Context in business process models:

What is the use?

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Where innovation starts

Focus of this talk

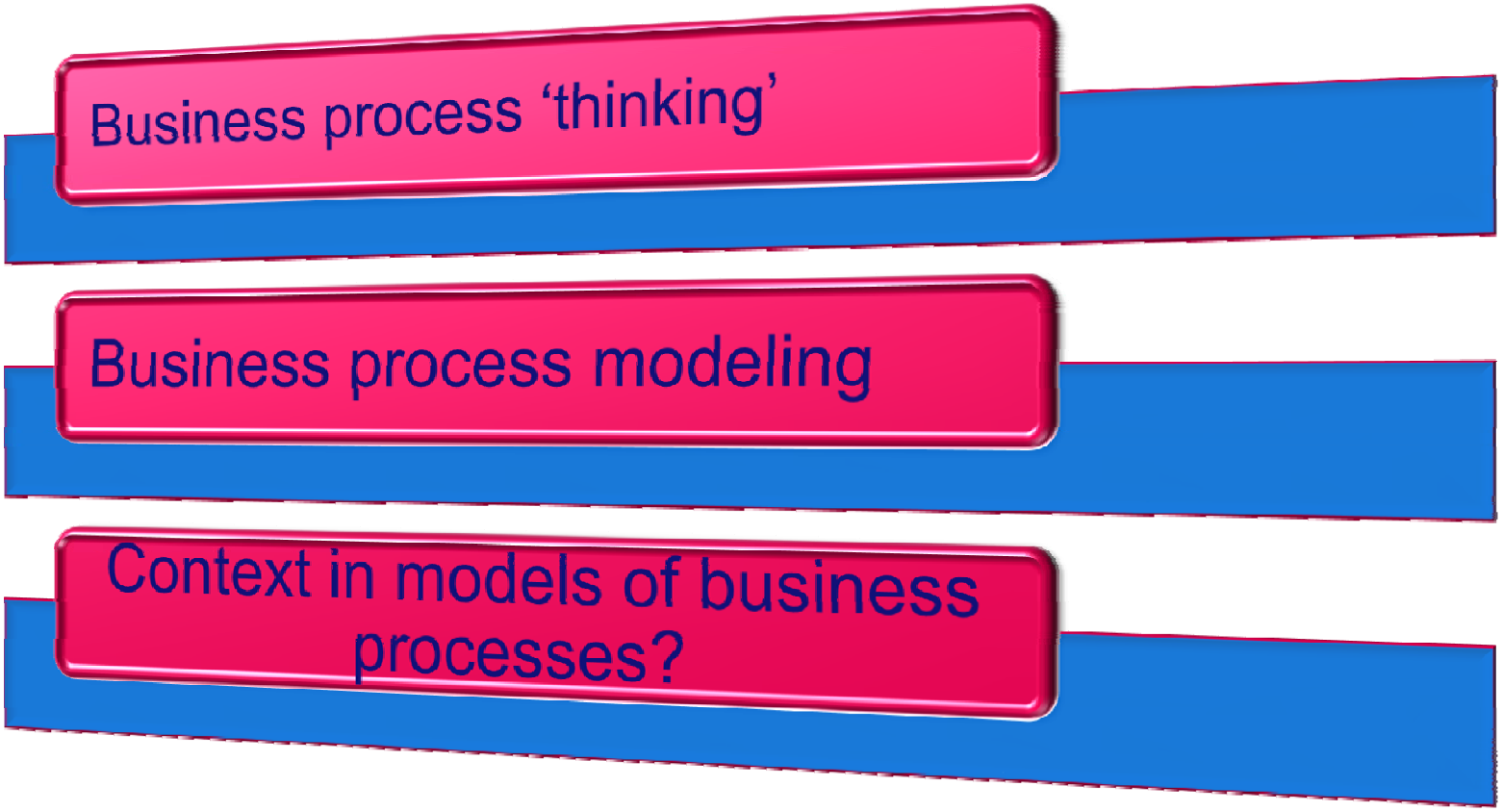
- Context awareness is hot:
  - Mobile applications, web systems, pervasive computing
- Business process modeling is hot:
  - BPMN/BPEL/EPCs, workflow management, quality systems

