# ICT393
# Advanced Business Analysis and Design

## Topic 7

Business Process Improvement

# Readings and Resources

## Required

- Reijers, H. A. (2005) Process Design and Redesign (Chapter 9) in Dumas, M., van der Aalst, W.M. & ter Hofstede, A. H. M. (eds) *Process-Aware Information Systems*. John Wiley and Sons. **Available from My Unit Readings**

## Other recommended resources

- Berliner BPM-Offensive (2015) *BPMN 2.0 Poster*. Also available
from: http://www.bpmb.de/index.php/BPMNPoster

# Learning Objectives

After completing this topic you should be able to:

- Discuss why organisations undertake business process improvement
- Understand the context within which business process improvement occurs
- Describe the performance indicators commonly used to assess the success of business process redesign efforts, and discuss the trade offs between them
- Use the 'best practice' method for redesigning business processes
- Describe the kinds of software product used to support business process improvement
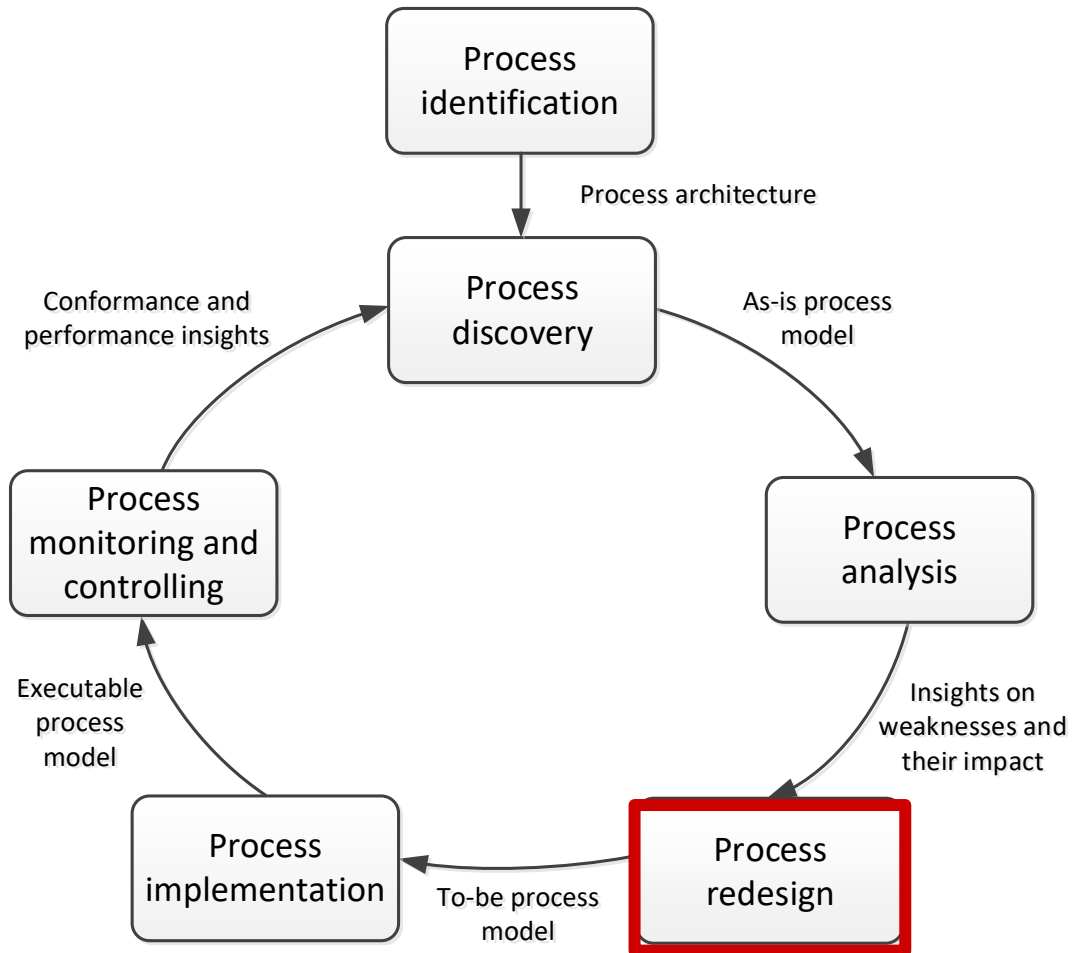
# Why Redesign Processes?

