

# AEoM33PIS – Industrial Information Systems

Lecture Nr. 3

6. 3. 2017



Department of Cybernetics K13133  
Centre for Knowledge Management K13393

# Agenda

- AAR
- Business Process Management
- Process Models, ARIS Notation



# AAR

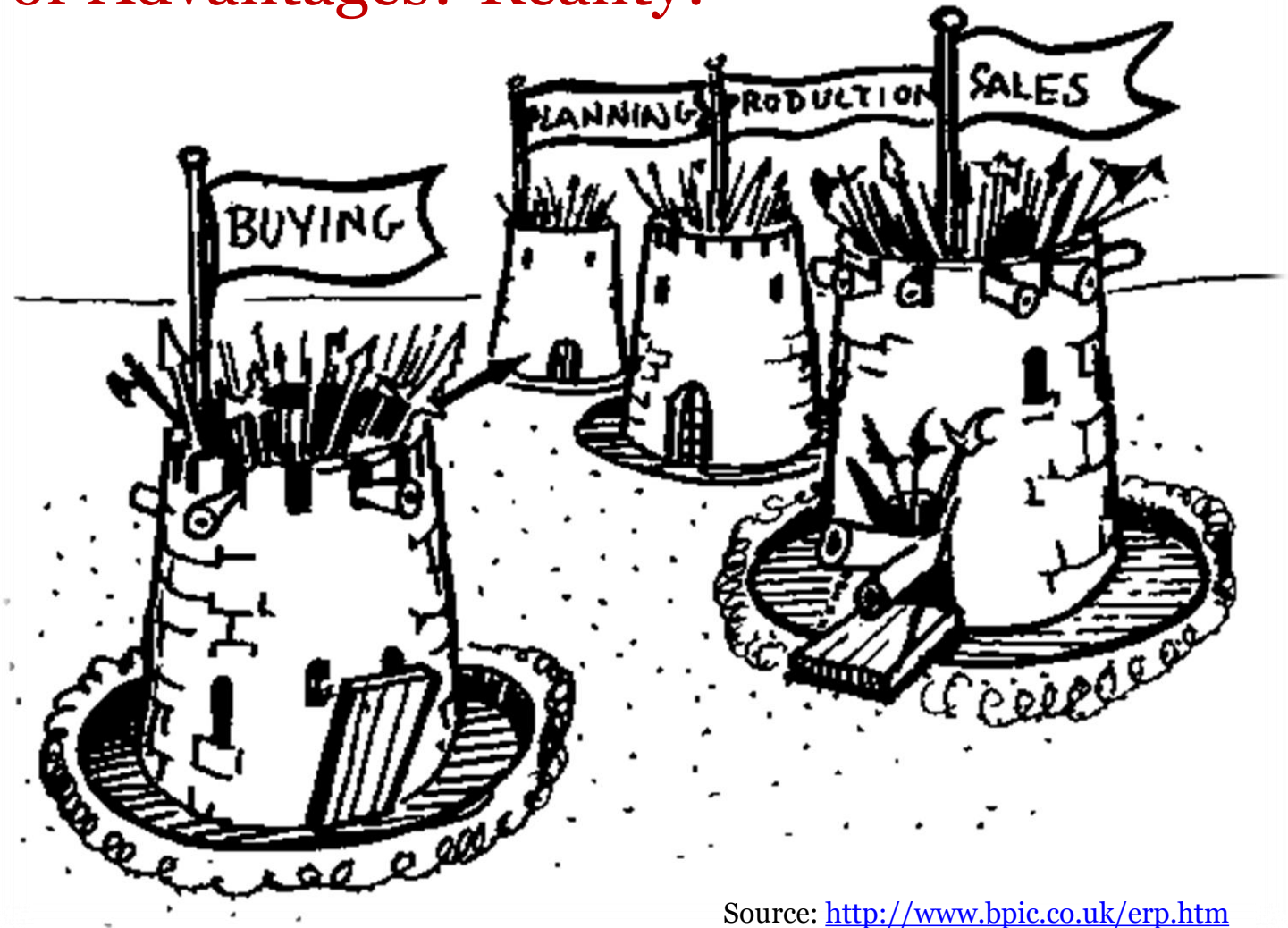
- Main ideas of the 2<sup>nd</sup> lecture:
  - Role of an Information System?
  - Definition of an Information System?
  - Hierarchy of Information systems?
  - Types of Information Systems?
  - Do you remember any Information Systems type?

