Business Process Engineering Week # 2

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Week 2 Agenda

- Components of Business Process
  - Events , Activities , Tasks ,Decision Points
  - Actors , Outcomes
- Business Process Management
  - Basic Definition
- Business Process Management Lifecycle
  - Process Identification
  - Process Discovery

Business Processes

What companies do for customers whenever they deliver:

- a service; or
- a product

The way processes are designed and performed affects:

- "quality of service/product" that customers perceive
- the efficiency with which services are delivered.

Business Processes

But what happens if that process
isn't achieving the result

OR

if it's not achieving it very effectively?

- Every business has goals, but the interesting part (and what business process management actually) is the exact steps a business will take to achieve those goals.

Components of a Business Process

A business process encompasses a number of events and activities.

- **Events** correspond to things that happen atomically, meaning that they have no duration. The arrival of an equipment at a construction site is an event.
- An event is a **specific instant of time**, which marks the start or end of an activity. Event consumes neither time nor resource.
- An event may trigger the execution of **series of activities.**
- An **activity** is the actual performance of the task and requires time and resources for its completion.
- When an activity is rather simple and can be seen as one single unit of work, we call it a task.
- A single unit of work is called a **task**

Components of a Business Process

- The activity proceeding to any given activity is called the predecessor activity
- The activity succeeding to any given activity is called the successor activity
- An activity has many tasks

Example:

The arrival of an equipment at a construction site is an **event**. This event may trigger the execution of **series of activities**. when a piece of equipment arrives, the site engineer **inspects** it. This inspection is an **activity**, in the sense that it takes time. if the inspection that the site engineer performs is quite simple e.g. just checking that the equipment received corresponds to what was ordered—we can say that the **equipment inspection is a task**.

If on the other hand the **equipment inspection requires many steps**—such as checking that the equipment fulfills the specification included in the purchase order, checking that the equipment is in working order, and checking the equipment comes with all the required accessories and safety devices—**we will call it an activity**

Components of a Business Process

Decision Points: Points in time when a decision is made that affects the way the process is executed.

Example: as a result of the inspection, the site engineer may decide that the equipment should be returned or that the equipment should be accepted. This decision affects what happens later in the process

Decisions represent the explicit rules that are required to maintain consistency in customers experience.

- Consider a leave granting process in any big organization. There are explicit rules which define the number of leaves that a person can take as well as the procedure to get them approved. Although, it looks like a manager is taking the decisions with regards to granting leave, all they are doing is following a pre-defined procedure.
- No matter who the manager is, the decisions will always remain consistent

Components of a Business Process

A process also involves a number of:

- Actors e.g., human actors, organizations, or software systems acting on behalf of human actors or organizations
- Physical objects e.g., equipment, materials, products, paper documents
- Immaterial objects e.g., electronic documents and electronic records

The execution of a process leads to one or several outcomes. Ideally, an outcome should deliver value to the actors involved in the process

Positive outcome – the value is delivered to the actors involved

Negative outcome – the value is not achieved or is only partially achieved


Issue delivery receipt
Load truck
Package products
Issue invoice
Prepare shipment
Schedule payment
Schedule delivery
Check & confirm PO
Unload truck
Notify shipment
Obtain PO confirm.
Match incoming payment
Check Invoice
Request PO change


PO received
Check & confirm PO
Package products
Load truck
Notify shipment
Issue invoice
Match payment
Payment made
P.O.
PO issued
Obtain PO confirm.
Schedule delivery
Unload truck
Issue delivery receipt
Check invoice
Schedule payment
Goods arrived
P.O.


Your
Bring menu
Load dish-washer
Take order
Serve meal
Collect payment
Collect laundry
Brush grills
Collect laundry
Unload dish-washer
Present bill
Sweep & mop
Clean kitchen surfaces
Greet & seat


Customer arrived
Greet & seat
Bring menu
Take order
Serve meal
Present bill
Collect payment
Customer paid
Kitchen is dirty
Load dish-washer
Clean kitchen surfaces
Brush grills
Collect laundry
Sweep & mop
Unload dish-washer
Kitchen is clean

A business process is…

a chain of events, activities and decisions
...involving several actors and objects,
….triggered by a need
and leading to an outcome that is of value to a customer.

Examples:

- Order-to-Cash
- Procure-to-Pay (aka Purchase-to-Pay)
- Application-to-Approval
- Issue-to-Resolution

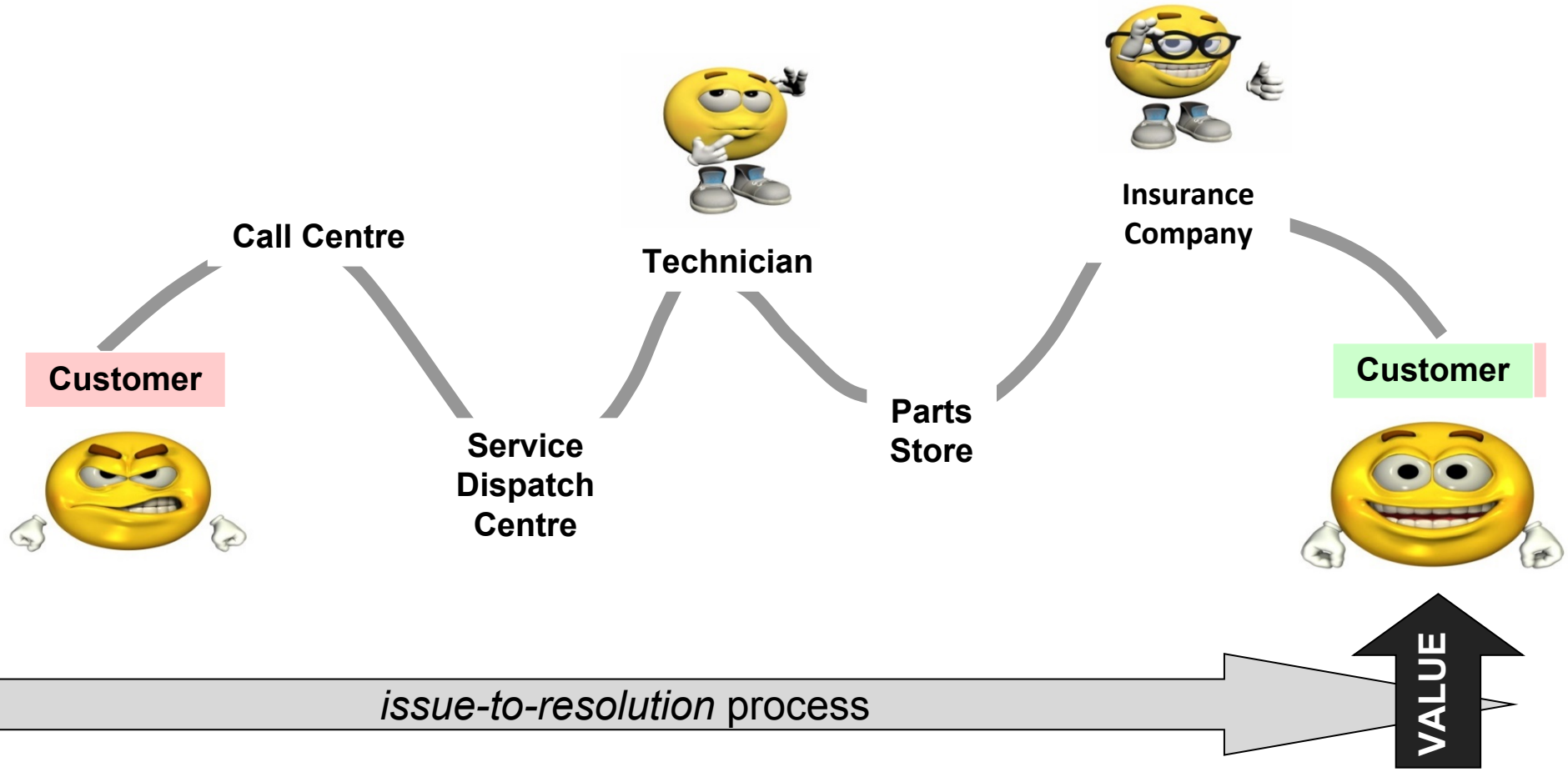
"My washing machine doesn't work…"

Negative outcomes (value-reducing):

- Fault not repaired in a timely manner
- Fault repaired but customer pays more than expected

Positive outcomes (value-adding):

- Fault repaired immediately with minor intervention
- Fault repaired, covered by warranty



Your turn

Think of an organization and a process in this organization:

- Is it order-to-cash, procure-to-pay, application-to-approval, issue-to-resolution…
- Who is/are the customer(s)?
- What value does this process deliver to its customer?
- Who are the key actors of the process?
- List at least 3 outcomes of the process.

Exercise 1.1 Consider the following process for the admission of graduate students at a university. In order to apply for admission, students first fill in an online form. Online applications are recorded in an information system to which all staff members involved in the admissions process have access to. After a student has submitted the online form, a PDF document is generated and the student is requested to download it, sign it, and send it by post together with the required documents, which include:

• Certified copies of previous degree and academic transcripts. • Results of English language test.

• Curriculum vitae.

When these documents are received by the admissions office, an officer checks the completeness of the documents. If any document is missing, an e-mail is sent to the student. The student has to send the missing documents by post. Assuming the application is complete, the admissions office sends the certified copies of the degrees to an academic recognition agency, which checks the degrees and gives an assessment of their validity and equivalence in terms of local education standards. This agency requires that all documents be sent to it by post, and all documents must be certified copies of the originals. The agency sends back its assessment to the university by post as well. Assuming the degree verification is successful, the English language test results are then checked online by an officer at the admissions office. If the validity of the English language test results cannot be verified, the application is rejected (such notifications of rejection are sent by e-mail). Once all documents of a given student have been validated, the admission office forwards these documents by internal mail to the corresponding academic committee responsible for deciding whether to offer admission or not. The committee makes its decision based on the academic transcripts and the CV. The committee meets once every 2 to 3 weeks and examines all applications that are ready for academic assessment at the time of the meeting. At the end of the committee meeting, the chair of the committee notifies the admissions office of the selection outcomes. This notification includes a list of admitted and rejected candidates. A few days later, the admission office notifies the outcome to each candidate via e-mail. Additionally, successful candidates are sent a confirmation letter by post.

With respect to the above process, consider the following questions:

1. Who are the actors in this process?
2. Which actors can be considered to be the customer (or customers) in this process?
3. What value does the process deliver to its customer(s)?
4. What are the possible outcomes of this process?

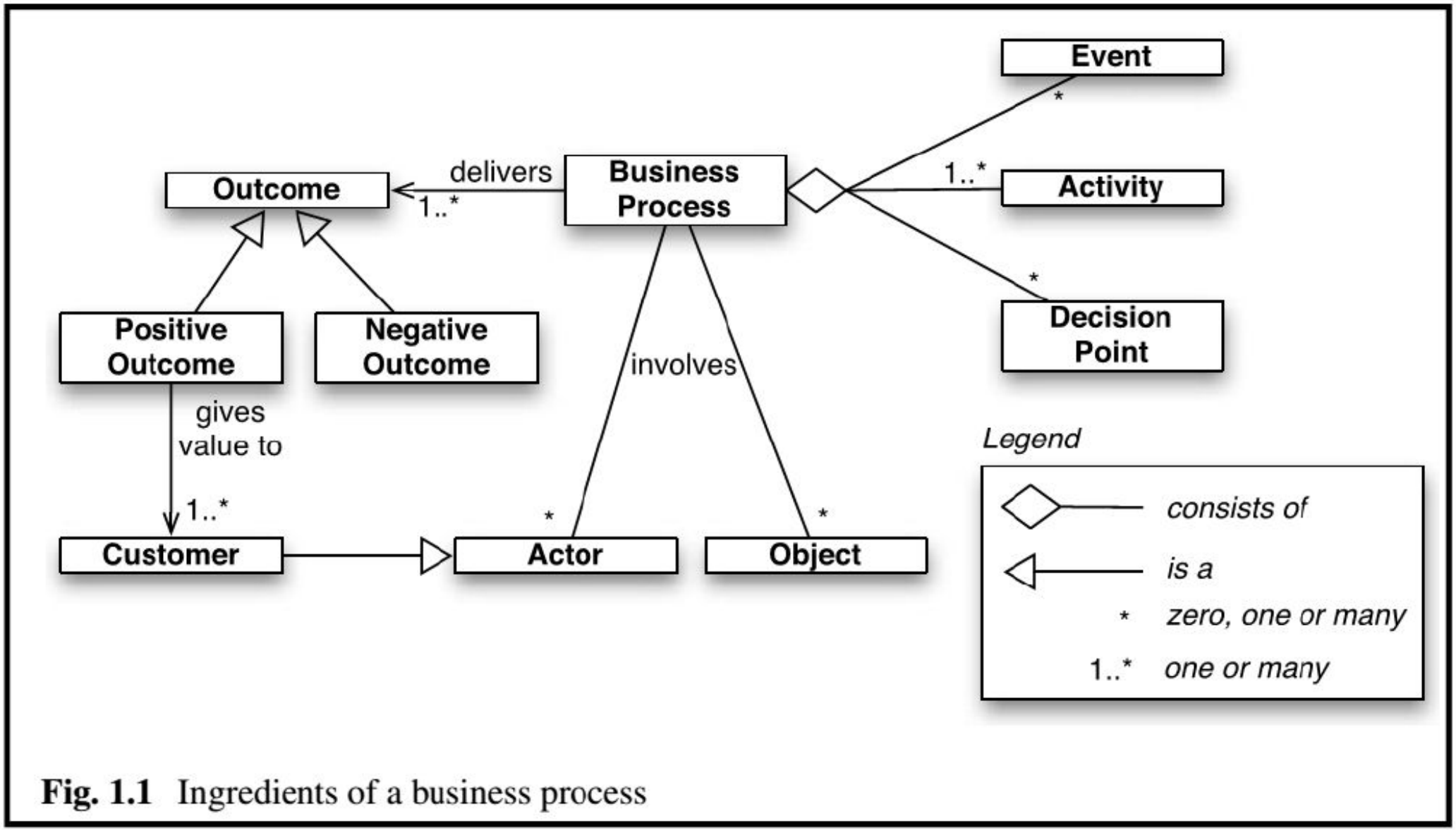


Fig. 1.1 Ingredients of a business process

Business Process Management

Business Process Management (BPM) is the art and science of overseeing how work is performed in an organization to ensure **consistent outcomes** and to take advantage of **improvement opportunities**.