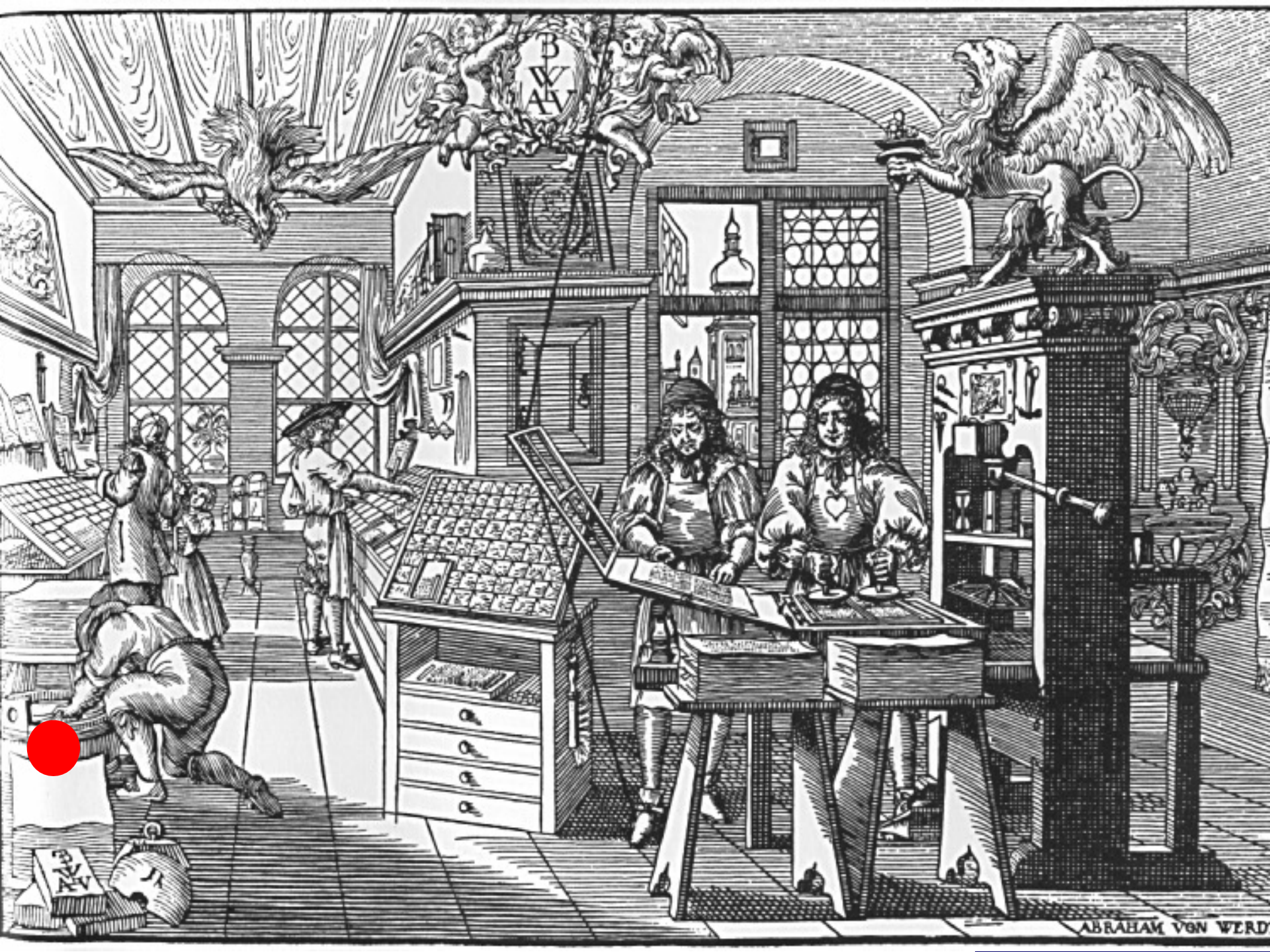
- Question:
  - Is context important for business process modeling?

