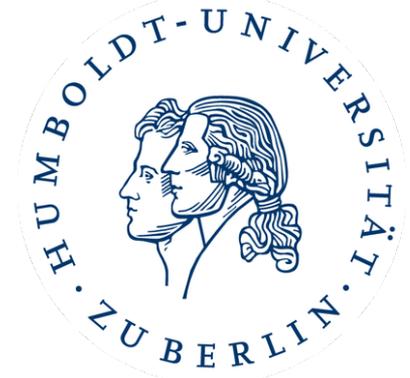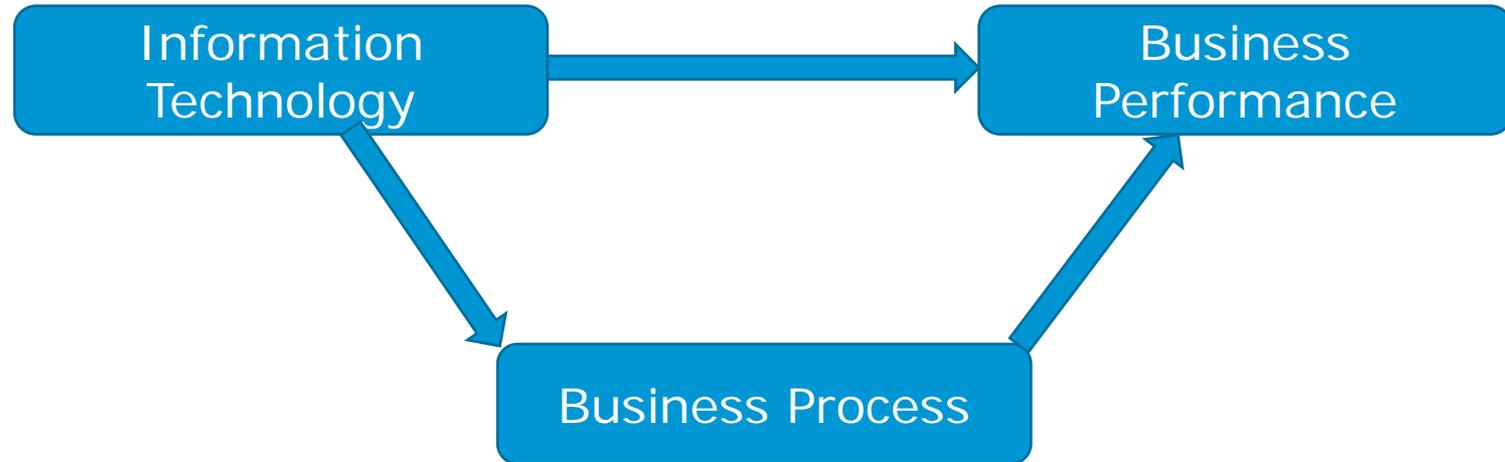# Introduction to Business Process Management

Jan Mendling, HU Berlin
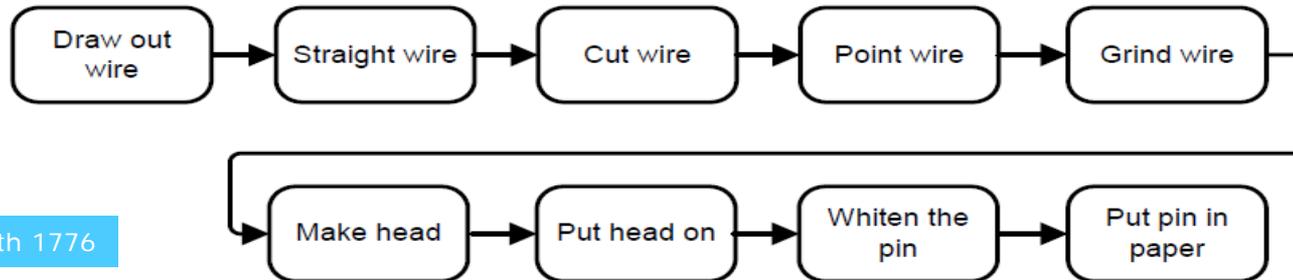
Why Talking about Business Processes?

What is a Business Process?

"To take an example, the trade of a pin-maker: But in the way in which this business is now carried on, it is divided into a number of branches:
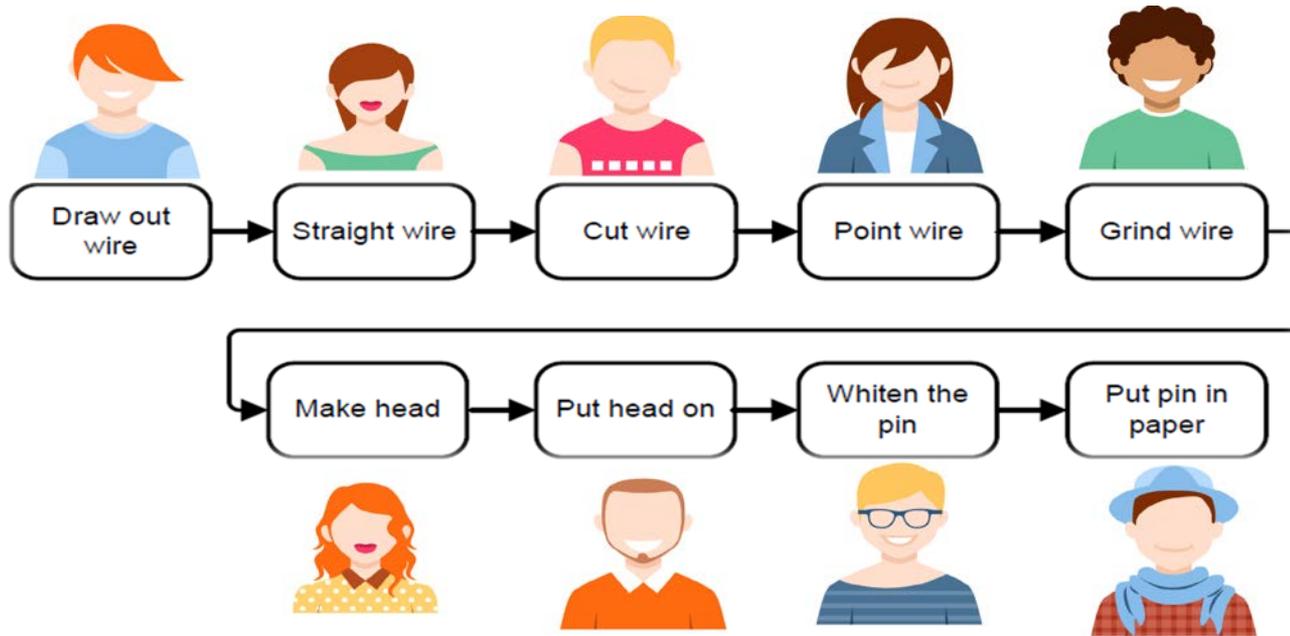
- One man draws out the wire; another straights it;
- a third cuts it; a fourth points it; a fifth grinds it at the
- top for receiving the head; to make the head requires
- three operations; to put it on is a peculiar business;
- to whiten the pins is another; to put them into the paper;

