

IT Service Management, Best practices and research challenges

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SBRC 2010

The message

- There's more to IT than just networks and systems
- There's interesting research to be done on the other aspects of IT than technology (people and processes)

Agenda

- IT Service Management
 - What's the problem?
 - Service Management as a Practice
 - ITSM: The IT Infrastructure Library (ITIL)
 - IT Governance
- Business-Driven IT Management
 - Introduction
 - BDIM Challenges
 - Applying BDIM to Specific Scenarios
 - Overview of some current BDIM tools and solutions

WHAT'S THE PROBLEM?

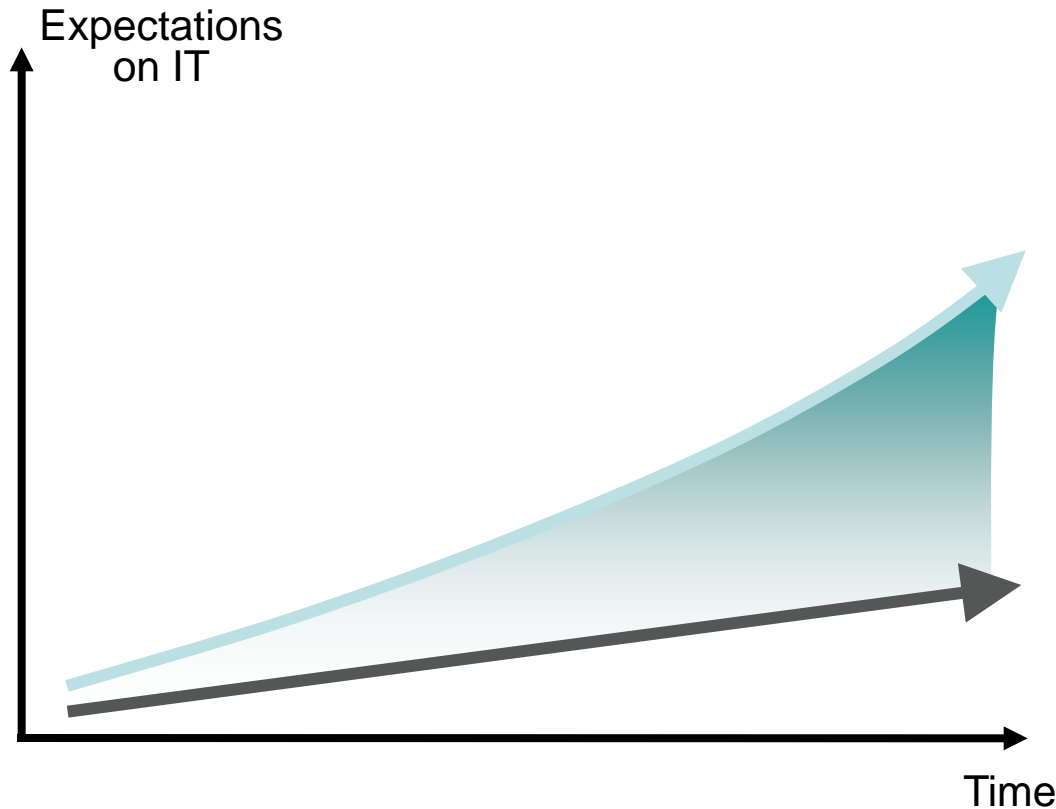
Drivers

- Dependence of organizations on IT
 - Information is the most important strategic resource that any organization has to manage.
- Results
 - Much increased deployment
 - Much increased complexity (heterogeneous, distributed, very large scale systems)
 - Much increased cost (3-11% of revenue!) leads to increased senior management scrutiny on IT
 - the CFO is screaming bloody murder!
 - Fast changing world
 - Changing business context/requirements
 - Changing technologies

Key Issues for the CIO:

- How many of these involve “technology”?
- IT and business strategic planning
- Integrating and aligning IT and business goals
- Implementing continuous improvement
- Measuring IT organization effectiveness and efficiency
- Optimizing costs and the Total Cost of Ownership (TCO)
- Achieving and demonstrating Return on Investment (ROI)
- Demonstrating the business value of IT
- Developing business and IT partnerships and relationships
- Improving project delivery success
- Outsourcing, insourcing and smart sourcing
- Using IT to gain competitive advantage
- Delivering the required, business justified IT services (i.e. what is required, when required and at an agreed cost)
- Managing constant business and IT change
- Demonstrating appropriate IT governance.

The IT reality



Business demands

- Agility, alignment and availability
- Business intelligence
- Mergers and acquisitions
- Regulatory compliance

Technology demands

- Modern, flexible architecture
- Service migrations and upgrades
- IT automation and consolidation
- Security

Versus

IT's capability to deliver

- Flat to modest increase in budget
- Manual processes
- Disparate tools/point solutions
- Silo'd organizations

There's a growing gap between the demands placed on IT and IT's ability to deliver

Leveraging best practice to bridge the gap

Running IT like a business



Business

- Compliance
- Improving Business Operations
- Enable Competitive advantage

Management

- Linking IT with the Business
- Improving IT processes, Governance
- Significantly reduce the cost of IT operations
- Demonstrating Business Value

Need to break down functional IT silos to deliver positive business outcomes

Strategy

Applications

Operations

ITIL v3 (Service Management)

ITIL v2 (ITSM)

Therefore ...

- The old ways of managing IT are not adequate
 - IT is much more important and much more visible than in the past
 - Need to get organized to handle all these dragons

A SOLUTION: IT SERVICE MANAGEMENT

A change in IT mindset

- IT is not a technology island dissociated from the business
- Basic changes needed in IT management
 - Get visibility into the business (look outside the IT department)
 - Identify clients, their needs (business, not technology)
 - Package what IT does for the business in a way that it can be described, cataloged, its quality agreed-upon, audited, continuously improved
 - The notion of “service”
 - Organize the IT processes so that you can offer the services with required quality attributes

ITSM

- All this is called IT Service Management (ITSM)
- The (promised) result? Management systems are becoming become:
 - more focused on business needs
 - more closely integrated with the business processes
 - less dependent on specific technology and more “service centric”
 - more integrated with other management tools and processes as the management standards evolve.
- It is about understanding and meeting business needs through the provisioning of IT services at every stage of their lifecycle, encompassing everything from strategy to daily operations

ITSM and ITIL

- “By 2008, more than half of all enterprises will be looking to standardize ITSM processes based on ITIL.”
- Wow! Maybe we should have a look at ITSM and ITIL!

Business-Driven IT Management

- But we think ITIL still needs to mature to get even better visibility into the business
- Business-Driven IT Management (BDIM) is a new area looking into these issues

WHAT ARE SERVICES?

What is a service?

- Service = means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs and risks.
- Simple example of a customer outcome facilitated by an IT service:
 - “Sales people spending more time interacting with customers” facilitated by “a remote access service that enables reliable access to corporate sales systems from sales people’s laptops”
 - Services are organized in a *Service Catalog*

Transfer of costs and risks - 1

- Service is a transfer of costs and risk between two parties
- Ex. a business unit needs a terabyte of secure storage to secure its online shopping system.
 - It does *not* want to be accountable for all the associated costs and risks
 - because it does have the confidence to do it well
 - A third party (a service provider) has expertise and experience (and hence the confidence) to control costs and risks
 - The service business unit is responsible for the fulfillment of purchase orders

Transfer of costs and risks - 2

- Service provider responsible for:
 - operation and maintenance of fault-tolerant configurations of storage devices
 - dedicated and redundant power supplies
 - qualified personnel
 - security of the building perimeter
 - administrative expenses
 - Insurance
 - compliance with safety regulations
 - contingency measures
 - optimization of idle capacity for unexpected surges in demand
- The business unit does not want to own these costs and risks

Services as Assets

- IT Services are crucial, strategic, organizational *assets*
- Organizations must invest appropriate levels of resource into the support, delivery and management of these critical IT Services and the IT systems that underpin them
- These aspects of IT are often overlooked or only superficially addressed within many organizations

Service Providers

- They need not be inhouse
- Increasing number of companies outsource IT services
 - Actually, almost the whole IT department
 - Keep the business analysts who know how to apply technology to solve business problems

WHAT IS IT SERVICE MANAGEMENT?

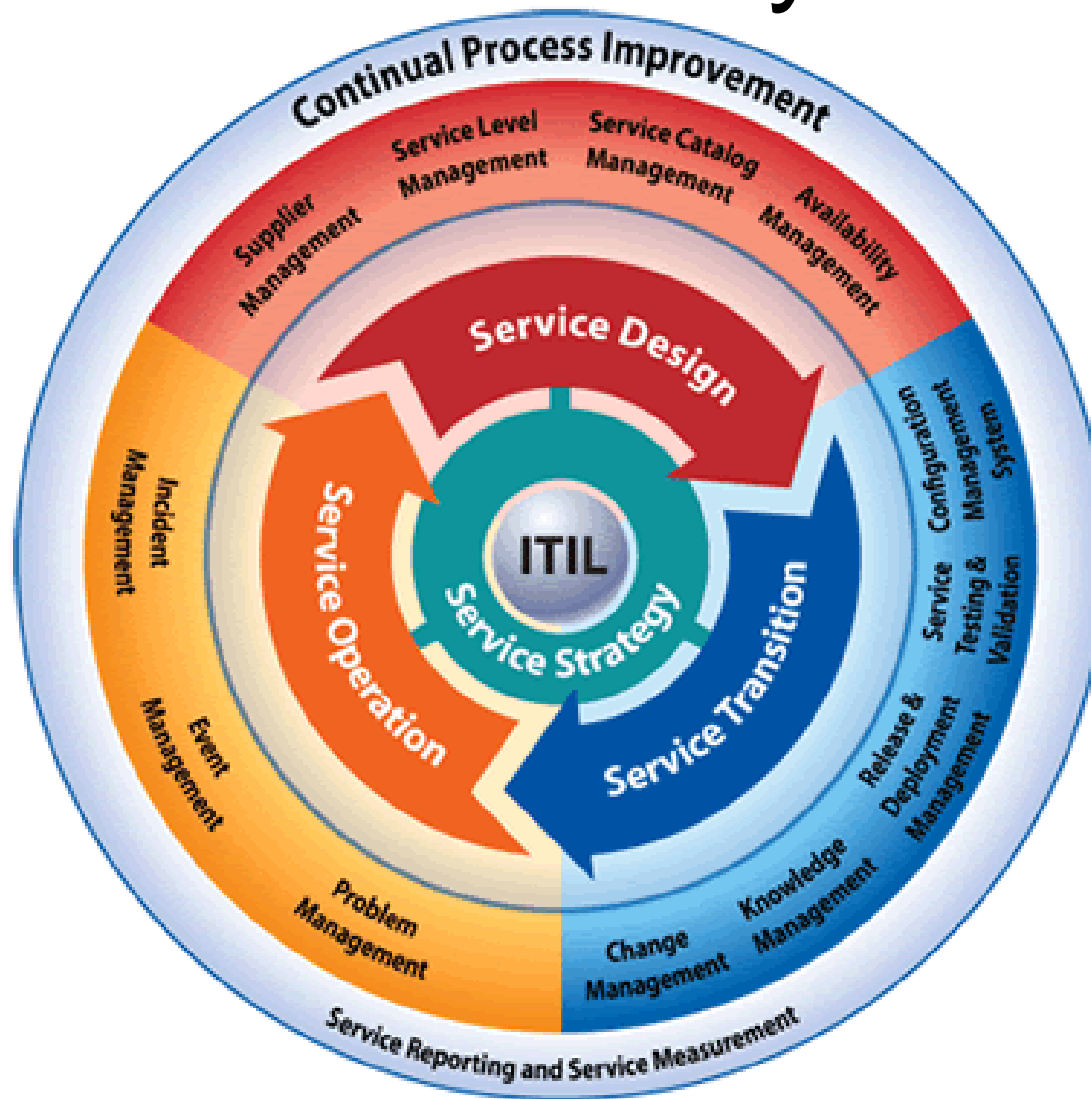
Objectives of ITSM

- Service management is what enables a service provider to
 - Understand the services they are providing
 - Ensure that the services really do facilitate the outcomes their customers want to achieve
 - Understand the value of the services to their customers
 - Understand and manage all of the costs and risks associated with those services

ITSM as a set of capabilities

- ITSM = “specialized organizational capabilities”
 - Processes
 - Methods
 - Functions
 - Roles
 - Activities
- Treats service, process or infrastructure component over its entire lifecycle
 - Strategy
 - Design
 - Transition
 - Operation
 - Continual improvement

Service lifecycle



ITSM as an Asset

- Effective service management is itself a strategic asset
- Follow good practice for effective ITSM
 - Public frameworks
 - ITIL, COBIT and CMMI
 - Standards
 - ISO/IEC 20000, ISO 9000
 - Proprietary knowledge of people and organizations

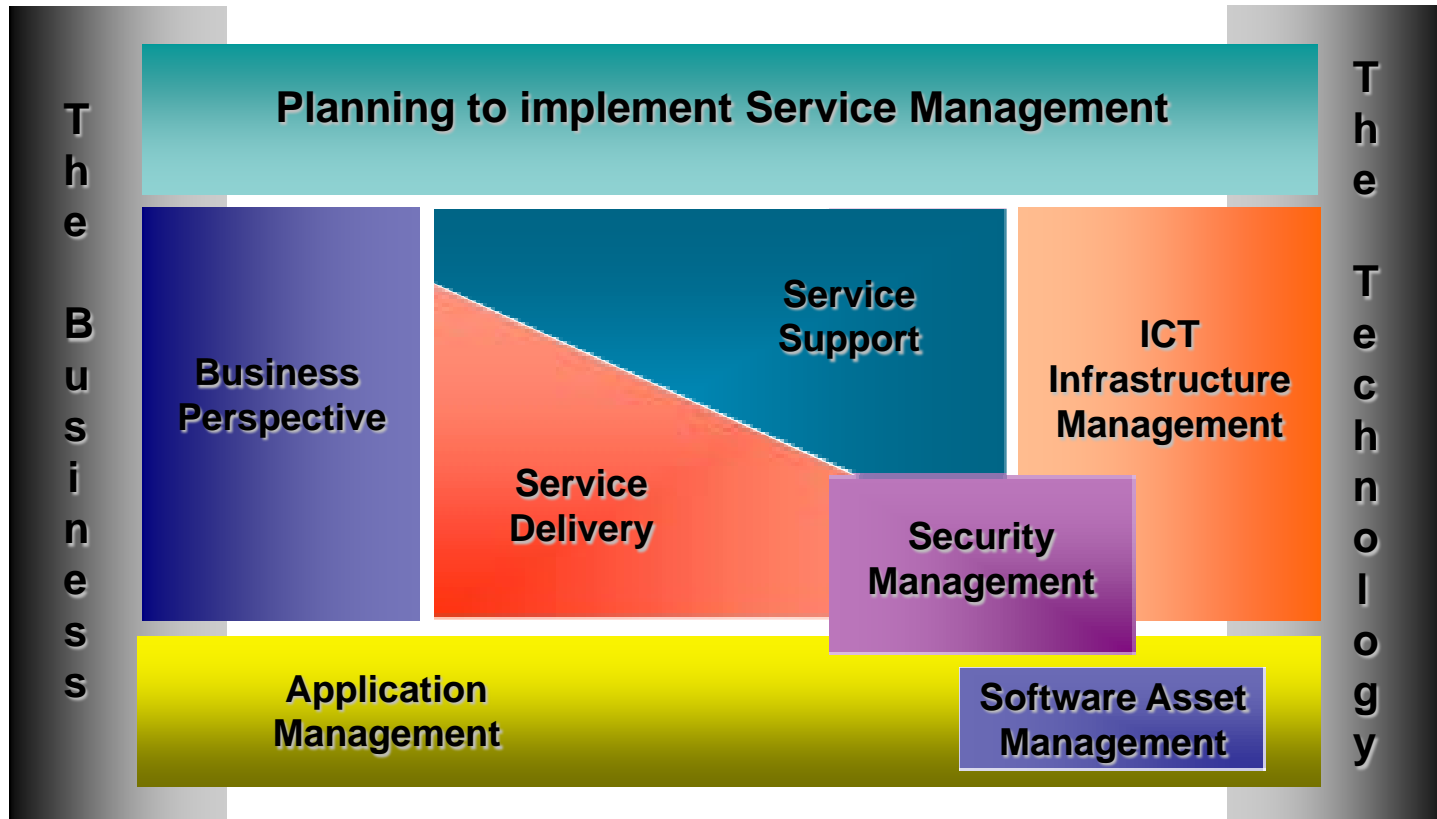
THE BUSINESS PROCESS

IT and BPs

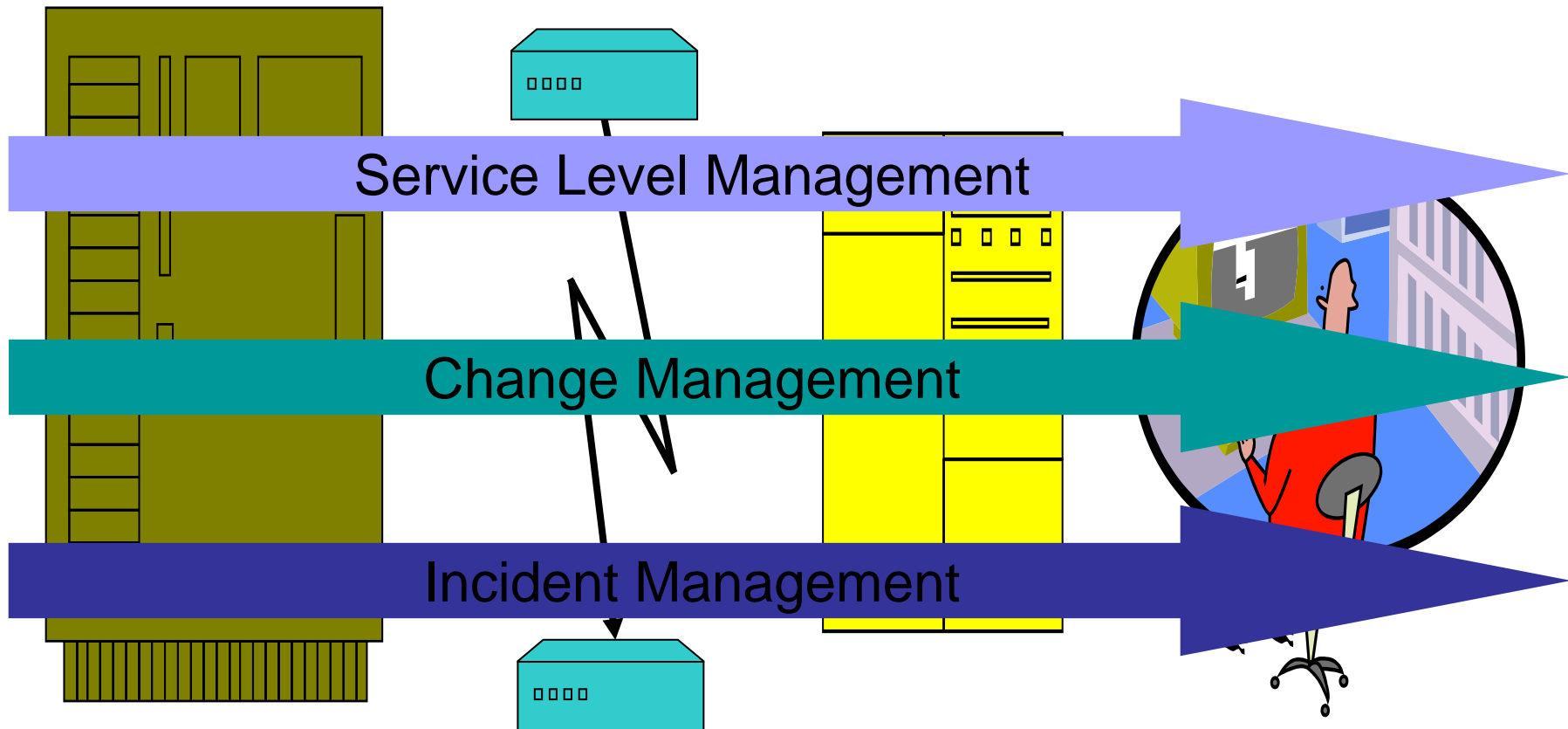
- BP is a coordinated set of activities producing an outcome that creates value
 - Think of a workflow in a business
- Business managers *challenge* IT organizations to engage with them at the level of business processes
 - They want assurance that applications and infrastructure will support new business initiatives
- IT services serve the business by supporting BPs