First impression

- **Yes, context is important for business process modeling:**
  - K. Ploesser, M. Peleg, P. Soffer, M. Rosemann, and J. Recker. Learning from Context to Improve Business Processes. BPTrends, January 2009
  - J. Ghattas, M. Peleg, P. Soffer, and Y. Denekamp. Learning the Context of a Clinical Process. ProHealth workshop, September 2009.
  - M. Rosemann, J. Recker, and C. Flender. Contextualisation of Business Processes. International Journal of Business Process Integration and Management, Vol. 3, No. 1, 2008, pp. 47-60.
  - A. Analytia, M. Theodorakis, N. Spyratos, and P. Constantopoulos. Contextualization as an Independent Abstraction Mechanism for Conceptual Modeling. Information Systems, Vol. 32, No. 1, 2007, pp. 24-60

Outline


Business process ‘thinking’
Business process modeling
Context in models of business processes?


ABRAHAM VON WERD

Second industrial revolution (1865–1900)

- **Frederick Taylor's scientific management:**
  - **rationalization**
  - **division of labor**
  - **specialist**
  - **functional management**
- **Extremely effective, tenfold improvements!**

We still work this way…

Negative sides functional orientation

- Client dissatisfaction is abundant
- Departmental sub-optimization
- Lack of workforce commitment
- Inflexible organizations

The New Industrial Engineering: Information Technology and Business Process Redesign

Thomas H. Davenport
James E. Short

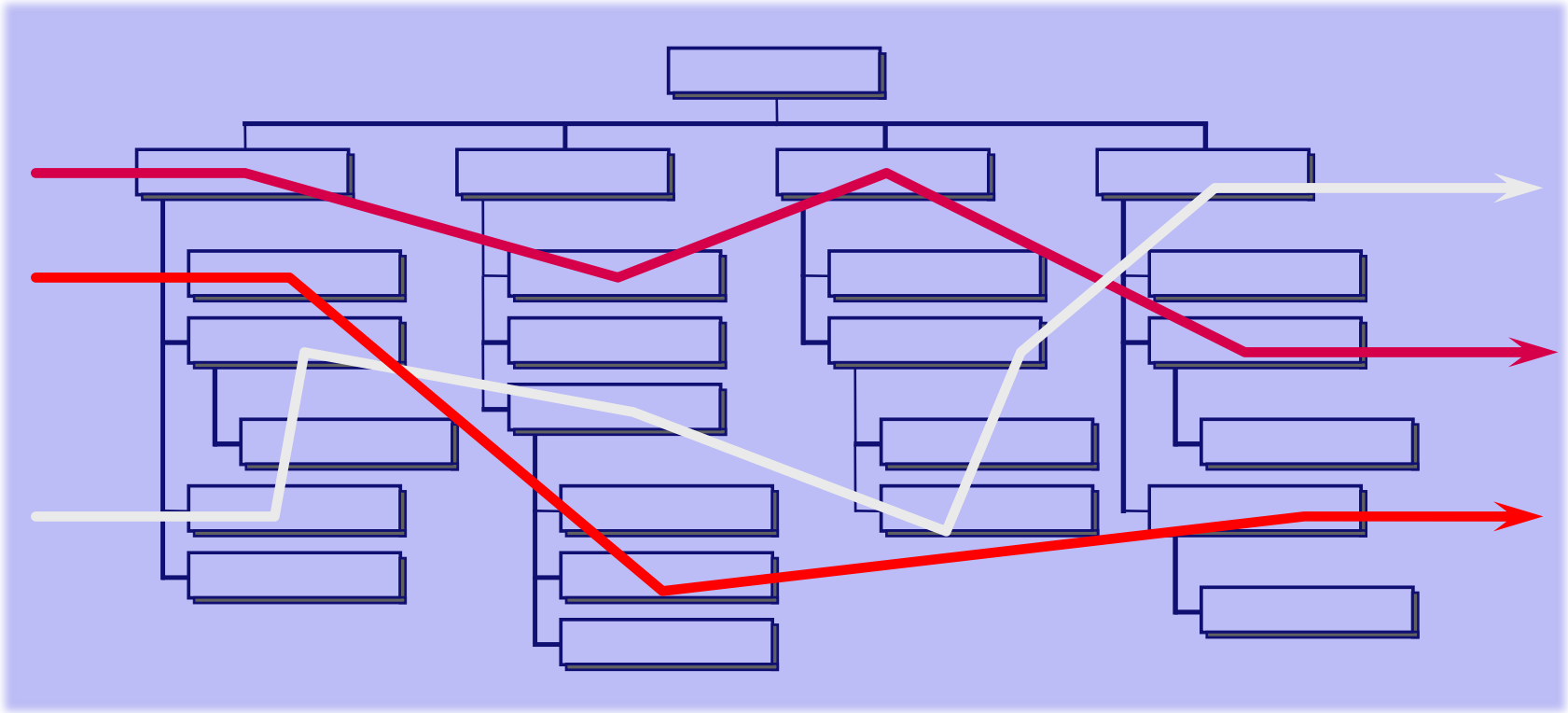
Ernst and Young
MIT Sloan School of Management