and the important business of making a pin is, in this
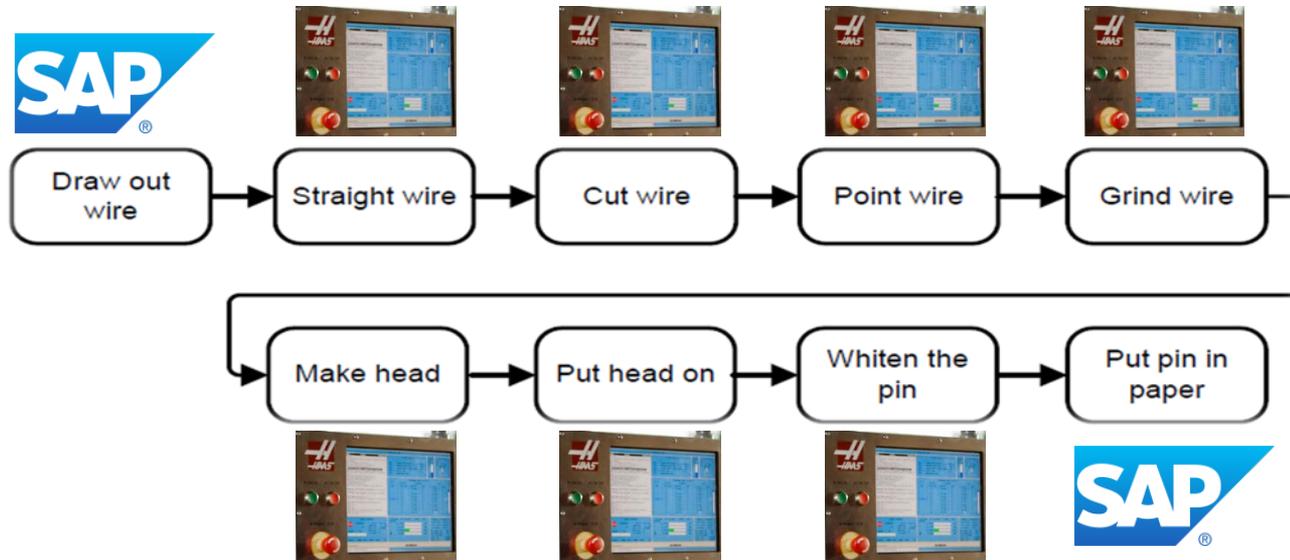
manner, divided into about eighteen distinct operations."
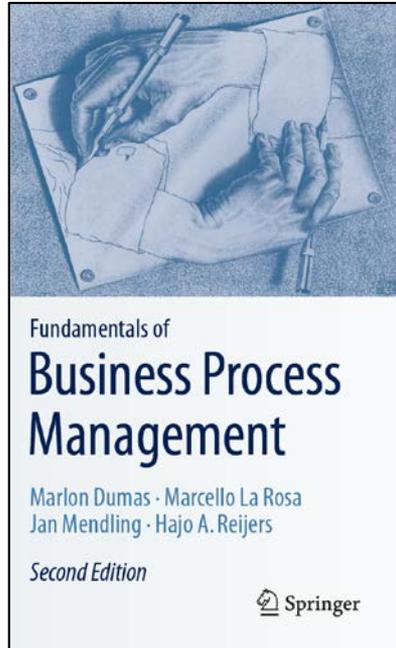
Smith 1776

Division of Labour

Draw out wire → Straight wire → Cut wire → Point wire → Grind wire → Make head → Put head on → Whiten the pin → Put pin in paper

Icons designed by Freepik

IT Support

Chapter 1: Introduction to BPM

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Definition of Business Process

A business process as a collection of inter-related events, activities, and decision points that involve a number of actors and objects, which collectively lead to an outcome that is of value to at least one customer.
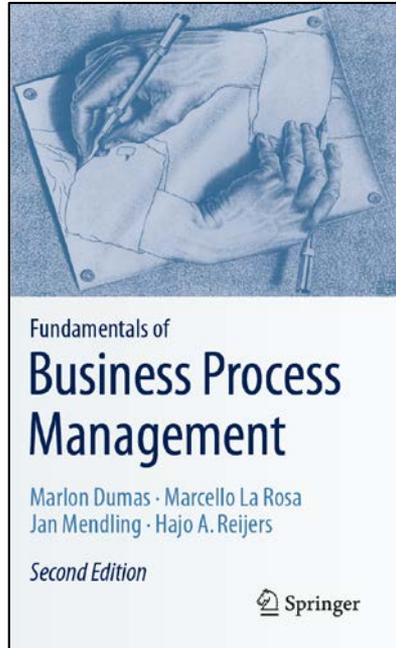
Ingredients of a Business Process
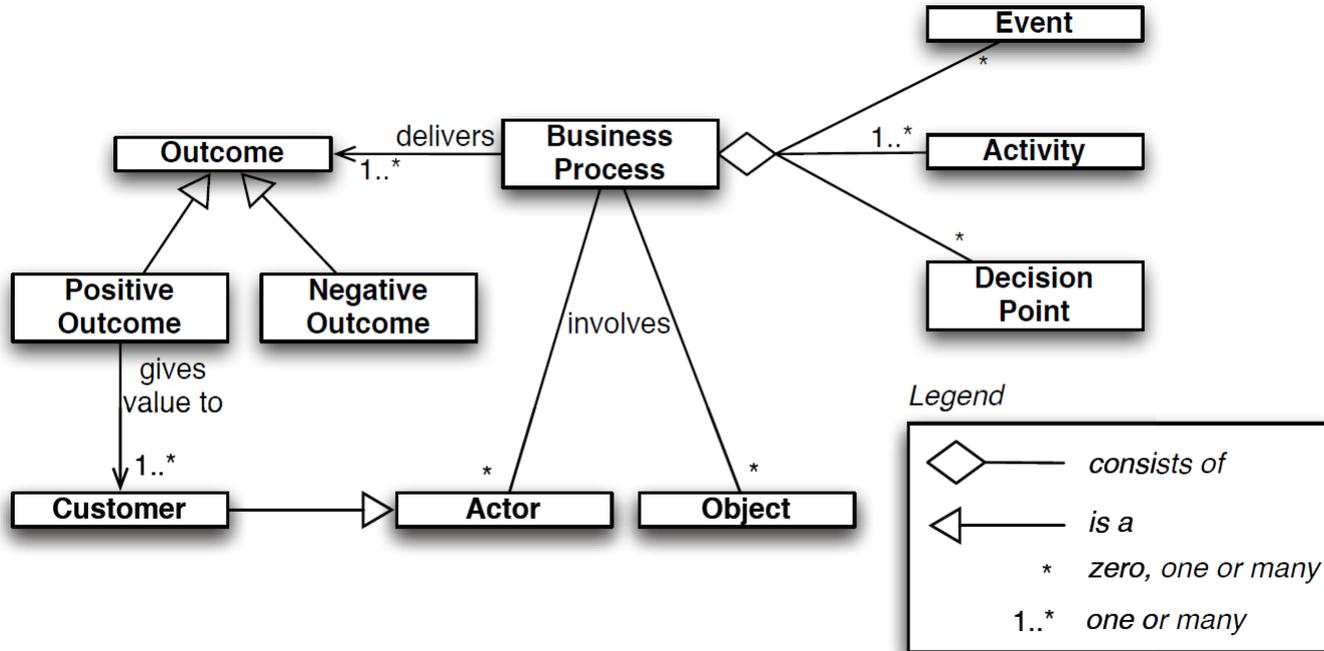
Definition of Business Process Management

BPM as a body of methods, techniques, and tools to identify, discover, analyze, redesign, execute, and monitor business processes in order to optimize their performance.

