning & Controlling

- **P06 -** IT Project Portfolio Management
- **P07 -** Capacity & Availability Management
- **P08 -** Continuity Management

Delivery

- **P11 -** IT Project Management
- **P12 -** Release Management
- **P13 -** Application Development

Operation & Configuration Management

- **P14 -** IT Operation & Configuration Management

IT User

IT Support

- **P16 -** Incident Management
- **P17 -** Problem Management

Supply Management

- **P15 -** IT Supplier Management

IT Supplier

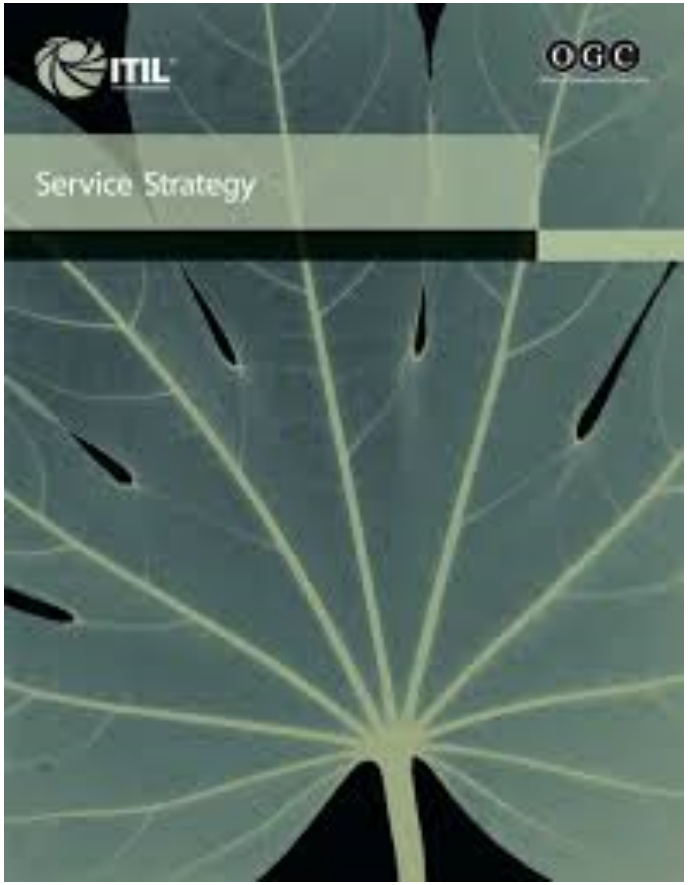

Backup Slides:
ITIL

ITIL in short

- Service Strategy
- Service Design
- Service Transition
- Service Operation
- Continual Service Improvement

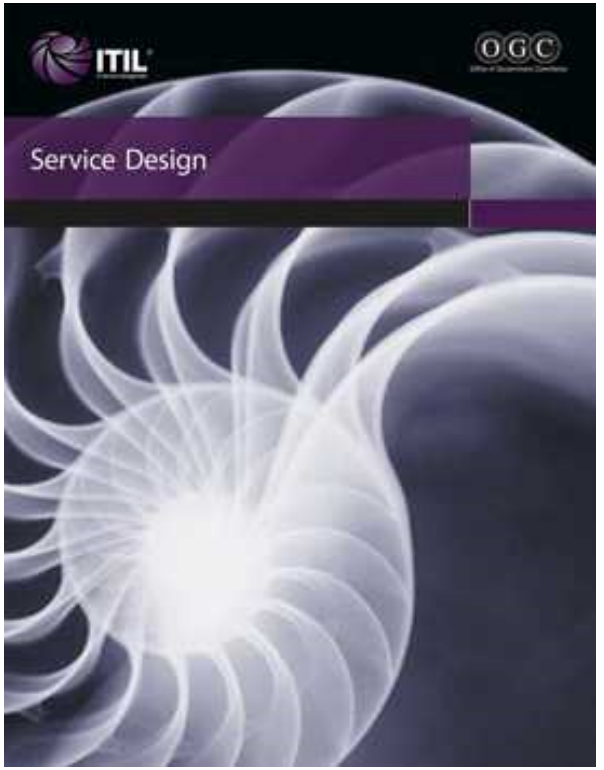
Service Strategy:
Key questions for Service Providers