THOSE ASPIRING TO IMPROVE the way work is done must begin to apply the capabilities of information technology to redesign business processes. Business process design and information technology are natural partners, yet industrial engineers have never fully exploited their relationship. The authors argue, in fact, that it has barely been exploited at all. But the organizations that *have* used IT to redesign boundary-crossing, customer-driven processes have benefited enormously. This article explains why.

Sloan Management Review
11
Summer 1990

AT THE TURN of the century, Frederick Taylor revolutionized the workplace with his ideas on work organization, task decomposition, and job measurement. Taylor's basic aim was to increase organizational productivity by applying to human labor the same engineering principles that had proven so successful in solving the technical problems in the work environment. The studies of five firms engaged in substantial process redesign. After defining business processes, we extract from the experience of the companies studied a generic five-step approach to redesigning processes with IT. We then define the major types of processes, along with the primary role of IT in each type of process. Finally, we consider management issues that arise when IT is used to redesign

Process versus function



sales - order entry - scheduling - manufacturing - storeroom - shipping - accounting

Process has become mainstream

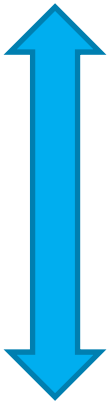
- **Various studies indicate success of process-centered organizations, e.g. McCormack (2001)**
- **Steady rise of process-aware information technology (workflow)**
- **Market analysts notice it, management consultants apply it, researchers study it..**

Essential ingredient: ***process models***

Business process modeling

- **Abundance of notations:**
  - **BPMN, EPCs, Workflow nets, YAWL, UML Activity Diagrams, IDEF3, etc.**
- **Many purposes:**
  - **Training and communication**
  - **Organization design**
  - **Documentation and knowledge management**
  - **Enactment**
  - **IT System development**
  - **Costing and budgeting**
  - **Simulation and analysis**