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Related Disciplines

- **Total Quality Management (TQM)**
  - Focus on continuously improving and sustaining the quality of products and services.
  - TQM puts emphasis on products and services themselves, while BPM focuses on improvement of processes.
  - Applications of TQM are primarily in manufacturing while BPM more in service organizations.
- **Operations Management**
  - Concerned with managing physical and technical functions of organization, particularly those relating to production and manufacturing.
  - Using probability theory, queuing theory, decision analysis, mathematical modeling, and simulation for optimizing efficiency of operations.
  - Such techniques are also useful in.
  - Often concerned with controlling an existing process, while BPM making changes to an existing process in order to improve it.

Related Disciplines

- **Lean**
  - Originates from manufacturing, in particular Toyota Production System.
  - Eliminates waste, i.e., activities that do not add value to the customer.
  - BPM puts more emphasis on use of information technology as a tool to improve business processes and to make them more consistent and repeatable.
- **Six Sigma**
  - Originates from manufacturing, in particular from production practices at Motorola.
  - Focuses on minimization of defects (errors).
  - Strong emphasis on measuring output of processes, especially in terms of quality.
  - Popular approach to blend Lean with Six Sigma, leading to Lean Six Sigma.
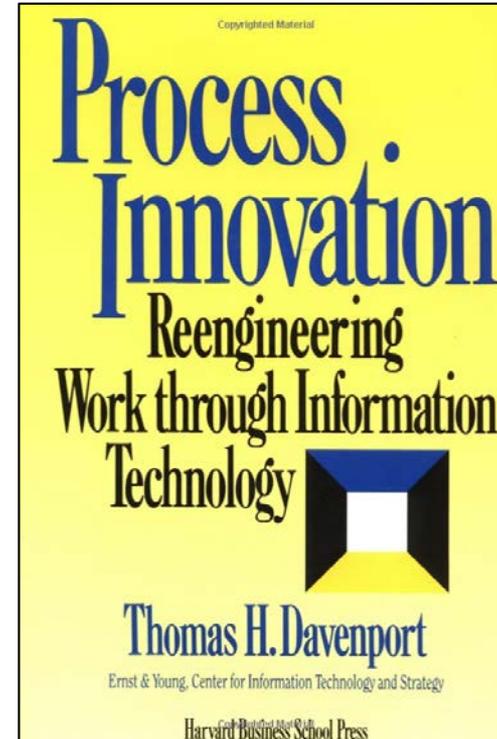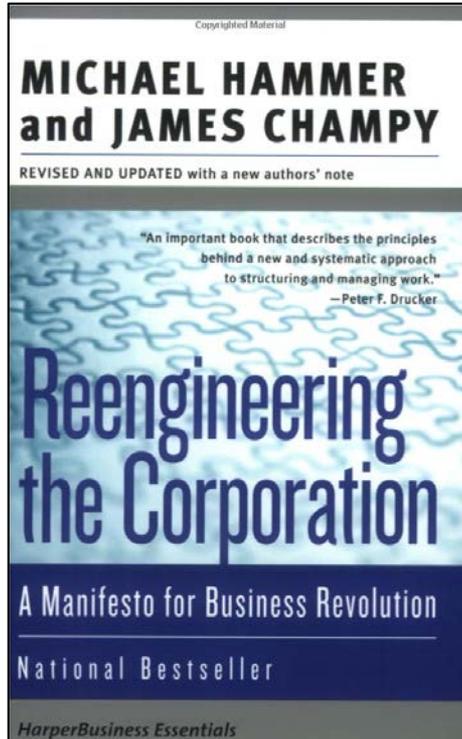
Frederick W. Taylor: Scientific Management

- Meticulously studying labor activities
- Work instructions for workers
- Managers oversee the productivity of groups of workers
- Units and their managers were structured hierarchically
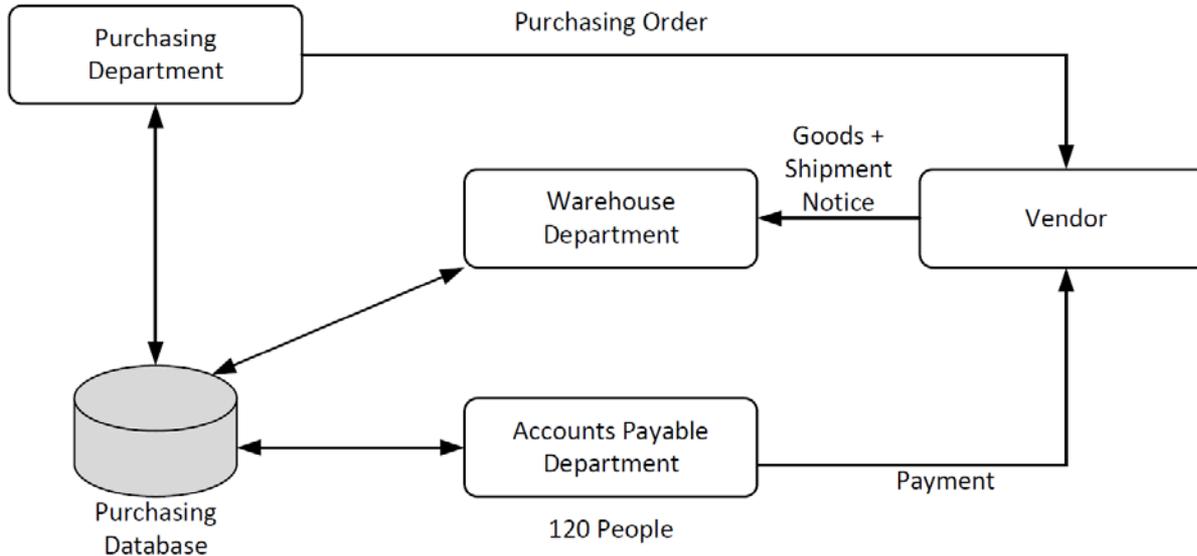- Functional organization remains dominant until the end o
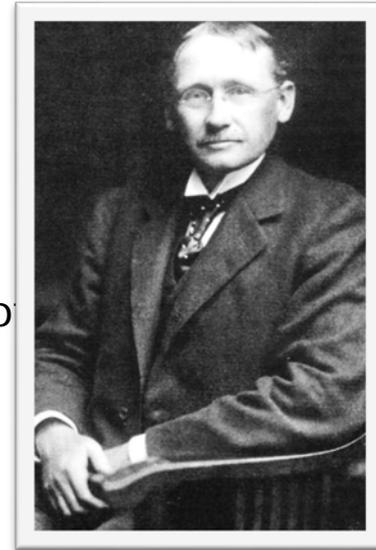
Birth of Process Thinking:
Business Process Reengineering (BPR)