- What IT Services should we provide?
- Who should we provide these services too?
- How do we genuinely differentiate from competitors?
- How do we create lasting business value for our customers?
- How can we make a case for ROI and other investments?
- How should we best define and measure service quality?
- How do we choose between different paths for improving service quality?
- How do we efficiently (re)allocate resources across a portfolio of services?
- How do we resolve conflicting demands for shared resources



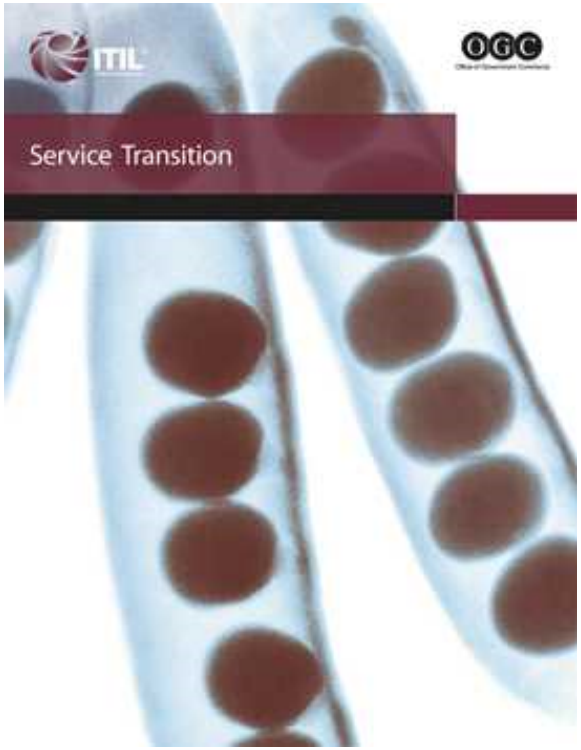
Service Design: Processes included

- Design coordination
- Service catalogue management
- Service level management
- Availability management
- Capacity management
- IT service continuity management
- Information security management
- Supplier management



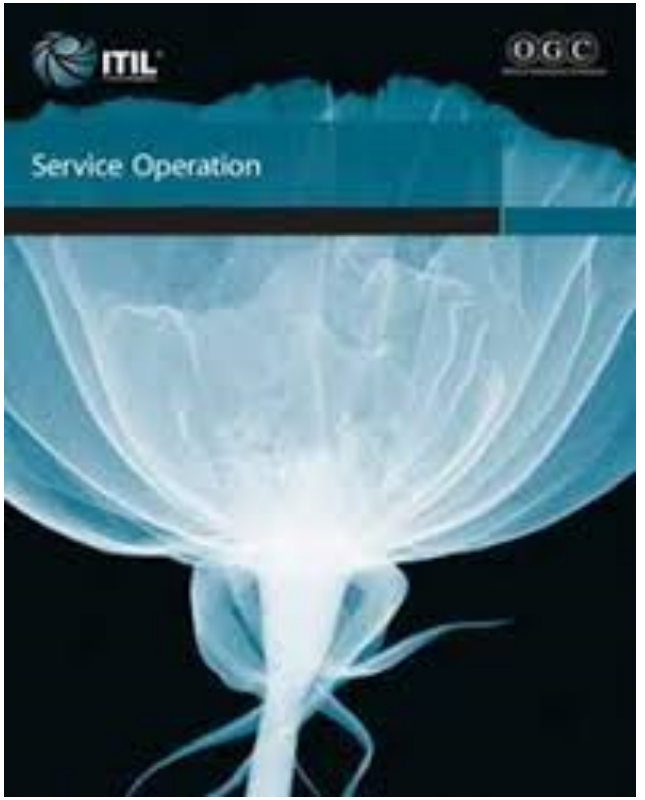
Service Transition: Processes included

- Knowledge management
- Transition planning and support
- Change management
- Availability management
- Service asset and configuration management (SACM)
- Release and deployment management
- Evaluation