IT INFRASTRUCTURE LIBRARY (ITIL)

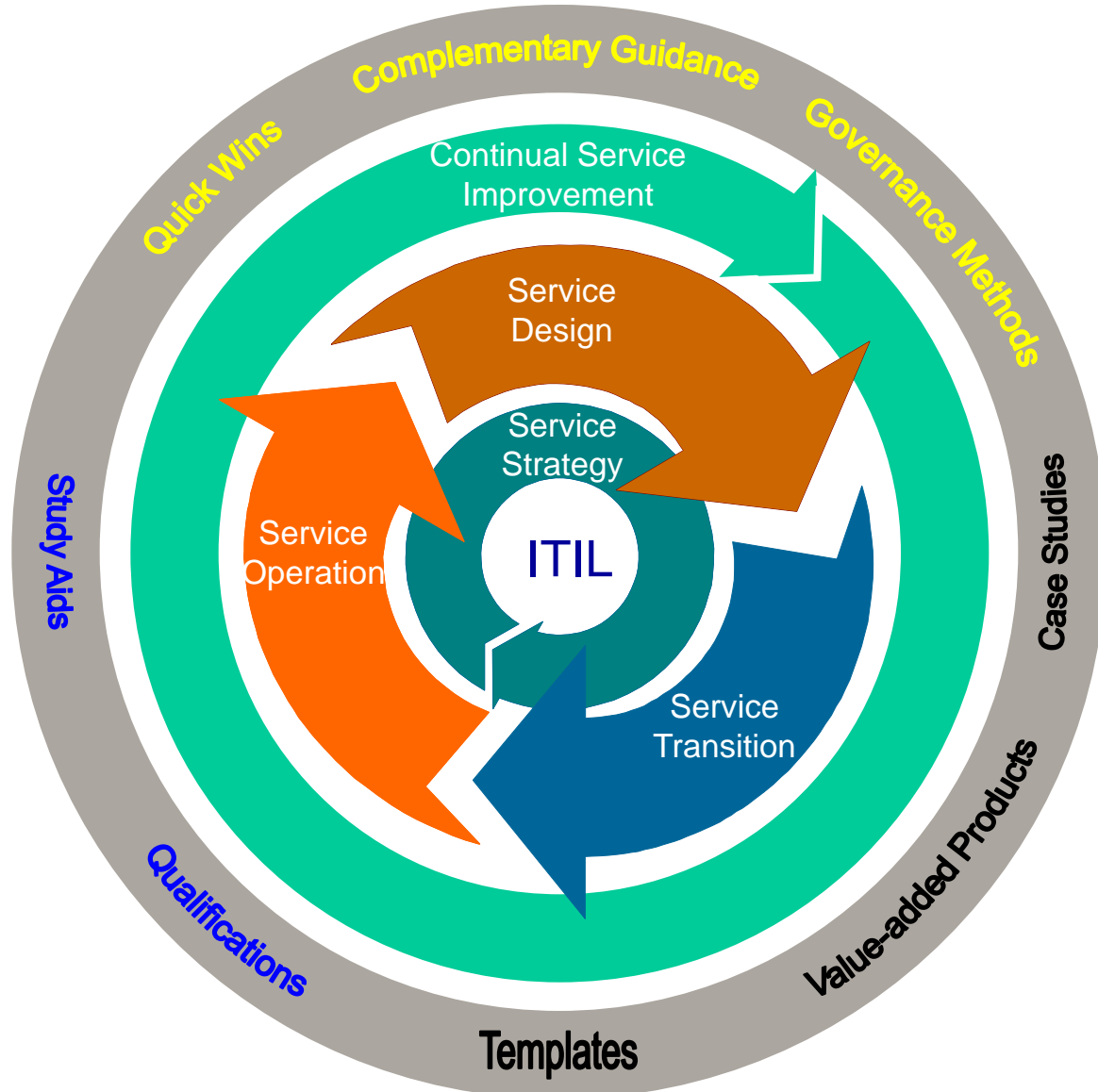
ITIL v2



Process Orientated Working



ITIL V3

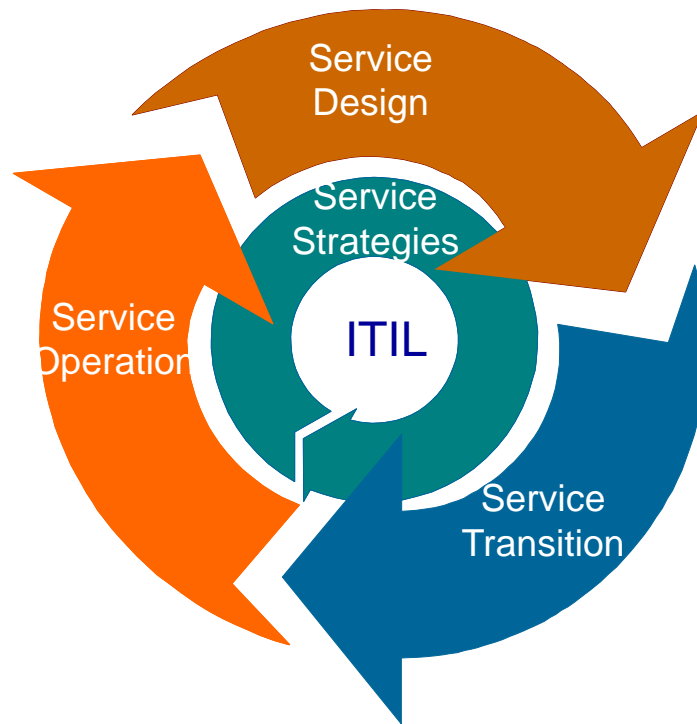


ITIL v3



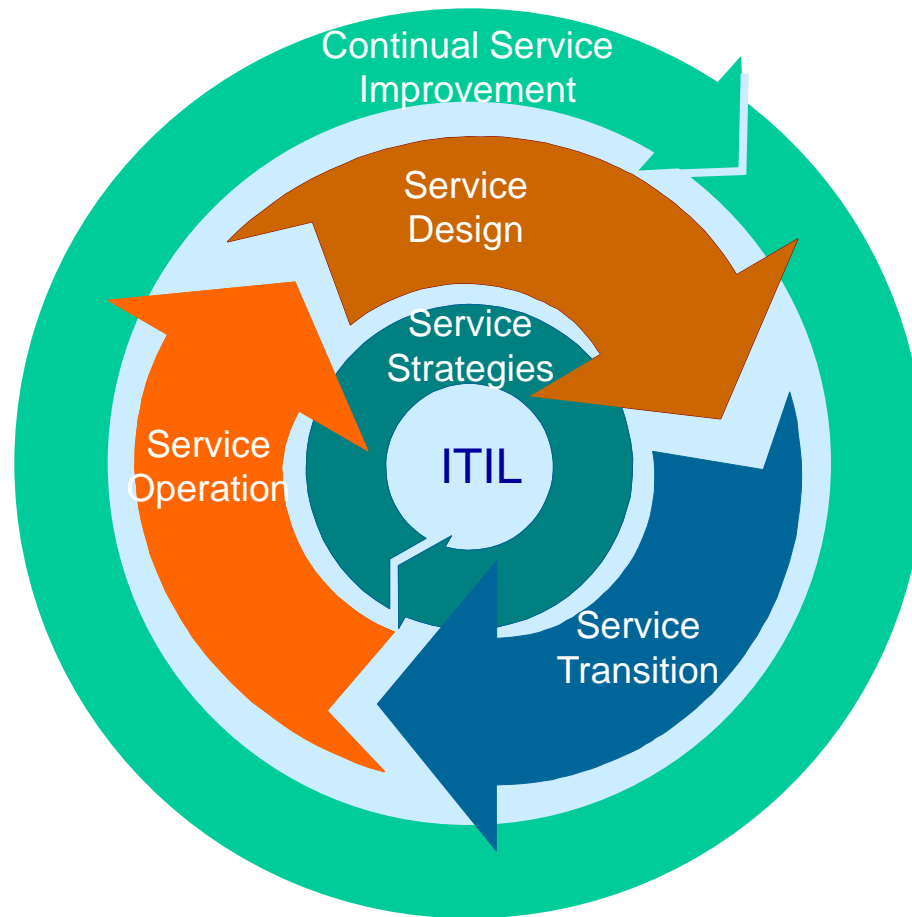
Source: ITIL Refresh Project

ITIL v3



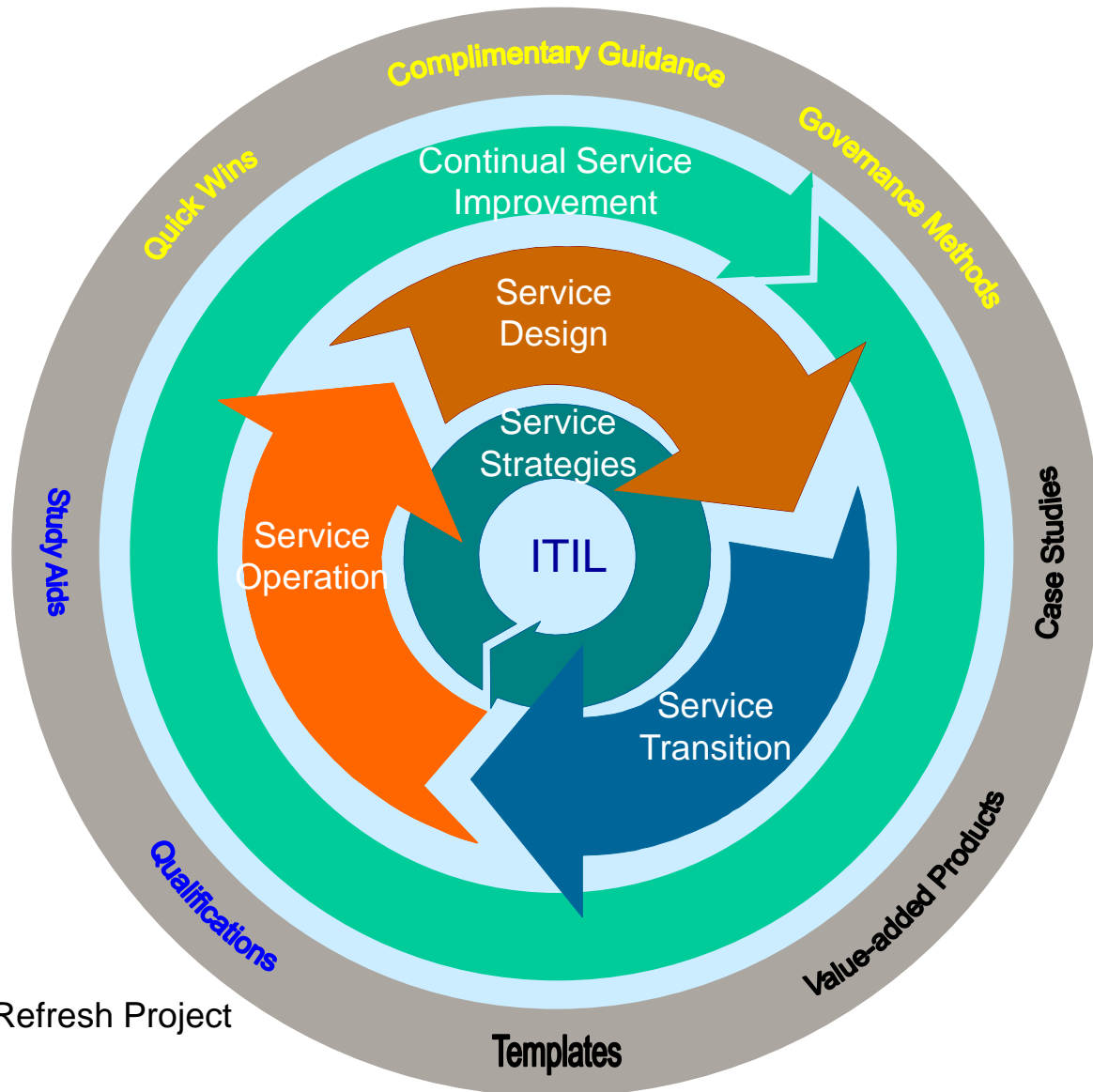
Source: ITIL Refresh Project

ITIL v3



Source: ITIL Refresh Project

ITIL v3



Source: ITIL Refresh Project

What's different about ITIL V3?

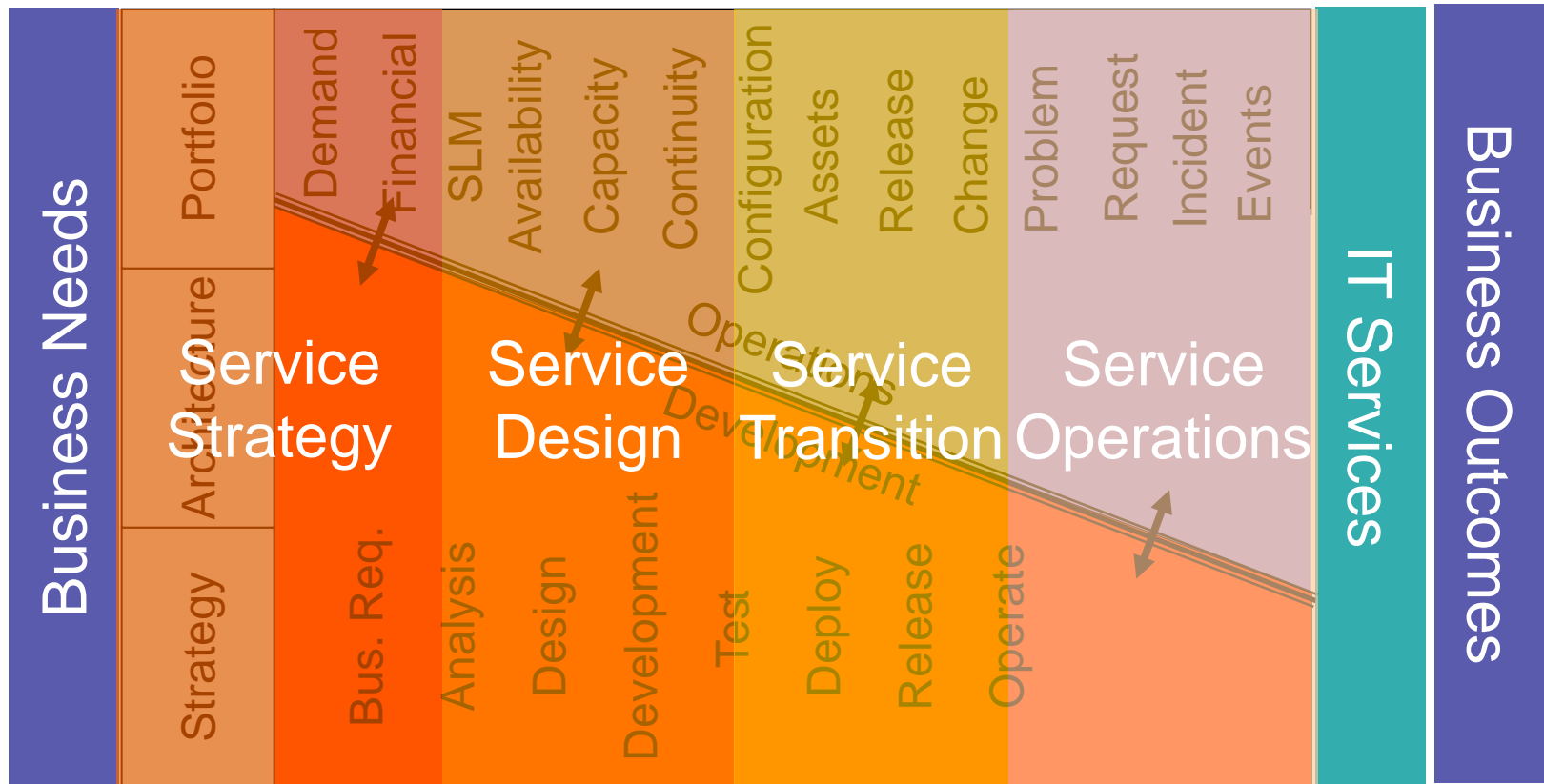
- Centered on business value
 - Seeing IT as a Strategic Business Unit
 - Creating a way to integrate IT Processes, People and Tools with the Business Strategy and desired Outcomes
- Structured according to the IT Service lifecycle
 - v2 was structured by processes
- Increased scope

What is NOT changing?

- Key concepts are preserved
 - No radical changes to v2 service support and service delivery processes
- Core books provide generic guidance and remain non-prescriptive
 - Adopt and adapt

The ITIL V3 Value Proposition

Continual Service Improvement



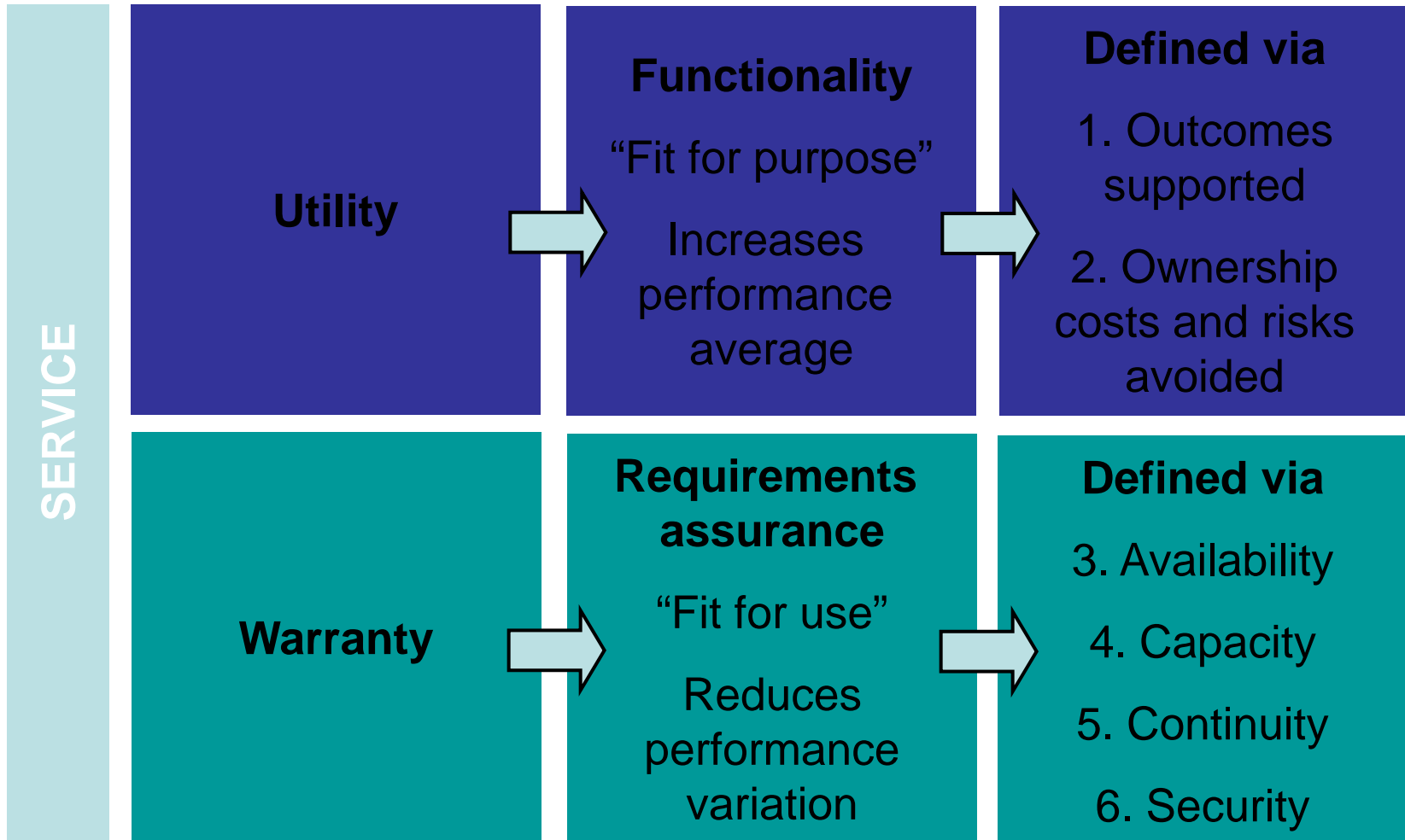
Continual Service Improvement

What is a 'Service'?