Purchasing process at Ford at the initial stage
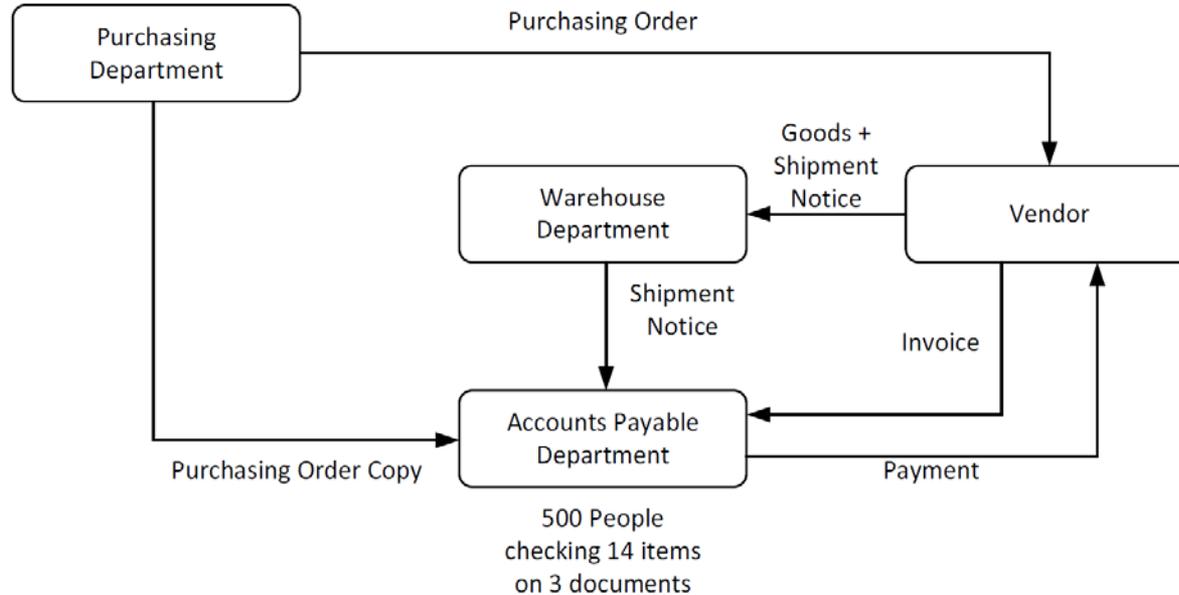
Purchasing process at Ford after redesign

The Rise and Fall of BPR

1. Concept misuse:
   - Projects were labeled BPR, even when business processes were not the core.
   - Many corporations initiated reductions of workforce, often packaged as process redesign projects, which triggered resentment.
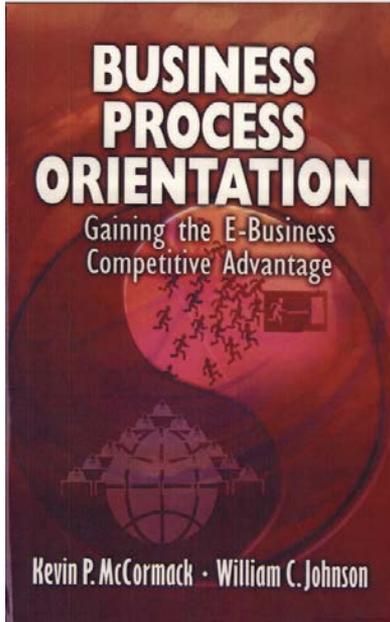2. Over-radicalism:
   - Hammer's early papers states: "Don't Automate, Obliterate".
   - Many situations require a much more gradual (incremental) approach.
3. Support immaturity:
   - Necessary tools and technologies were not yet available or insufficient.
   - Much process logic had to be hard-coded in IT applications of the time.
   - People grew frustrated when they noted that their efforts on redesigning a process were thwarted by a rigid infrastructure.

Reshaping Process Thinking

Process Orientation is productive

ERP Systems penetrate the market

Job Functions of Process Owner

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Establishing Process Thinking in Organizations

- Establish BPM Team
- Describe Process Architecture
- Define Process Performance Measures
- Discover and Model Processes
- Analyze, Redesign, Implement and Monitor Processes
- Make Use of Process-Aware Information Systems