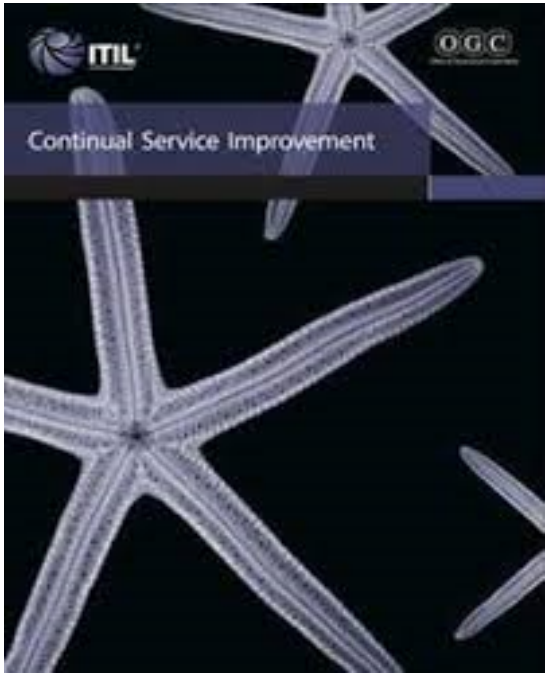
Service Operation: 4 main Functions

- Technical management
  - Manage the IT infrastructure
  - Provide skilled staff and support operations staff members
- Application management
  - Manage the IT applications
  - Ensure knowledge and provide training to technical staff
- Operations management
  - Conduct day-to-day activities to ensure that SLA is met
  - Ensure availability and stability of IT systems
  - Schedule and monitor batch-jobs
- Service desk
  - SPOC (Single Point of Contact) for users of IT services
  - Prioritize issues and escalates if necessary
  - Solves as far as possible incidents



Continual Service Improvement (CSI) in seven steps

1) Identify the strategy for improvement
2) Define what you will measure
3) Gather the data
4) Process the data
5) Analyse the information and data
6) Present and use the information
7) Implement improvement