More popular



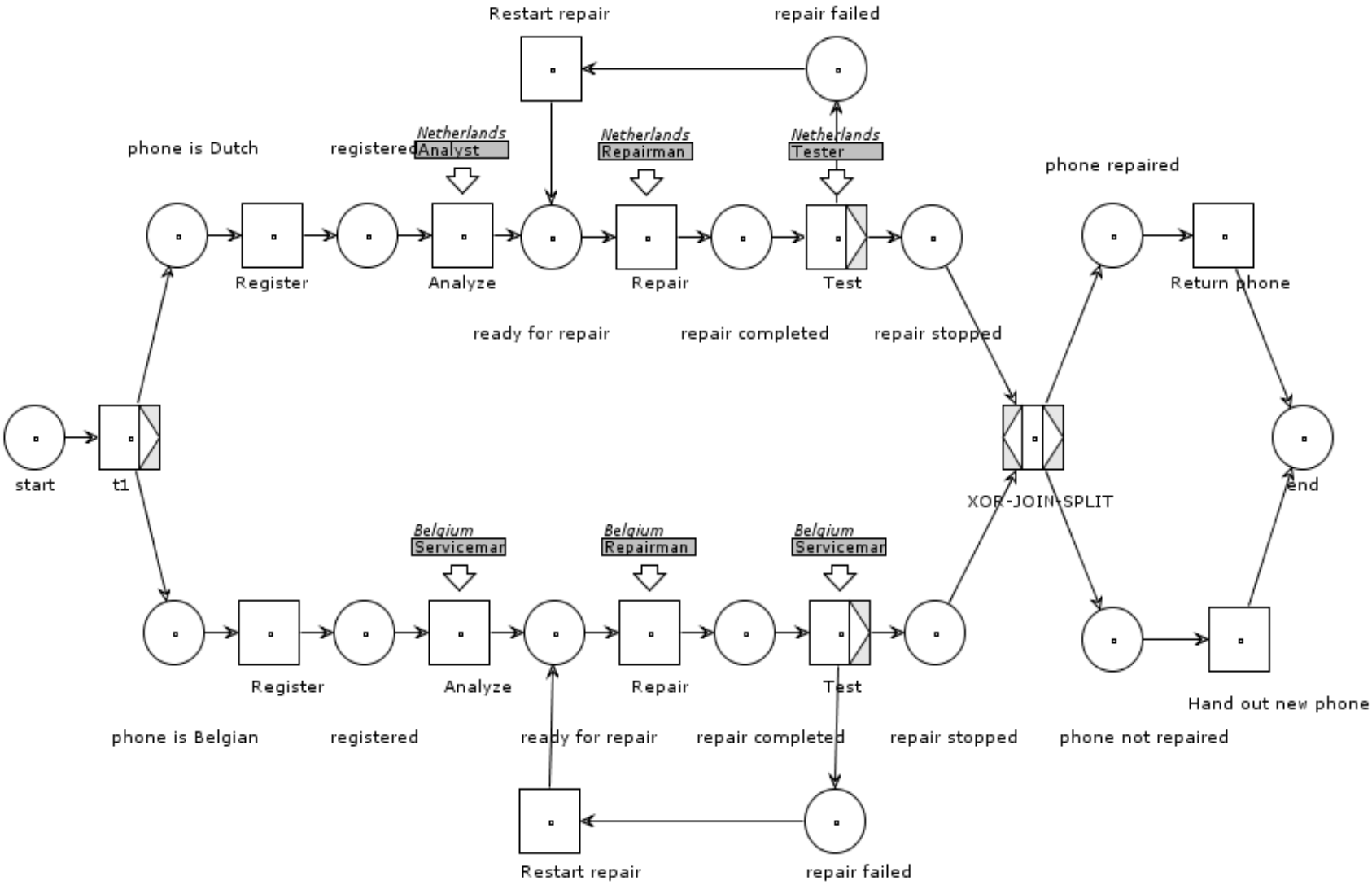
Less popular

Content of a process model

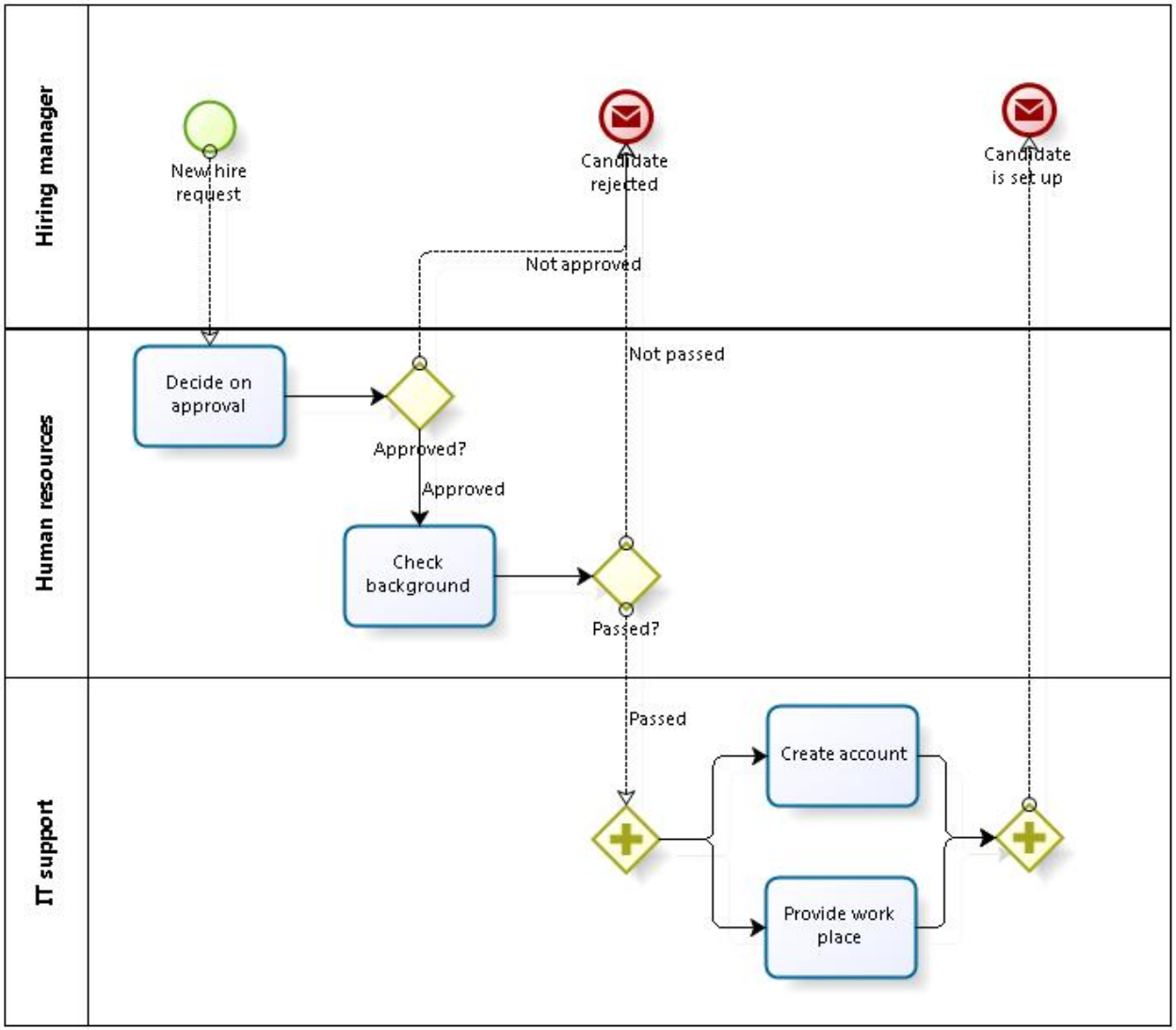
- **"A structured flow of activities, which supports business goals and is facilitated by data, supported by applications and enacted by organizational resources" (Harmon, 2007; Sharp and McDermott, 2001)**