# Business Process Management



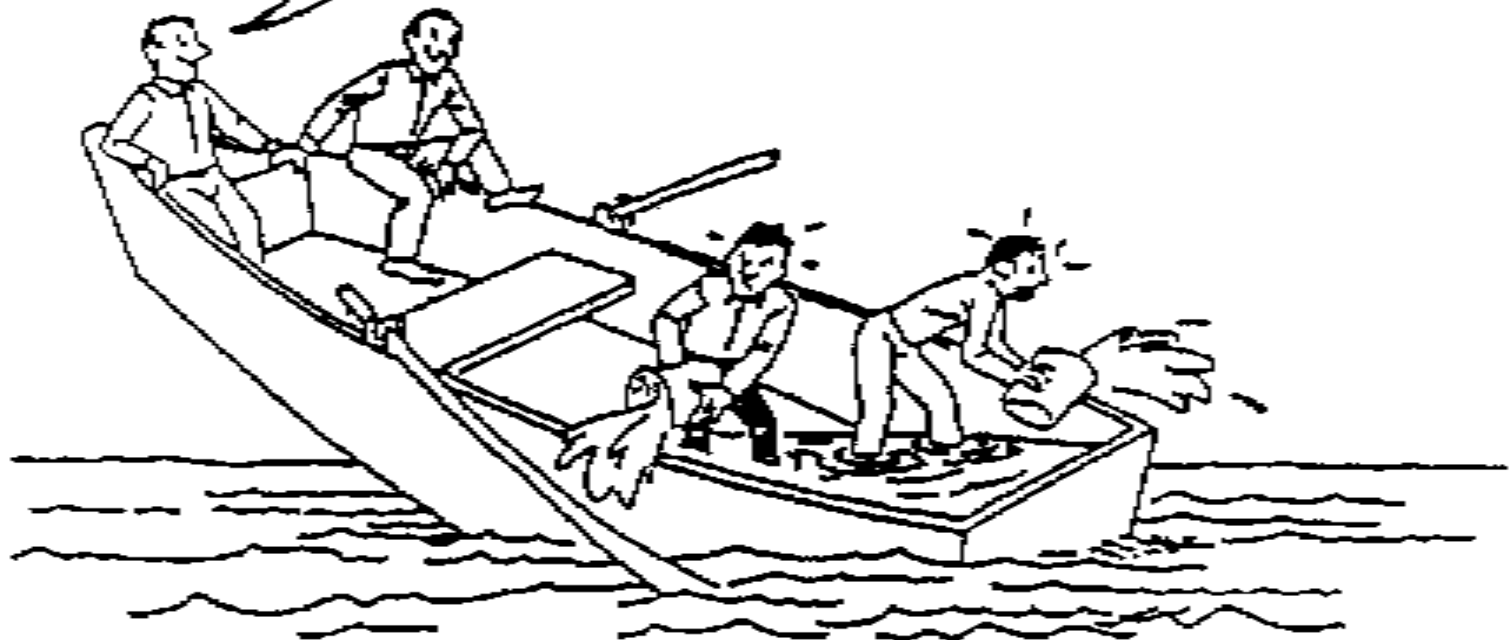