In this context, the term "improvement" may take different meanings depending on the objectives of the organization. Typical examples of improvement objectives include **reducing costs, reducing execution times and reducing error rates**.

Improvement initiatives may be on-off, but also display a more **continuous nature**. Importantly, BPM is not about improving the way individual activities are performed. Rather, it is about managing entire chains of events, activities and decisions that ultimately add value to the organization and its customers. **These "chains of events, activities and decisions" are called processes**

Business Process Management

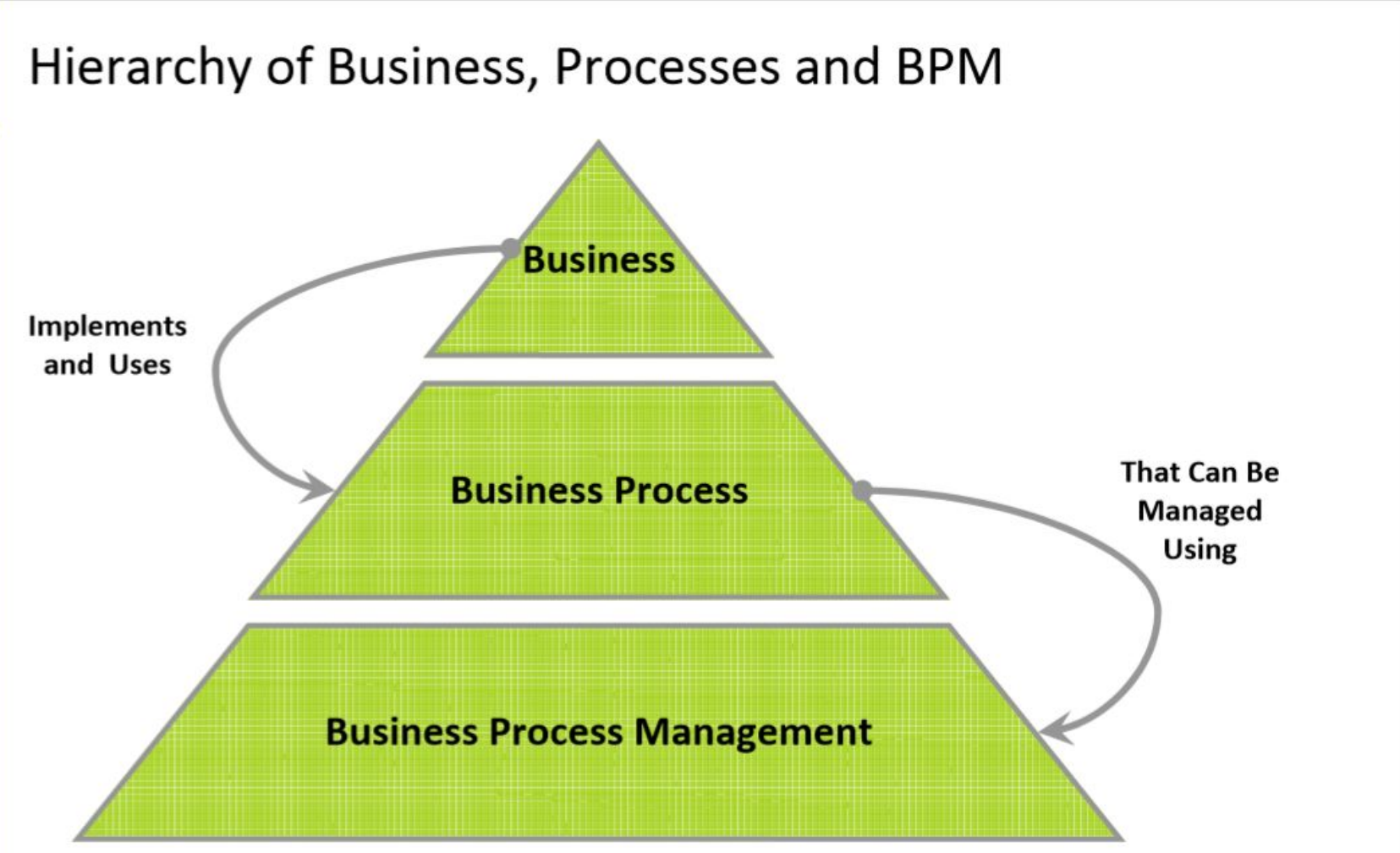
A collection of inter-related events, activities and decision points that involve a number of actors and objects, and that collectively lead to an outcome that is of value to at least one customer.

Business Process Management is "body of methods, techniques and tools to discover, analyze, redesign, execute and monitor business processes."

BPM asks: "is this really the best way to do it"

Processes are managed when they're kept up to date, tested and optimized. Since the nature of business is always changing because companies change size quickly and the tools they use change, processes have a terrible tendency to become outdated.

Hierarchy of Business Process



The step-by-step plan for achieving your business goals - BPM

Business process management = creating and optimizing the perfect plans to achieve your business goals.

It's not a technology, or a one time thing. You don't ever consider your processes 'fully managed' or optimized. Whether or not someone in the company has it in their job title or description, business processes are in a constant state of flux. BPM is always questioning the current state of operations.

The step-by-step plan for achieving your business goals - BPM

An important feature of BPM is ownership and collaboration.

Processes should be owned by people, and those people are responsible for updating and optimizing them. This makes sure the processes actually get used, too.

You should get other people to use them, offer their feedback and apply updates. Other-wise you will become center of attention/failure

Business Process Management

The best people to be in charge of creating and maintaining their own processes are those responsible for doing the tasks. Naturally, someone is responsible for keeping the writing and editing processes up to date. The support team takes care of the support processes, and anyone else who uses these processes can make edits and suggestions to optimize them, based on collective feedback

process management ≠ process automation.

Business Process Management

A body of methods, techniques and tools to discover, analyse, redesign, execute and monitor business processes.

A discipline of improving a business process from end to end by analysing it, modelling how it works in different scenarios, executing environments, monitoring the improved process and continually optimizing it.

Why Business Process Management?

Symptoms of Poor Business Process Management and Design –

- No standard process/method for addressing how to define business requirements and when to improve business processes –
- When automation of processes is commissioned, “Business "says that they do not always get what they think they have asked for –The processes used to document and communicate business processes and requirements are neither easy nor documented
- Our business programs frequently exist in a culture of reacting to cross-functional problems/emergencies –
- IT has responsibility for creating and maintaining business process flows, business requirements and business rules

Process performance

If you had to choose between two services, you would typically choose the one that is:

Faster

Cheaper

Better

Process performance

Three dimensions of process performance

Time

Cost

Quality

BPM Related Disciplines

- TQM
- Operations Management
- Lean
- Six Sigma

BPM Related Disciplines - TQM

Total Quality Management (TQM) is an approach that both historically preceded and inspired BPM. The focus of TQM is on **continuously improving and sustaining the quality of products**, and by extension also of services. In this way, it is similar to BPM in its emphasis on the necessity of ongoing improvement efforts.

But where TQM puts the **emphasis on the products and services themselves, the view behind BPM is that the quality of products and services can best be achieved by focusing on the improvement of the processes that create these products and services**.

It should be admitted that this view is somewhat controversial, as contemporary TQM adepts would rather see BPM as one of the various practices that are commonly found within a TQM program. Not so much a theoretical distinction but an empirical one is that applications of **TQM are primarily found in manufacturing domains—where the products are tangible—while BPM is more oriented to service organizations**

Operations Management & Lean

Operations Management is a field concerned with managing the **physical and technical functions** of a firm or organization, particularly those relating to **production and manufacturing**. Probability theory, queuing theory, decision analysis, mathematical modeling, and simulation are all important techniques for optimizing the efficiency of operations from this perspective. What is rather different between operations management and BPM is **that operations management is generally concerned with controlling an existing process without necessarily changing it**, while BPM is often concerned with **making changes to an existing process** in order to improve it.

Lean is a **management discipline** that originates from the **manufacturing industry**, in particular the engineering philosophy of Toyota. One of the main principles of Lean is the elimination of waste, i.e. activities that do not add value to the customer. The customer orientation of Lean is similar to that of BPM and many of the principles behind Lean have been absorbed by BPM. In that sense, BPM can be seen as a more encompassing discipline than Lean. Another difference is that BPM puts **more emphasis on the use of information technology as a tool to improve business processes and to make them more consistent and repeatable.**

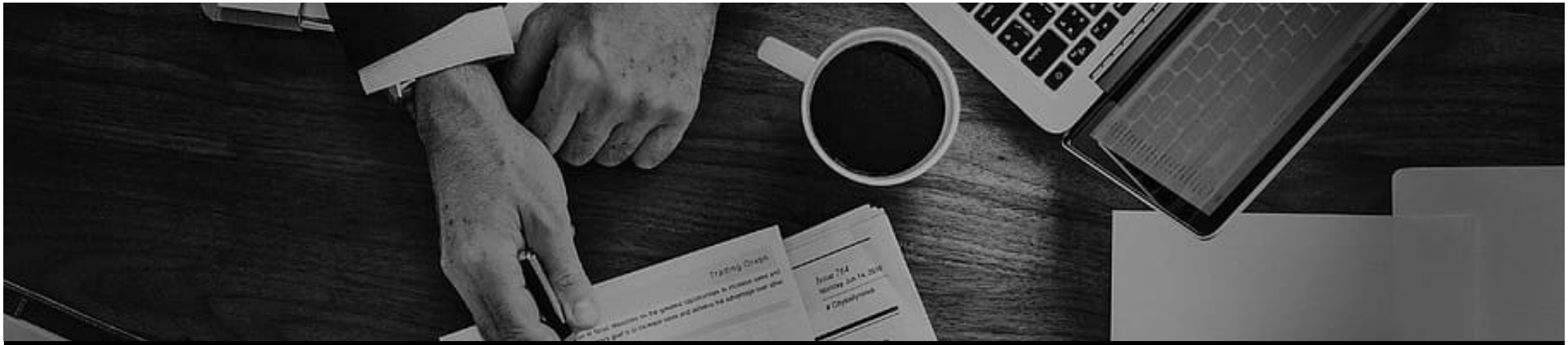
Lean Principles

- **Eliminate waste.**
- **Build quality in.**
- **Create knowledge.**
- **Defer commitment.**
- **Deliver fast.**
- **Respect people.**
- **Optimize the whole**

Six Sigma

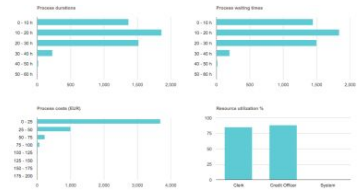
Six Sigma is another set of practices that **originate from manufacturing**, in particular from **engineering and production practices at Motorola**. The main characteristic of Six Sigma is its **focus on the minimization of defects (errors).** Six Sigma places a strong emphasis on **measuring the output of processes or activities**, especially in terms of **quality**. Six Sigma encourages managers to systematically compare the effects of improvement initiatives on the outputs.

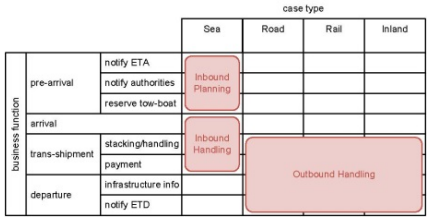
In practice, Six Sigma is not necessarily applied alone, but in conjunction with other approaches. In particular, a popular approach is to blend the philosophy of Lean with the techniques of Six Sigma, leading to an approach known as **Lean Six Sigma**. Nowadays, many of the techniques of Six Sigma are commonly applied in BPM as well.