- **A process model provides the transformation of one particular case type:**
  - **From a filed customer complaint towards a response to that customer,**
  - **From a mortgage application towards an acceptance decision …**

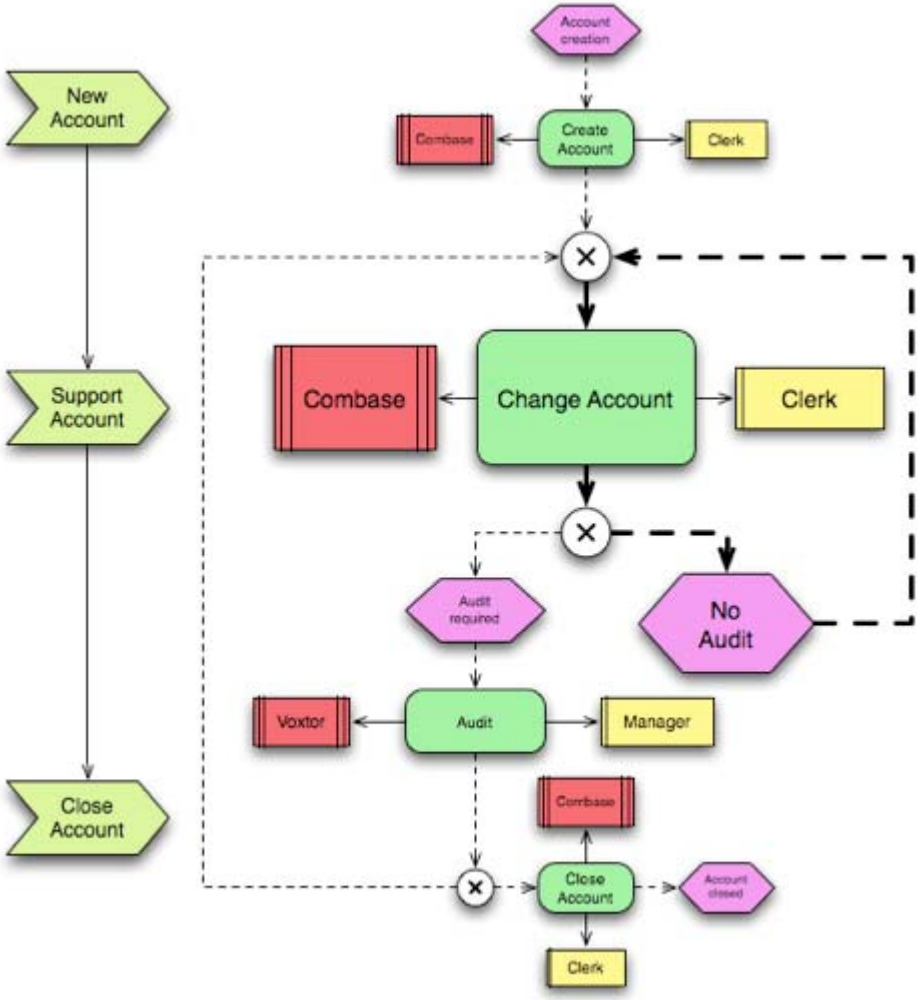
A workflow net example



A BPMN example



An EPC example



Characterizing process models

- **Training and communication**
  - High level control flow
  - Major activities/decision points
  - Major interaction points external parties
- **Enactment**
  - Exact control flow
  - All activities to be controlled
  - Major interactions with other systems
- **Simulation and analysis**
  - Exact control flow
  - All activities to be analyzed
  - Performance of activities

Activities are ‘black boxes’,
Models are incomplete

What about context in process models?

Viewpoint of ‘context researchers’

- The scope of process models is overly restricted to the internal perspective
- The context in which a business process is embedded consists of the combination of all implicit and explicit circumstances that impact the situation of a process
- Consideration of the context helps to:
  - Become more agile/flexible in dealing with exceptions
  - Improve the quality/conformance of the process

Ploesser et al., 2009; Rosemann et al., 2008; Rosemann and Zur Muehlen, 2005; Schmidt, 2000

Core argument

- **“Whether an activity is executed in a given context or not is difficult to express in contemporary process modeling languages such as UML, EPC, or BPMN. At most, contextual variables are captured through textual annotations or decision points, which have the drawback of making process models overly verbose. As a result, process modelers are lacking the analytical capabilities to determine preparedness for specific events in the process context.”**

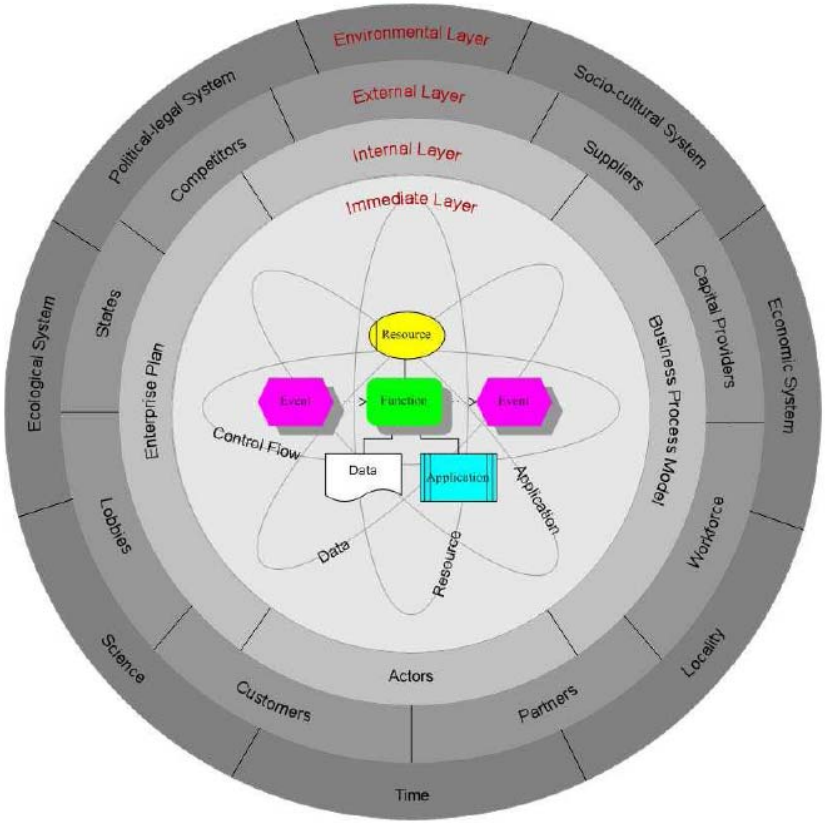
K. Ploesser, M. Peleg, P. Soffer, M. Rosemann, and J. Recker. Learning from Context to Improve Business Processes. BPTrends, January 2009