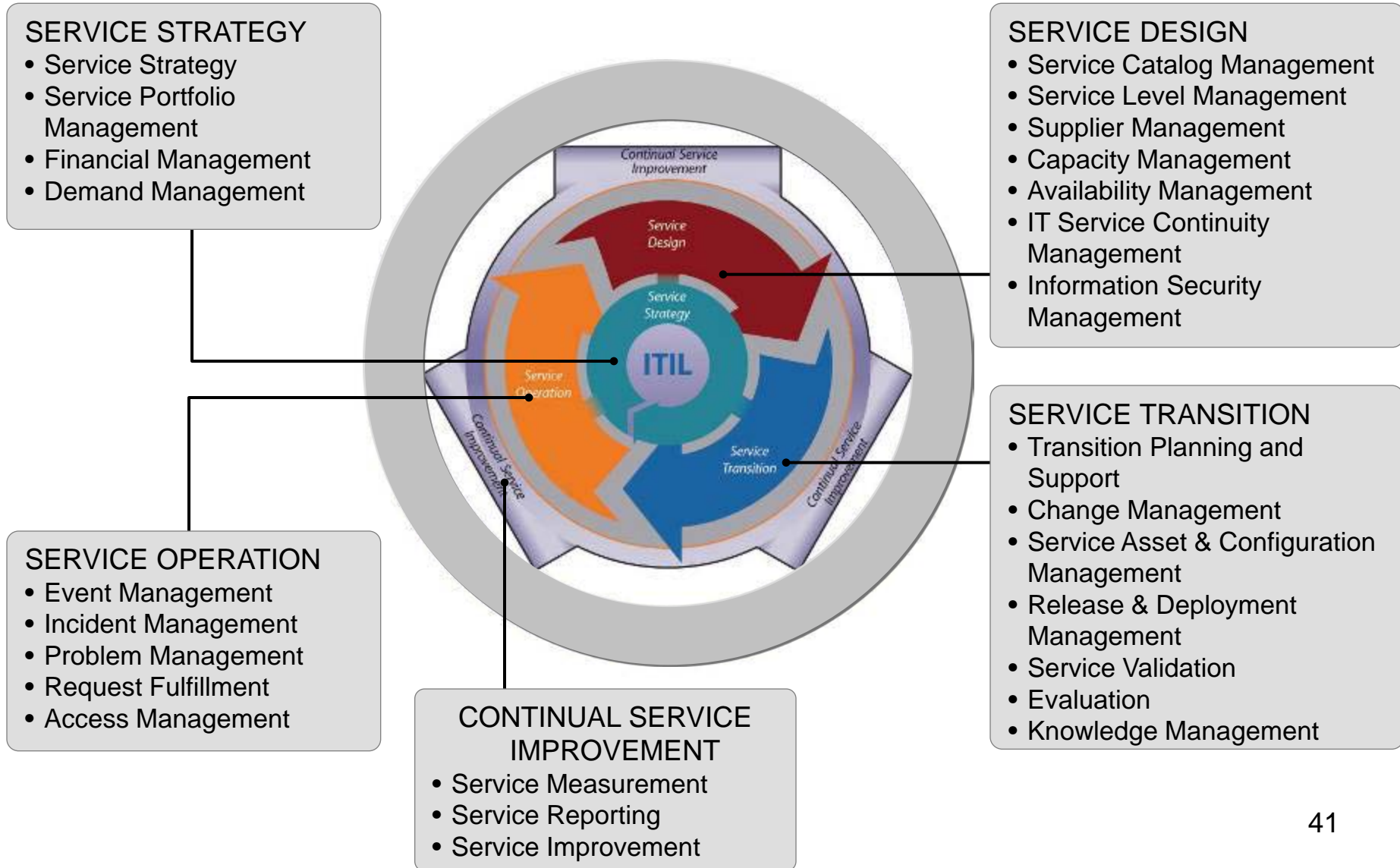
“A means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs and risks.”

- ITIL® V3 Glossary v3.1.24, 11 May 2007

How to define Services?



ITIL has 27 processes, each fully described in one of the 5 core books



What else is different about ITIL® V3?

- IT service lifecycle
- More context
 - Industry best practices
 - International standards
 - Regulatory compliance
 - Specific industries
- More people, processes and technology

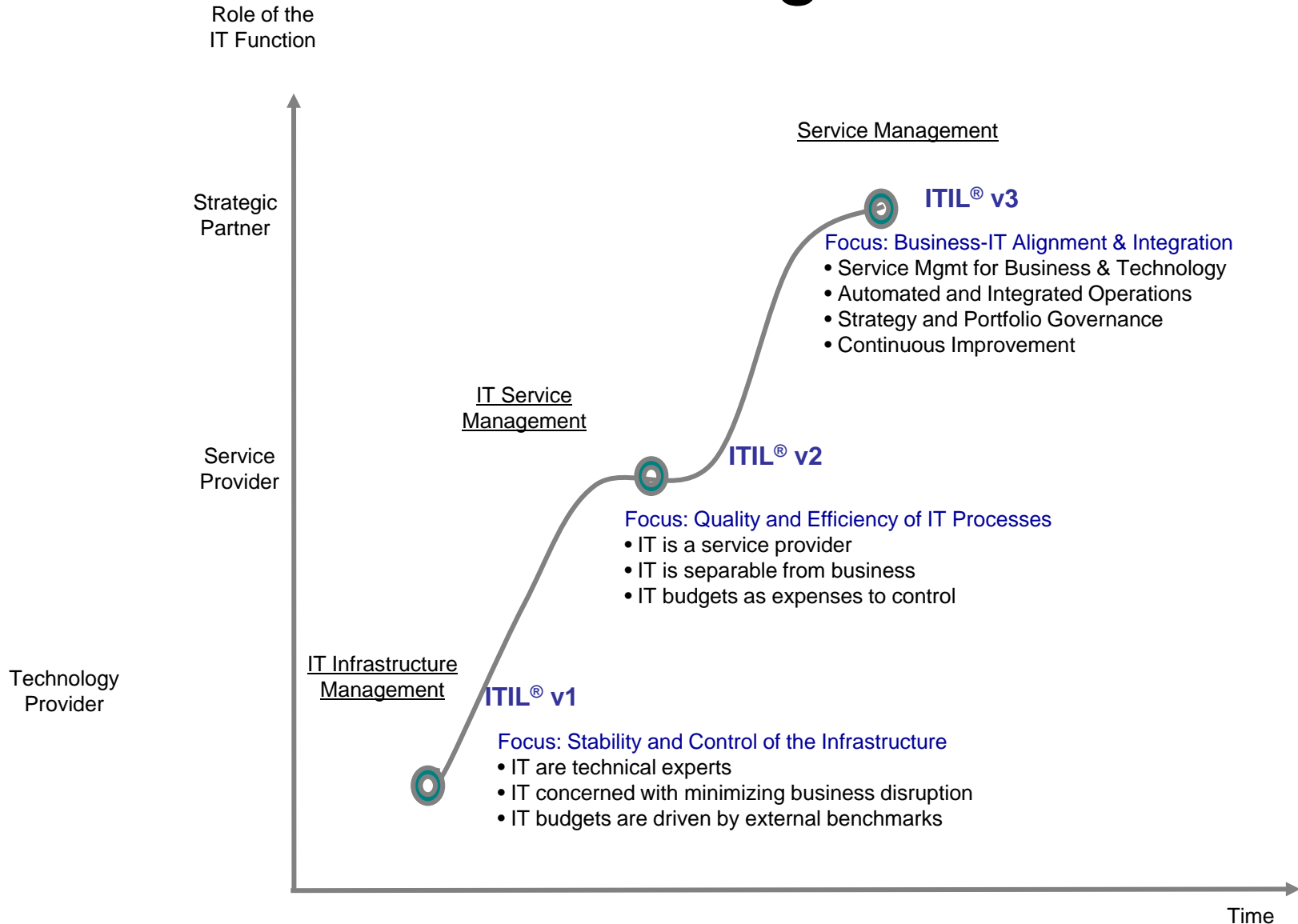


Why update ITIL?

- The industry has matured since 2000
- ITIL v2 tells us ‘what’ not ‘how’
- What is the return on investment?
- What about suppliers and customers?
- An integrated process model
- Application in different contexts

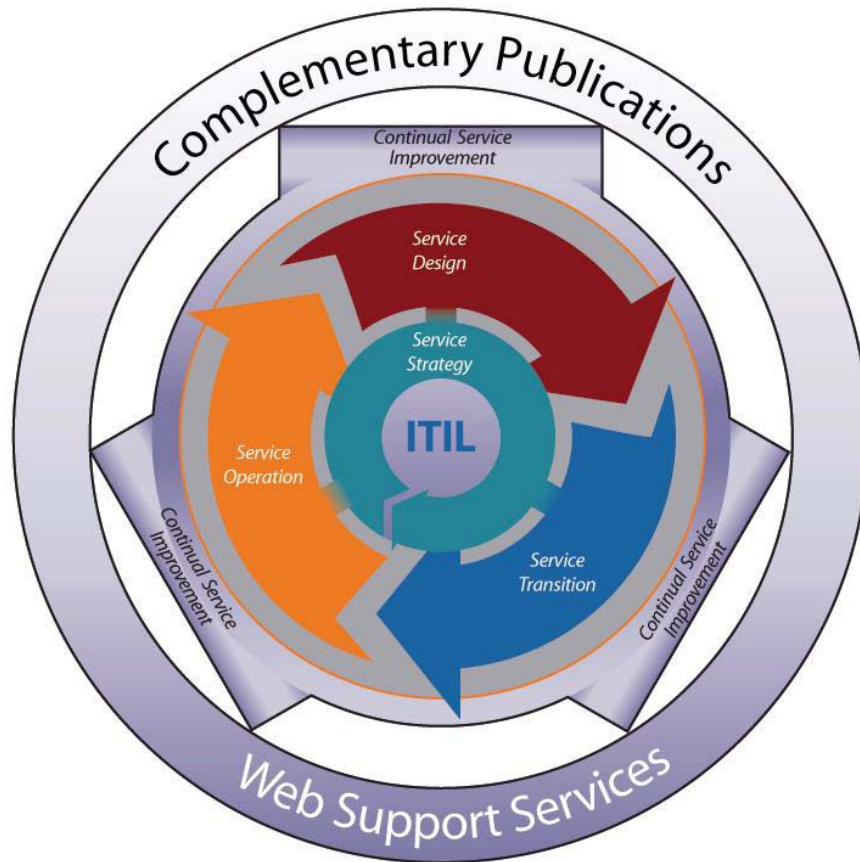


The Service Management Journey



The Service Lifecycle

A new control perspective



Key Themes in ITIL® v3

- Evolution from process to lifecycle management
- Services are driven by value
- Investments are lifecycle decision
- Functionality and manageability are two sides of the same coin
- Knowledge enables services
- Infrastructure and Service are not separate entities

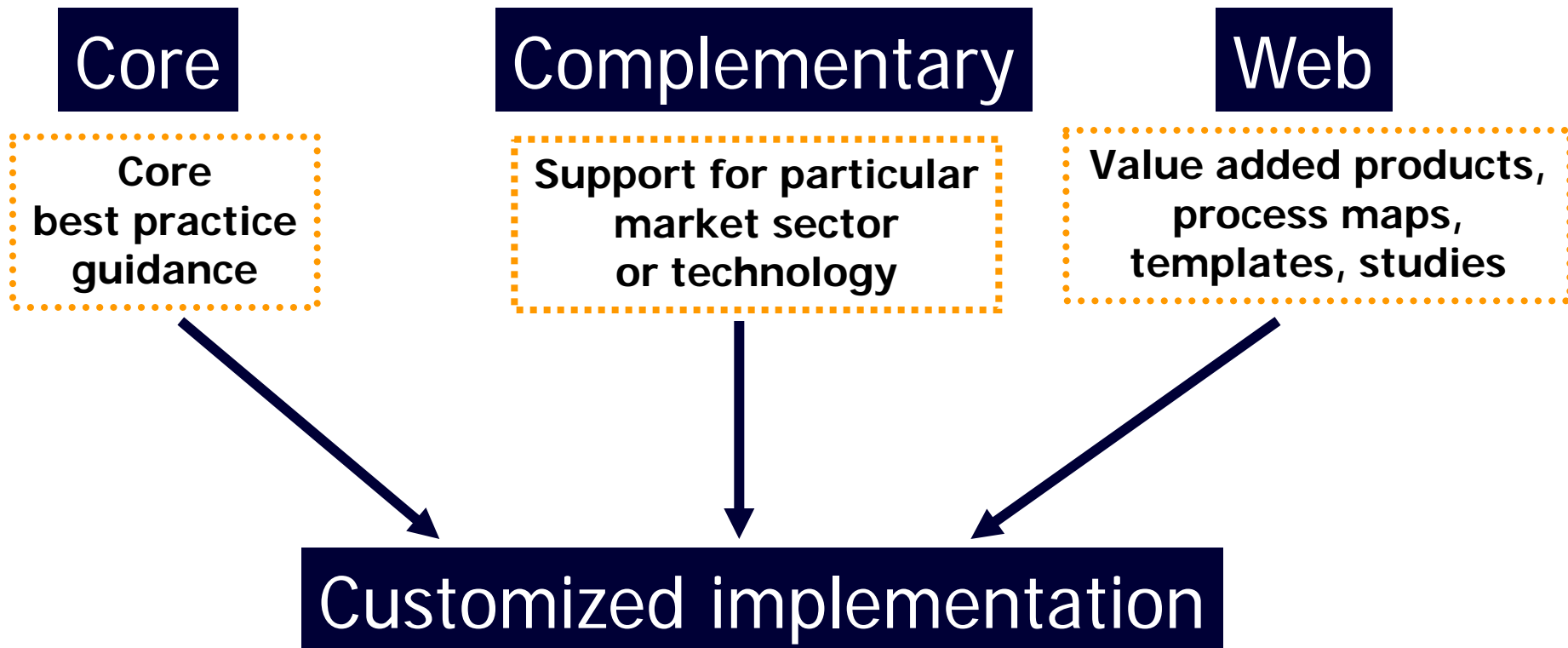
Some Key definitions

- A **‘Service’** is a means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs and risks
- **‘Service Management’** is a set of specialized organizational capabilities for providing value to customers in the form of services.
- **‘Business Service Management’** is the ongoing practice of governing, monitoring, and reporting on IT and the business services it impacts
- **‘IT Service Management’** is the implementation and management of Quality IT Services that meet the needs of the Business

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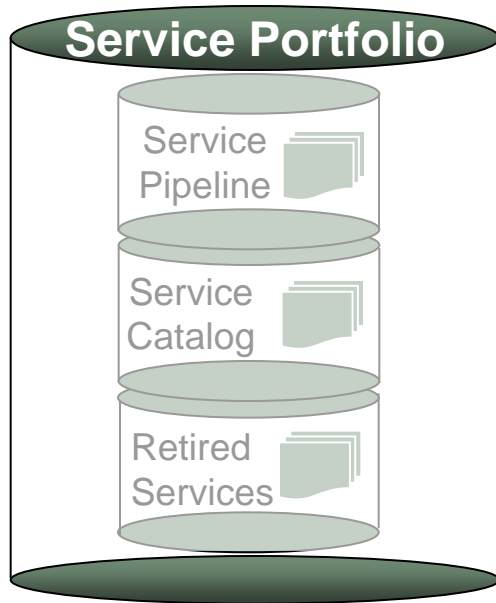
- ITIL® V3 Glossary v3.1.24, 11 May 2007
- * Service Strategy

ITIL v3 – The structure



Service Strategies

Practical Decision Making



- How should we select, adapt and tune the best IT strategies?
- How do we manage demand, IT finance and our service portfolio?
- How does IT create value for its customers and who are those customers?
- How do we manage risk, uncertainty and complexity?

Service Strategy Processes

Strategy Generation & Demand Mgmt

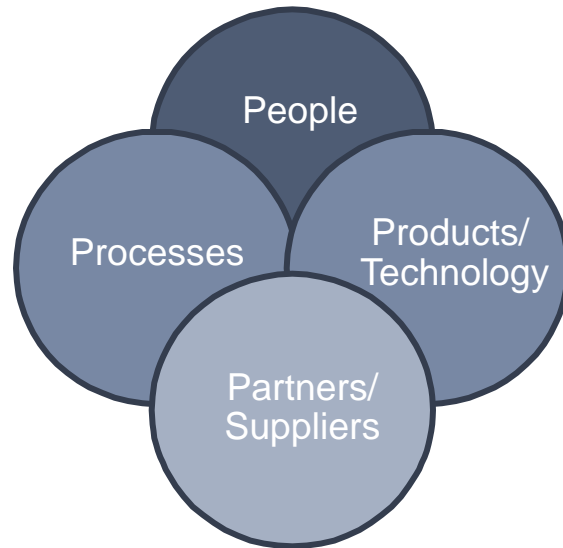
IT Financial & Service Portfolio Mgmt



CIO's
IT Managers
Consultants
Practitioners
Vendors

Service Design

Pragmatic Service Blueprint



- Policies, Architecture, service models
- Effective technology, process and measurement design
- Outsource, shared services, co-source models? How to choose the best option?
- The service package of utility, warranty, capability, metrics tree

Service Design Processes

Requirements Mgmt for Availability, SLM, Capacity, Service Continuity, Information Security Mgmt

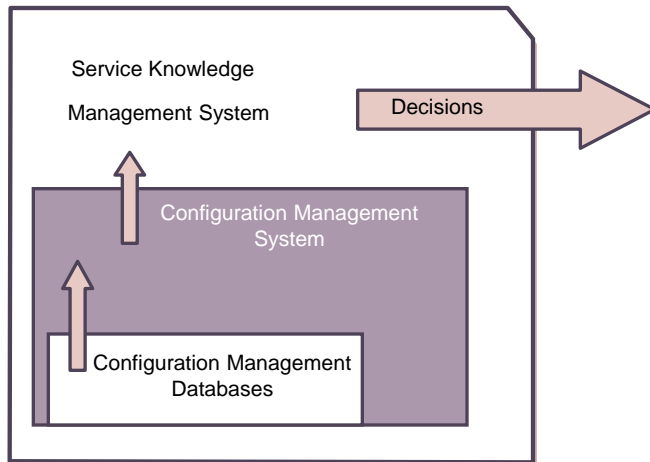
Supplier Mgmt & Service Catalog Mgmt



IT Managers
Consultants
Practitioners
Outsourcers
Vendors

Service Transition

Managing change, risk & quality assurance



- Newly designed Change, Release & Configuration processes
- Risk and quality assurance of design
- Managing organization & cultural change during transition
- Integrating projects into transition
- Creating & selecting transition models

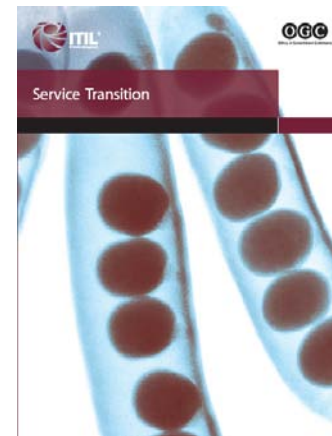
Service Transition Process

Planning & Support, Change, Service Asset & Configuration and Knowledge Mgmt

Release & Deployment Mgmt

Service Validation & Testing

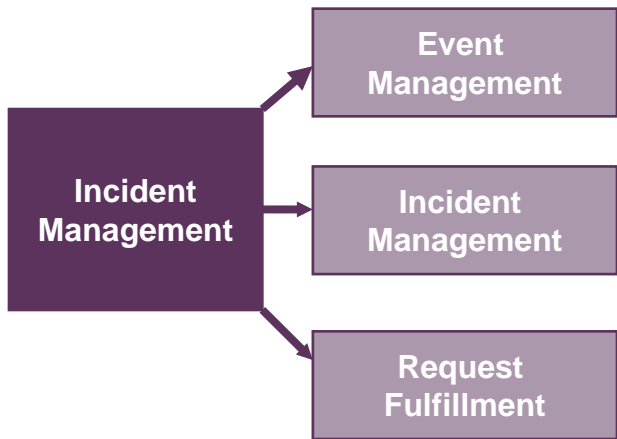
Evaluation



IT Managers
Consultants
Practitioners
Outsourcers
Vendors

Service Operations

Responsive, stable services



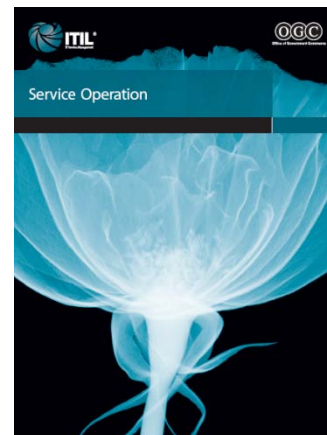
- Robust end to end operations practices
- Redesigned, incident and problem processes
- New processes covering Request, Asset, Security, Event & Technology operational management
- Influencing strategy, design, transition and improvement
- SOA, virtualization, adaptive, agile service operation models