Example: Process model for the initial fragment of the equipment rental process

The BPM Lifecycle

Process identification

Process architecture

Process discovery

As-is process model

Conformance and performance insights

Process analysis

Process monitoring

Insights on weaknesses and their impact

Executable process model

Process redesign

Process implementation

To-be process model
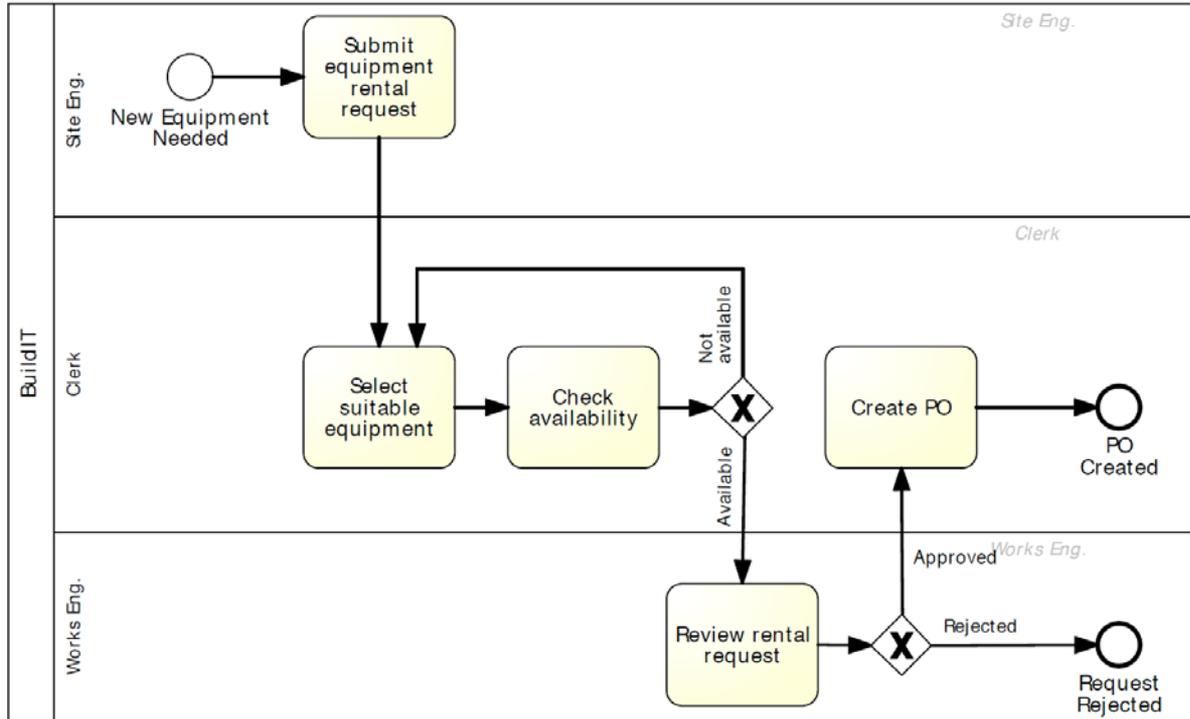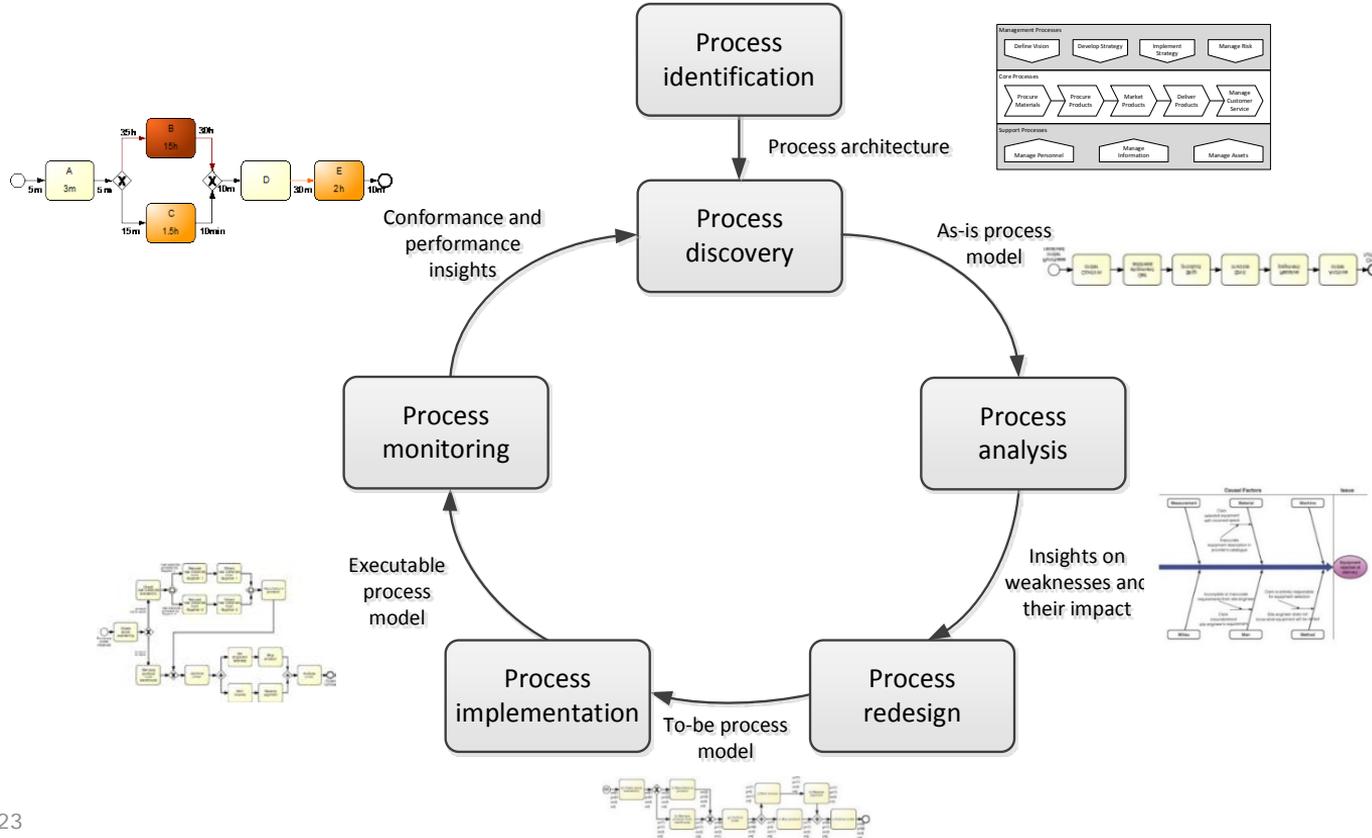
Stakeholders in the BPM Lifecycle

- **Management Team:**

  - Chief Executive Officer (CEO) responsible for overall business success.

  - Chief Operations Officer (COO) responsible for defining the way operations are set up, sometimes Chief Process Officer (CPO) or Chief Process and Innovation Officer (CPIO).

  - Chief Information Officer (CIO) responsible for operation of information system infrastructure.

  - Chief Financial Officer (CFO) responsible for overall financial performance of the company.

  - Human Resources (HR) director plays key role in processes that involve many process participants.

- **Process Owners:**

  - Process owner is responsible for efficient and effective operation of a given process, including

  - Planning and organizing, i.e. defining performance measures and objectives as well as initiating and leading improvement projects.

  - Monitoring, i.e. ensuring that performance objectives are met, and taking corrective actions.

  - Process owner is involved in process modeling, analysis, redesign, implementation, and monitoring.

Stakeholders in the BPM Lifecycle

- **Process Participants:**
  - Perform activities of business process on day-to-day basis.
  - Conduct routine work according to the standards and guidelines of the company.
  - Coordinated by process owner, who is responsible for non-routine aspects of process.
  - Involved as domain experts during process discovery and process analysis.
  - Support redesign activities and implementation.
- **Process Analysts:**
  - Conduct process identification, discovery, analysis, and redesign.
  - Coordinate implementation and monitoring.
  - Report to management and process owners
  - Have business or IT background.

- **Process Methodologist:**
  - Provides advice on methods, techniques and software tools.
 - Coordinates technical training.
- **System Engineers:**
  - Translate requirements into system design
 - Responsible for implementation, testing and deployment.
- **BPM Group (also BPM Center of Excellence):**
  - Responsible for preserving project knowledge and documentation.
  - Maintain process architecture.
  - Prioritize process redesign projects.
  - Align the BPM efforts with strategic goals.
  - Most common in large organizations with several years of BPM experience.