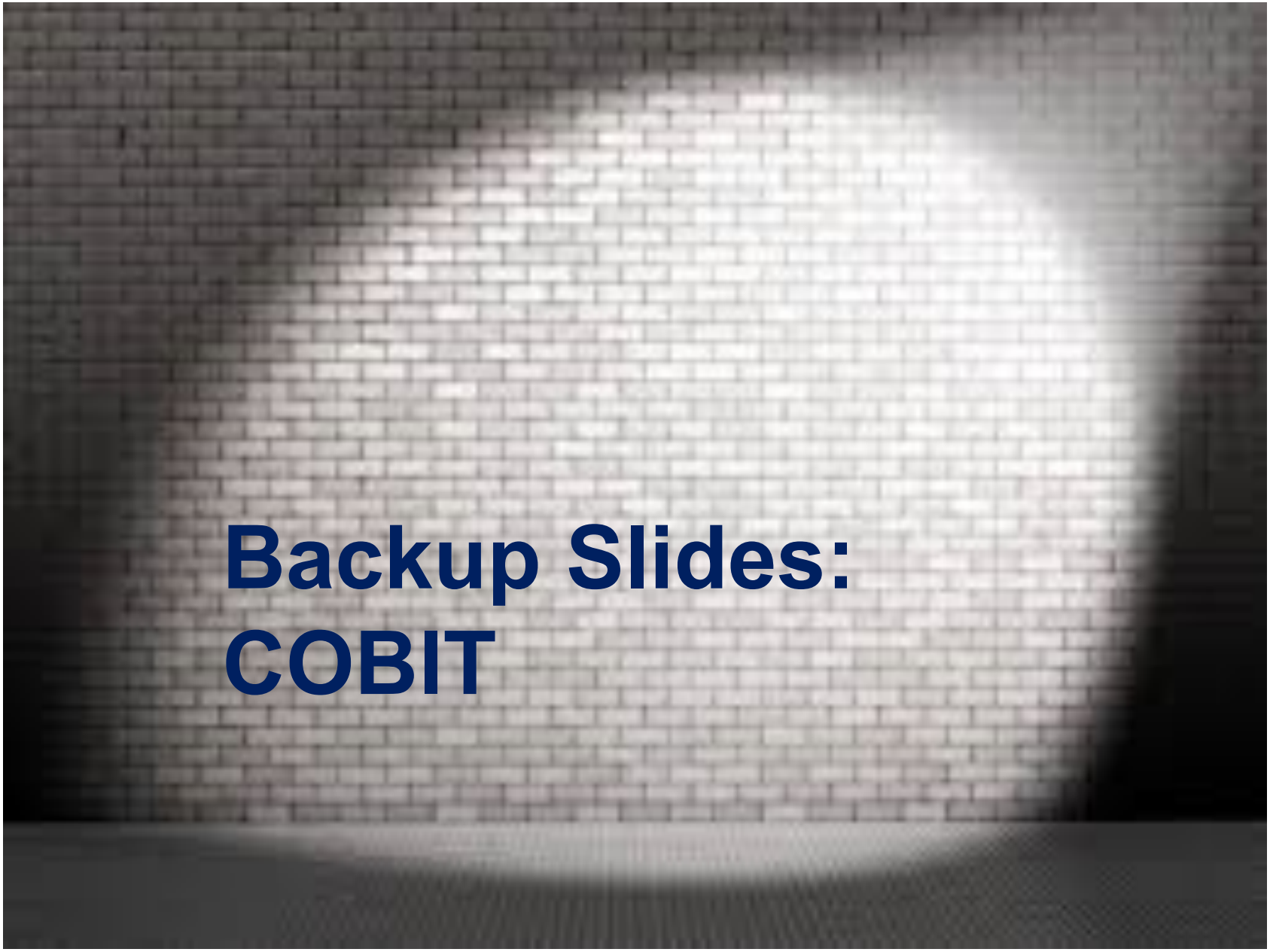
ITIL: pros and cons

Advantages

- reduced costs for the organization
- better productivity of the organization
- improved IT services through the use of proven best practice processes
- improved quality control
- improved utilization of skills and experience of the employees
- improved customer satisfaction
- utilization of industry standards
- improved delivery of third party services as the standard for service delivery in services procurements

Disadvantages

- extensive use may lead to considerable costs
- not easily understandable (Version 2 is more easily understandable)
- expensive books and not affordable for non-commercial users.
- specific training required


Backup Slides:
COBIT

COBIT 4 PO (Plan and Organise)

PO	Plan and Organise
PO1	**Define a strategic IT plan**
PO1.1	IT value management
PO1.2	Business-IT alignment
PO1.3	Assessment of current performance
PO1.4	IT strategic plan
PO1.5	IT tactical plans
PO1.6	IT portfolio management
PO2	**Define the information architecture**
PO2.1	Information architecture model
PO2.2	Enterprise data dictionary and data syntax rules
PO2.3	Data classification scheme
PO2.4	Integrity Management
PO3	**Determine technological direction**
PO3.1	Technological direction planning
PO3.2	Technical infrastructure plan - scope and coverage
PO3.3	Monitoring of future trends and regulations
PO3.4	Technology standards
PO3.5	IT architecture board
PO4	**Define the IT processes, organisation and relationships**
PO4.1	IT process framework
PO4.2	IT strategy committee
PO4.3	IT steering committee
PO4.4	Organisational placement of the IT function
PO4.5	IT organisational structure
PO4.6	Roles and responsibilities
PO4.7	Responsibility for IT quality assurance
PO4.8	Responsibilty for risk, security and compliance
PO4.9	Data and system ownership
PO4.10	Supervision
PO4.11	Segregation of duties
PO4.12	IT staffing
PO4.13	Key IT personnel
PO4.14	Contracted staff policies and procedures
PO4.15	Relationships
PO5	**Manage the IT investment**
PO5.1	Financial management framework
PO5.2	Priorisation wihtin IT budget
PO5.3	IT budgeting process
PO5.4	Cost management
PO5.5	Benefit management