Service Operation Processes

Access Mgmt

Operations and Event Mgmt

Incident, Problem, Request Fulfillment Mgmt



Continual Service Improvement

Measures to improve things



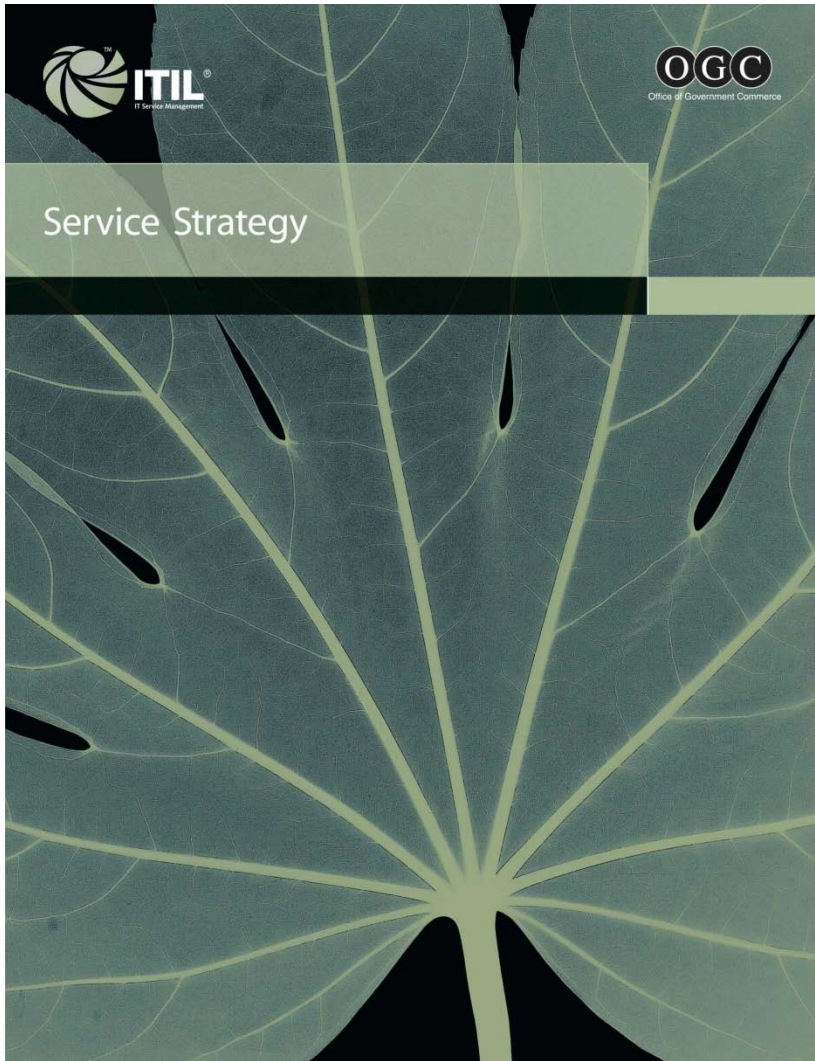
- The business case for ROI
- Getting past just talking about it
- Overall health of ITSM
- Portfolio alignment in real-time with business needs
- Growth and maturity of SM practice
- How to measure, interpret and execute results

Continual Service Improvement Processes

Service Improvement, Service Measurement, Service Reporting, Service Level Mgmt and Service ROI

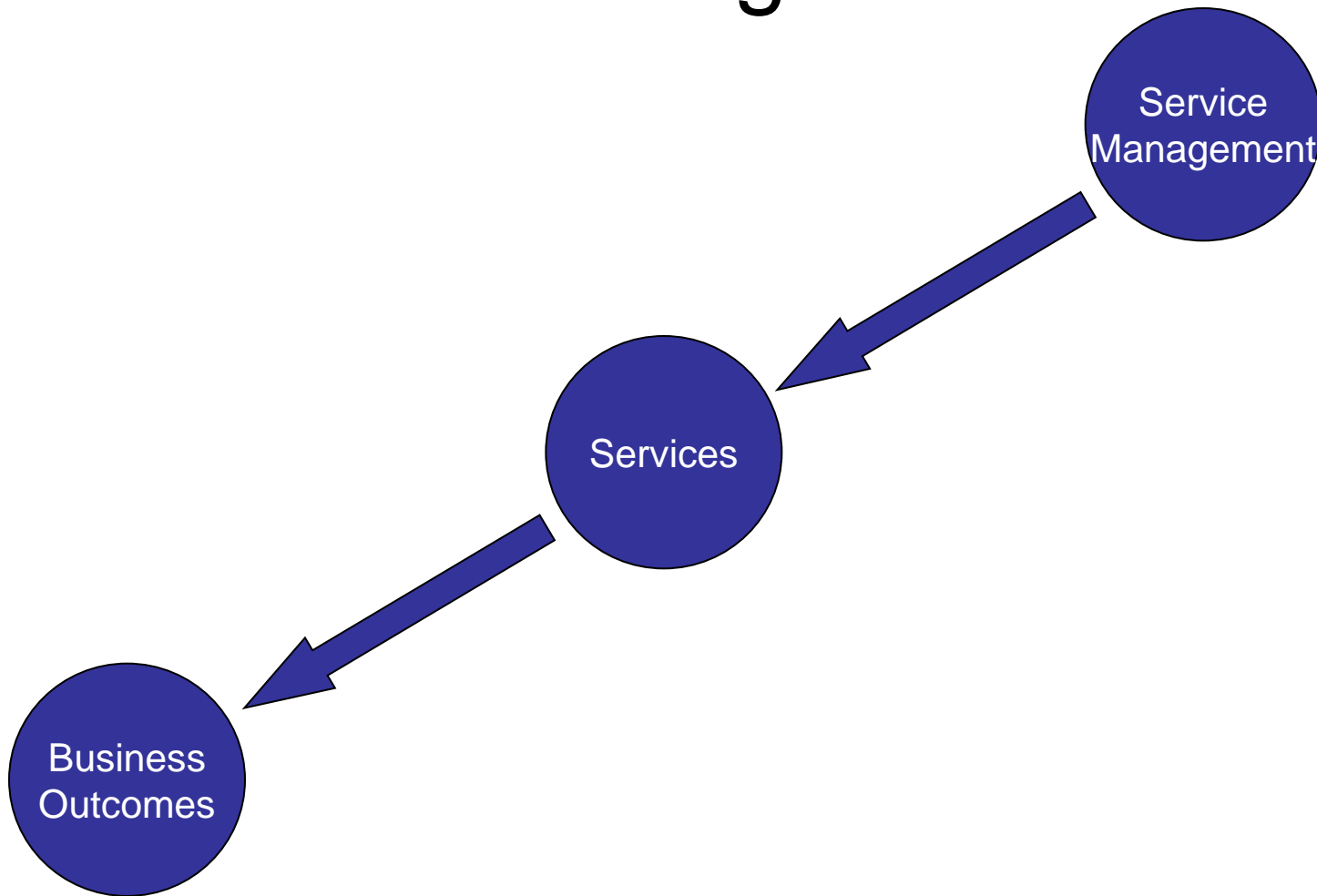


IT Managers
Consultants
Practitioners
Outsourcers
Vendors



- How to think and act in a strategic manner
- How to transform Service Management into a strategic asset
- Clarifies relationships between services, systems, processes and the business models, strategies or objectives they support

Creating value



Service Strategy – Processes

- Strategy Generation
- Financial management
- Service Portfolio Management
- Demand Management



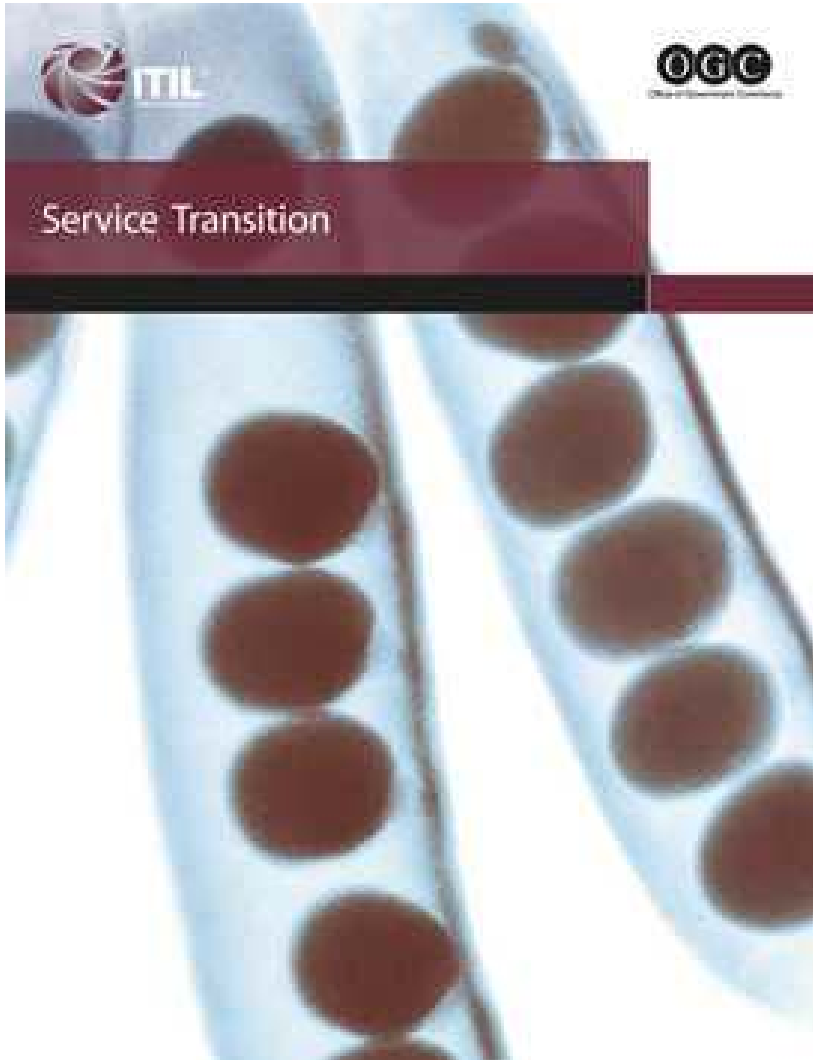
- Design everything needed to realize the strategy
- Aimed at development AND operations
- Includes many of the V2 Service Delivery Processes

Service Design - Aspects

- Service solutions
- Management systems and tools
- Technical and management architectures
- Service management processes
- Measurement systems and metrics

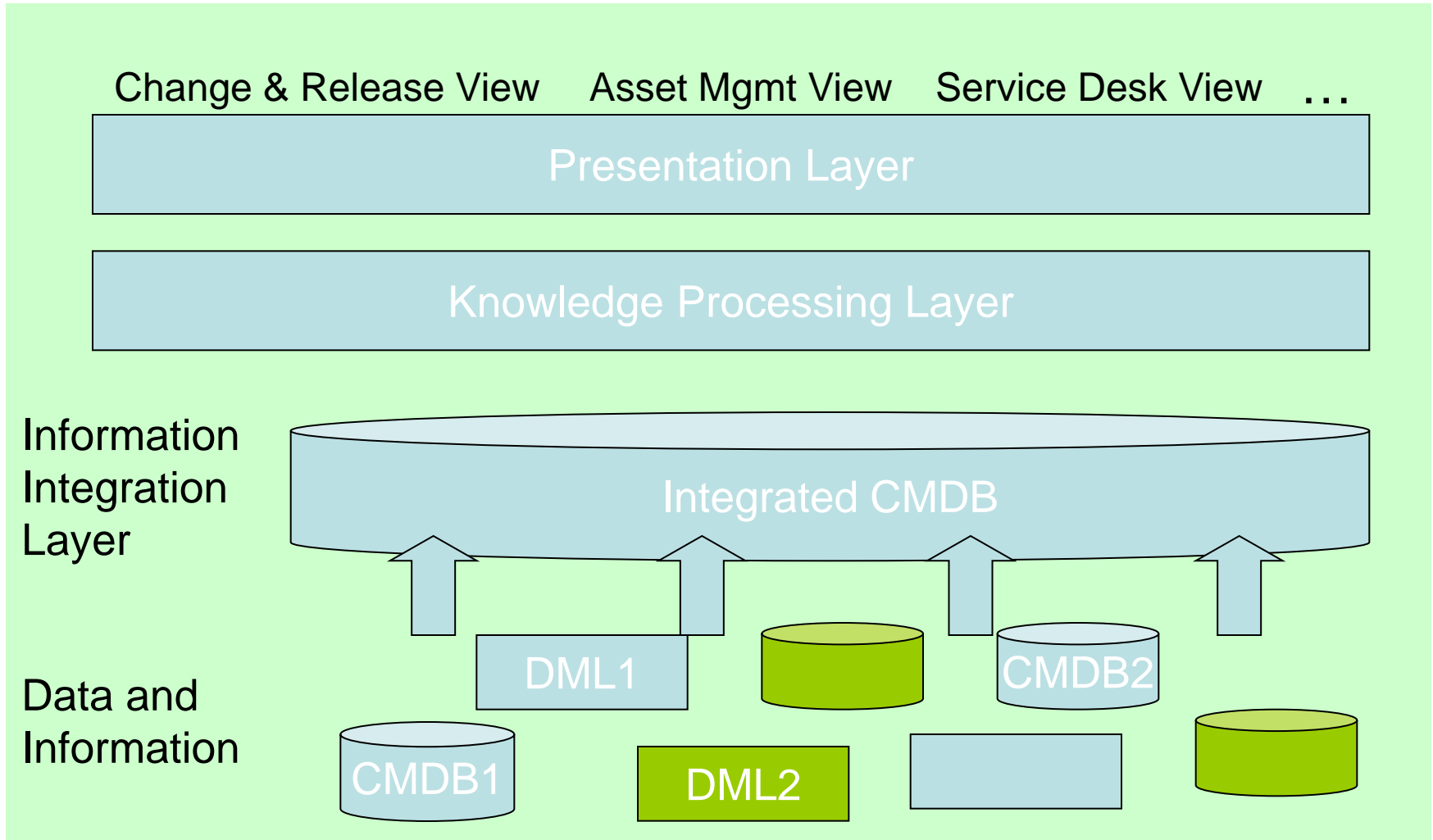
Service Design – Processes

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



- Implement Service Design Packages through testing to live
- Transition services to and from other organizations
- Organizational change
- Decommission or terminate services

Configuration Management System



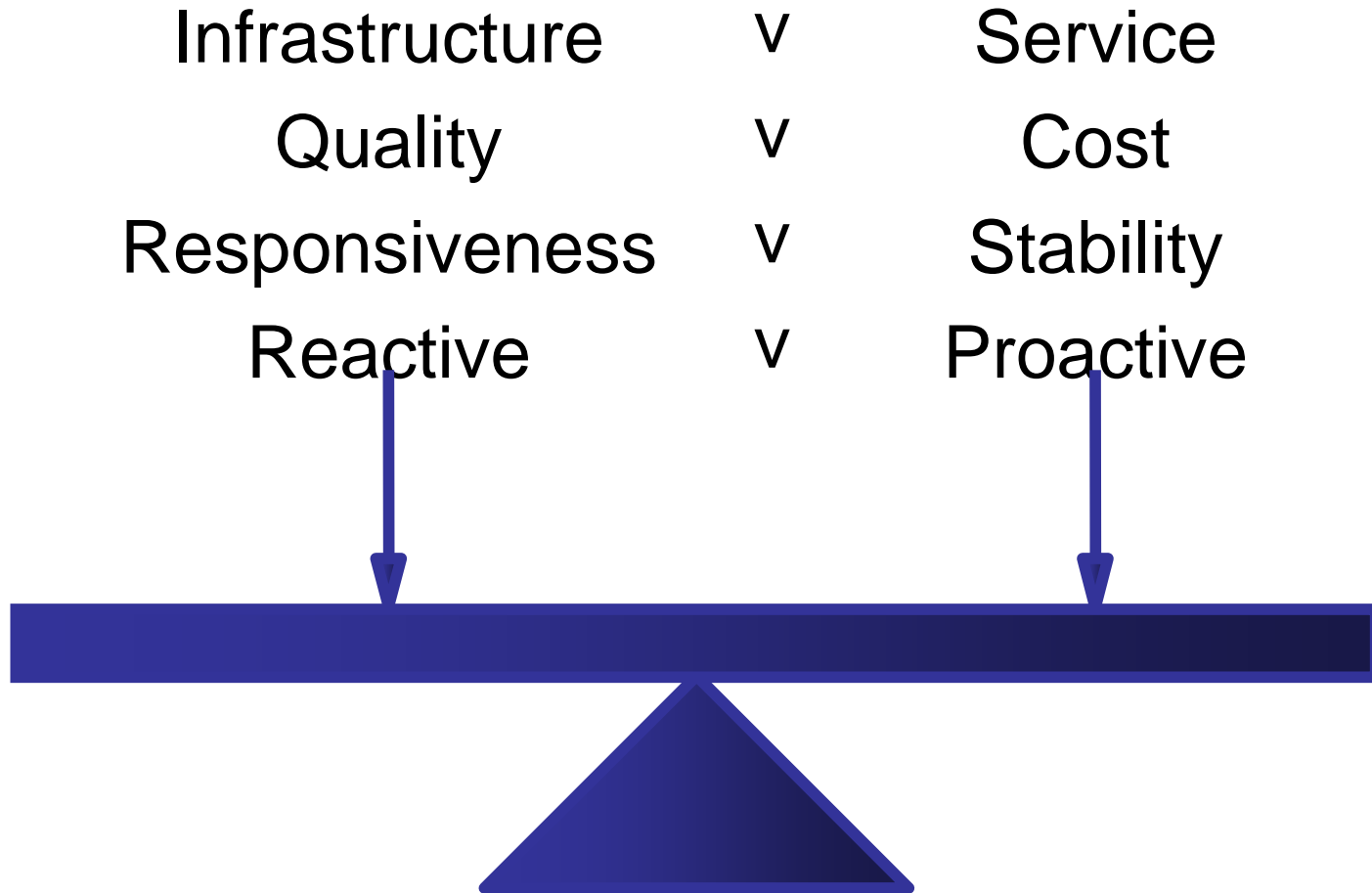
Service Transition Processes

- Transition Planning and Support
- Knowledge Management
- Service Testing and Validation
- Evaluation
- Change Management
- Service Asset and Configuration Management
- Release and Deployment Management