Process Modeling in the BPM Lifecycle
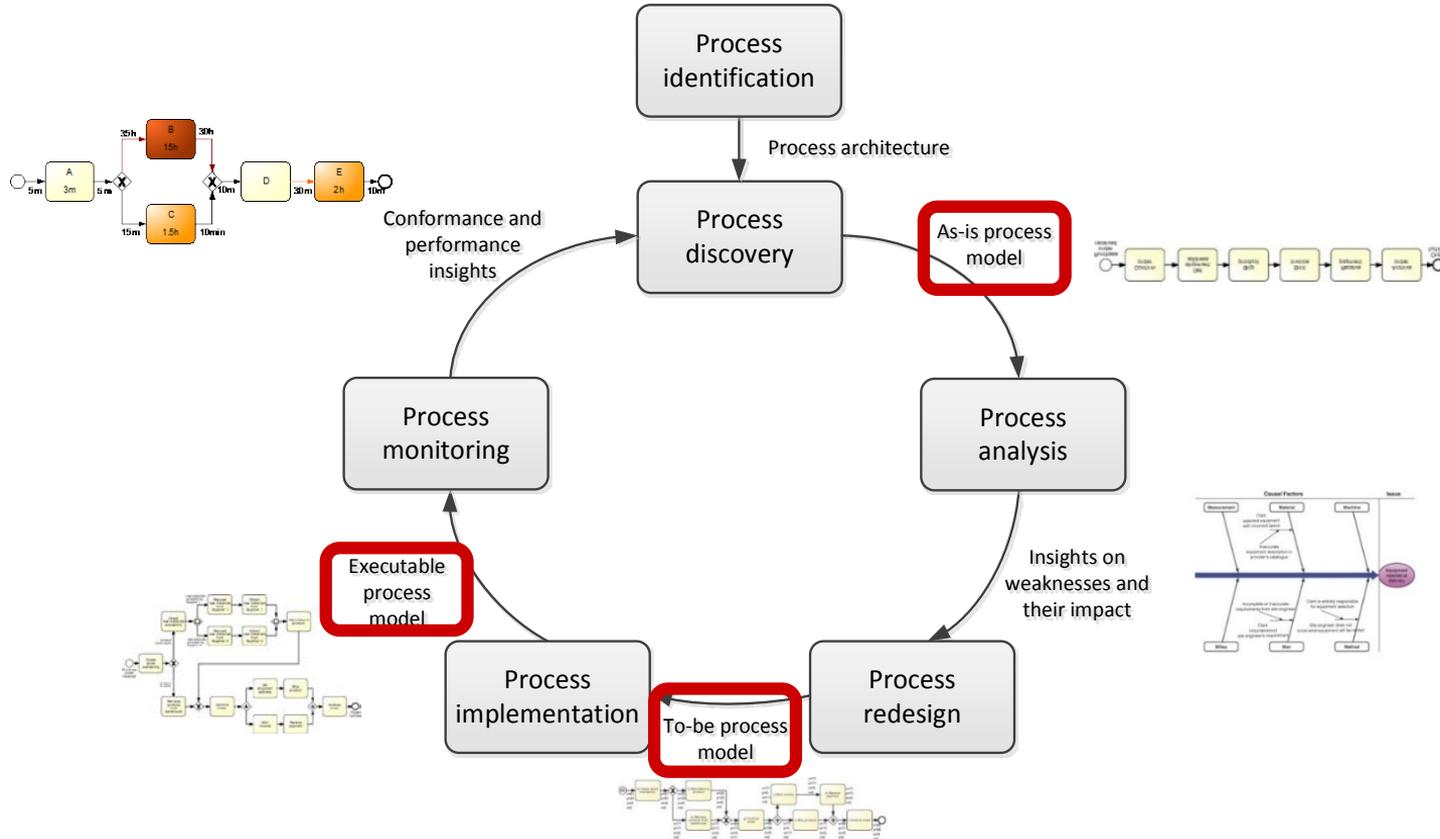
Chapter 3: Essential Process Modeling
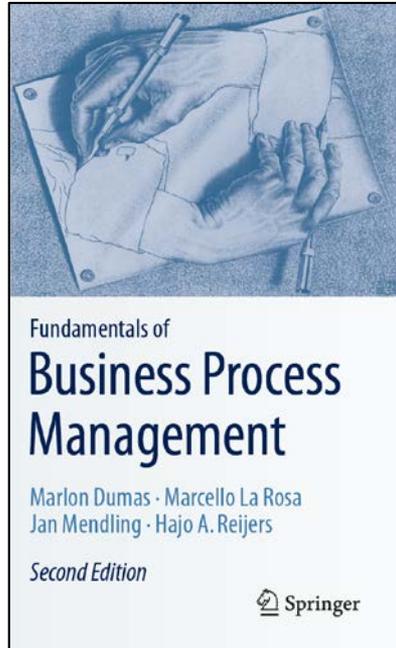
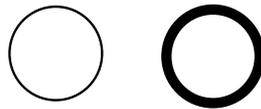Contents

BPMN from 10,000 miles...

Based on popular graphical flowcharts:

- Core set of notation elements

- Each core element has various subtypes

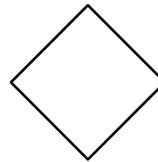A BPMN process model is a graph consisting of four types of **core elements**:

start   end

activity   event   gateway   sequence
flow

Let's start modeling

Order-to-cash

A typical order-to-cash process is triggered by the receipt of a purchase order from a customer. The purchase order has to be checked against the stock regarding the availability of the item(s) requested. Depending on stock availability the purchase order may be confirmed or rejected.

If the purchase order is confirmed, an invoice is emitted and the goods requested are shipped. The process completes by archiving the order or if the order is rejected.

Solution in BPMN: Order-to-cash
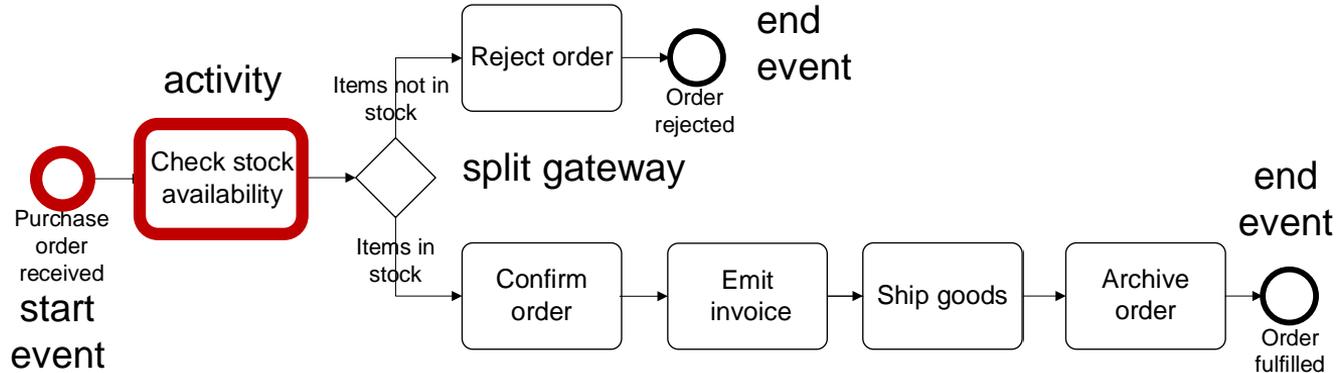
Naming conventions

- Event: noun + past-participle verb (e.g. insurance claim lodged)

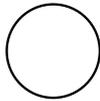- Activity: imperative verb + noun (e.g. assess credit risk)

BPMN core elements

activity

Activities capture work performed in a process
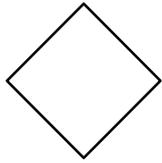
- Different types of activities

start event   end event

Events represent the process' triggers (start event) and outcomes (end event).

- Different types of events

BPMN core elements

gateway

Gateways capture forking and joining paths in the control flow.

- Different types of gateways

sequence flow

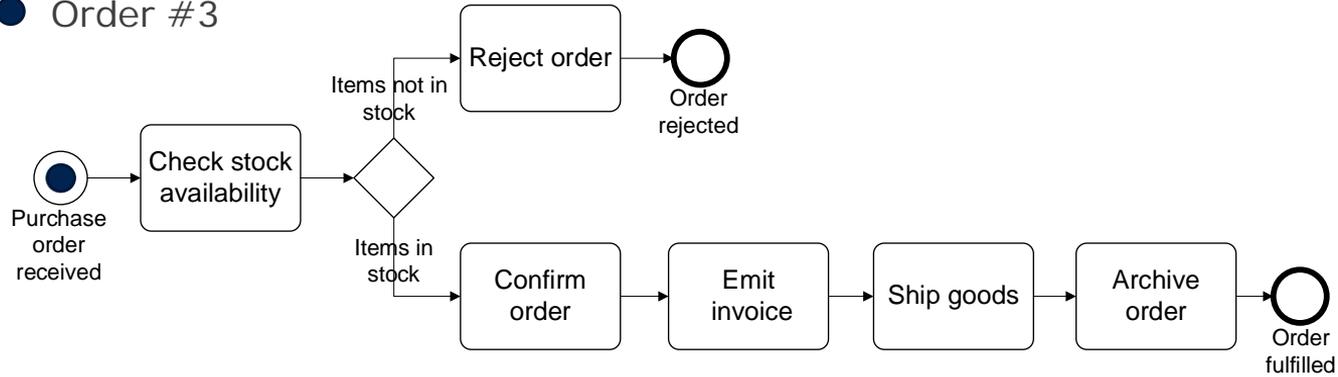*Sequence flows* represent the order in which activities and events will be performed.