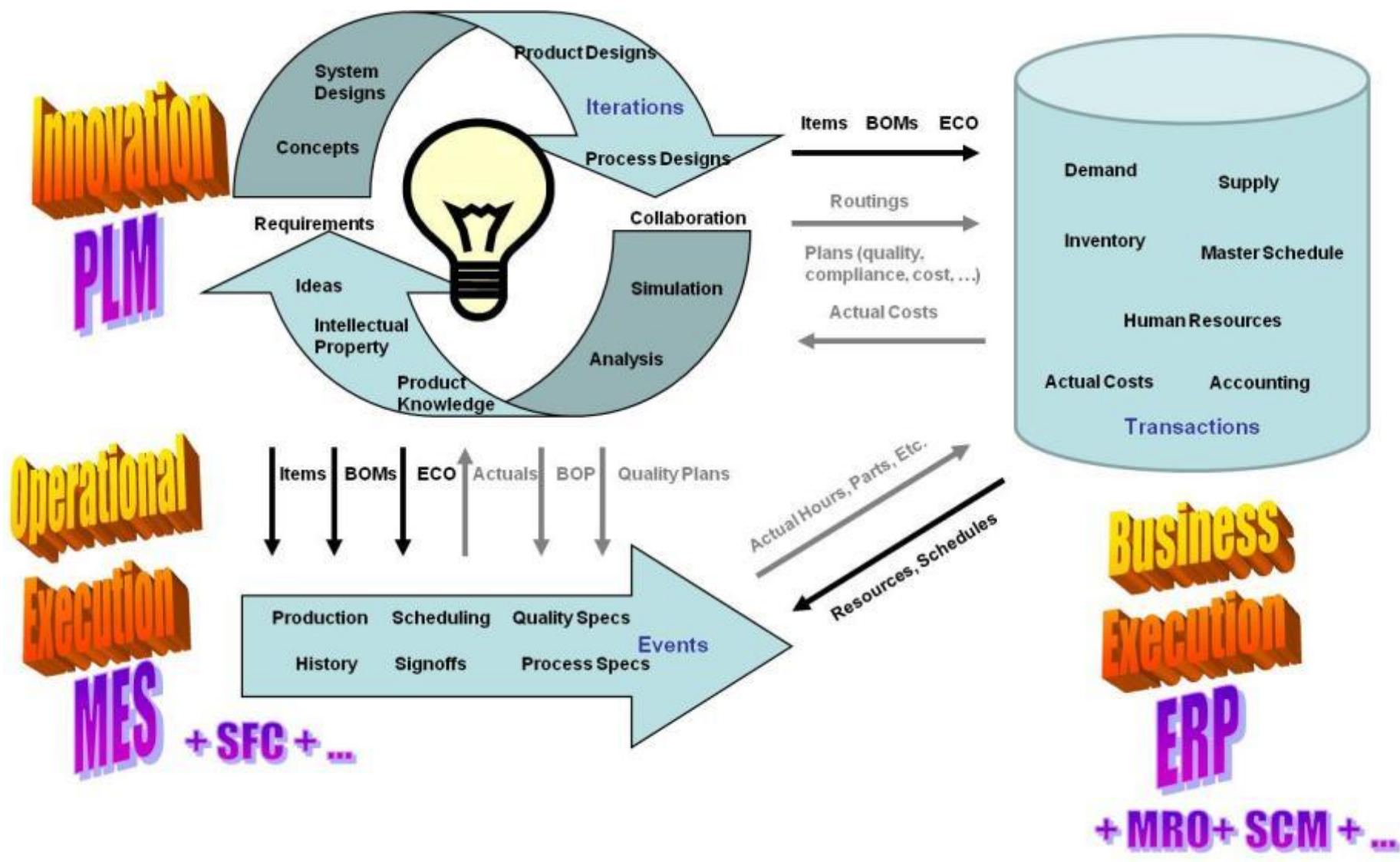
# Obstacles or Advantages? Reality!