PO6	Communicate management aims and direction
P6.1	IT policy and control environment
P6.2	Enterprise IT risk and internal control framework
P6.3	IT policies management
P6.4	Policy rollout
P6.5	Communication of IT objectives and direction
PO7	**Manage IT human resources**
PO7.1	Personnel recruitment and retention
PO7.2	Personnel competencies
PO7.3	Staffing of roles
PO7.4	Personnel training
PO7.5	Dependence upon individuals
PO7.6	Personnel clearance procedures
PO7.7	Employee job performance evaluation
PO7.8	Job change and termination
PO8	**Manage quality**
PO8.1	Quality management system
PO8.2	IT standards and quality practices
PO8.3	Development and acquisition standards
PO8.4	Customer focus
PO8.5	Continuous improvement
PO8.6	Quality measurement, monitoring and review
PO9	**Assess and manage IT risks**
PO9.1	IT and business risk management alignment
PO9.2	Establishment of risk context
PO9.3	Event identification
PO9.4	Risk assessment
PO9.5	Risk response
PO9.6	Maintenance and monitoring of a risk action plan
PO10	**Manage projects**
PO10.1	Programme management framework
PO10.2	Project management framework
PO10.3	Project management approach
PO10.4	Stakeholder commitment
PO10.5	Project scope statement
PO10.6	Project phase initiation
PO10.7	Integrated project plan
PO10.8	Project resources
PO10.9	Project risk management
PO10.10	Project quality plan
PO10.11	Project change control
PO10.12	Project planning of assurance methods
PO10.13	Project performance measurement, reporting and monitoring
PO10.14	Project closure

COBIT 4 AI (Acquire and Implement)

AI	Acquire and Implement
AI1	**Identify automated solutions**
AI1.1	Definition and maintenance of business functional and technical requirements
AI1.2	Risk analysis report
AI1.3	Feasibility study and formulation of alternative courses of action
AI1.4	Requirements and feasibility decision and approval
AI2	**Acquire and maintain application software**
AI2.1	High-level design
AI2.2	Detailed design
AI2.3	Application control and auditability
AI2.4	Application security and availability
AI2.5	Configuration and implementation of acquired application software
AI2.6	Major upgrades to existing systems
AI2.7	Development of application software
AI2.8	Software quality assurance
AI2.9	Application requirements management
AI2.10	Application software maintenance
AI3	**Acquire and maintain technology infrastructure**
AI3.1	Technological infrastructure acquisition plan
AI3.2	Infrastructure resource protection and availability
AI3.3	Infrastructure maintenance
AI3.4	Feasibility test environment
AI4	**Enable operation and use**
AI4.1	Planning for operational solutions
AI4.2	Knowledge transfer to business management
AI4.3	Knowledge transfer to end users
AI4.4	Knowledge transfer to operations and support staff

AI5	Procure IT resources
AI5.1	Procurement control
AI5.2	Supplier contract management
AI5.3	Supplier selection
AI5.4	Software acquisition
AI5.5	Acquisition of development resources
AI5.6	Acquisition of infrastructure, facilities and related services
AI6	**Manage changes**
AI6.1	Change standards and procedures
AI6.2	Impact assessment, prioritisation and authorisation
AI6.3	Emergency changes
AI6.4	Change status tracking and reporting
AI6.5	Change closure and documentation
AI7	**Install and accredit solutions and changes**
AI7.1	Training
AI7.2	Test plan
AI7.3	Implementation plan
AI7.4	Test environment
AI7.5	System and data conversion
AI7.6	Testing of changes
AI7.7	Final acceptance test
AI7.8	Promotion to production
AI7.9	Software release
AI7.10	System distribution
AI7.11	Recording and tracking of changes
AI7.12	Post-implementation review

COBIT 4 DS (Deliver and Support)