They can be assigned a condition to distinguish between alternative branches.
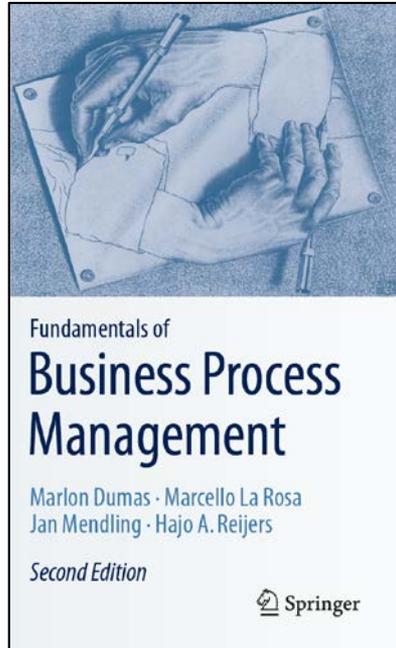
- Different types of flows

Order #1
Order #2
Order #3

Purchase order received → Check stock availability → ◇

Items not in stock → Reject order → Order rejected

Items in stock → Confirm order → Emit invoice → Ship goods → Archive order → Order fulfilled

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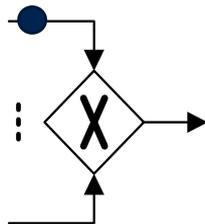Jan Mendling · Hajo A. Reijers

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A little more on gateways: XOR Gateway

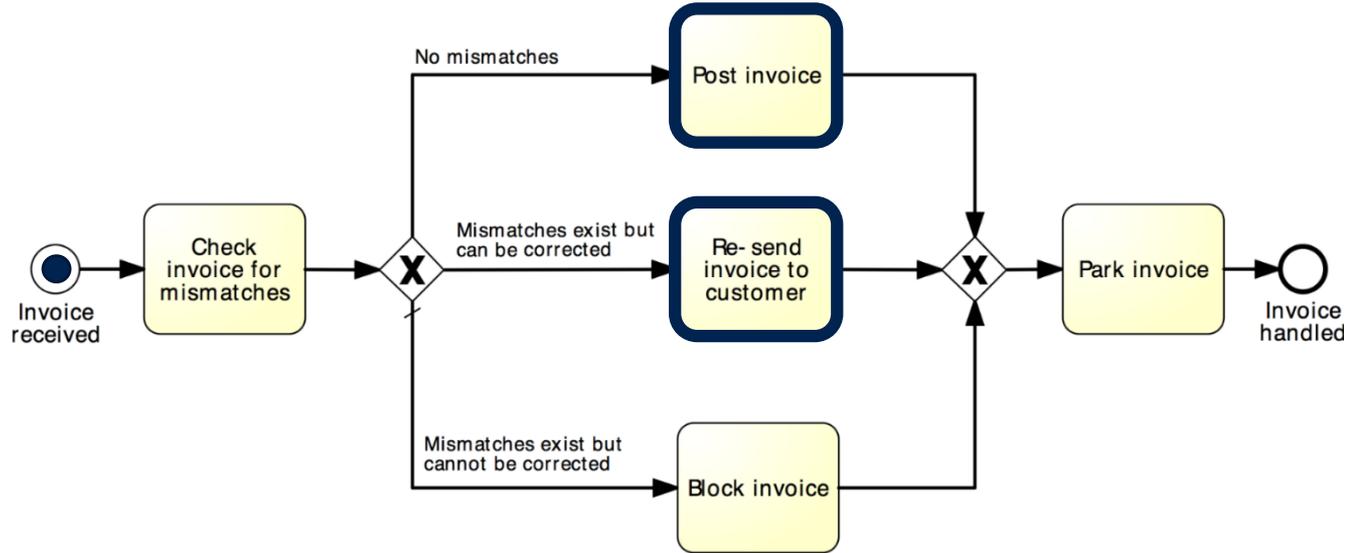An *XOR Gateway* captures decision points (XOR-split) and points where alternative flows are merged (XOR-join)
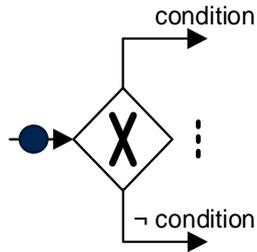
XOR-split ➔ takes **one** outgoing branch

condition

¬ condition

XOR-join ➔ proceeds when **one** incoming branch has completed
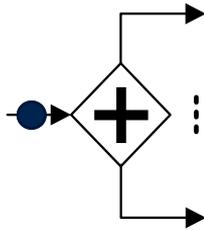
Example: XOR Gateway
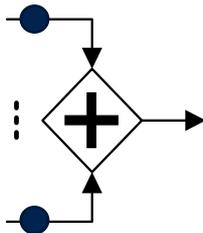
Invoice checking process

A little more on gateways: AND Gateway

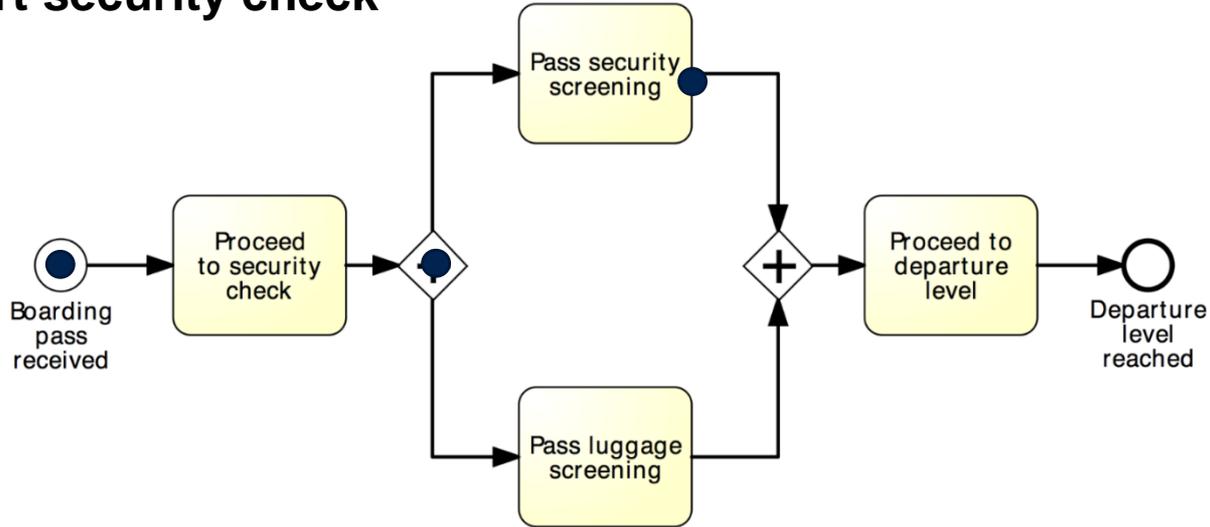An *AND Gateway* provides a mechanism to create and synchronize "parallel" flows.
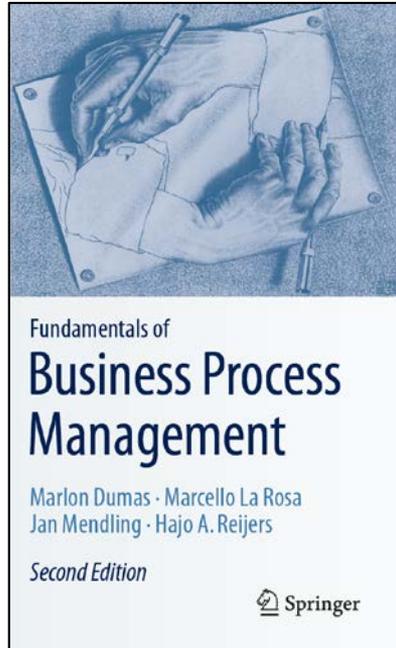
AND-split ➔ takes **all** outgoing branches