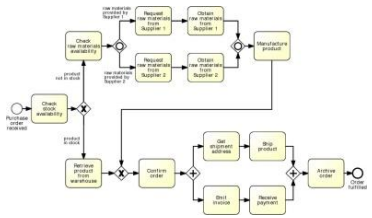


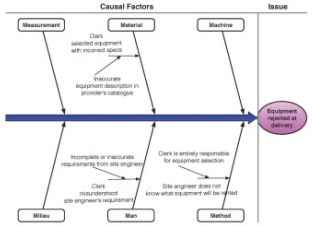
Business Process Management Life Cycle

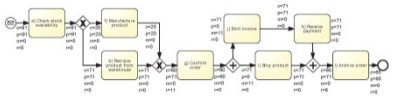
The BPM lifecycle

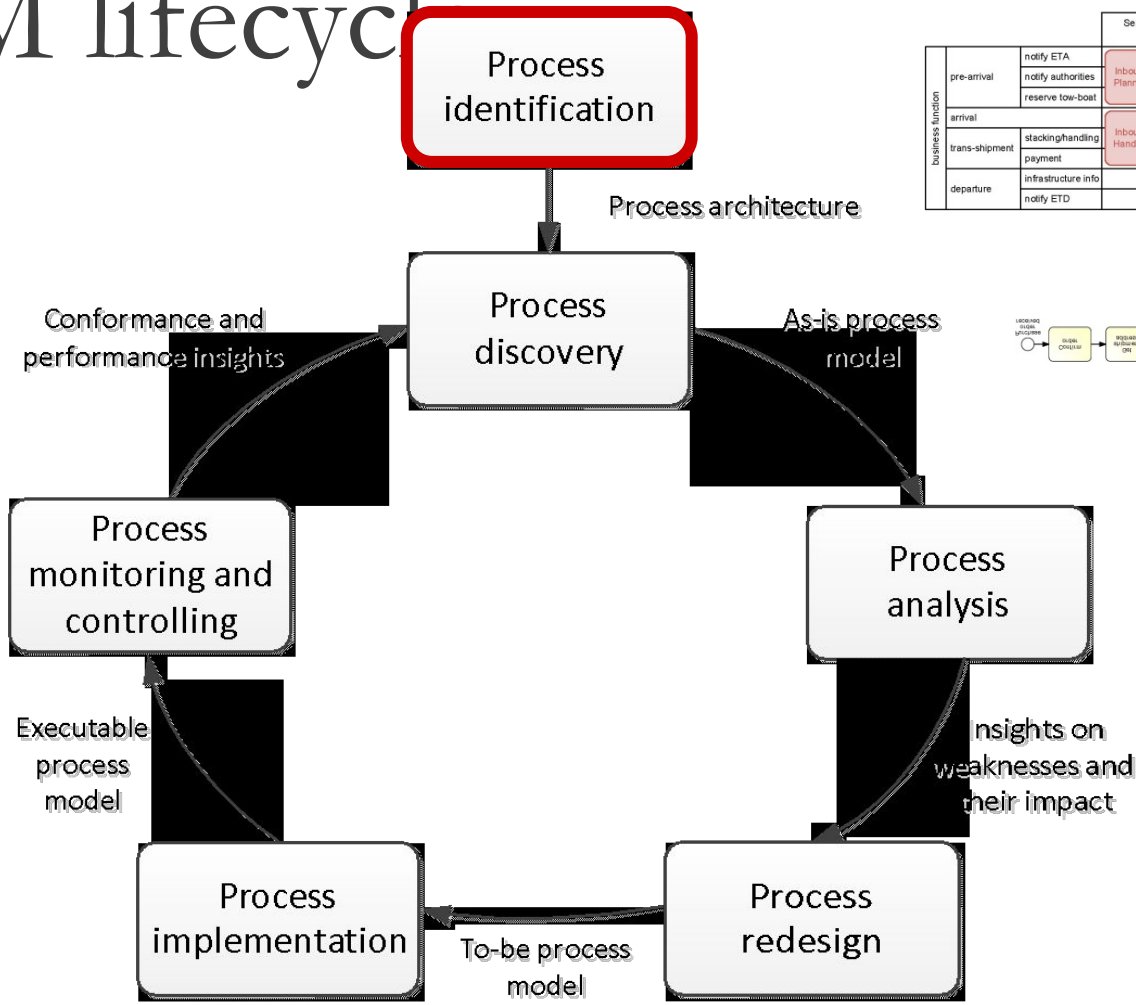












BPM Lifecycle Activities

5 Step Activities

Designing

Modelling

Executing/implementing

Monitoring & Controlling

Optimization

6/6+ Step Activities

- Analyze
- Model
- Implement
- Monitor
- Manage
- Automate

Design

Process Design encompasses both the identification of existing processes and the design of "to-be" processes.

The aim is to ensure that a correct and efficient theoretical design is prepared.

The proposed improvement could be in human-to-human, human-to-system, and system-to-system workflows, and might target regulatory, market, or competitive challenges faced by the businesses.

Design

Process Identification - In this phase, a business problem is posed, processes relevant to the problem being addressed are identified, delimited and related to each other. The outcome of process identification is a new or updated process architecture that provides an overall view of the processes in an organization and their relationships.

Process Discovery - (also called as-is process modeling). Here, the current state of each of the relevant processes is documented, typically in the form of one or several as-is process models

Process Analysis - In this phase, issues associated to the as-is process are identified, documented and whenever possible quantified using performance measures. The output of this phase is a structured collection of issues. These issues are typically prioritized in terms of their impact, and sometimes also in terms of the estimated effort required to resolve them

Process Redesigning - (also called process improvement). The goal of this phase is to identify changes to the process that would help to address the issues identified in the previous phase and allow the organization to meet its performance objectives. To this end, multiple change options are analyzed and compared in terms of the chosen performance measures. This entails that process redesign and process analysis go hand-in-hand: As new change options are proposed, they are analyzed using process analysis techniques. Eventually, the most promising change options are combined, leading to a redesigned process.

Modeling

Modeling takes the theoretical design and introduces combinations of variables (e.g., changes in rent or materials costs, which determine how the process might operate under different circumstances).

The output of this phase is typically a digital form of to-be process model, which serves as a basis for the next phase.

BPM modeling or process modeling can also be defined as the graphical illustration that depicts the steps in a process.

It also involves running "what-if analysis" on the processes: "What if I have 75% of resources to do the same task?" "What if I want to do the same job for 80% of the current cost?".

Execution/Implementation

Organizational Change Management

Process Automation is:

- to develop/purchase an application that executes the required steps of the process
- to use a combination of software and human intervention - more complex => difficult documentation process.

Developed software enables the full BP to be defined in a computer language directly executed by the computer. The system will use services in connected applications to perform business operations, or, when a step is too complex to automate, will ask for human input.

Monitoring & Controlling

Collection of relevant data (from redesigned process)

Determine how well is the process performing

Identification of bottlenecks , recurrent errors/deviations w.r.t intended behavior

Correction of identified errors

Cycle would be repeated continuously as new errors will arise in the process.

Tracking of individual processes, so, that information on their state can be easily seen, and statistics on the performance of one or more processes can be provided.

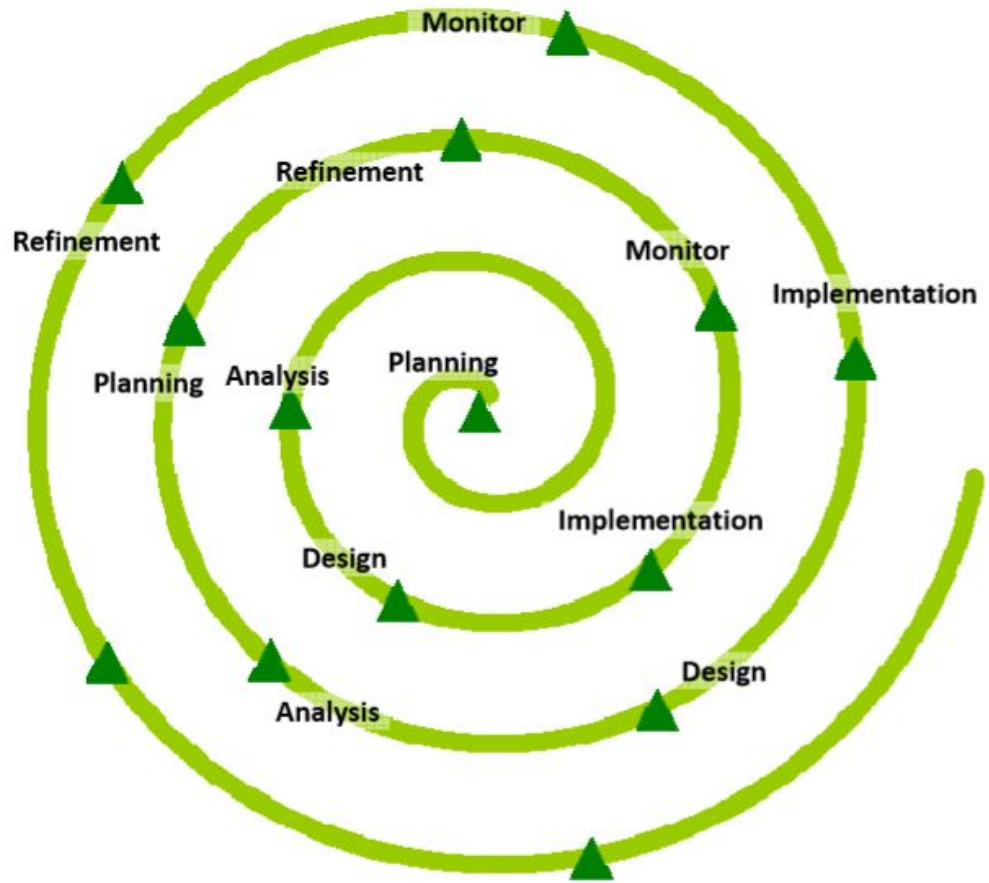
The degree of monitoring depends on what information the business wants to evaluate and analyze and how business wants it to be monitored, in real-time, near real-time or ad-hoc.

Optimization

Process optimization includes retrieving process performance information from modeling or monitoring phase; identifying the potential or actual bottlenecks and the potential opportunities for cost savings or other improvements; and then, applying those enhancements in the design of the process.

BPM Lifecycle

- Iterative, phased set of activities



Importance of BPM

Allows organizational leaders to understand the various processes that happen within their organization, analyse them from end to end and improve them on an ongoing basis

Allows organizational leaders to optimize end-to-end business processes to have a greater impact on outcomes

Well-executed BPM can reduce waste, cut down on errors, save time and generate better services and products

Well-executed BPM continually delivers improvements

Realize bigger organizational goals

Move toward digital transformation

Business Process Management Examples

HR Department

- If the organization's onboarding process is too complex and chaotic?
- Is HR department asking the candidates to fill out paper forms that make them exhausted?

Sales Department

- Spends significant amount of time in coordinating with the Accounts Receivable team to get sales invoices approved. A small typo can ruin the lives of salespeople

Types of BPM Systems

Human-Centric BPM

- Primarily executed by humans; have a lot of approvals and tasks performed by individuals

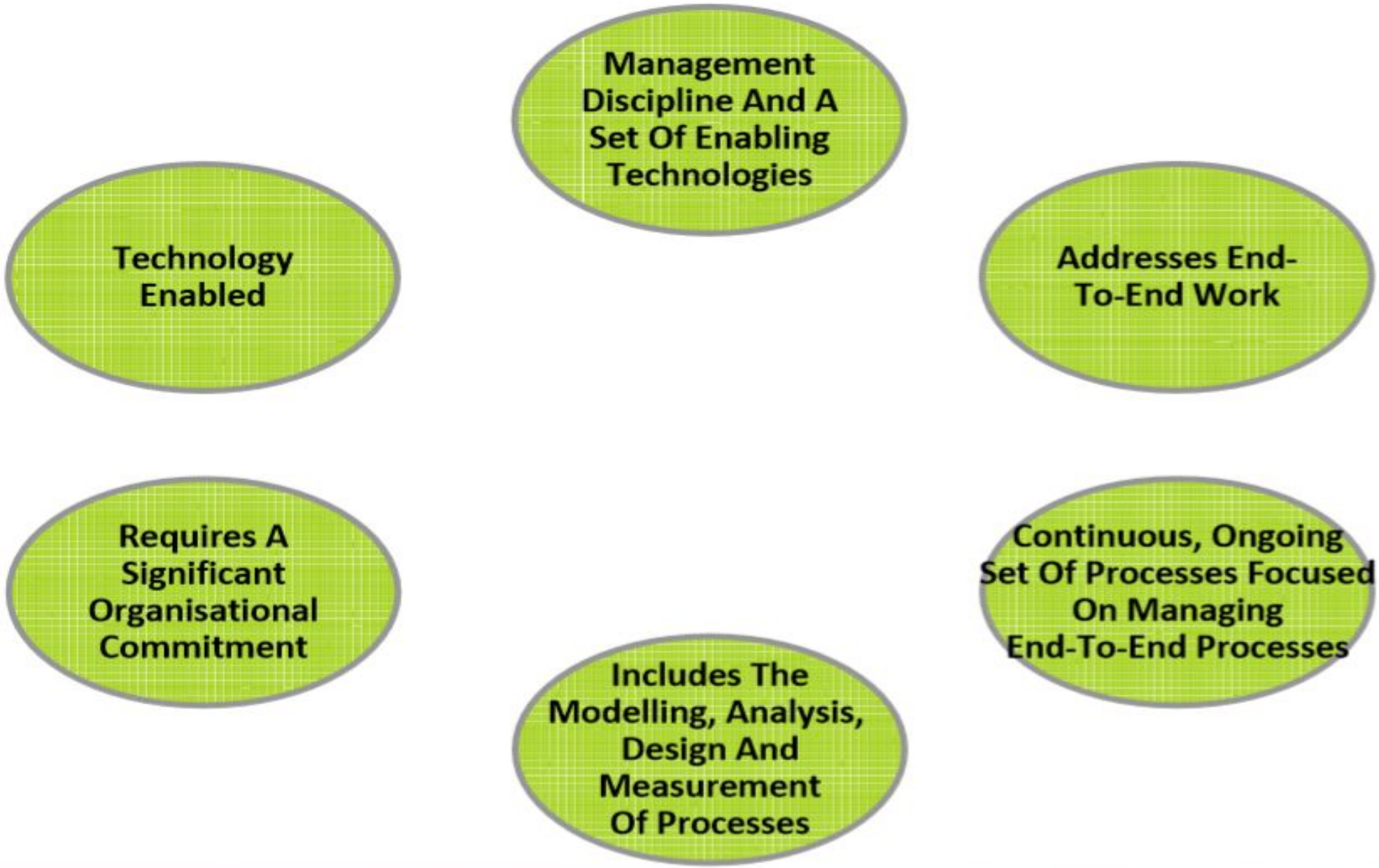
Document-Centric BPM

- When a document e.g., a contract or agreement is at the heart of the process. Enable routing, formatting, verifying, and getting the document signed as the tasks pass along the workflow

Integration-Centric BPM

- Handles processes that primarily jump between existing systems e.g., HRMS, CRM, ERP without much human involvement. BPM & SOA

BPM Core Concepts



BPM Core Concepts

BPM is a management discipline and a set of enabling technologies

BPM addresses end-to-end work and distinguishes between sets of subprocesses, tasks, activities and functions

BPM is a continuous, ongoing set of processes focused on managing an organization's end-to-end business processes

BPM includes the modelling, analysis, design and measurement of an organization's business processes

BPM requires a significant organizational commitment, often introducing new roles, responsibilities and structures to traditional functionally oriented organizations

BPM is technology enabled with tools for visual modelling, simulation, automation, integration, control and monitoring of business processes and the information systems which support these processes

Management Discipline and Enabling Technologies

BPM acronym used loosely and its meaning varies depending upon the context

Software companies often refer to BPM to describe the capabilities of a particular product or technology

Practitioners, management consultants and academics typically discuss the process and management discipline of BPM

Firstly BPM is a management discipline and process for managing an organization's business processes

Enabling technology is meaningless without the management disciplines and processes for exploiting the technology

BPM involves managing the end-to-end work organizations perform to create value for their customers

Performance of this work is essentially how organizations fulfill their mission

Vendors have created application suites which help enable organizations to better manage their business processes

Tools to visually design and model business processes −Simulate and test business processes, automate, control and measure business processes −Provide feedback and reporting on process performance