Reasons might include:

- Reduce costs

- Improve productivity

- Improve customer service – shorter lead times, improved quality

- Fit commercial software - especially process-aware information systems

- Streamline the supply chain (better collaboration with business partners)
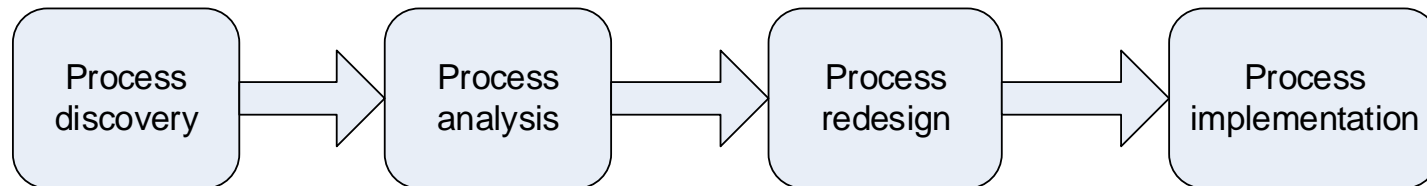
# REMINDER -  BPM Lifecycle

# Context of Business Process Improvement

**Project management**

Modelling, analytical and design techniques

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┌──────────────┐      ┌──────────────┐      ┌──────────────┐      ┌──────────────────┐
│   Process    │ ───▶ │   Process    │ ───▶ │   Process    │ ───▶ │     Process      │
│  discovery   │      │   analysis   │      │   redesign   │      │  implementation  │
└──────────────┘      └──────────────┘      └──────────────┘      └──────────────────┘
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Research, interviewing, group facilitation techniques