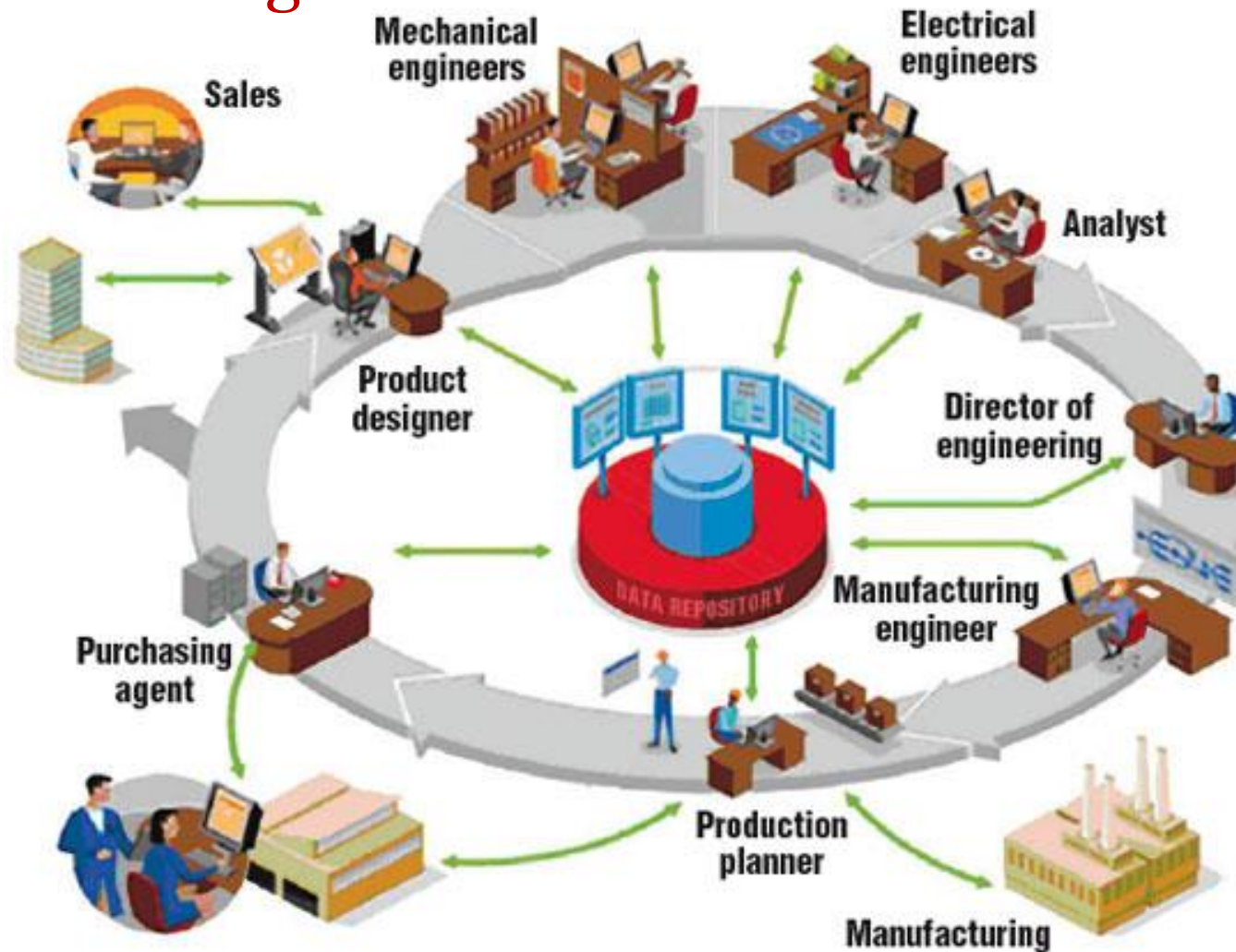
Source: <http://www.bpic.co.uk/erp.htm>

I'm sure glad the hole isn't in our end . . .