Some vendors have combined these into integrated business process management suites Most large organizations have a significant investment into a number of legacy systems Designed to support specific functions

In order to manage the end-to-end work involved in business processes, a BPMS must be able to integrate with legacy systems in order to control work, get information or measure performance

Common framework for how these technologies are deployed is most often referred to as a Service Oriented Architecture (SOA)

Standardizing on a specific set of open technologies commonly referred to as web services −By leveraging web services in a SOA, organizations can build and manage end-to-end business processes across organizational silos and their legacy systems

Process Planning and Strategy

BPM lifecycle begins with developing a process driven strategy and plan for the organization

Sets the strategy and direction for the BPM process

Plan starts with an understanding of organizational strategies and goals

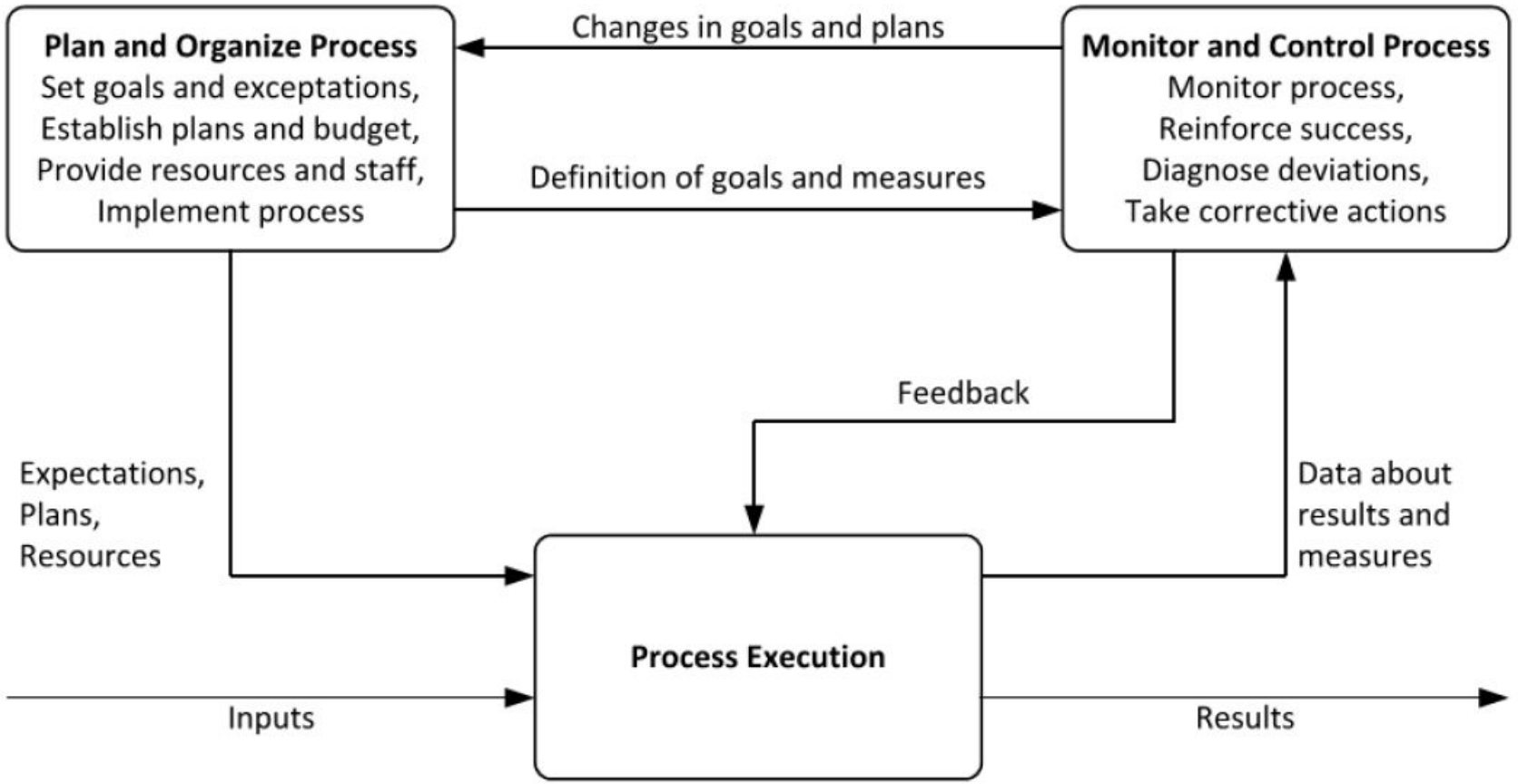
Designed to ensure a compelling value proposition for customers

Plan provides structure and direction for continued customer centric process management

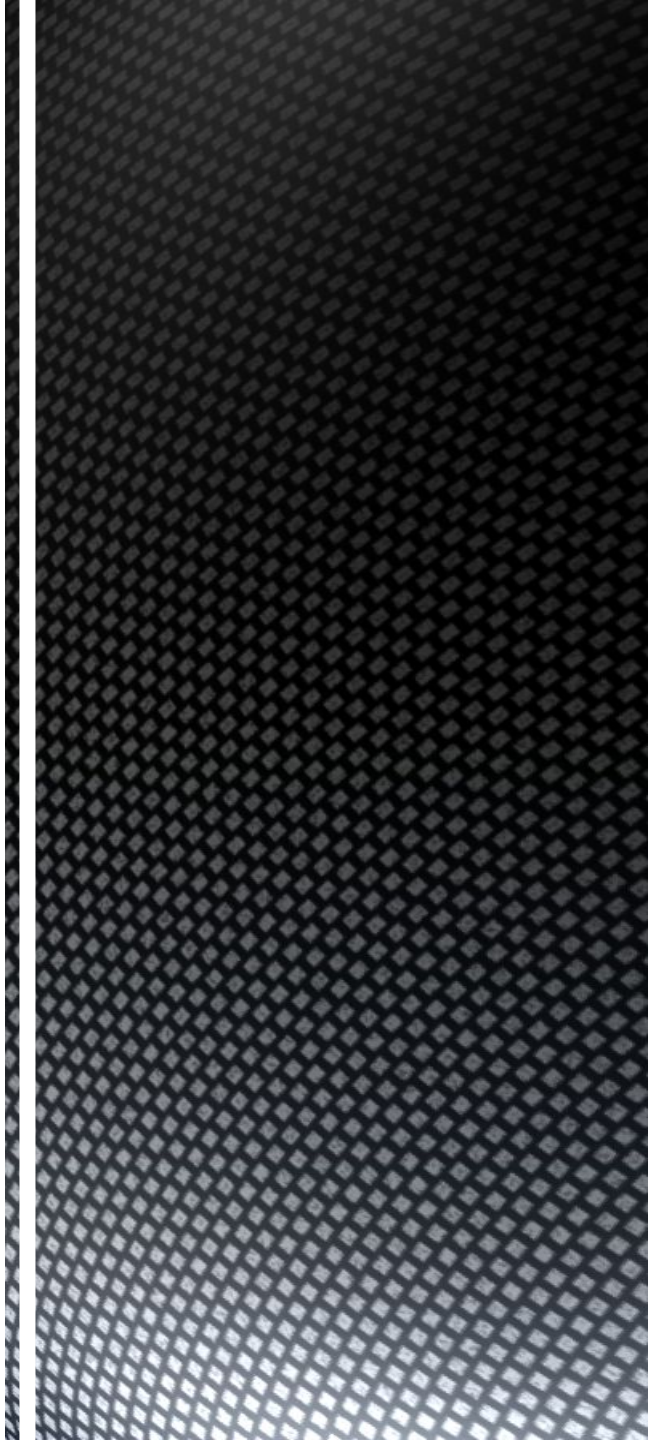
Provides a foundation for a holistic BPM approach to ensure the alignment with organizational strategy and the integration of strategy, people, processes and systems across functional boundaries

Identifies appropriate BPM organizational roles and responsibilities, executive sponsorship, goals and expected performances measures and methodologies

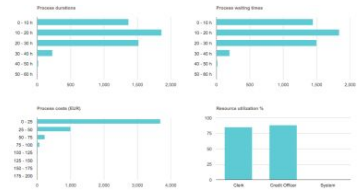
Process Owner

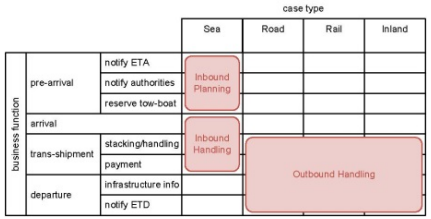


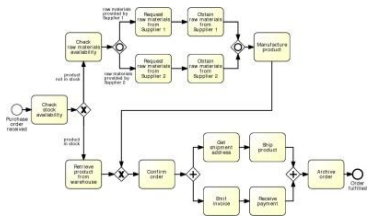
How to go about BPM?

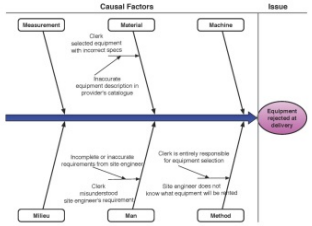


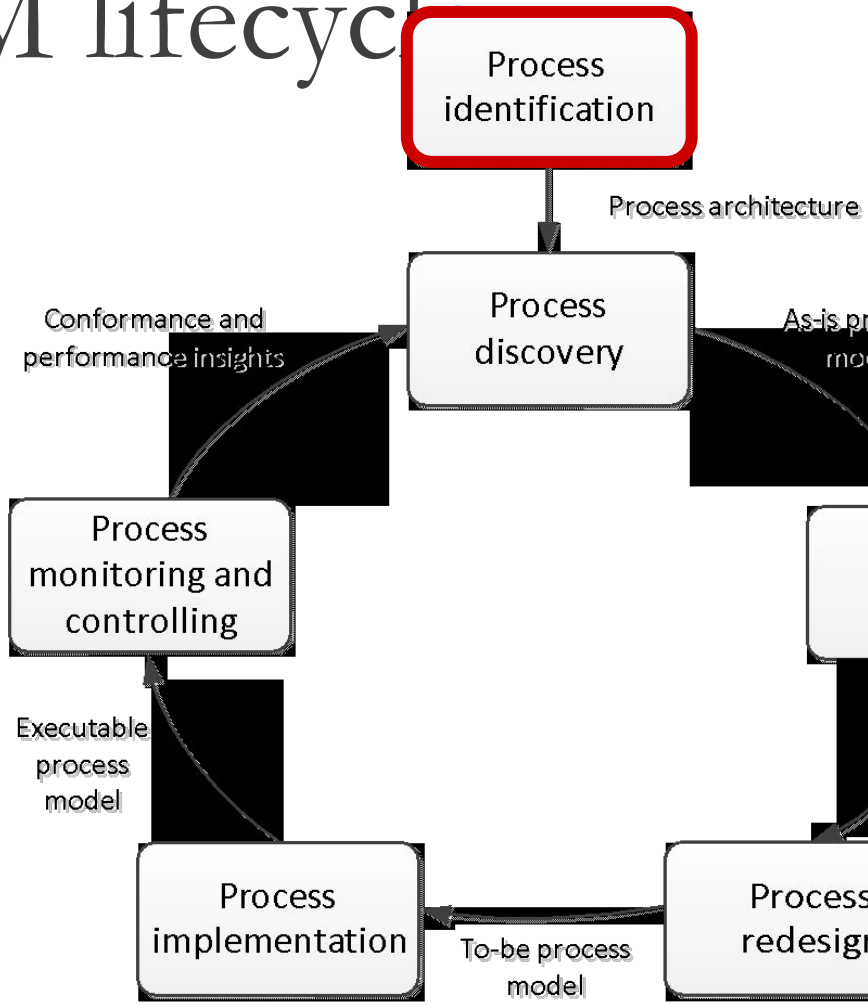
The BPM lifecycle

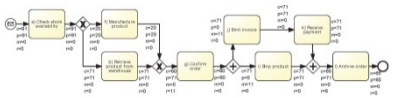












Process identification steps

1. Designation step
   - Enumerate main processes
   - Determine process scope

→ Process Architecture

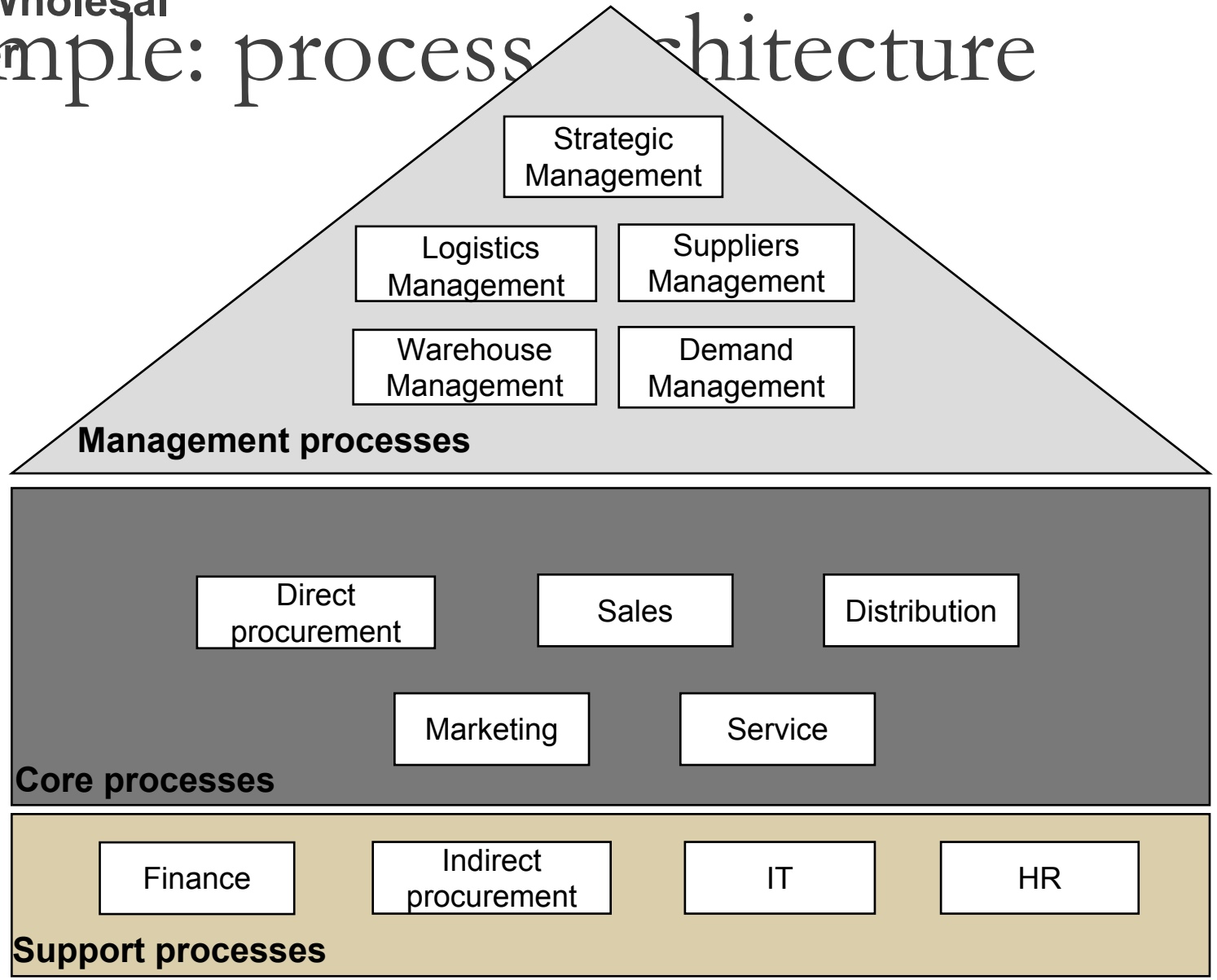
2. Prioritization step (aka Process selection)