DS	Deliver and Support
DS1	**Define and manage service levels**
DS1.1	Service level agreement framework
DS1.2	Definition of services
DS1.3	Service level agreements
DS1.4	Operating level agreements
DS1.5	Monitoring and reporting of service level achievements
DS1.6	Review of service level agreements and contracts
DS2	**Manage third-party services**
DS2.1	Identification of all aupplier relationships
DS2.2	Supplier relationship management
DS2.3	Supplier risk management
DS2.4	Supplier performance monitoring
DS3	**Manage performance and capacity**
DS3.1	Performance and capacity planning
DS3.2	Current capacity and performance
DS3.3	Future capacity and performance
DS3.4	IT resources availability
DS3.5	Monitoring and reporting
DS4	**Ensure continuous service**
DS4.1	IT continuity framework
DS4.2	IT continuity plans
DS4.3	Critical IT resources
DS4.4	Maintenance of the IT continuity plan
DS4.5	Testing of the IT continuity plan
DS4.6	IT continuity plan training
DS4.7	Distribution of the IT continuity plan
DS4.8	IT-Services recovery and resumption
DS4.9	Offsite backup storage
DS4.10	Post-resumption review
DS5	**Ensure systems security**
DS5.1	Management of IT security
DS5.2	IT security plan
DS5.3	Identity management
DS5.4	User account management
DS5.5	Security testing, surveillance and monitoring
DS5.6	Security incident definition
DS5.7	Protection of security technology
DS5.8	Cryptographic key management
DS5.9	Malicious software prevention, detection and correction
DS5.10	Network security
DS5.11	Exchange of sensitive data

DS6	**Identify and allocate costs**
DS6.1	Definition of services
DS6.2	IT accounting
DS6.3	Cost modelling and charging
DS6.4	Cost model maintenance
DS7	**Educate and train users**
DS7.1	Identification of education and training needs
DS7.2	Delivery of training and education
DS7.3	Evaluation of training received
DS8	**Manage service desk and incidents**
DS8.1	Service desk
DS8.2	Registration of customer queries
DS8.3	Incident escalation
DS8.4	Incident closure
DS8.5	Trend analysis
DS9	**Manage the configuration**
DS9.1	Configuration Repository and Baseline
DS9.2	Identification and maintenance of configuration items
DS9.3	Configuration Integrity Review
DS10	**Manage problems**
DS10.1	Identification and classification of problems
DS10.2	Problem tracking and resolution
DS10.3	Problem closure
DS10.4	Integration of change, configuration and problem management
DS11	**Manage data**
DS11.1	Business requirements for data management
DS11.2	Storage and retention arrangements
DS11.3	Media library management system
DS11.4	Disposal
DS11.5	Backup and Restoration
DS11.6	Security requirements for data management
DS12	**Manage the physical environment**
DS12.1	Site selection and layout
DS12.2	Physical security measures
DS12.3	Physical access
DS12.4	Protection against environmental factors
DS12.5	Physical facility management
DS13	**Manage operations**
DS13.1	Operations procedures and instructions
DS13.2	Job scheduling
DS13.3	IT infrastructure monitoring
DS13.4	Sensitive documents and ouput devices
DS13.5	Preventive maintenance for hardware

COBIT 4 ME (Monitor and Evaluate)

ME	Monitor and Evaluate
ME1	**Monitor and evaluate IT performance**
ME1.1	Monitoring approach
ME1.2	Definition and collection of monitoring data
ME1.3	Monitoring method
ME1.4	Performance assessment
ME1.5	Board and executive reporting
ME1.6	Remedial actions
ME2	**Monitor and evaluate internal control**
ME2.1	Monitoring of internal control framework
ME2.2	Supervisory review
ME2.3	Control exceptions
ME2.4	Control self-assessment
ME2.5	Assurance of internal control
ME2.6	Internal control at third parties
ME2.7	Remedial Actions
ME3	**Ensure regulatory compliance**
ME3.1	Identification of laws and regulations having potential impact on IT
ME3.2	Optimisation of response to regulatory requirements
ME3.3	Evaluation of compliance with regulatory requirements
ME3.4	Positive assurance of compliance
ME3.5	Integrated Reporting
ME4	**Provide IT-governance**
ME4.1	Establishment of an IT governance framework
ME4.2	Strategic alignment
ME4.3	Value delivery
ME4.4	Ressource management
ME4.5	Risk management
ME4.6	Performance measurement
ME4.7	Independent assurance