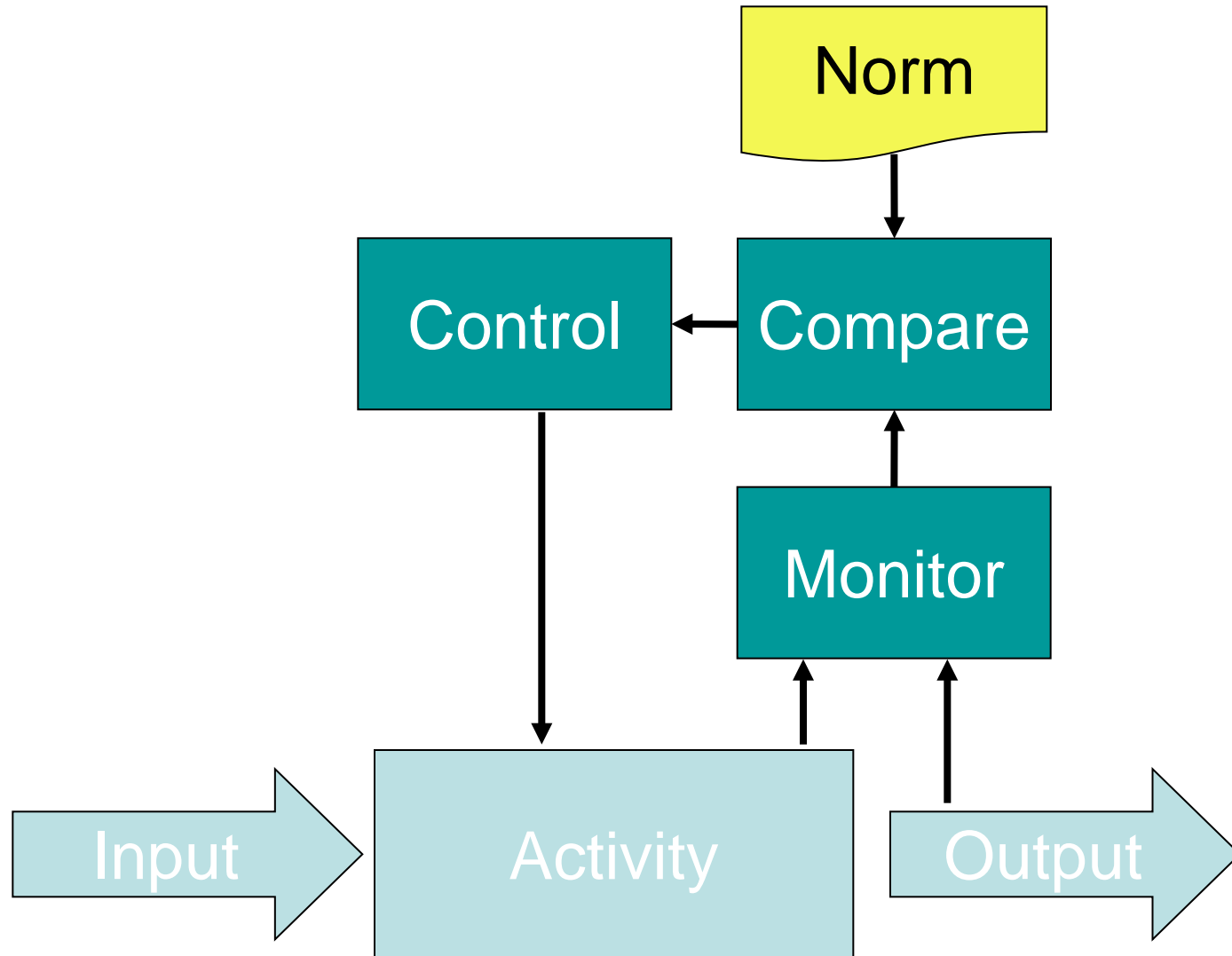


- Coordinate and carry-out day-to-day activities
- Deliver and manage services at agreed levels
- Manage technology and applications
- Execute and measure all plans, designs and optimizations
- Where value is actually delivered to the business

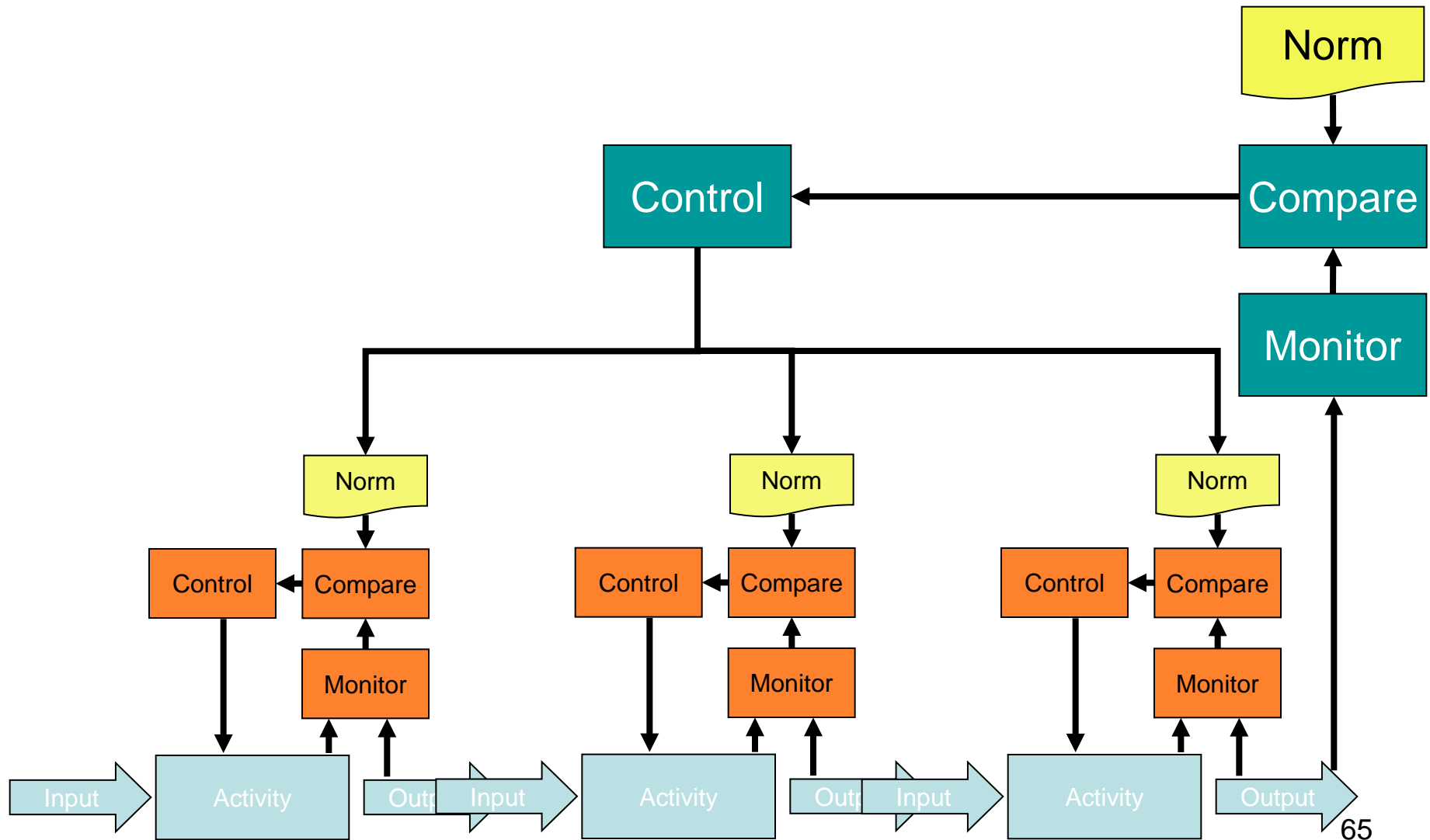
Achieving Balance



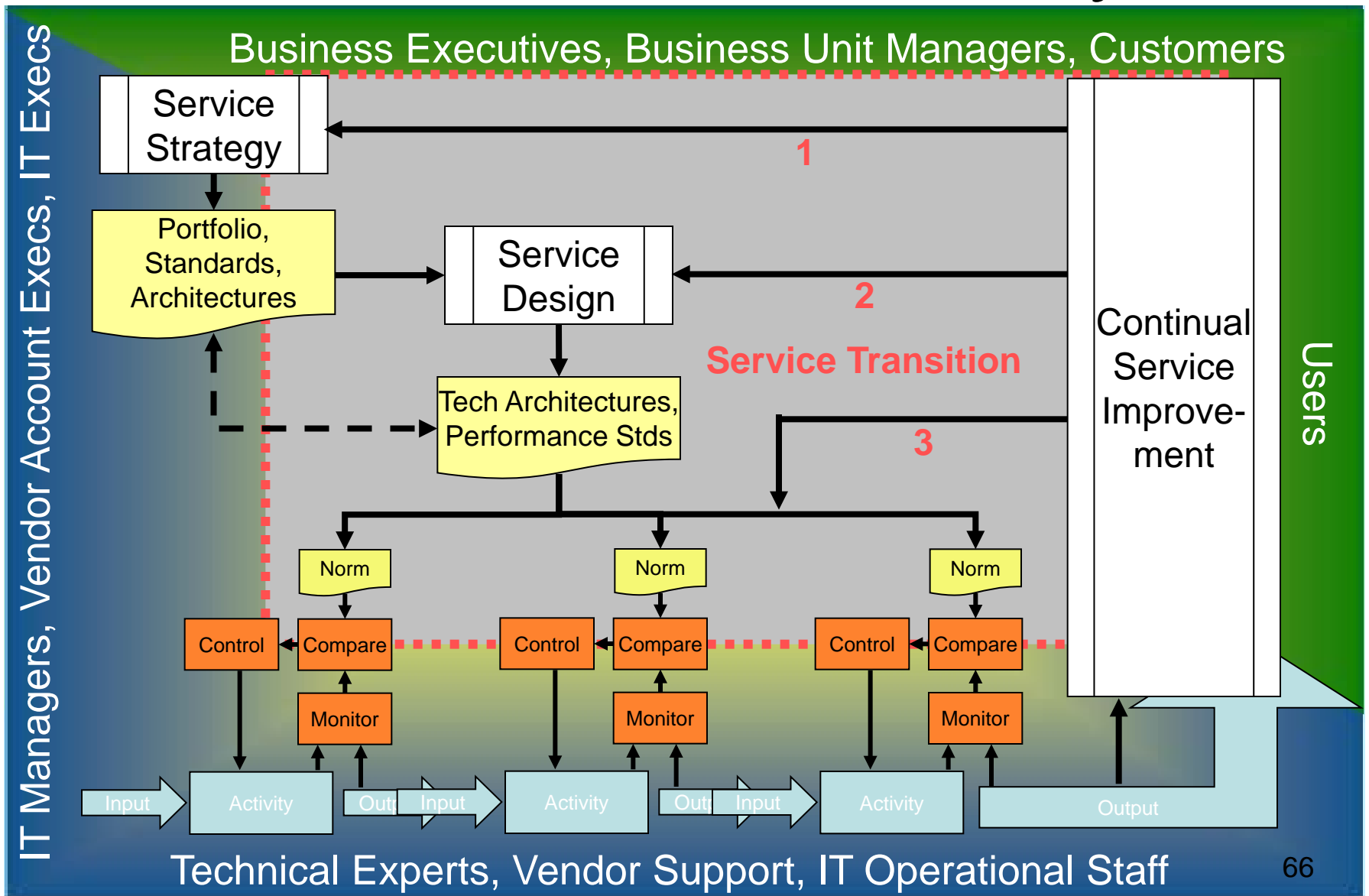
Monitor Control Loop



Complex Monitor Control Loops



Context - The ITSM Lifecycle



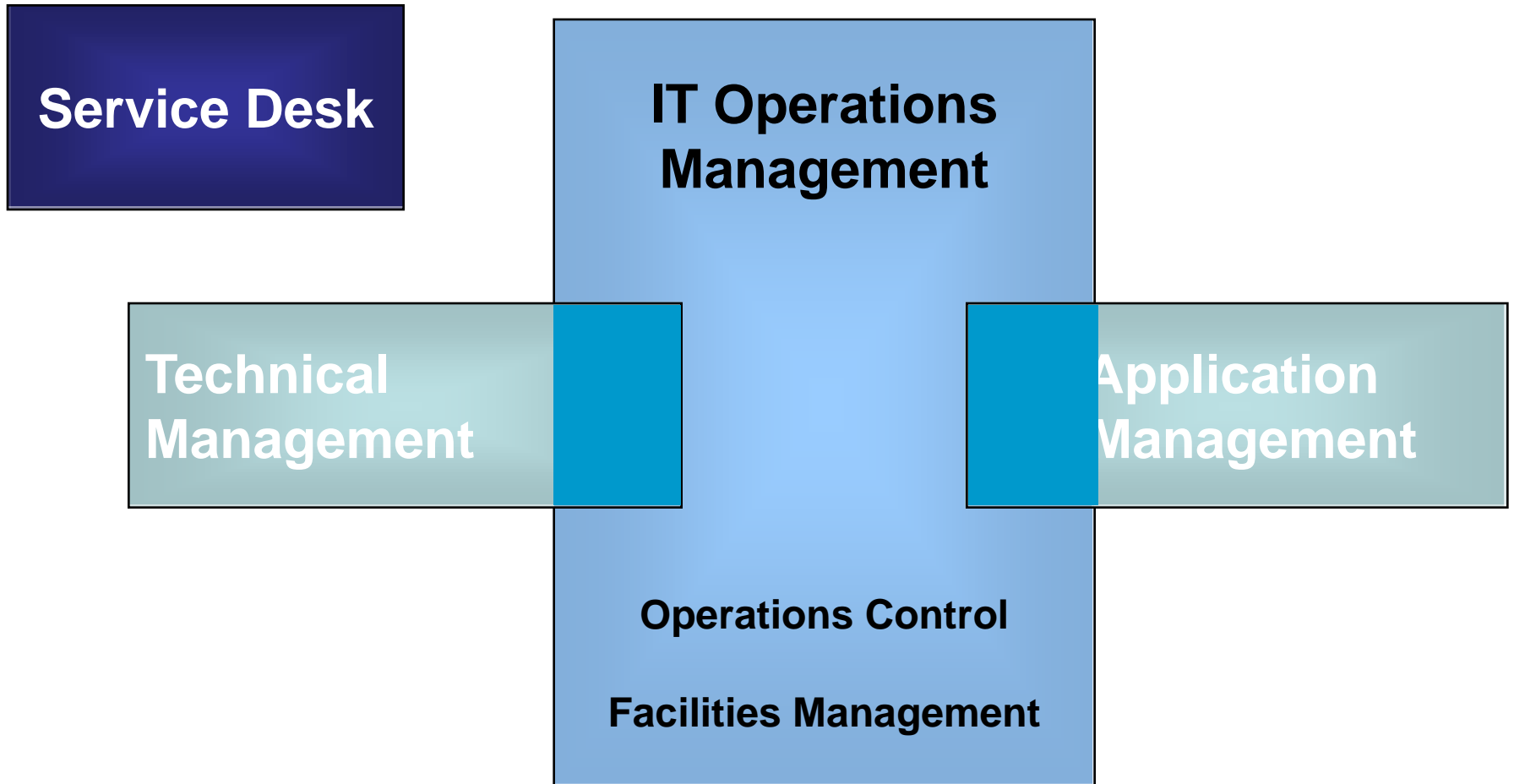
Service Operation Processes (I)

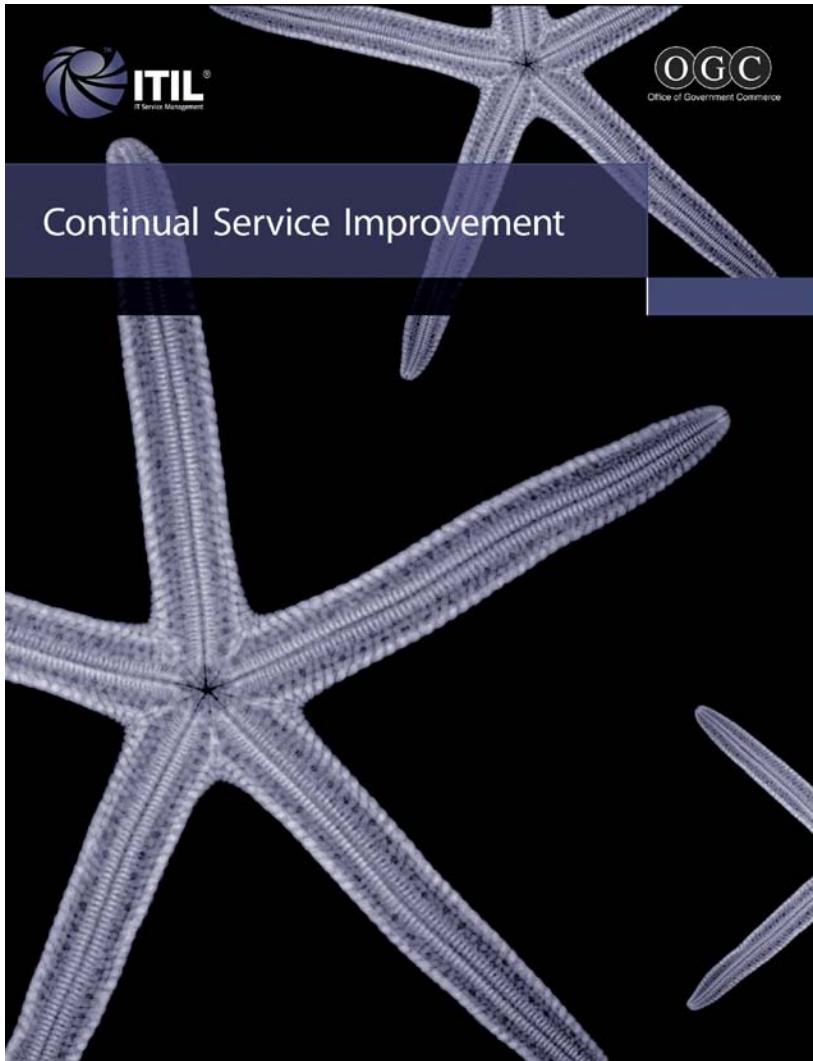
- Event Management
 - Detect Events, make sense of them, and determine action
 - Manage events throughout their Lifecycle
- Incident Management
 - Restore normal service as quickly as possible
 - Minimize the adverse impact on the business
- Problem Management
 - Eliminate recurring incidents
 - Minimize impact of incidents that can't be prevented

Service Operation Processes (2)

- Request Fulfillment
 - Allow users to request and receive standard services
 - Provide information to users and customers about procedures for obtaining services
 - Assist with general information, complaints or comments
- Access Management
 - Grant authorized users right to use a service
 - Prevent access from non-authorized users

Service Operation Functions

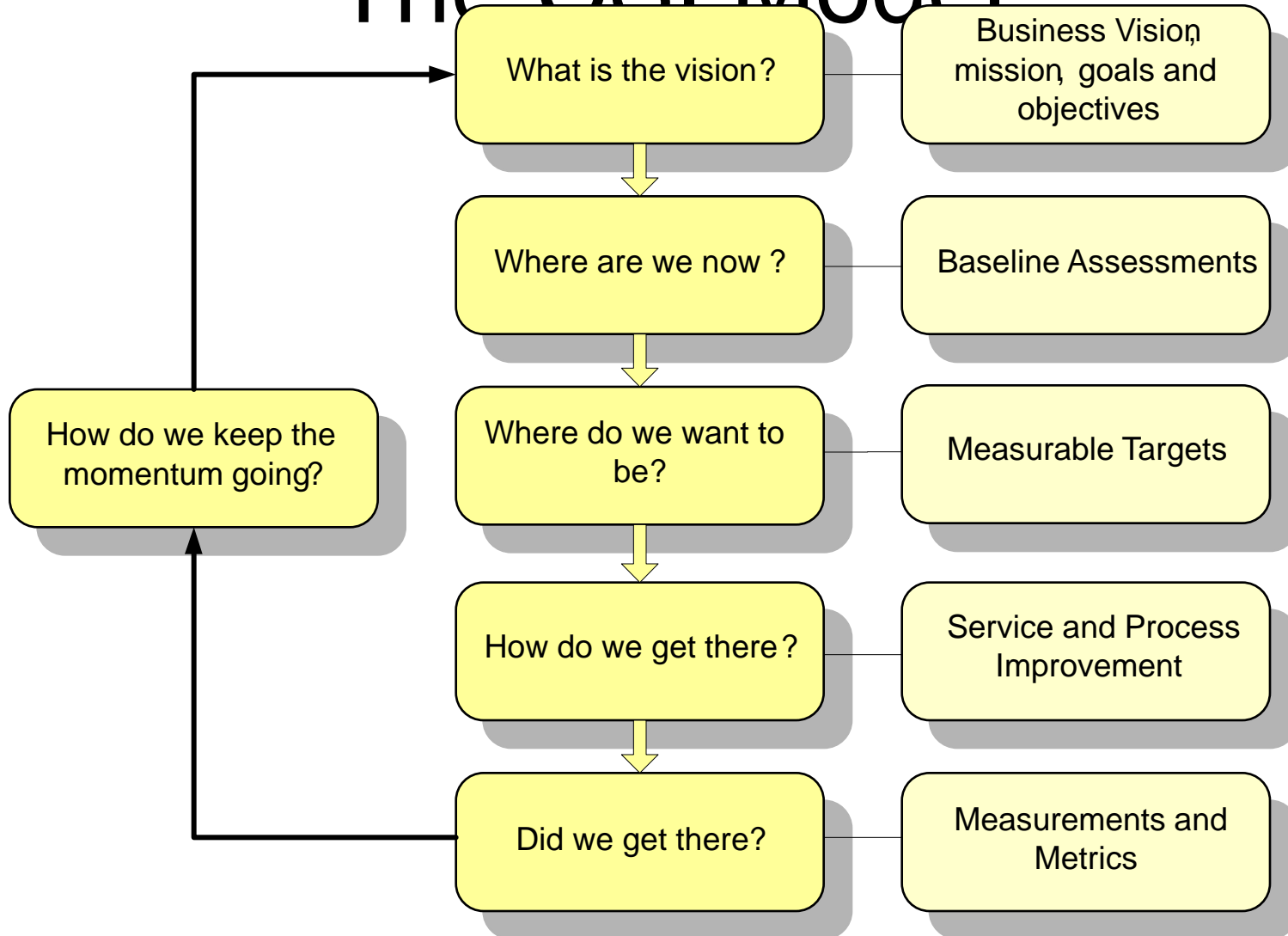




- Measurement and improvement
- Continually looking for ways to improve
 - processes and services
 - efficiency, effectiveness, and cost effectiveness
- Improve each stage in the lifecycle