   Prioritize processes based on:
   - Importance
   - Health
   - Feasibility

→ Prioritized Process Portfolio

After Davenport (1993)

Example: process architecture



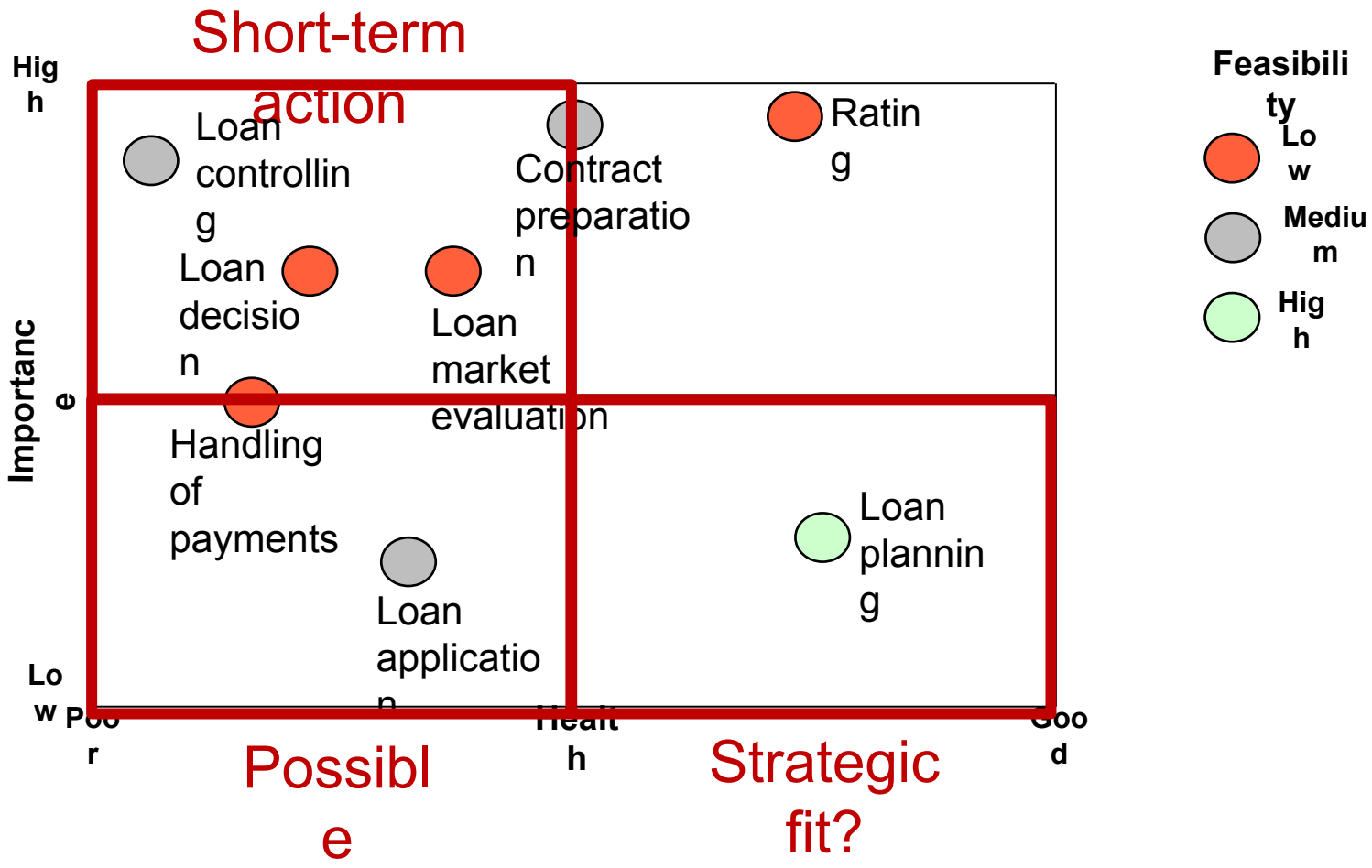
Prioritization (aka Process Selection)

1. **Importance**
   Which processes have greatest impact on the organization‘s strategic objectives?
2. **Health (or Dysfunction)**
   Which processes are in deepest trouble?
3. **Feasibility**
   Which processes are most susceptible to successful process management?

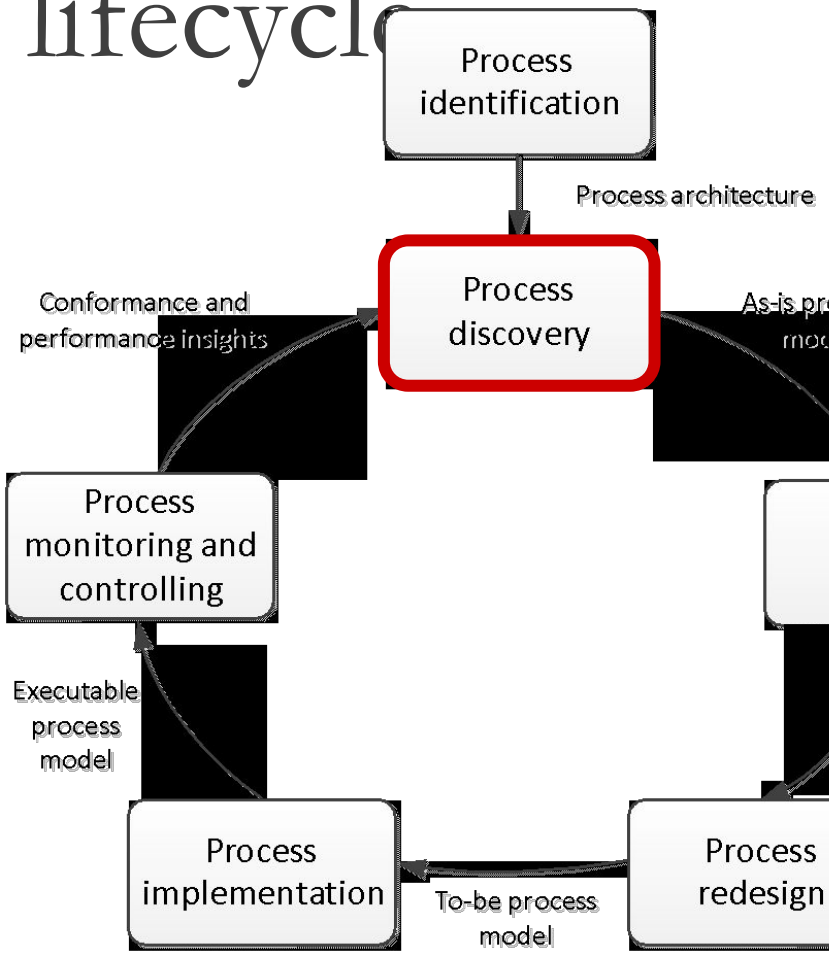
Prioritized process portfolio

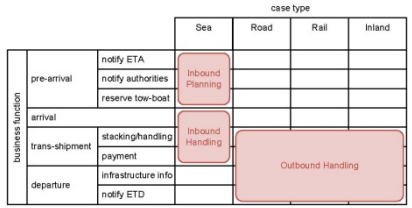
Hammer, Champy (1993)