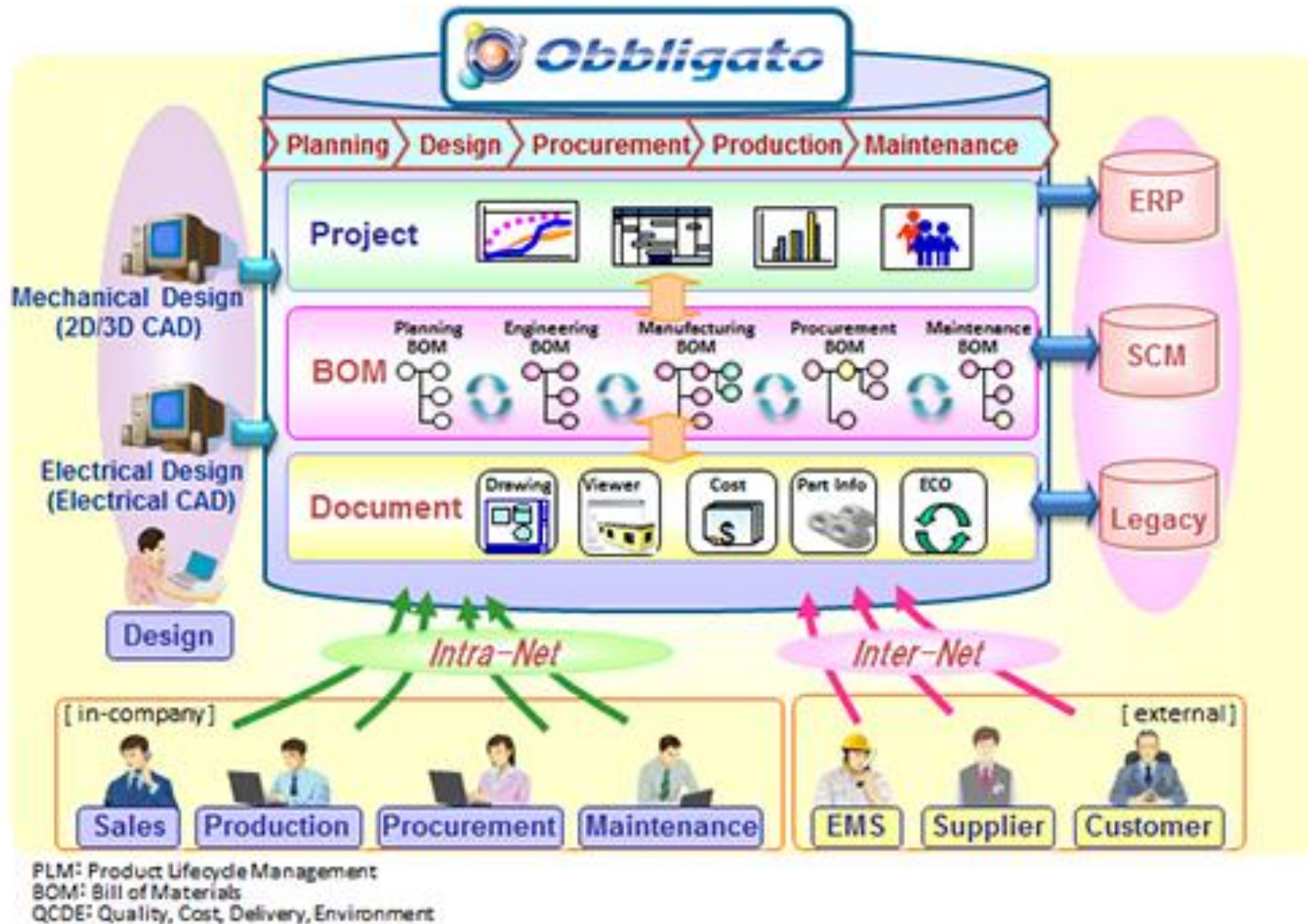


# Machine