AND-join ➔ proceeds when **all** incoming branches have completed

Example: AND Gateway

Airport security check

Chapter 3: Essential Process Modeling

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Resources

Active resources:

- Process participant
- Software system
- Equipment

Resource class:

A **group of (active) resources** that are interchangeable, e.g. a role, an organizational unit or the whole organization.

Resources in the order-to-cash example

The order-to-cash process is carried out by a seller's organization which includes two departments: the **Sales department** and the **Warehouse & Distribution department**.

The purchase order received by the Seller has to be checked against the stock. This is done via an **ERP** module within the **Warehouse & Distribution department**.

If the purchase order is confirmed, the **Warehouse & Distribution department** ships the goods. Meantime, the **Sales department** emits the invoice. The process concludes with the order being archived by the **Sales department**.
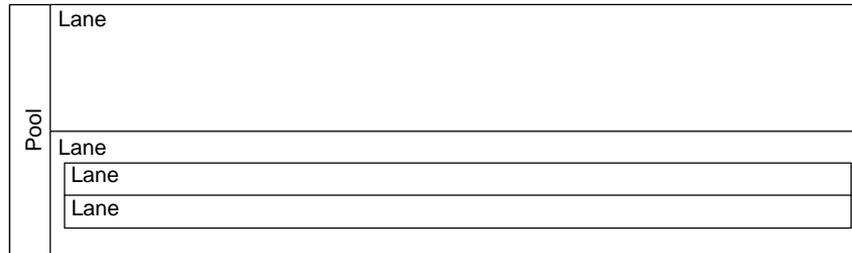
BPMN Elements – Pools & Lanes

Pool

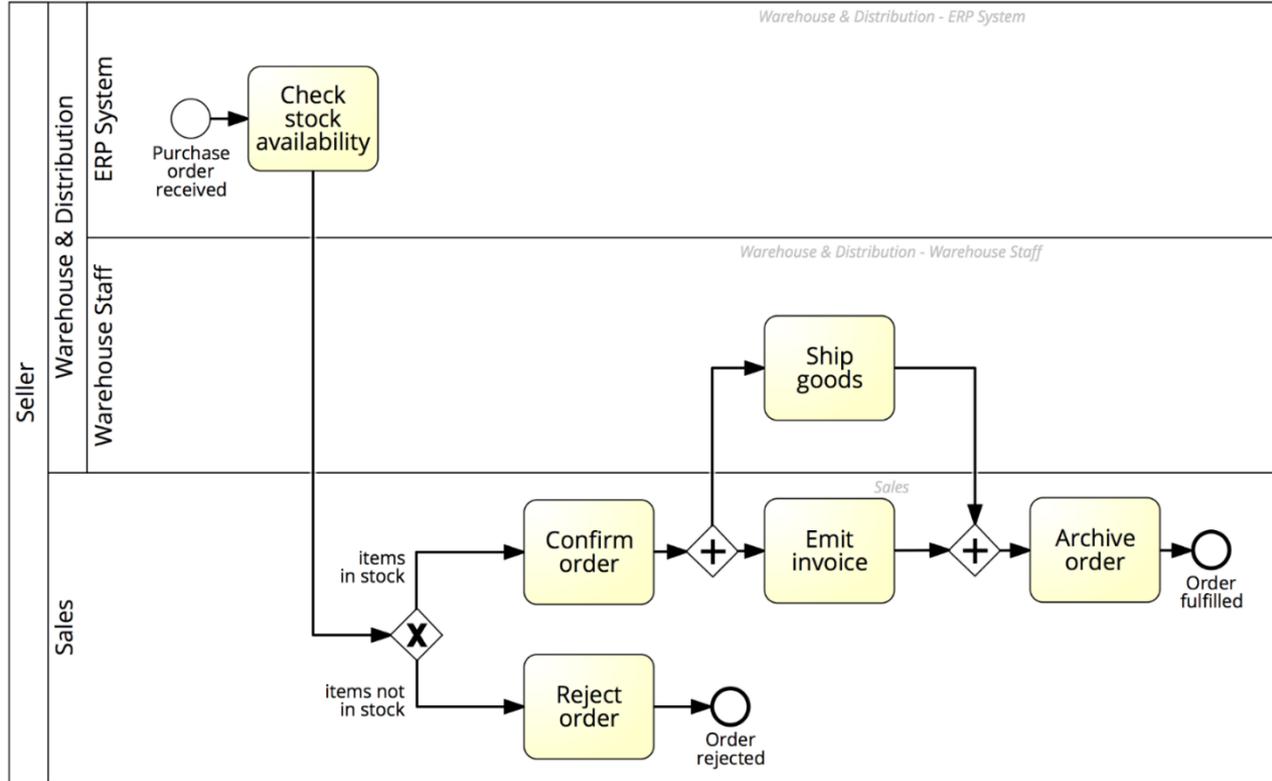Captures a resource class. Generally used to model a business party (e.g. a whole company)
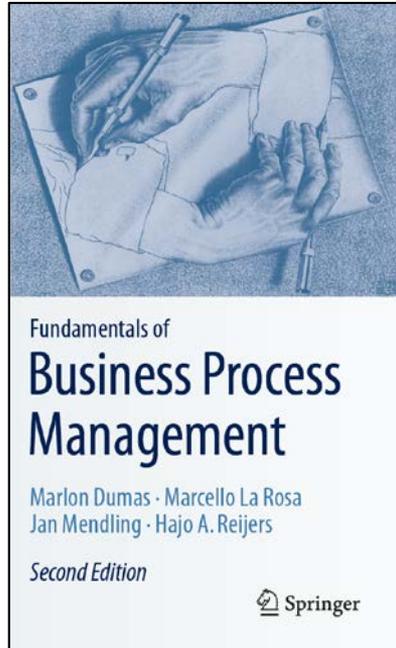

Lane

Captures a *resource sub-class* within a resource class by partitioning a pool. Generally used to model departments (e.g. shipping, finance), internal roles (e.g. Manager, Associate), software systems (e.g. DBMS, CRM) or equipment (e.g. Manufacturing plant)

Solution: Order-to-cash

Chapter 1: Introduction to BPM

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Recap

- A process is a collection of events, activities, and decisions that collectively lead to an outcome that brings value to an organization's customers.

- Every organization has processes.

- Managing processes ensures that they produce value.

- BPM is a body of principles, methods, and tools to design, analyze, execute, and monitor business processes.

- Process models and performance measures are pillars for managing processes.

- Various related disciplines complement BPM, such as Lean, Six Sigma, and Total Quality Management.

Let's stay in touch!