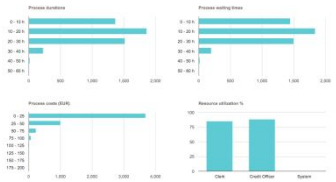
Example: prioritized process portfolio

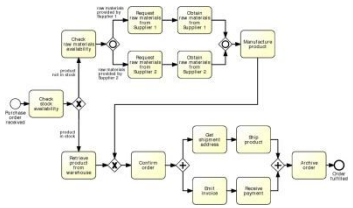


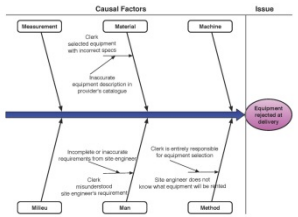
The BPM lifecycle

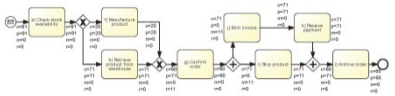






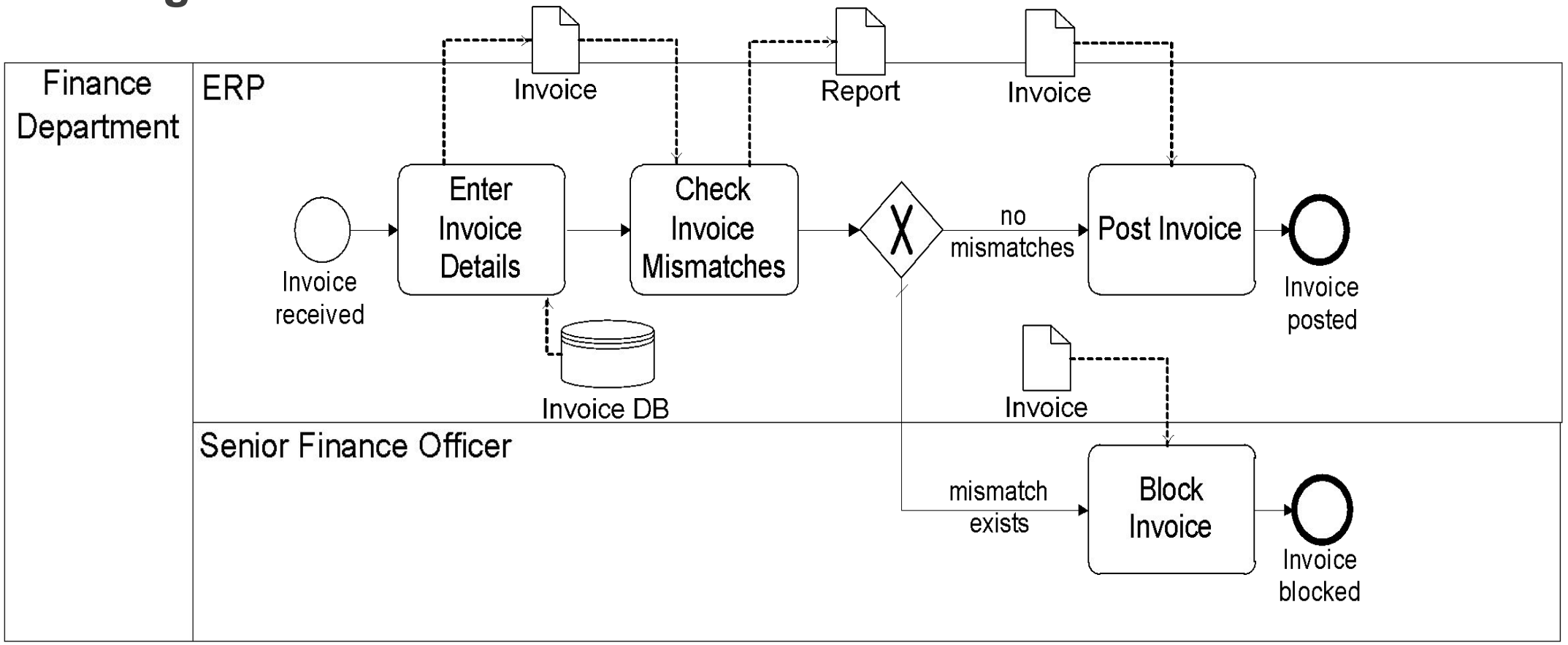




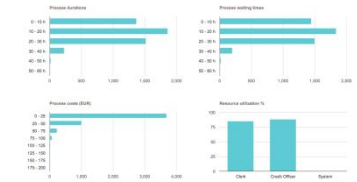


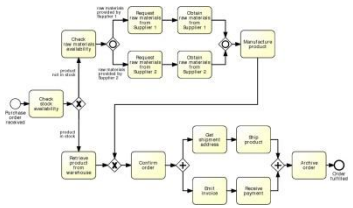
Business process model

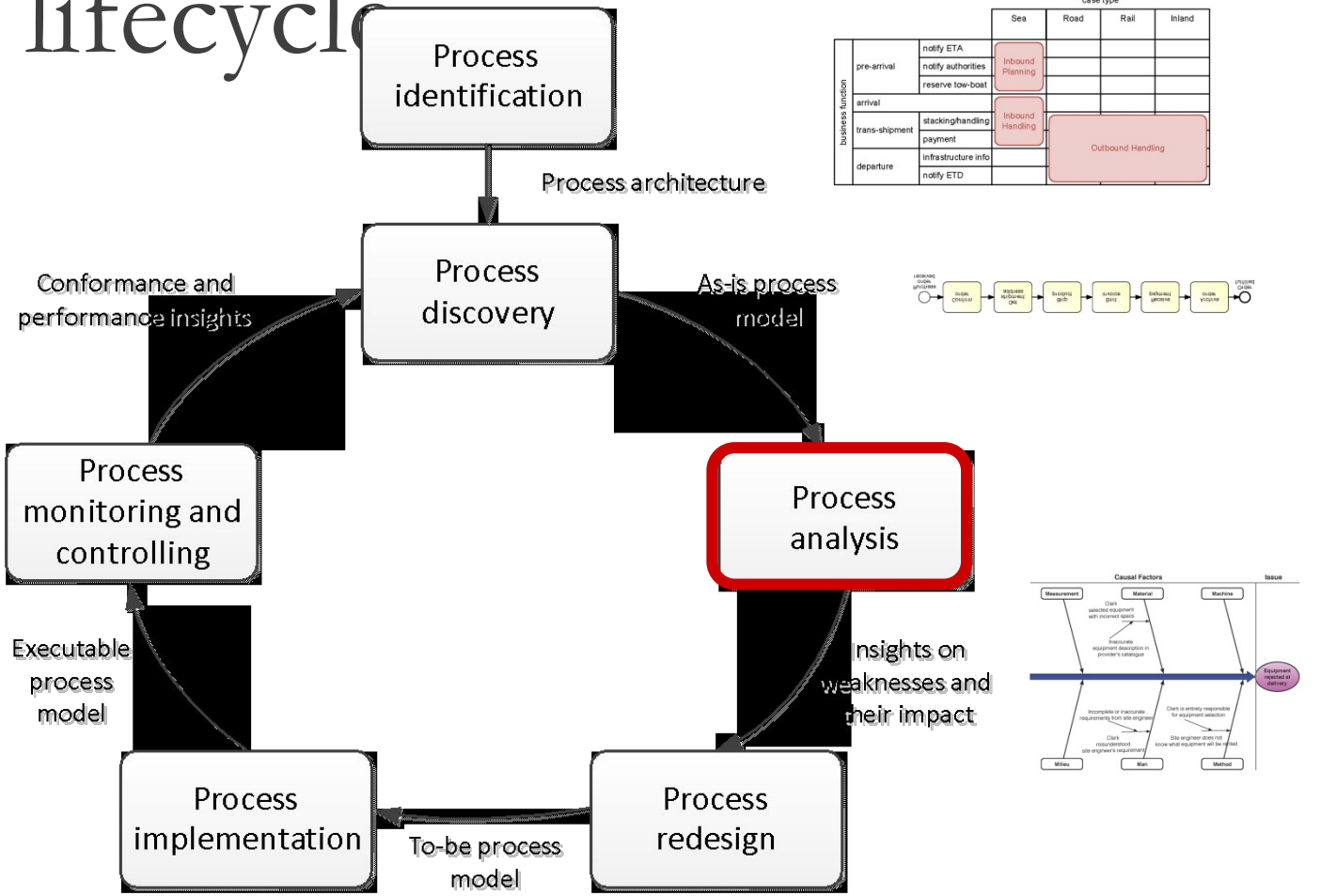
Invoice handling

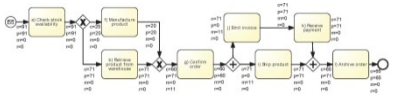


The BPM lifecycle



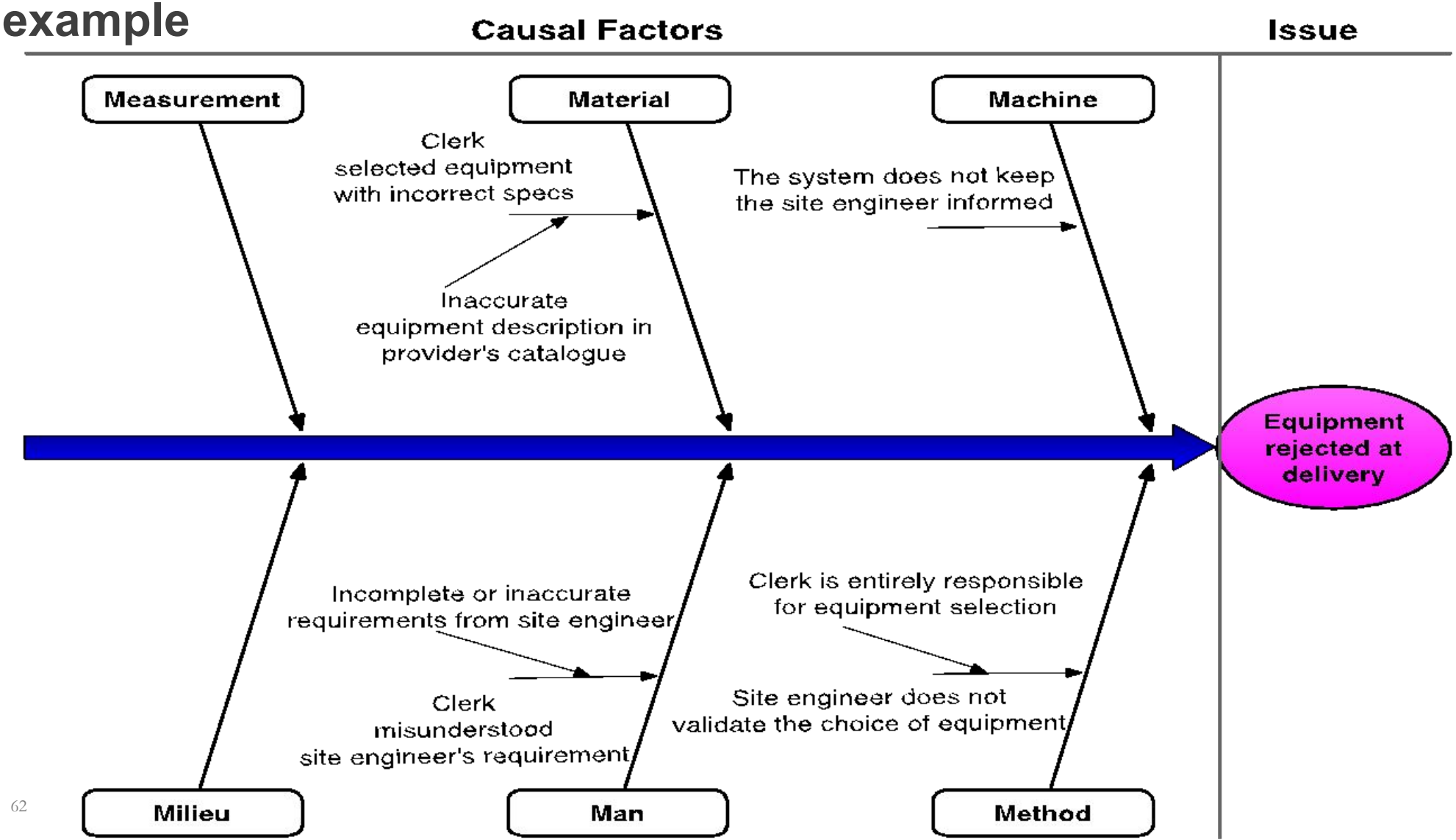






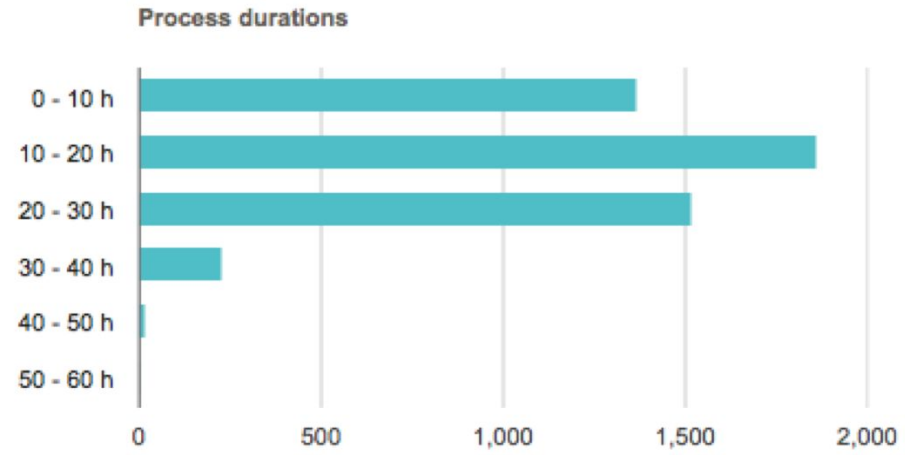
Qualitative process analysis

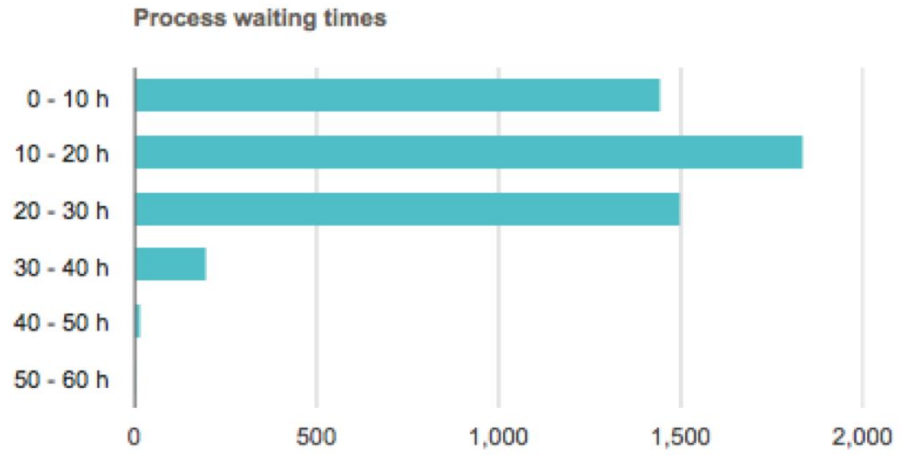
Root-cause analysis example

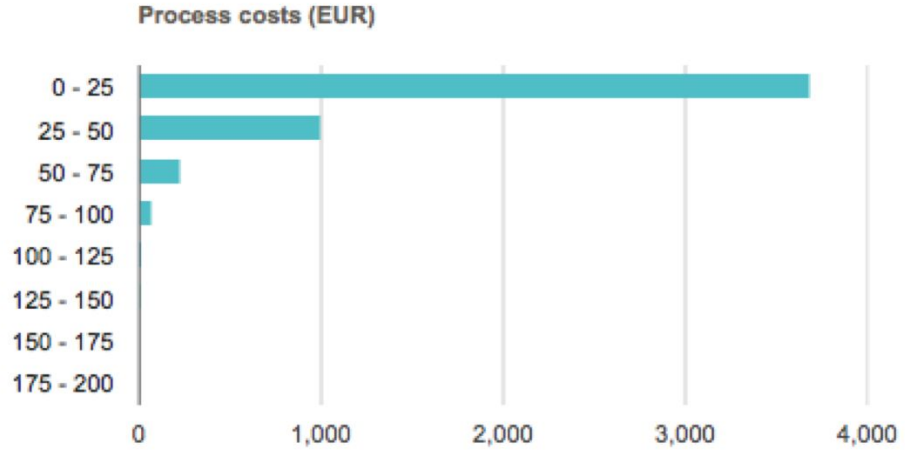


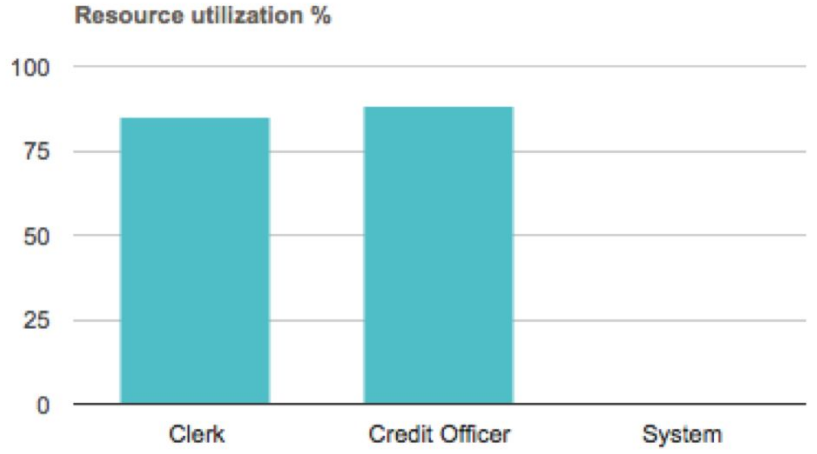