**Communications and change management**
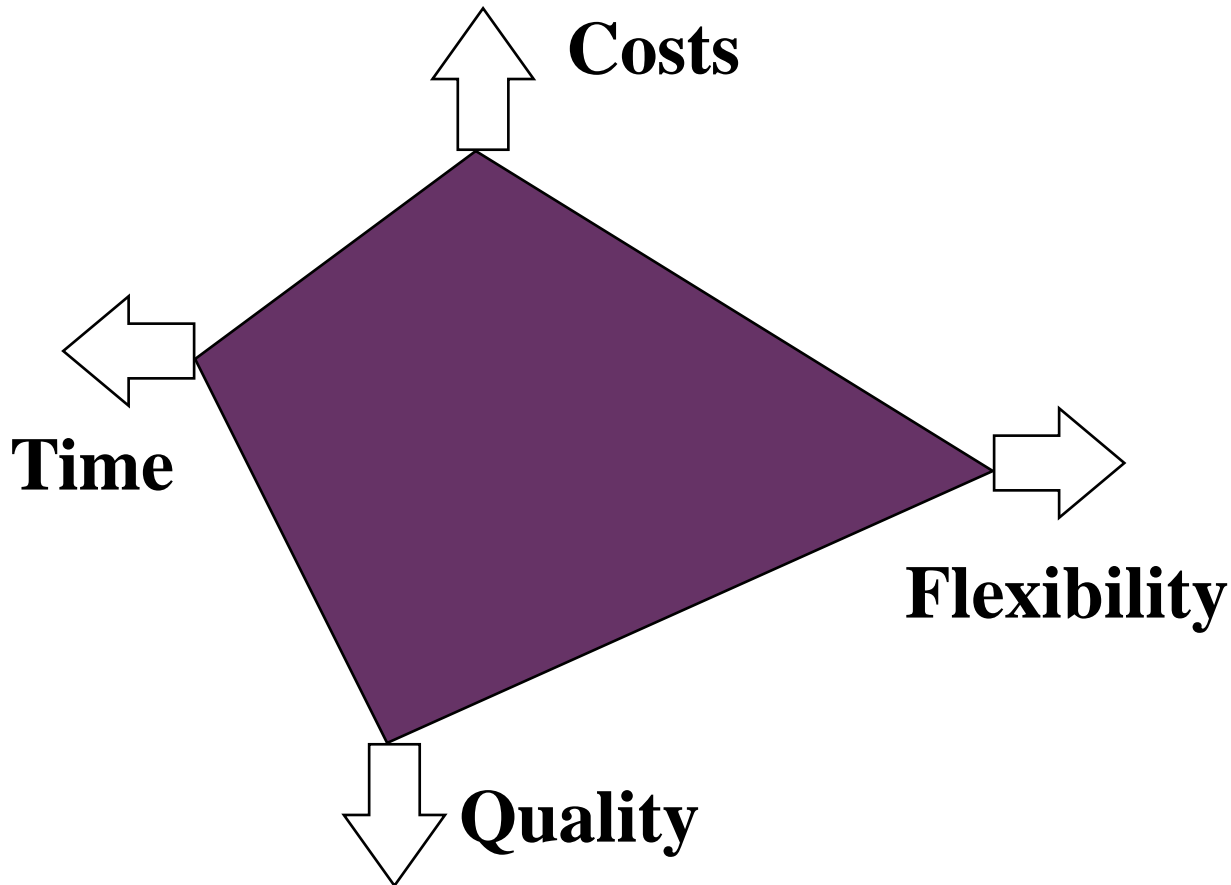
# **Performance Indicators**

In any redesign effort it should be clear which performance aspects of the process are being targeted for improvement and specific goals established

Changes can be evaluated on the basis of:

- Time
- Quality
- Cost
- Flexibility

Often there is a trade-off between them!

# Possible Trade-offs between Performance Indicators



For example - it is difficult to reduce costs and improve quality at the same time

# Costs

Costs are the most common performance target of redesign projects and savings in labour costs are often targeted

Type of costs:
- fixed or variable
- human, system (hardware/software), or external
- Processing, management or support

**Note that there is often a trade-off between human and system-related costs**

# **Time**

Lead time (AKA throughput time or cycle time) is the time it takes to handle a case or instance from beginning to end. It is composed of:

- service time - time that resources actually spend handling the case
- queue time - time spent waiting in queue because there are no resources available
- waiting time - all other time

There are various ways to evaluate time and **goals may relate to different measures**:

- average
- maximum
- variation

# Quality

External: satisfaction of the customer
- Product: product meets specification/expectation
- Process: the way the product is delivered (service level)

Internal: conditions of work
- Do workers feel in control?
- Is work challenging?

There is often a positive correlation between external and internal quality

**What relationships do you think exist between quality and time?**

# Flexibility

Flexibility is the ability to react to changes

Measurement can relate to flexibility of:
- resources (ability to execute many tasks/new tasks)
- process (ability to handle various cases and changing workloads)
- management (ability to change rules/allocation of resources)
- organisation (ability to change structure and responsiveness to meet wishes of the market and business partners)

**How do you think automation can affect flexibility?**

# Redesigning using Heuristic 'Best Practices'

A best practice is some sort of pattern that expresses what is believed to be the best way to treat a particular problem and can be replicated in similar situations

Lists of redesign best practices can be used to evaluate and improve existing processes

Note: there is often little quantitative evidence for the redesign best practices

# Redesigning using 'Best Practices'

Reijers (2005) describes more than 30 process redesign best practices in 6 groups:

- **Task best practices** – focus on optimising individual tasks
- **Routing best practices** – try to improve order and flow of tasks
- **Allocation best practices** – relate to allocation of resources within the process
- **Resource best practices** – focus on types and number of resources used
- **Best practices for external parties** – relate to collaboration and communications
- **Integral best practices** – apply to the process as a whole

# Task Best Practice - Example

**Task elimination** - check the necessity of each task and eliminate tasks that do not add value from client's point of view. Often control tasks fall into this category (i.e. checking)

A study by Mansar and Reijers (2007) found that this practice has the biggest impact on cost.