Overall CSI Approach

The CSI Model



Measurement and Improvement

- You cannot manage what you cannot control
- You cannot control what you cannot measure
- You cannot measure what you cannot define

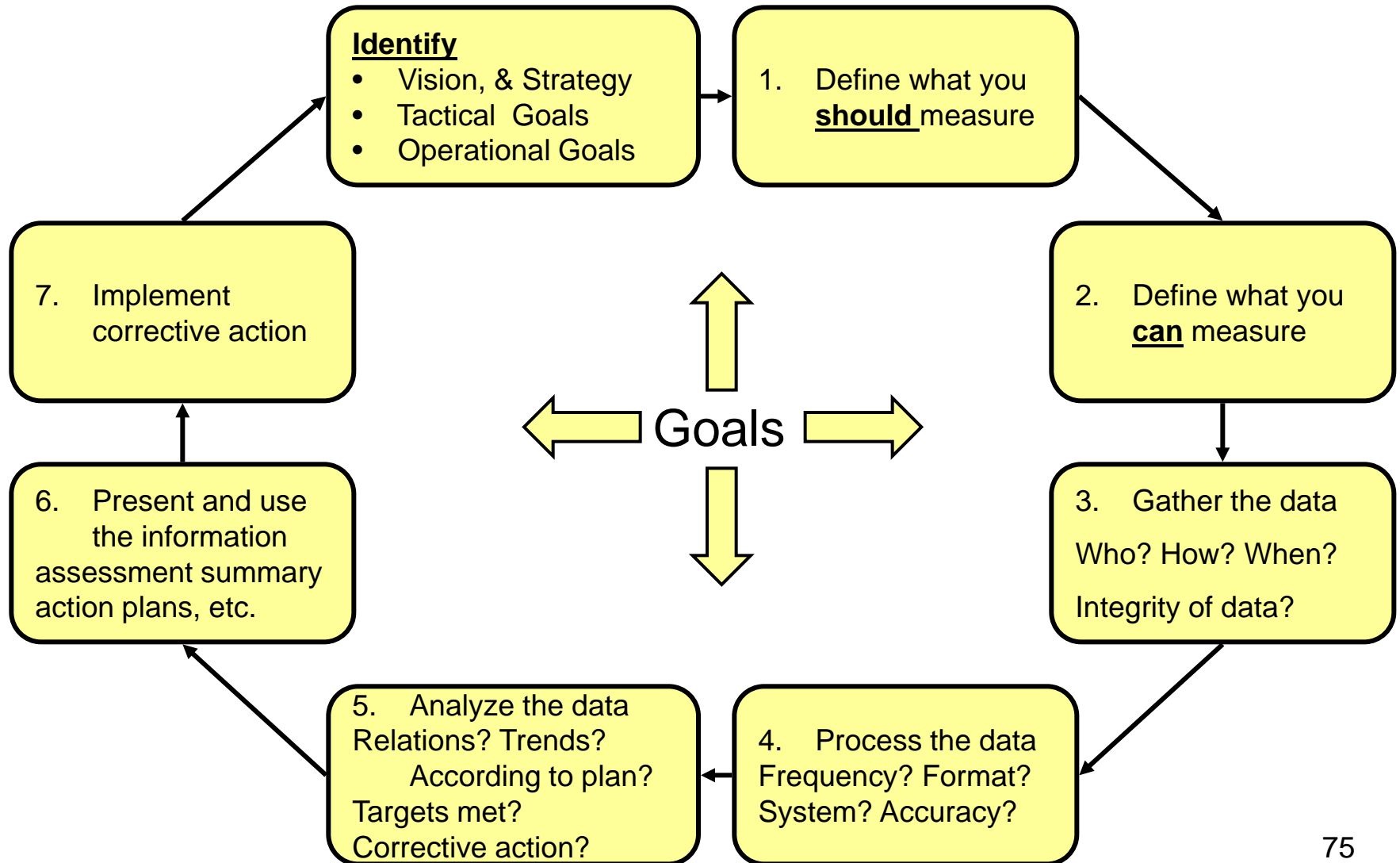
Measurement and Improvement

- You cannot manage what you cannot control
- You cannot control what you cannot measure
- You cannot measure what you cannot define
- Services and processes need to be implemented with...
 - Clearly defined goals and objectives
 - Clearly defined measurements
- Now we can monitor, measure, and improve
 - Not just discrete projects, but as a way of life

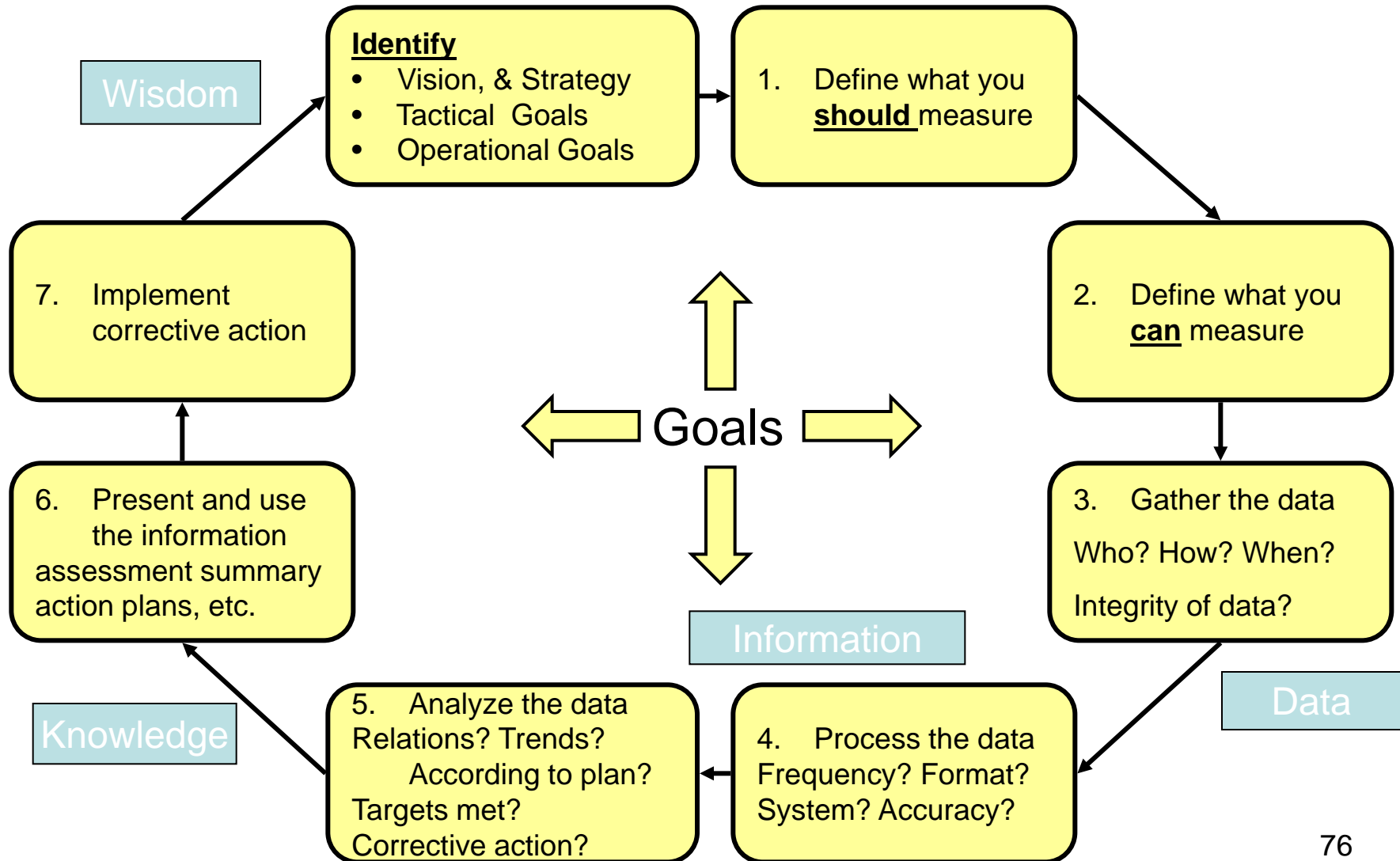
Types of Metric

Service Metrics	The results of the end-to-end service
Process Metrics	CSFs, KPIs and activity metrics for the service management processes
Technology Metrics	Component and application based metrics such as utilisation, performance, availability

The 7-Step Improvement Process



The 7-Step Improvement Process



CSI Processes

- The 7-Step Improvement Process
- Service Reporting
 - The right content for the right audience
 - Focused on the future as well as the past
 - This is what happened; this is what we did; this is why it won't happen again; this is how we will improve
- Service Measurement
 - Service Measurement Framework
 - Underpins scorecards and reports
 - Underpins improvement

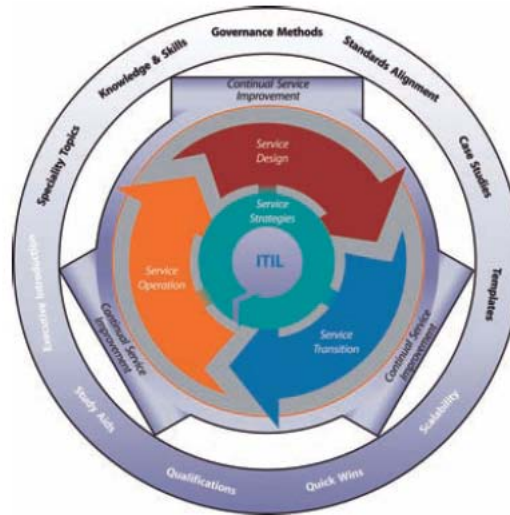
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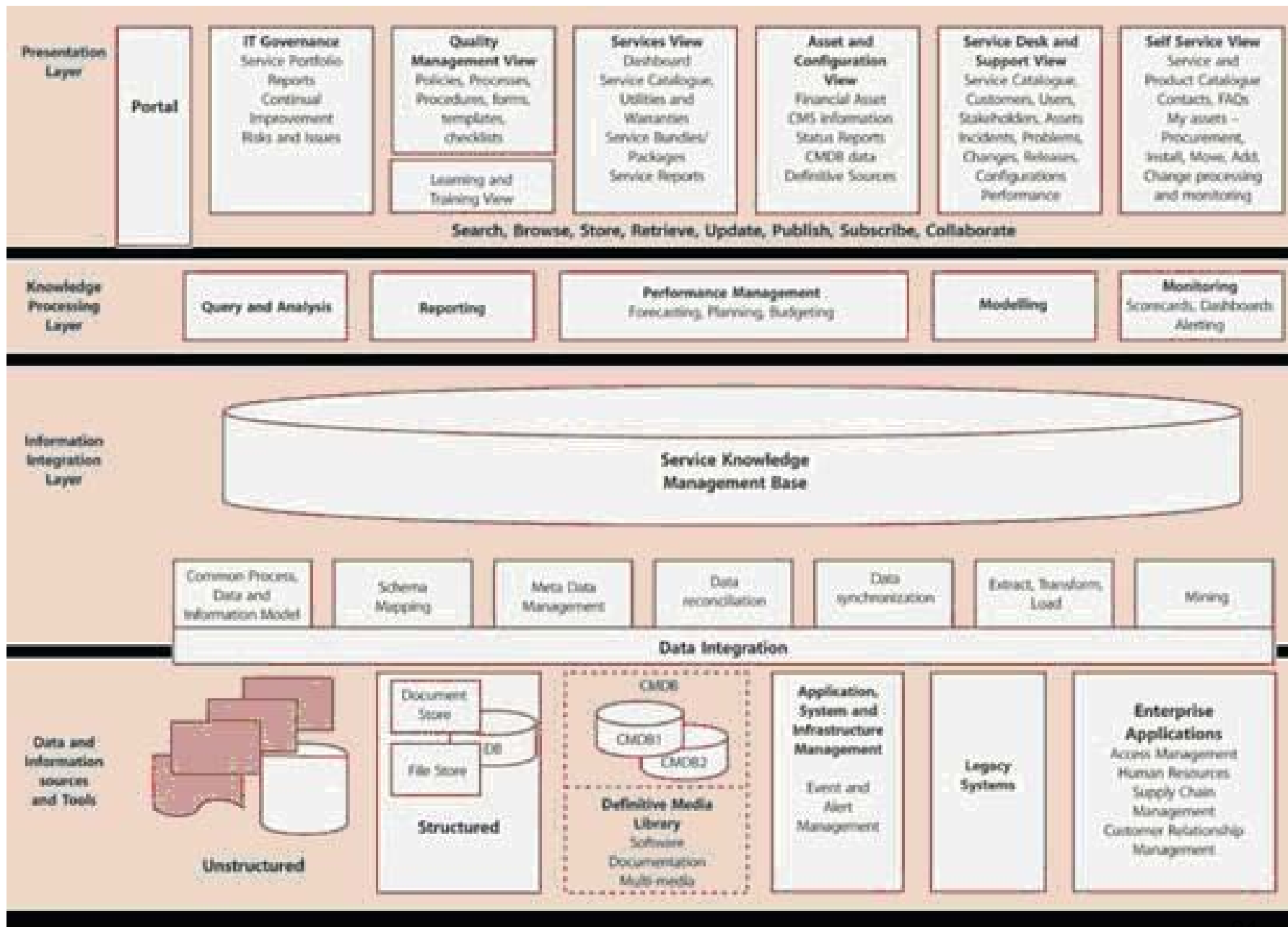
An Introductory Overview of ITIL® V3



IT GOVERNANCE

IT Governance

- IT governance is the responsibility of executives and the board of directors, and consists of the leadership, organisational structures and processes that ensure that the enterprise's IT sustains and extends the organisation's strategies and objectives.



COBIT

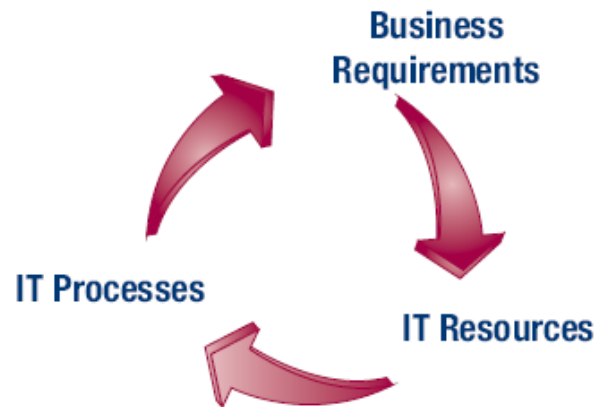
- Control Objectives for Information and related Technology (COBIT®) provides good practices across a domain and process framework and presents activities in a manageable and logical structure. COBIT's good practices represent the consensus of experts.
- They are strongly focused on control and less on execution. These practices will help optimise IT-enabled investments, ensure service delivery and provide a measure against which to judge when things do go wrong.

COBIT

- For IT to be successful in delivering against business requirements, management should put an internal control system or framework in place. The COBIT control framework contributes to these needs by:
 - Making a link to the business requirements
 - Organising IT activities into a generally accepted process model
 - Identifying the major IT resources to be leveraged
 - Defining the management control objectives to be considered

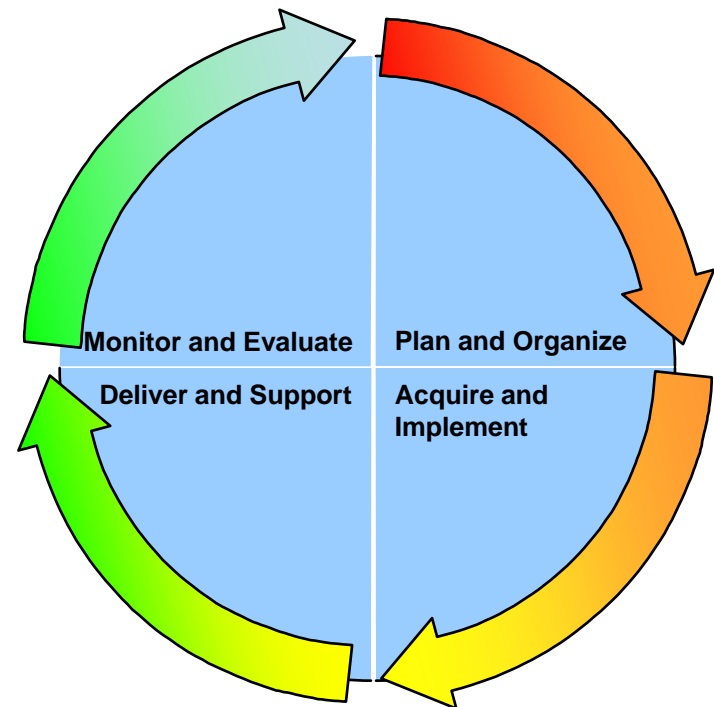
COBIT basic principle

The COBIT framework is based on the following principle: to provide the information that the enterprise requires to achieve its objectives, the enterprise needs to manage and control IT resources using a structured set.



Process oriented

COBIT framework can be shown with COBIT's process model of 4 domains containing 34 generic processes, 214 Control Objectives, managing the IT resources to deliver information to the business according to business and governance requirements.



Plan and Organize (PO)

This domain is related to strategy and tactic to support alignment of IT to corporate business objectives.

Strategic vision needs to be carefully planned, defined and communicated. A support organization and technology is then needed.

It addresses following questions:

- Are IT and Corporate strategies aligned?
- Company is exploiting at the best its own resources?
- IT objectives are clearly stated and shared by all within the company?
- IT risks are analyzed and managed?
- IT service quality is aligned to business objectives?

Acquire and Implement (AI)

To execute IT strategy, it's needed to identify, acquire, implement and release ad hoc solutions, integrating them into IT processes. This domain covers also all modification and maintenance to existing applications to align them to new business demands.

It addresses following questions:

- New projects are correctly addressing business demand?
- Projects are being delivered inline with expected time and budget?
- Implemented solutions and services are correctly working according to the initial demand?
- Changes can be applied without impacting to end users?

Deliver and Support (DS)

This domain addresses delivery of IT services, security management, continuity management, service support to end users and data and infrastructure management.

It addresses following questions:

- IT services are delivered inline with corporate priority?
- Are IT costs optimized?
- Availability, integrity and security are correctly addressed and guaranteed?