Quantitative process analysis

Process simulation

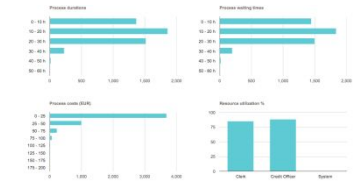


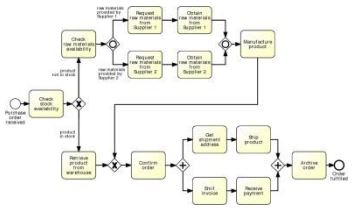


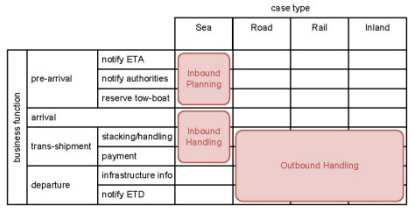


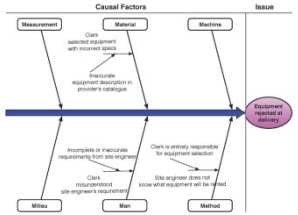


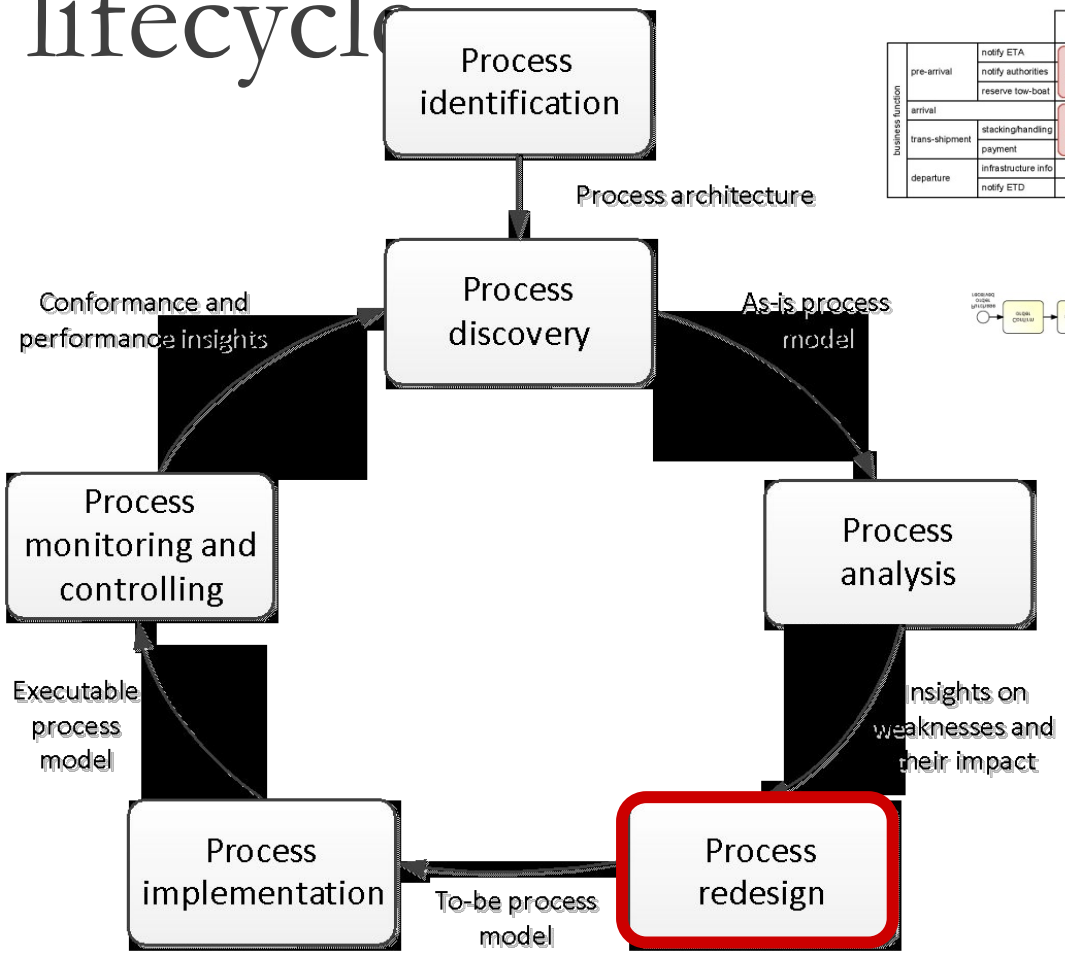
The BPM lifecycle

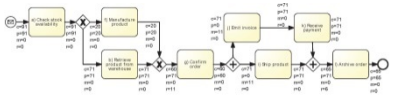






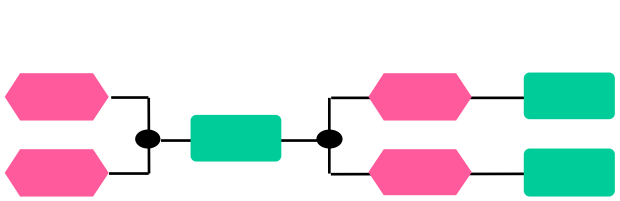




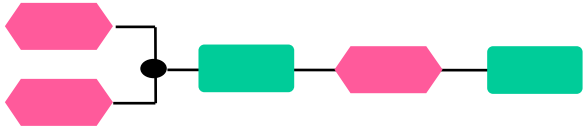


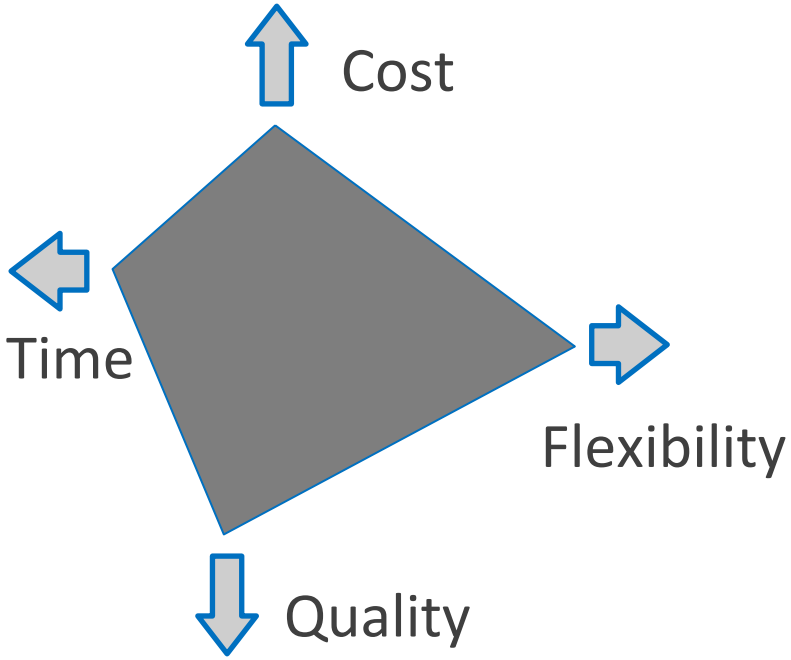
Process redesign

AS-IS process model

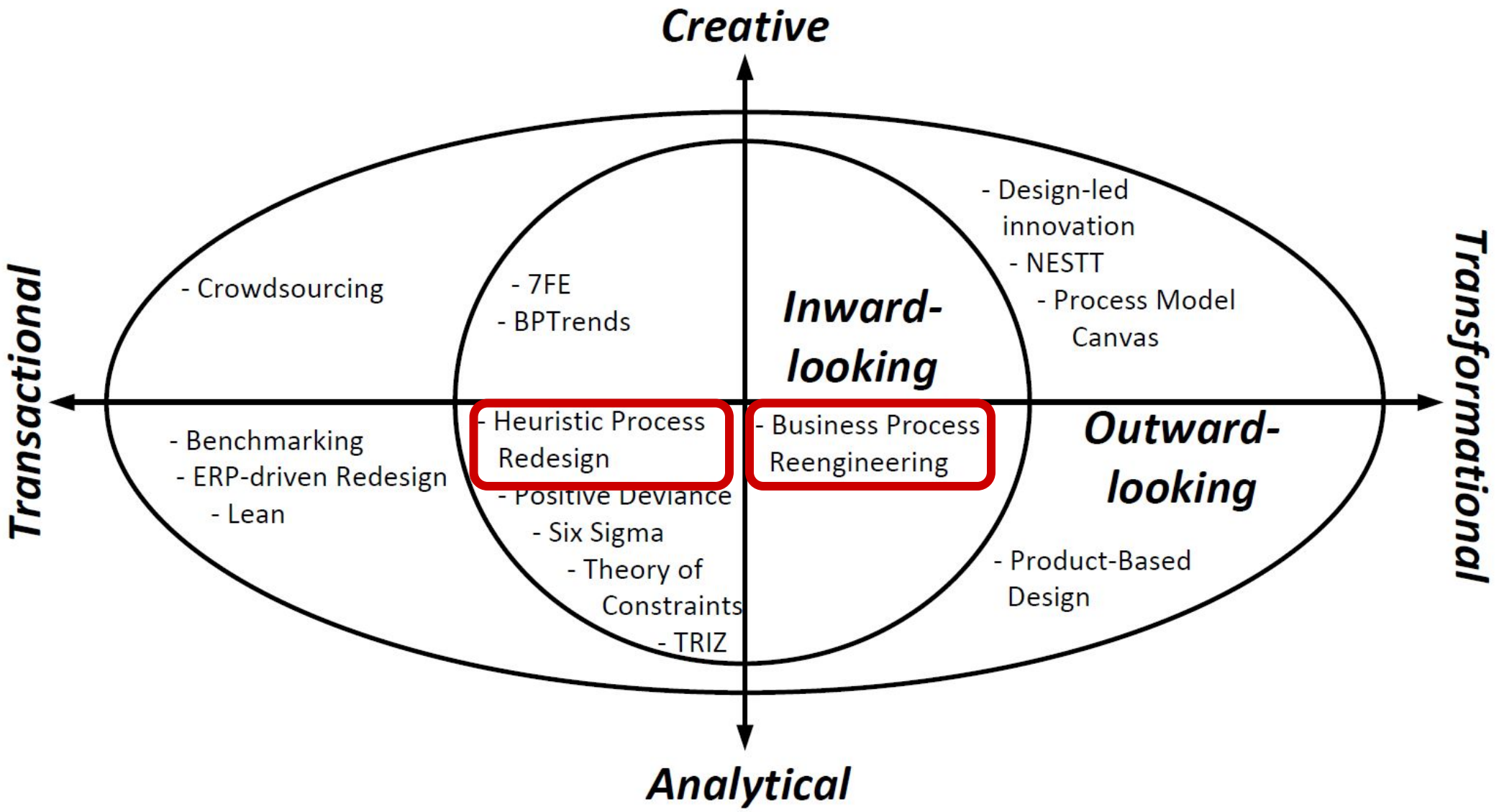


TO-BE process model

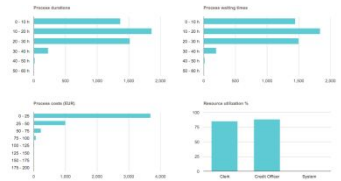


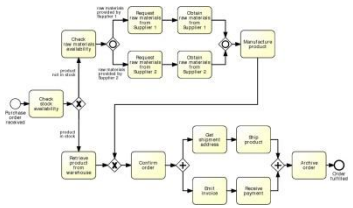


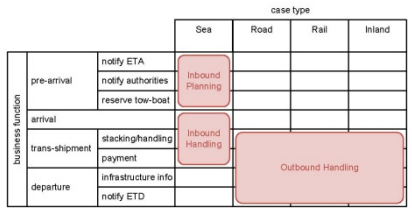
The Process Redesign Orbit

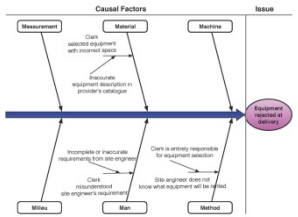