Note: there may be a trade-off between the cost of the checking and the cost of not doing the check. The quality of the service may be reduced
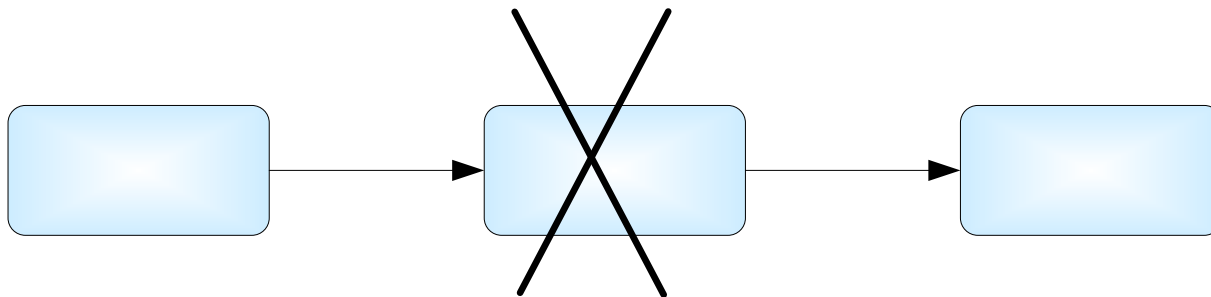
# Task Best Practice - Example

**Task automation** – automation of tasks or automated support of tasks so that they can be carried out faster, with less cost, and with better outcomes

Possible trade-offs:

- Development of a system that automates tasks might be expensive
- Loss of flexibility

# Routing Best Practice - Example

**Knockout** - if a process involves checking various conditions, and a condition that is not met leads to termination of that part of the process, the order of checking should be arranged so that checking that has highest probability of knockout is done first

Trade-off - may have longer lead time than if conditions are checked in parallel
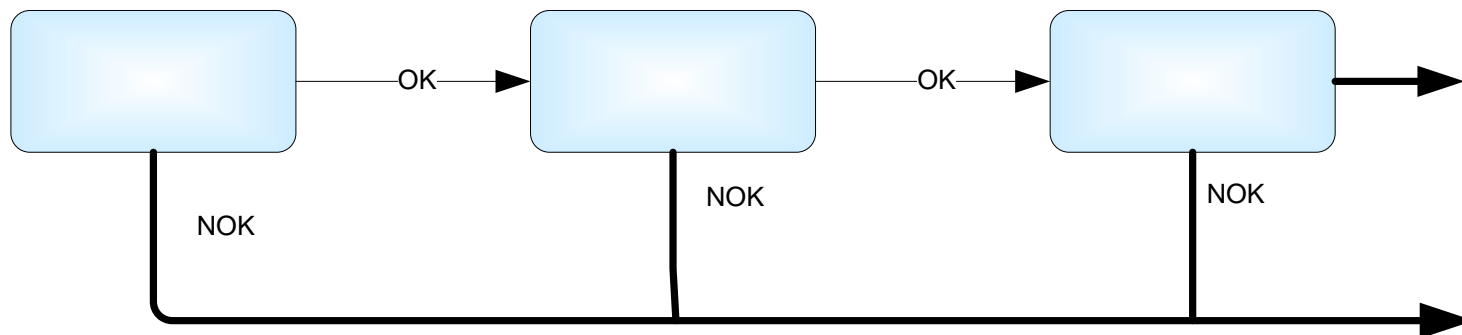
# Routing Best Practice - Example

**Parallelism** – consider whether tasks can be executed in parallel to reduce lead time

IT infrastructures which allow for the sharing of data and work enable parallelism

Trade offs include:

- More complex to manage (may lead to reduction in quality and/or flexibility)
- Reduces possibility of using knockout best practice

# Allocation Best Practice - Example

**Case manager** is assigned to a case. They are responsible for the case and will execute some tasks in the process

Benefits:

- Having one contact person improves client satisfaction
- Improves internal quality as one person is responsible for correcting mistakes

# Resource Best Practice - Examples

**Numerical involvement** – minimize the number of departments, groups and people involved in a business process

- Should lead to fewer coordination problems, and hence more time for processing cases

**Empower** – reduce middle management and give workers most of the decision making authority

- Reduces labour costs and should reduce lead times
- Trade-off – quality of decisions may be reduced and errors may not be found

The study by Mansar and Reijers (2007) found that the empower practice has the biggest impact on flexibility

# Best Practices for External Parties - Examples

**Integration** – consider integration of business process with a business process of client or supplier

- Should be more efficient, but probably less flexible
- The study by Mansar and Reijers (2007) found that BPR practitioners believed that this practice has the biggest impact on time

**Outsourcing** – consider outsourcing a business process – either wholly or partially

- Intention is to reduce cost, but may reduce quality
- Requires more complex coordination

# Integral Best Practices - Examples

**Integral technology** – try to reduce the physical constraints in a business process by applying new technology to the whole process

- **Can you think of some examples of this practice?**

The study by Mansar and Reijers (2007) found that BPI practitioners believed that this practice has the biggest impact on quality

# Business Process Management Suite (BPMS) Products

A BPMS product is a software tool that can be used to develop a BPMS application and then run it

It supports the entire process improvement life cycle — from process discovery, definition and design to implementation, monitoring and analysis, and through ongoing optimization

# Example of BPMS Use

An application to manage insurance claim processing:

- The process is analysed, modelled and improved
- The BPMS application is developed
- Once implemented the application manages the processing of each claim – maintaining data specific to the progress of each claim in a database.
- Managers/users can monitor this and make changes in the process as needed

**What type of best practice would this be?**

# BPMS products (ctd)

The BPMS is a layer of software that sits above other applications and uses process specifications to determine when to call those other applications

It contains at least:

- A process diagram component to define processes to be managed

- A BPMS execution engine that generates instances of applications when they are needed and terminates them when completed – can manage both software and human aspects of a process

# iBPMS Products

The latest category of these products are being labelled as **intelligent business process management suite** (iBPMS) technologies

They have more emphasis on support for system and human intelligence within business processes; e.g. simulation, optimisation and analytics

They also have added support for human collaboration, integration with social media, mobile access to processes, and real-time decision management

# Gartner provides an analysis of iBPMS products

Ref: Dunie, R., Kerremans, M, Baker, V. & Wong, J. (2017) *Magic Quadrant for Intelligent Business Process Management Suites*
Gartner Report: ID G00315642

CHALLENGERS

LEADERS

Appian

Pegasystems

Bizagi

IBM

K2  Oracle

AuraPortal  Genpact (PNMsoft)

BP Logix

Axon Ivy

AgilePoint  Kofax

Software AG

Newgen Software

TIBCO Software

Whitestein

Itesoft | W4  Bonitasoft

bpm'online

NICHE PLAYERS

VISIONARIES

ABILITY TO EXECUTE

COMPLETENESS OF VISION

As of October 2017

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Source: Gartner (October 2017)

# Learning Objectives Revisited

- Why do organisations redesign processes?
- Can you explain the context within which business process improvement occurs?
- Can you describe the performance indicators commonly used to assess the success of business process redesign efforts, and discuss the trade offs between them?
- Can you use the 'best practice' method for redesigning business processes?
- What kinds of software product can be used to support business process improvement?

# Other References

- Dunie, R., Schulte, W. R., Kerremans, M. & Cantara, M. (2016) *Magic Quadrant for Intelligent Business Process Management Suites.* Gartner Report: ID G00276892

- Harmon, P. (2007) *Business Process Change: A Guide for Business Managers and BPM and Six Sigma Professionals* (2nd edition). Morgan Kaufmann Publishers. Chapter 13. **Electronic copy available from library**

- Mansar, S. L., & Reijers, H. A. (2007). Best practices in business process redesign: Use and impact. *Business Process Management Journal, 13*(2), 193-213.