Monitor and Evaluate (ME)

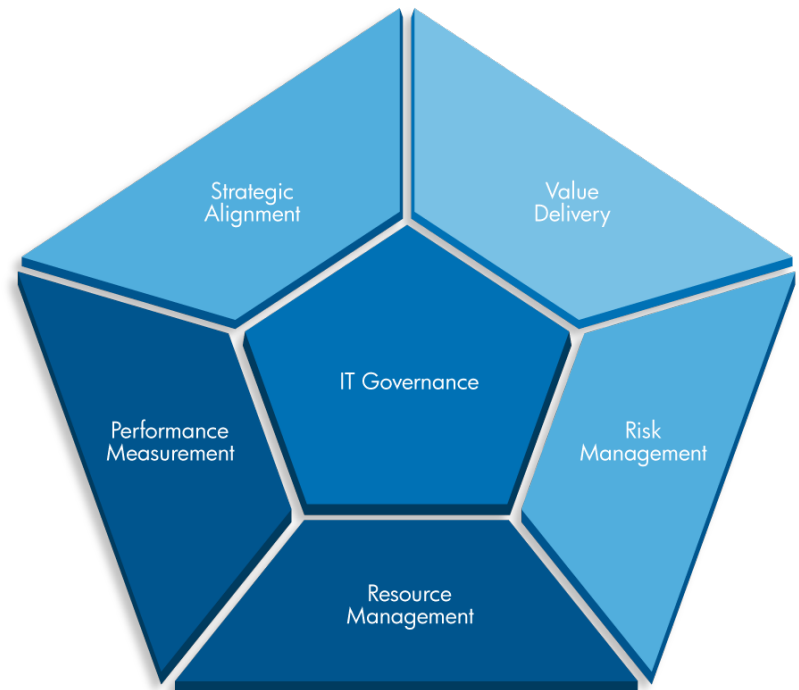
All IT processes need to be periodically reviewed to monitor quality and adherence to business demands. This domain addresses IT performance mgmt, respect to regulatory obligations, alignment to government requirements.

It addresses following questions:

- Are IT performances monitored to identify and isolate problems before it's too late?
- IT mgmt assures controls are executed in an effective and efficient way?
- Is IT performance linked to corporate business objectives?
- Is in place a set of controls to monitor risks, compliances and performances?

IT Governance focus Area

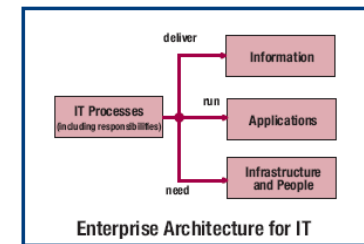
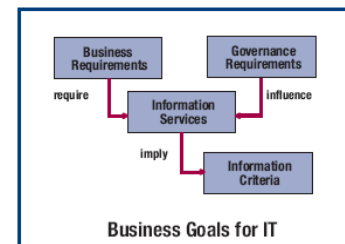
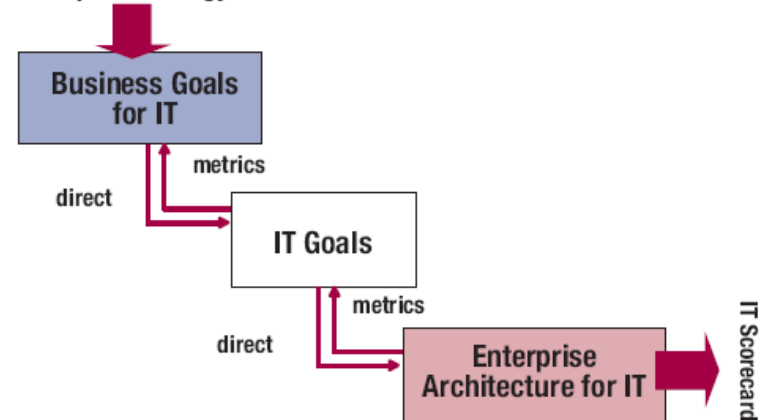
- COBIT thus supports IT governance by providing a framework to ensure that:
 - IT is aligned with the business
 - IT enables the business and maximises benefits
 - IT resources are used responsibly
 - IT risks are managed appropriately



Business Goals and IT Goals

The enterprise strategy should be translated by the business into objectives for its use of IT-enabled initiatives (the business goals for IT). These objectives in turn should lead to a clear definition of IT's own objectives (the IT goals), and then these in turn define the IT resources and capabilities (the enterprise architecture for IT) required to successfully execute IT's part of the enterprise's strategy.

Enterprise Strategy



Information criteria

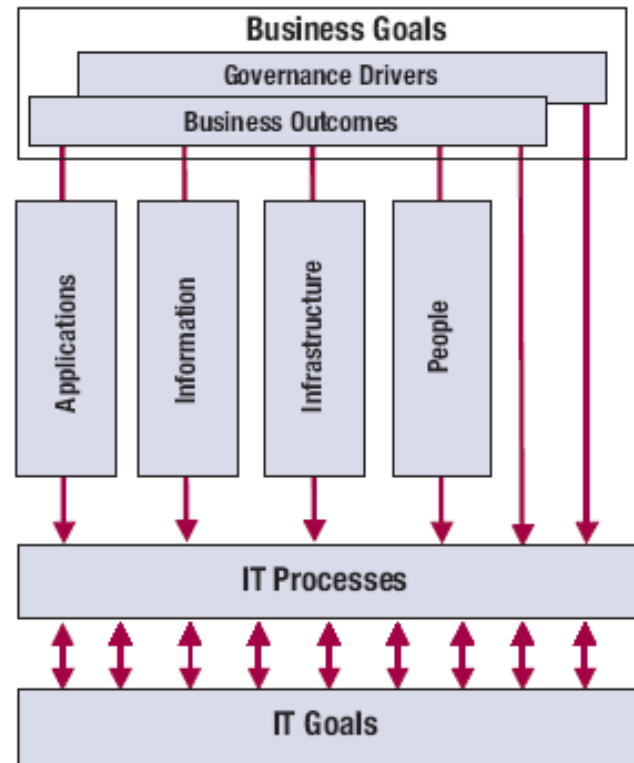
To satisfy business objectives, information needs to conform to certain control criteria, which COBIT refers to as business requirements for information. Based on the broader quality, fiduciary and security requirements, seven distinct, certainly overlapping, information criteria are defined

- **Effectiveness**
- **Efficiency**
- **Confidentiality**
- **Integrity**
- **Availability**
- **Compliance**
- **Reliability**

IT resources

The IT resources identified in COBIT can be defined as follows:

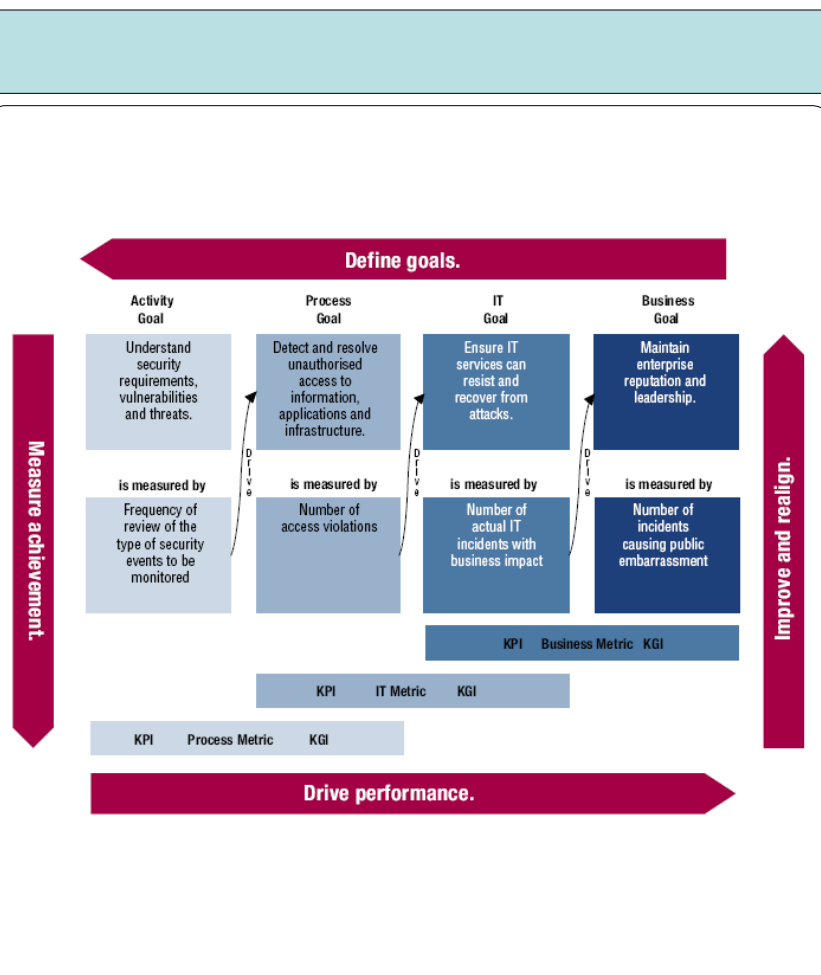
- **Applications**
- **Information**
- **Infrastructure**
- **People**



Performance measurement

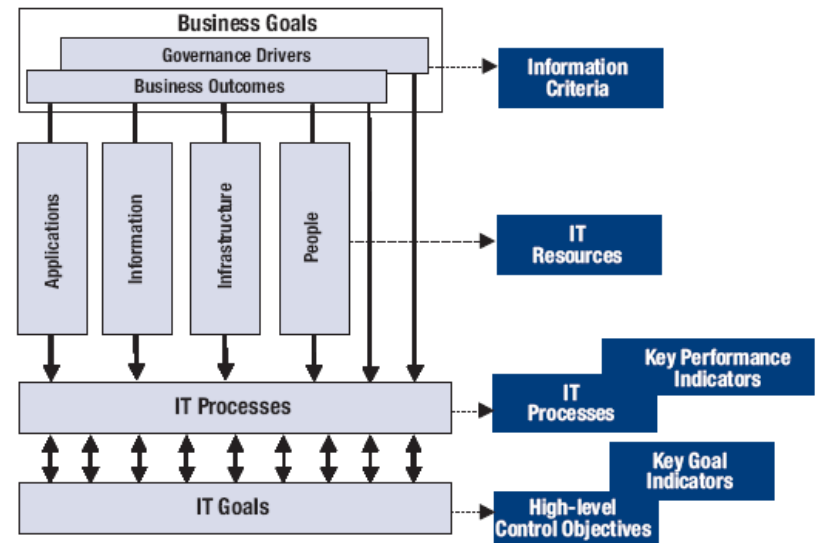
Obiettivi e metriche sono definiti nel COBIT a tre livelli:

- obiettivi IT e metriche di che cosa l'azienda si aspetta dall'IT (cosa l'azienda vuole usare per misurare l'IT)
- obiettivi di processo e metriche che definiscono cosa deve produrre il processo IT per supportare gli obiettivi dell'IT (come si dovrebbe valutare il referente del processo IT)
- metriche della performance del processo (per misurare come sta funzionando il processo e indicare la probabilità di raggiungere gli obiettivi)



COBIT framework model

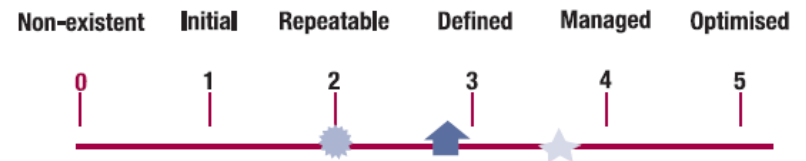
The COBIT framework, therefore, ties the businesses requirements for information and governance to the objectives of the IT services function. The COBIT process model enables IT activities and the resources that support them to be properly managed and controlled based on COBIT's control objectives, and aligned and monitored using COBIT's KGI and KPI metrics.



Maturity model

For each process a maturity model has been defined to provide a measurable level from **0 (Not-existent)** to **5 (Optimised)**. Using the maturity model, it can be identified:

- current performance of each process
- maturity gap in respect to business objectives
- roadmap to fill gap and reach maturity needed by related business objectives



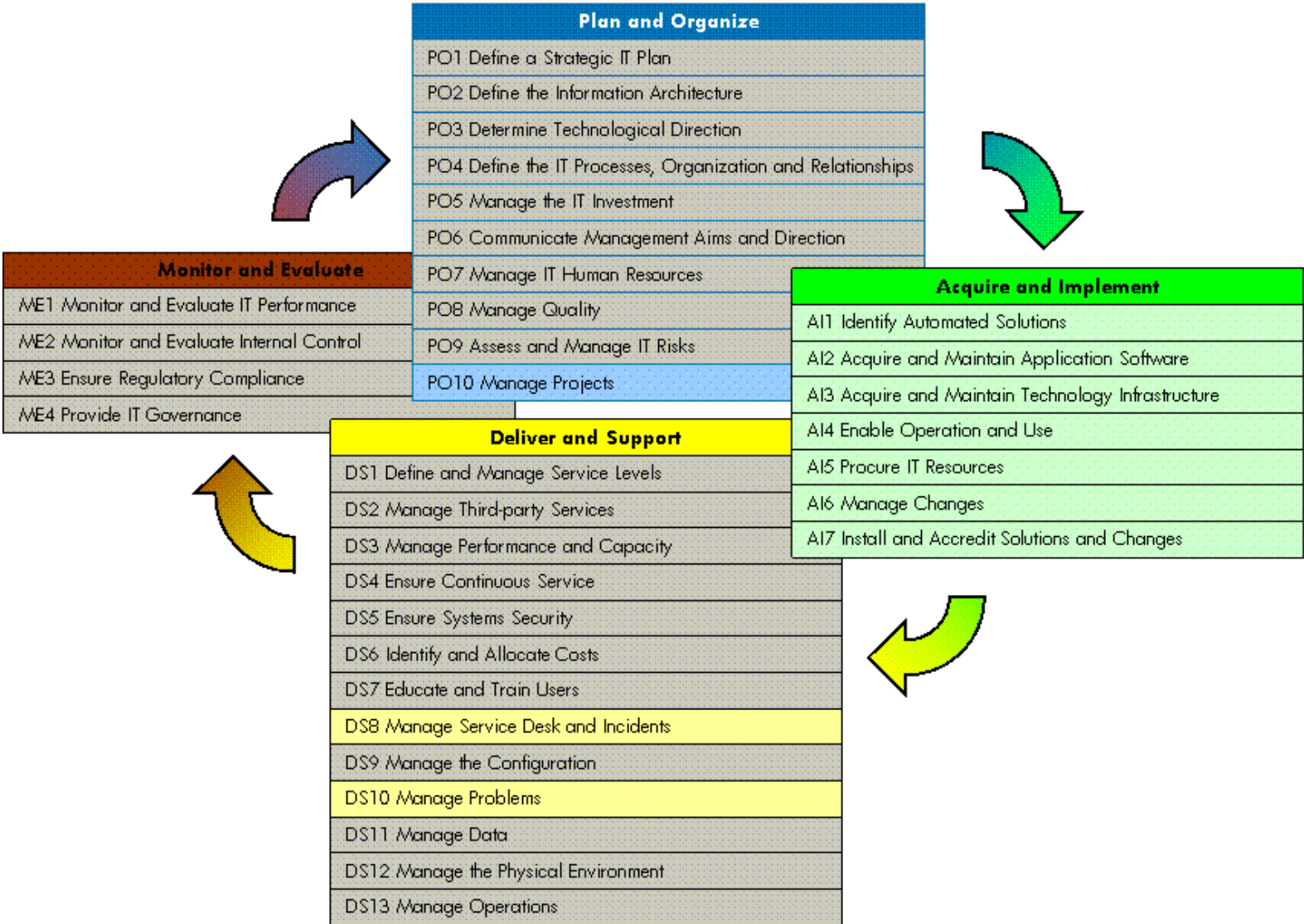
LEGEND FOR SYMBOLS USED

- Enterprise current status
- Industry average
- Enterprise target

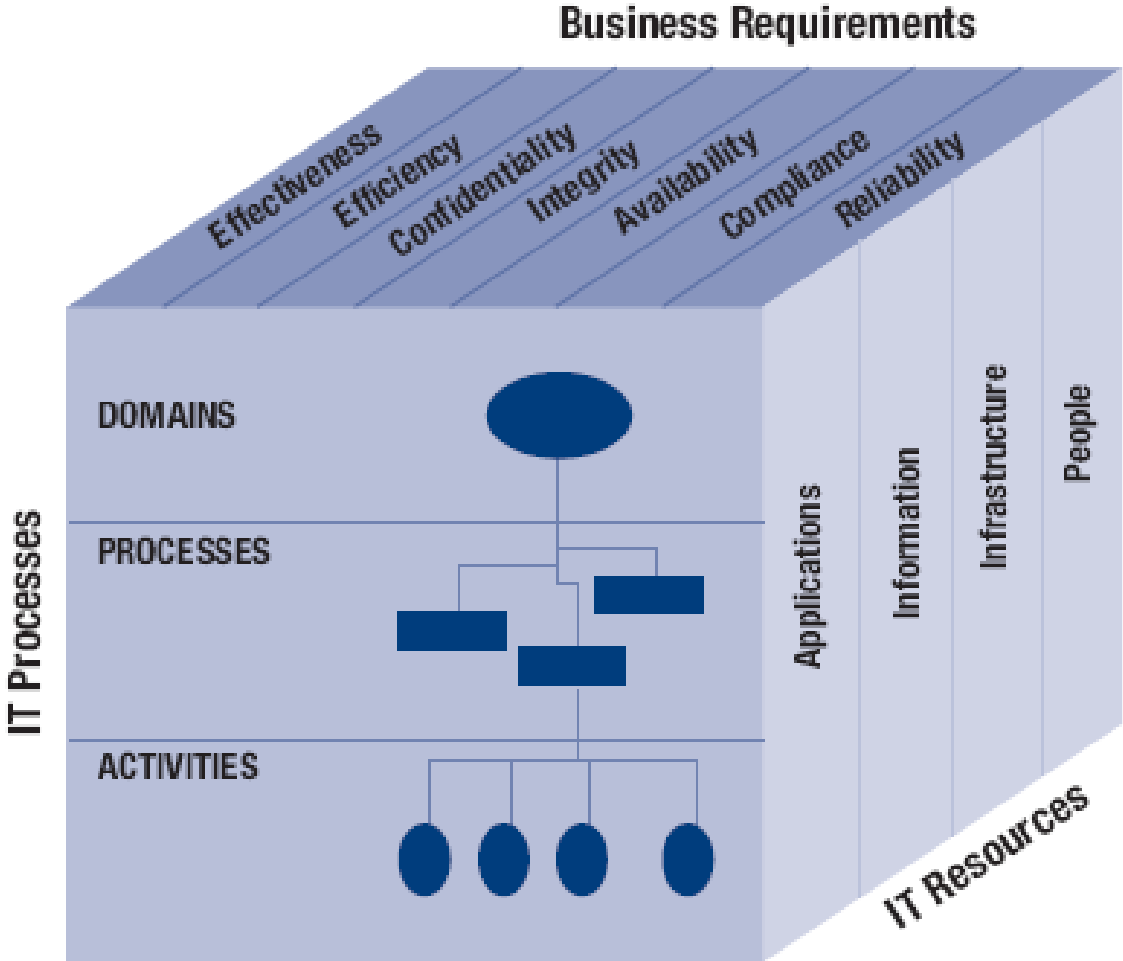
LEGEND FOR RANKINGS USED

- 0—Management processes are not applied at all.
- 1—Processes are *ad hoc* and disorganised.
- 2—Processes follow a regular pattern.
- 3—Processes are documented and communicated.
- 4—Processes are monitored and measured.
- 5—Good practices are followed and automated.