Motivating examples

- Airline check-in during a national holiday
- Swap transaction with Lehman brothers, hours after bankruptcy
- Provision of conventional antibiotic to patient who is resistant

Proposed solutions

- Capturing of hard and soft goals
- Extensions of notation with contextual ‘tags’
- Metamodels for contextual variables
- Frameworks to identify contextual variables



My view

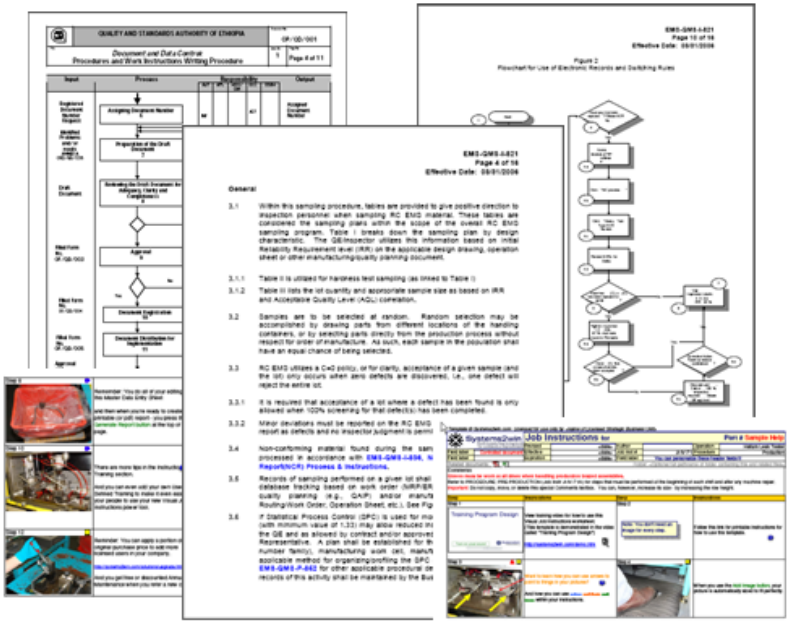
- Tacit mix-up occurs between content of a process model and the actual execution of a process
- But: process models are mostly not used as a specification for enactment/execution!
- And: if process models are used for enactment/execution, their ‘verboseness’ is not a problem!

Process models are mostly used to communicate

- (a) the regular flow, and
- (b) main deviations from that flow

Additional note

- **Even in training scenarios, activities in process models are ‘near-black boxes’**
- **Work instructions typically complement process models in training scenarios**
- **Work instructions are certainly verbose!**



But what about flexibility?

- **Flexibility is definitely an issue in process enactment/execution**
- **Abundance of research on workflow flexibility/evolution:**
  - **ADEPT, case handling, worklets, workflow patterns, etc.**
- **Presumed issue**
  - **‘Intrinsic’ focus vs ‘extrinsic’ focus**

Expected vs. unexpected exceptions

- **Flexibility relates to dealing with exceptions:**
  - **Occasional deviations from normal process behavior**
- **Expected exceptions:**
  - **predictable deviations from the normal behavior of a process, such as when a customer cancels a flight reservation in a travel reservation process, or when a deadline for a proposal presentation expires**
- **Unexpected exceptions:**
  - **correspond to inconsistencies between the (ideal) business process and its corresponding representation (the model).**

Strong and Miller, 1995; Eder and Liebhart, 1996; Casati, 1999

My view

- **Unexpected exceptions:**
  - **Their inclusion in a process model is impossible – by definition…**
  - **Adaptive workflow/workflow evolution is remedy during process enactment**
- **Expected exceptions:**
  - **Their inclusion in a process model is mainly an economic decision relating to the purpose of the process model**
  - **No new modeling constructs are required:**
    - **If it can be understood, it can be modeled**

Message of this talk

- **Is ‘context research’ for process modeling useful?**
  - **No, if it aims at proposing new constructs/ tags/ notations for specifying context in process models**
  - **Yes, if it aims at better understanding how external circumstances relate to ideal process execution**
  - **But…**

Discussion points

- **Would another interpretation of context have led to another conclusion?**
- **Is “context awareness” useful in other scenarios in the business process field?**
- **Is context specification in models in general distinctly different from simply moving the system borders?**


The End