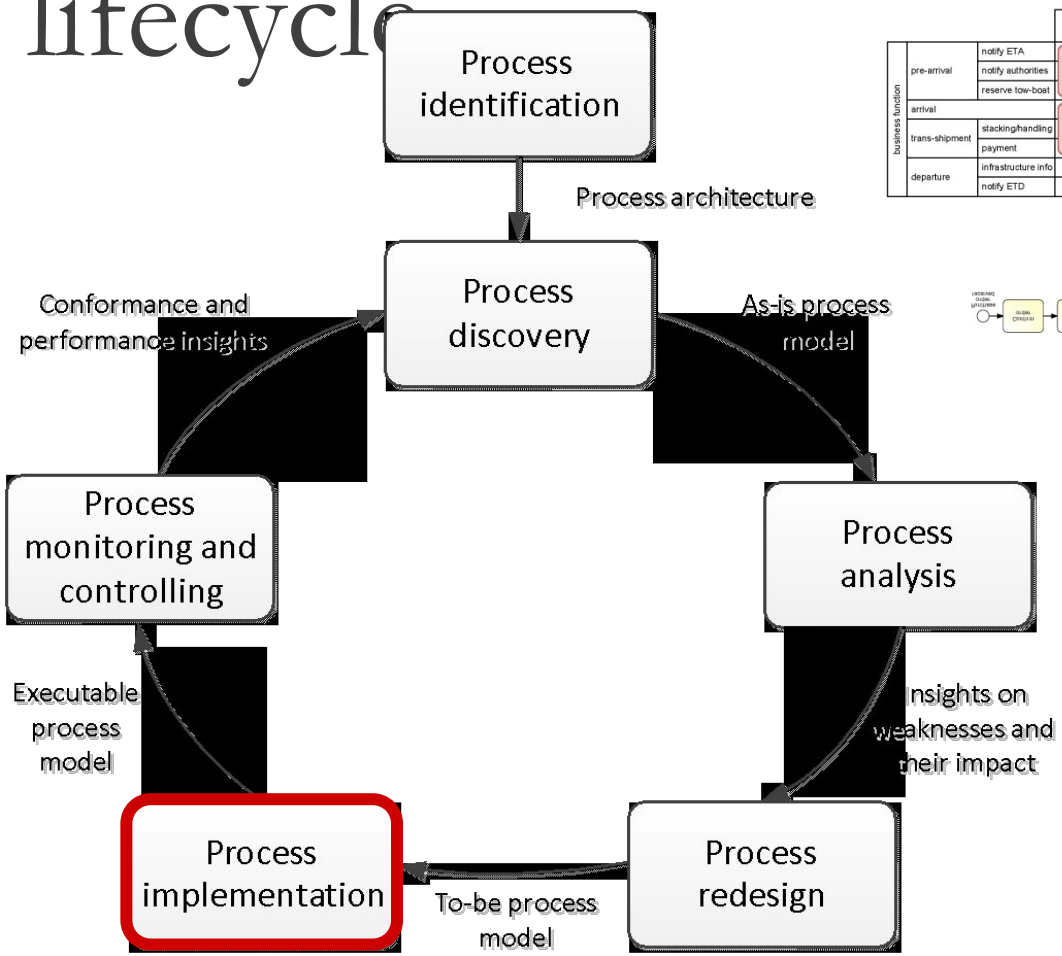
The BPM lifecycle

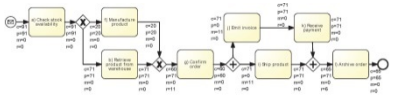




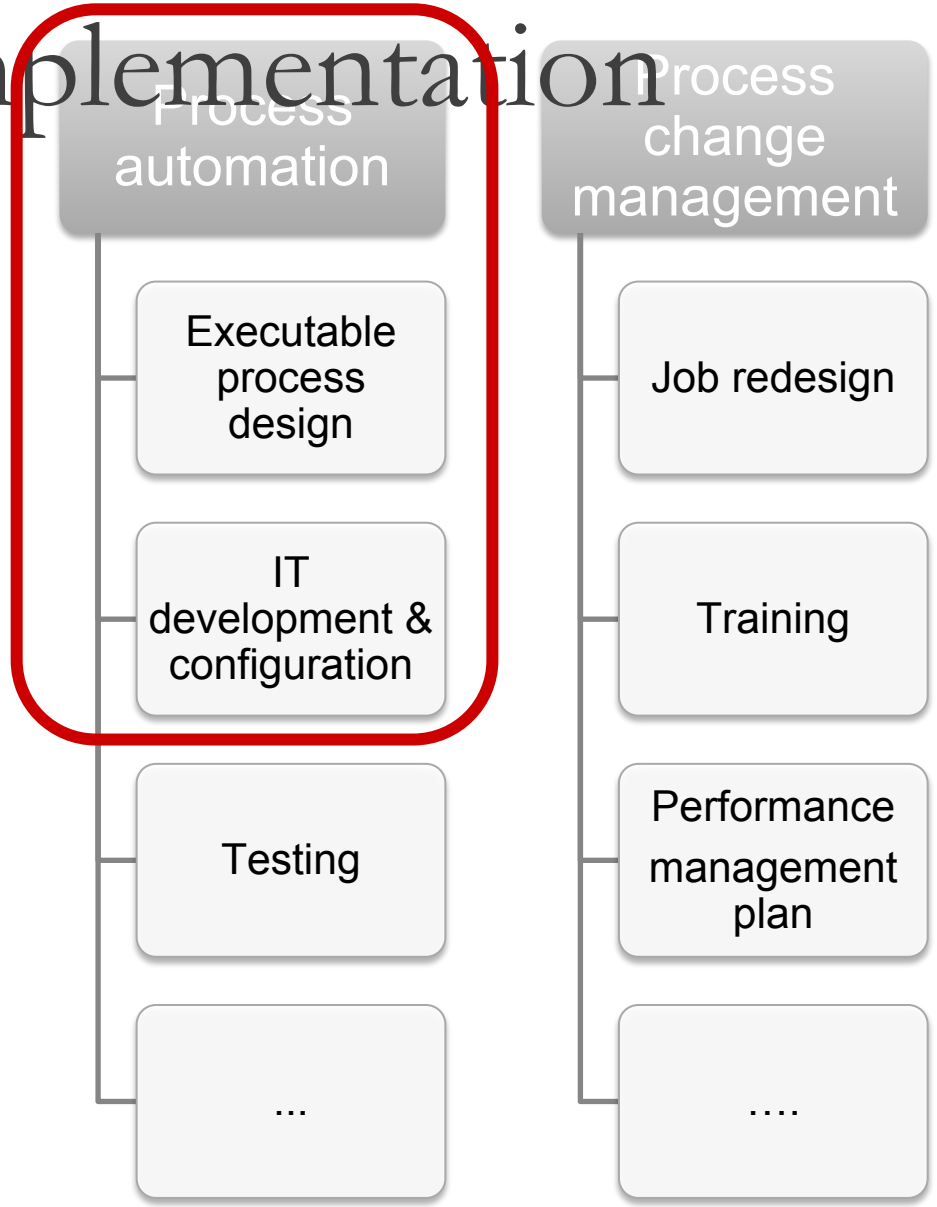




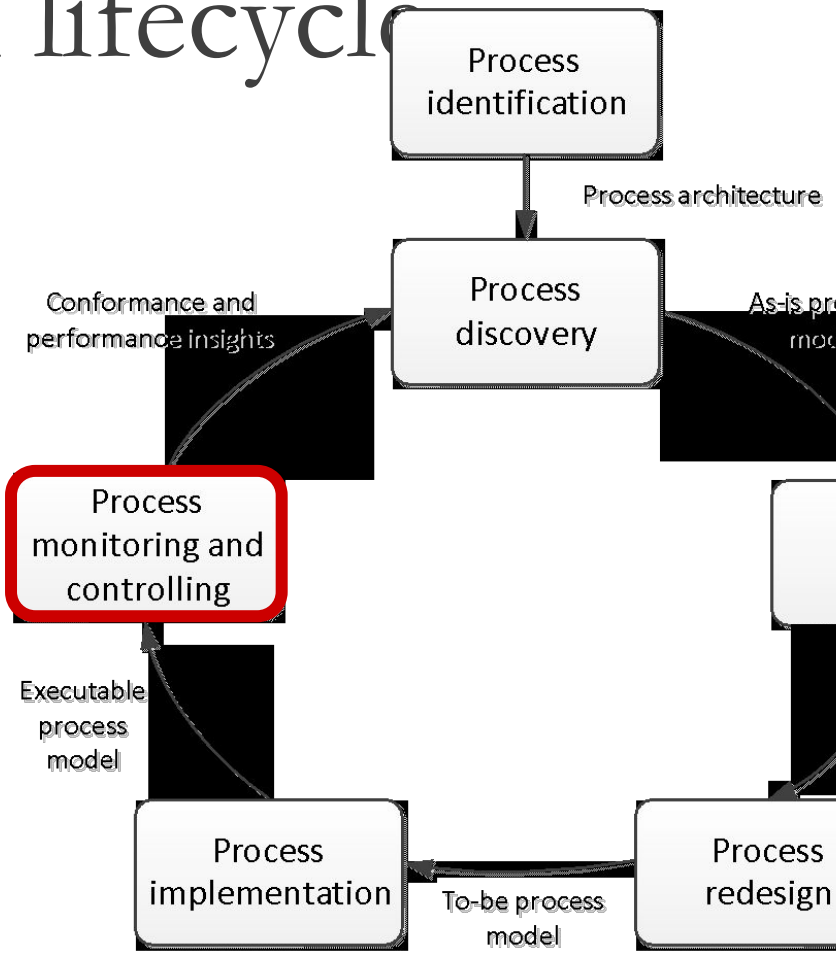


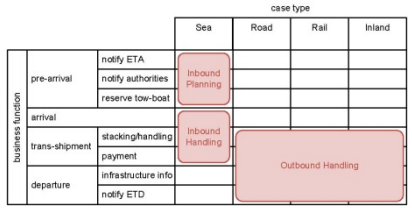


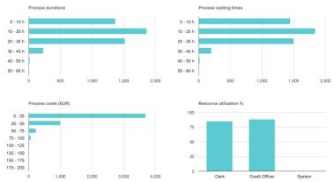
Process implementation

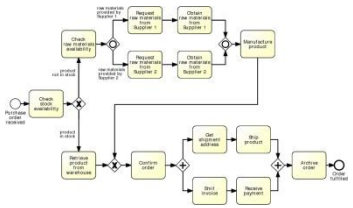


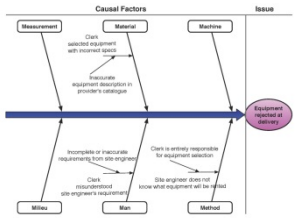
The BPM lifecycle

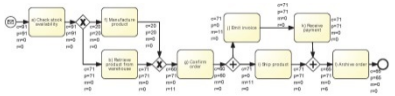




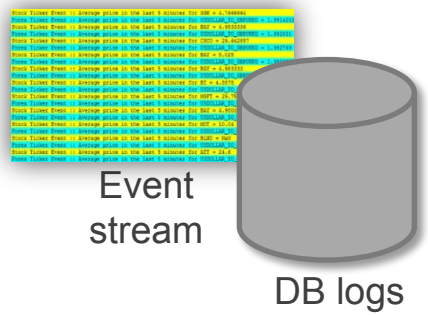




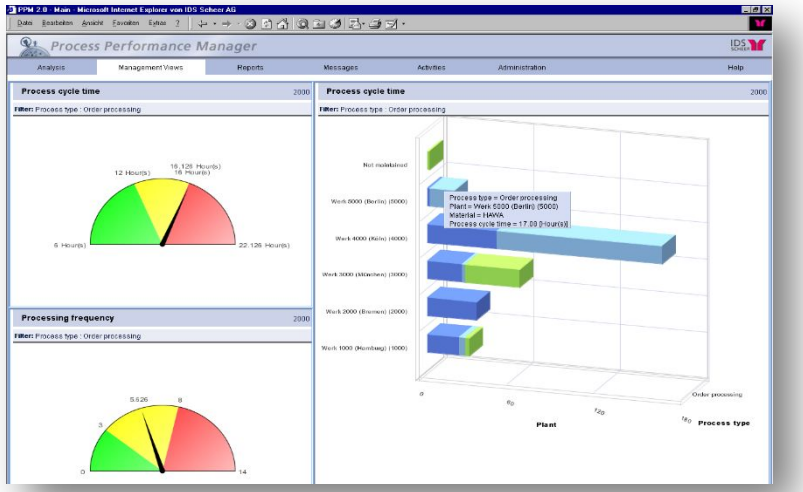




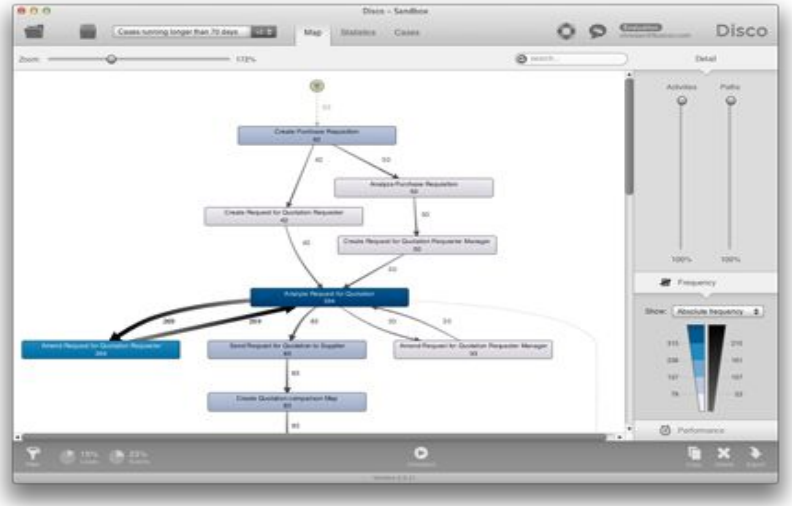
Process monitoring



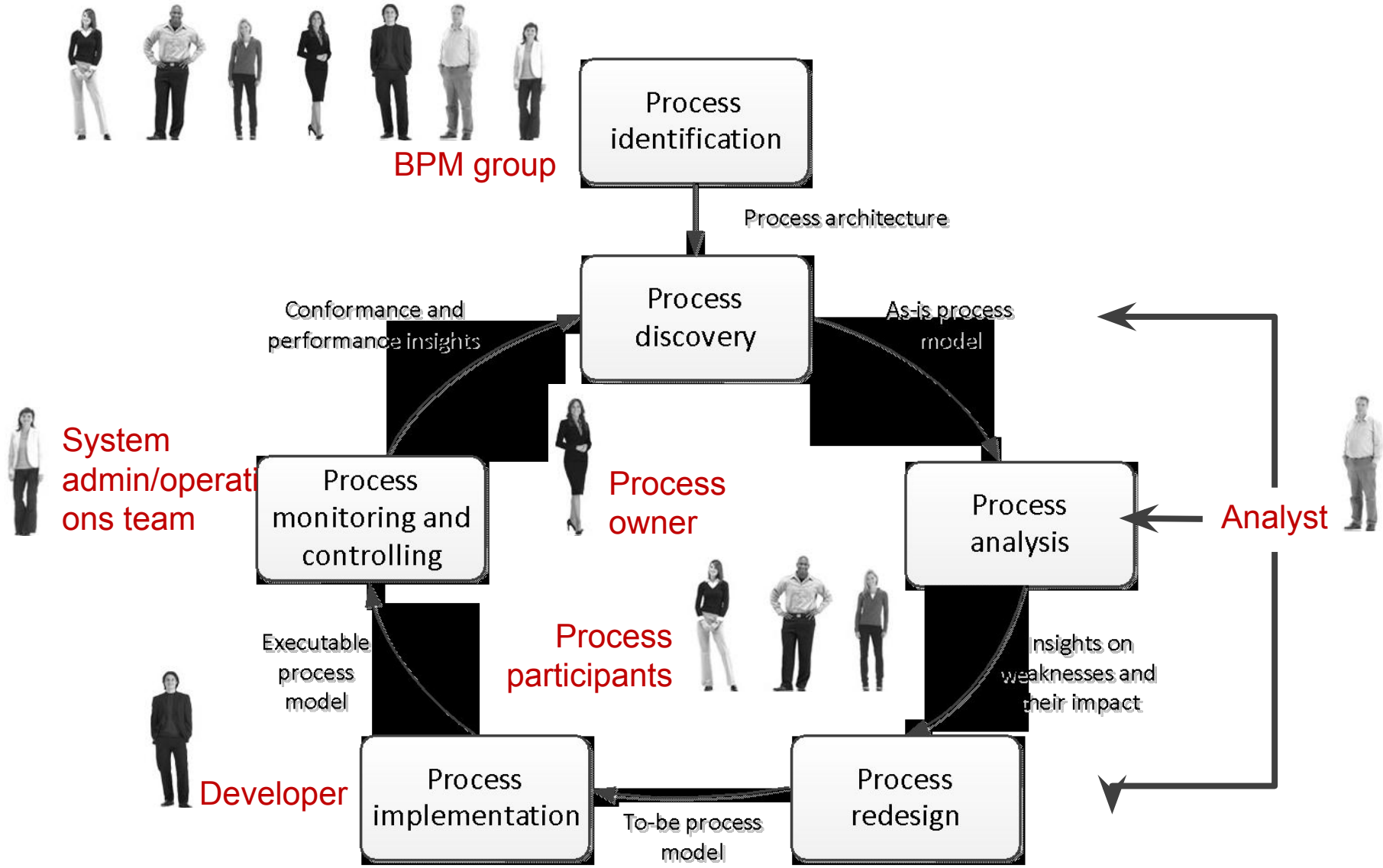
Dashboards, alerts & reports



Model-based analytics (p. mining)



Roles in the BPM lifecycle



Course structure