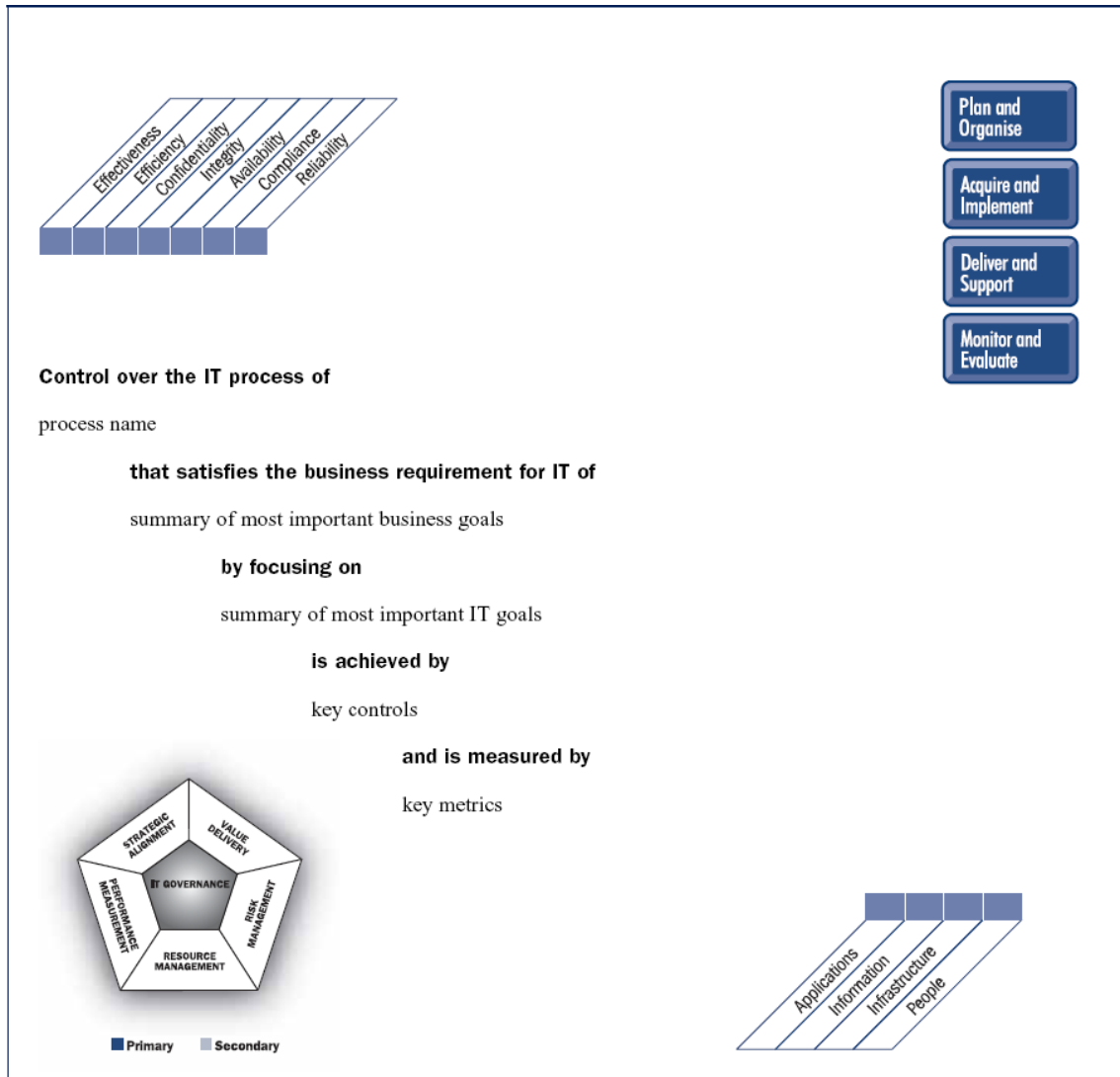
COBIT Framework



COBIT cube



COBIT Framework Navigation

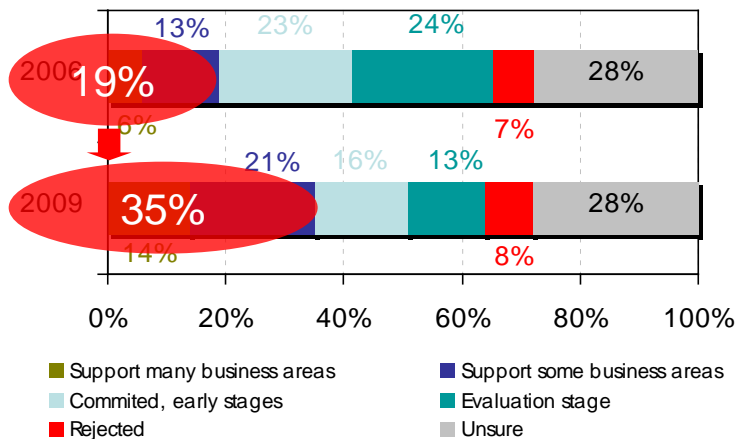


ITSM Market Trend

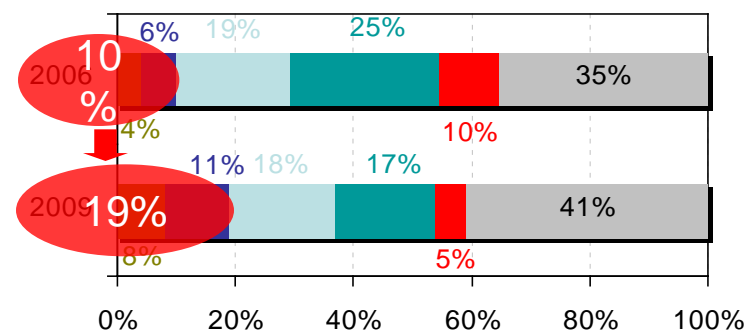
To what extent has your organization currently implemented ITSM?

To what extent will your organization implement ITSM by mid- year 2009?

ITSM adoption, Enterprise level



ITSM adoption, Mid market level



Source: "Survey finds highly satisfied ITSM customers are most business focused", Summit Strategies, August 2006

OVERVIEW OF SOME CURRENT BDIM TOOLS AND SOLUTIONS

- HP business technology optimization datawarehouse
- IBM tivoli decision center and cognos
- BMC Dashboard for business service management
- CA Cleverpath AION BPM, BRE (Business rules expert)

BUSINESS-DRIVEN IT MANAGEMENT

The problem

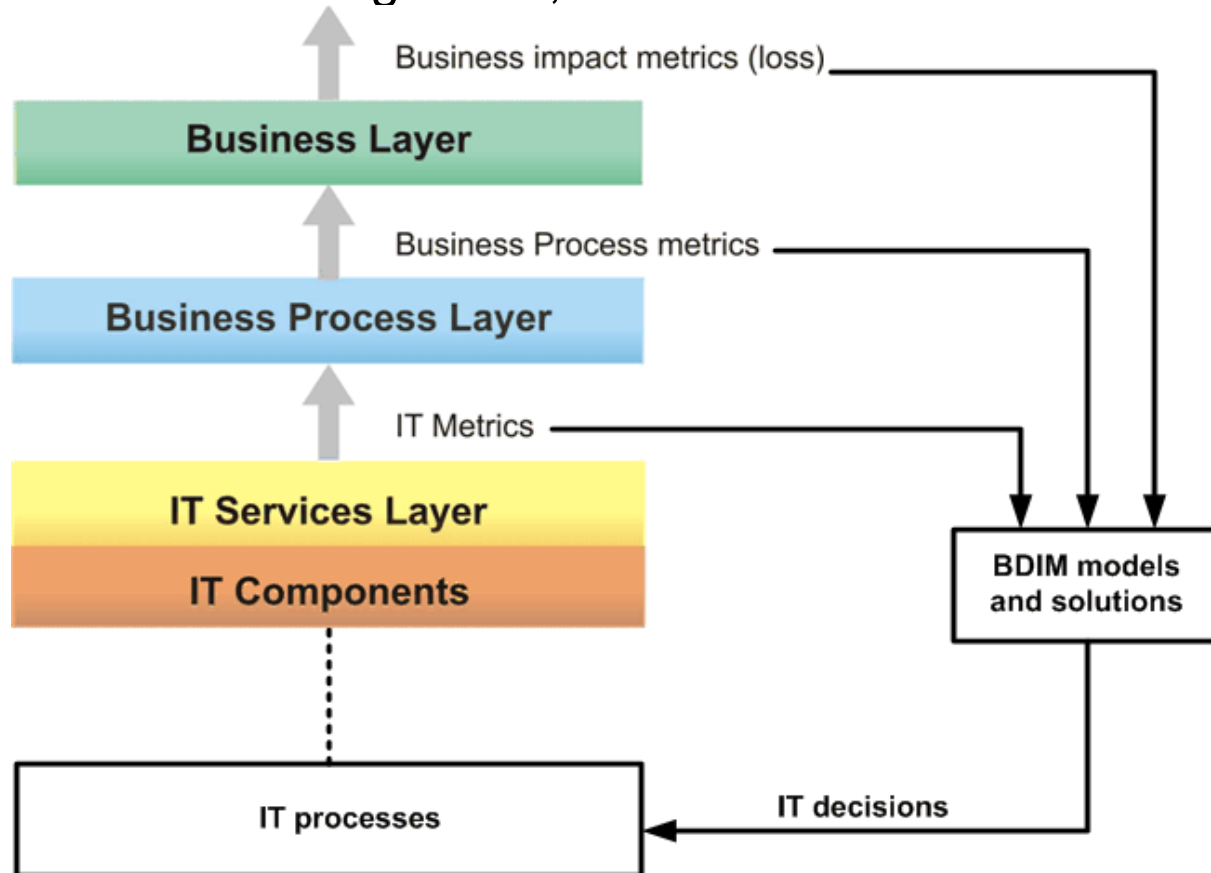
- Why are we *still* talking about IT-business alignment after 15 years??
- The problem is not completely solved by current ITSM practices
 - ITIL v2: aligned to activity and output but not necessarily to *value*
 - ITIL V3: brings in a greater business context
 - But still vague
 - No concrete “how-to” models and techniques to embed in automatic tools

Defining BDIM

- *Business-Driven IT Management is the application of a set of models, practices, techniques and tools to map and to quantitatively evaluate **dependencies between IT solutions and business performance** and using the quantified evaluation to improve the IT solutions' quality of service and related business results*
- Careful! There are 2 businesses!
 - Running IT *like* a business versus running IT *for* the business

BDIM is concerned with IT decisions

- A framework
 - Not business management, not BPM

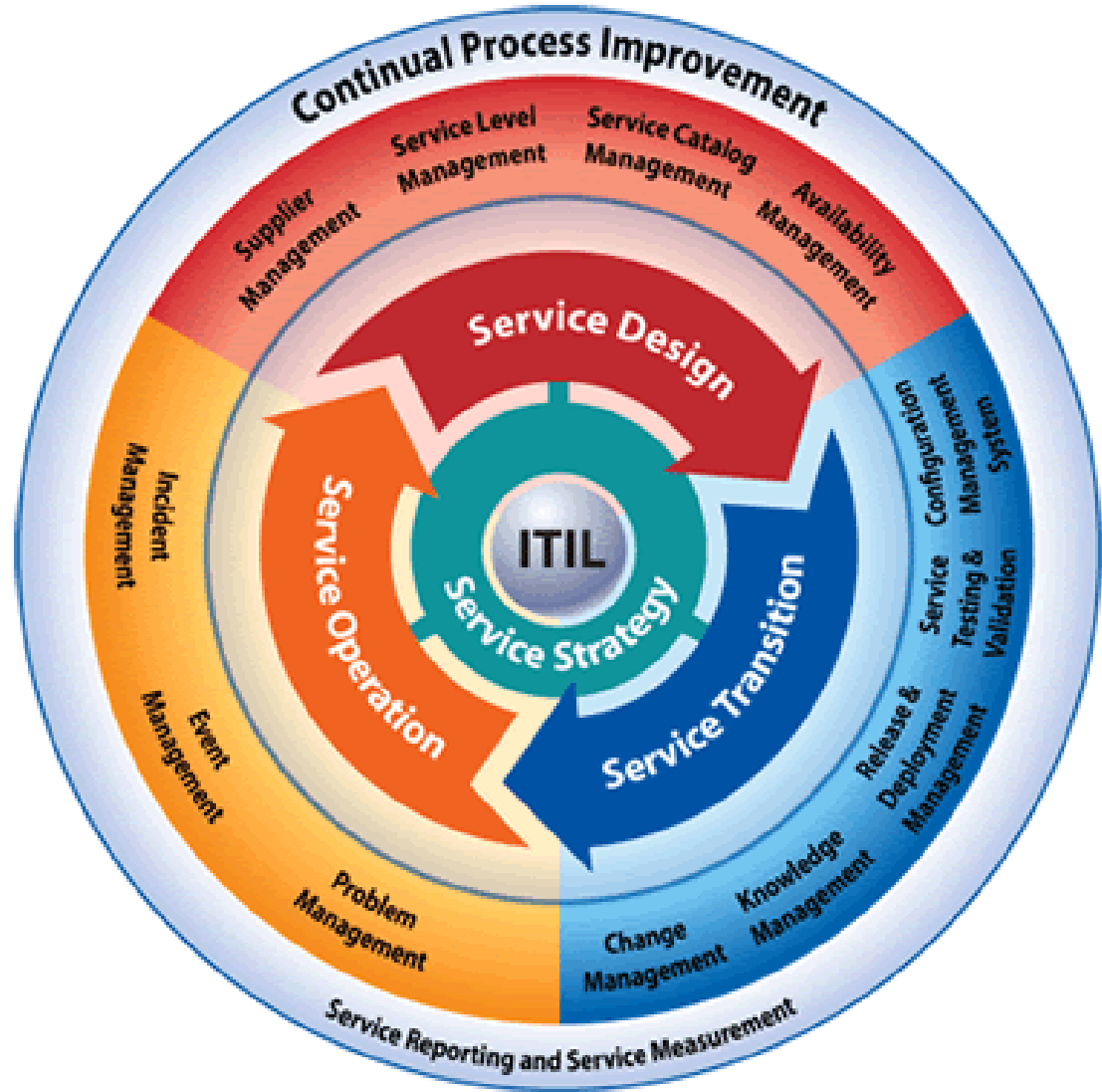


Questions BDIM should answer

- Which of the hundreds of incidents should I take care of now?
- What SLO values does the business need?
- Which changes should I handle now considering impact, risk and corporate risk attitude?
- Which services should be part of my portfolio?
- Which tests should be run on a service release to lower risk to a level acceptable to the business?

BDIM application areas

- Still very much at the research stage



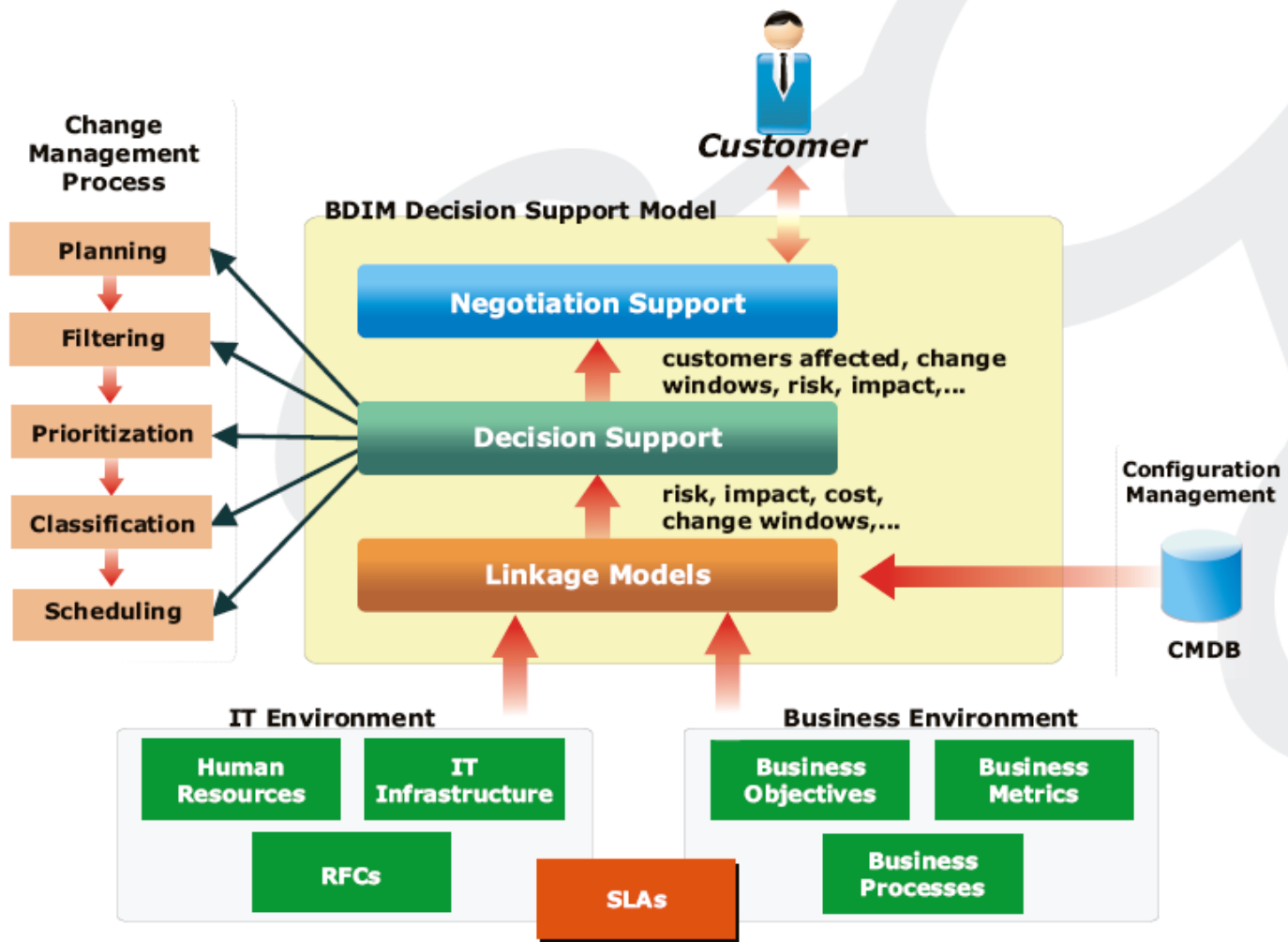
Example: BDIM and incident prioritization

- Incident management ITSM process
- How do you prioritize incidents?
- BDIM approach
 - Compute the **likelihood of violation** of an SLO in function of the time taken to close a jeopardy incident
 - From this, compute the **alignment** with the business objectives
 - Alignment = probability of meeting objectives
 - **Prioritize** the incidents the **maximize alignment** with the business objectives

Example: BDIM and Capacity Planning/SLM

- How do you **design service infrastructure**?
 - You minimize cost to yield a certain QoS expressed in the SLA
- But how do you **choose the SLOs**?
 - 99%? 99.5%? 99.9%?, 99.99%?
 - 1 s.? 2 s.? ½ s.?
 - Finger in the air ...
- BDIM approach
 - Calculate business loss due to unavailability and high response time and **minimize cost+loss**

Example: BDIM and Change Management



Example: Portfolio Management

- To support IT Governance, project portfolio management could help manager analyze alternative portfolio decisions taking into account such indicators as:
 - Guarantee a given return on investment
 - Work with an upper bound on fund for IT investment
 - Comply with Sarbanes-Oxley 404 regulations
 - Increase customer satisfaction
 - Improve voice-of-the-workforce scores
- Observe that many of these are intangible ...

Example: Service testing

- Testing is a risk elimination activity
 - Risk is uncertainty
- Answer testing questions using risk models
 - Should a particular test be performed or not?
 - Which set of tests should be run?
- This is still at the research stage

Some BDIM challenges

- How do we cross the IT-business chasm?
 - IT-business linkage models
 - Little model reusability due to very diversity of the many possible IT scenarios
- Cost of modeling needs to be kept to a minimum
- Deriving appropriate and accurate values to instantiate the parameters of the model is a very hard task
- The consequences of courses of action on the IT infrastructure and services will need to be predicted

Some more BDIM challenges

- Prediction of consequences will likely need to include risk analysis over a long enough observation period
- How to capture long-term business objectives?
 - How to capture strategy?
 - Be first, be best, be cheapest ...
- How to capture intangibles?

Non-technical challenges

- The **technical mindset** of the community
 - Business? What business?
- **Selling** the vision to business
 - Sell on business terms, not on technical terms
 - Do we know the real business value of our approach?
 - Validation is not simple

References

- UK Office of Government Commerce (OCG) - Information Technology Infrastructure Library (ITIL) version 3.
- IT Governance Institute (ITGI) – Control Objectives for Information and Related Technologies (COBIT)
- Claudio Bartolini, Kamal Bhattacharya, Akhil Sahai and Jacques Sauvé (eds.). Information Technology Management from a Business Perspective, vol 1,2,3, 4, 5 - Proceedings of the 1st, 2nd, 3rd, 4th, 5th BDIM workshops co-located with NOMS 2006, IM 2007, NOMS 2008, IM 2009, NOMS 2010
 - From here, you can get to the rest ...

Thank you

The message

- There's more to IT than just networks and systems
- There's interesting research to be done on the other aspects of IT than technology (people and processes)