Design

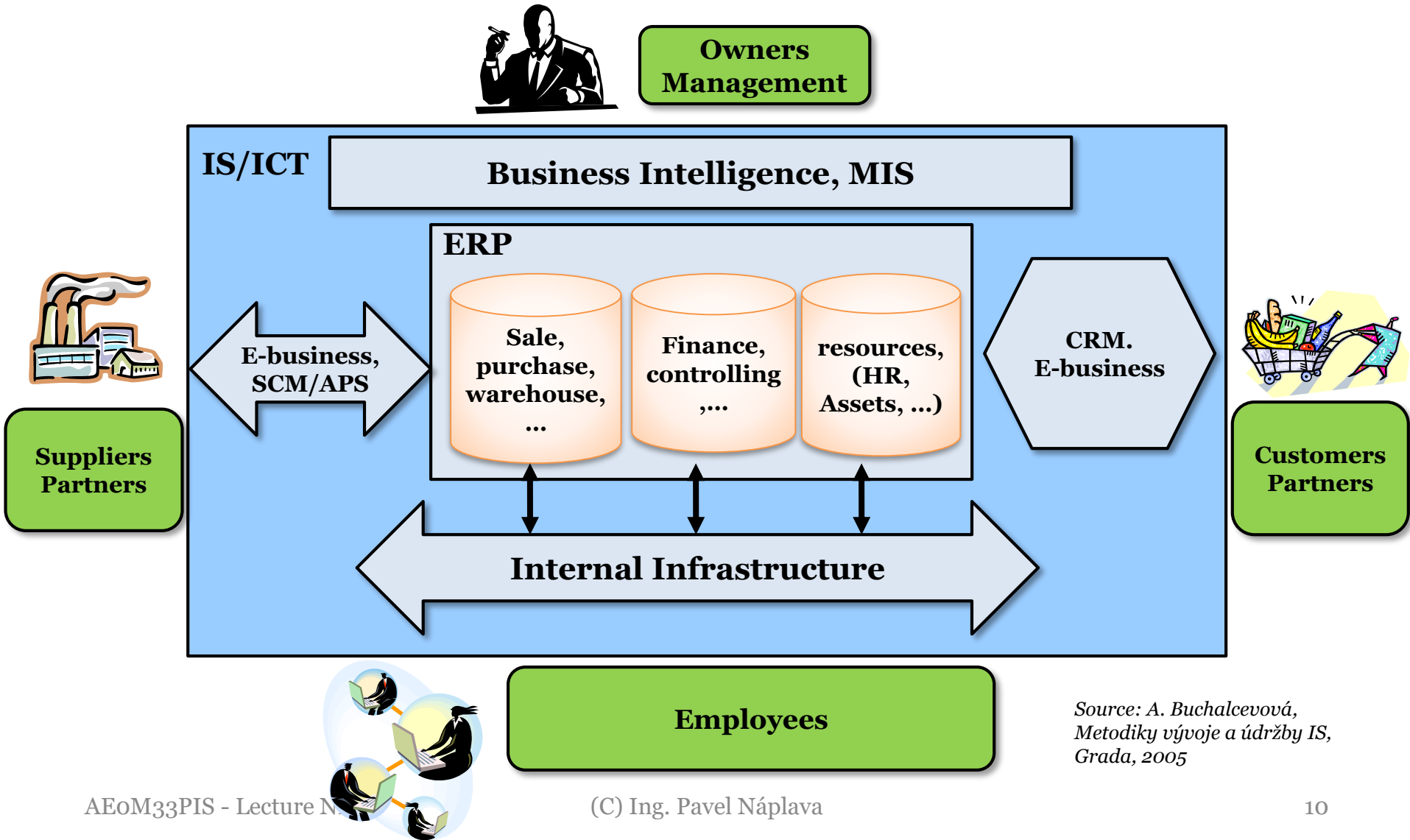


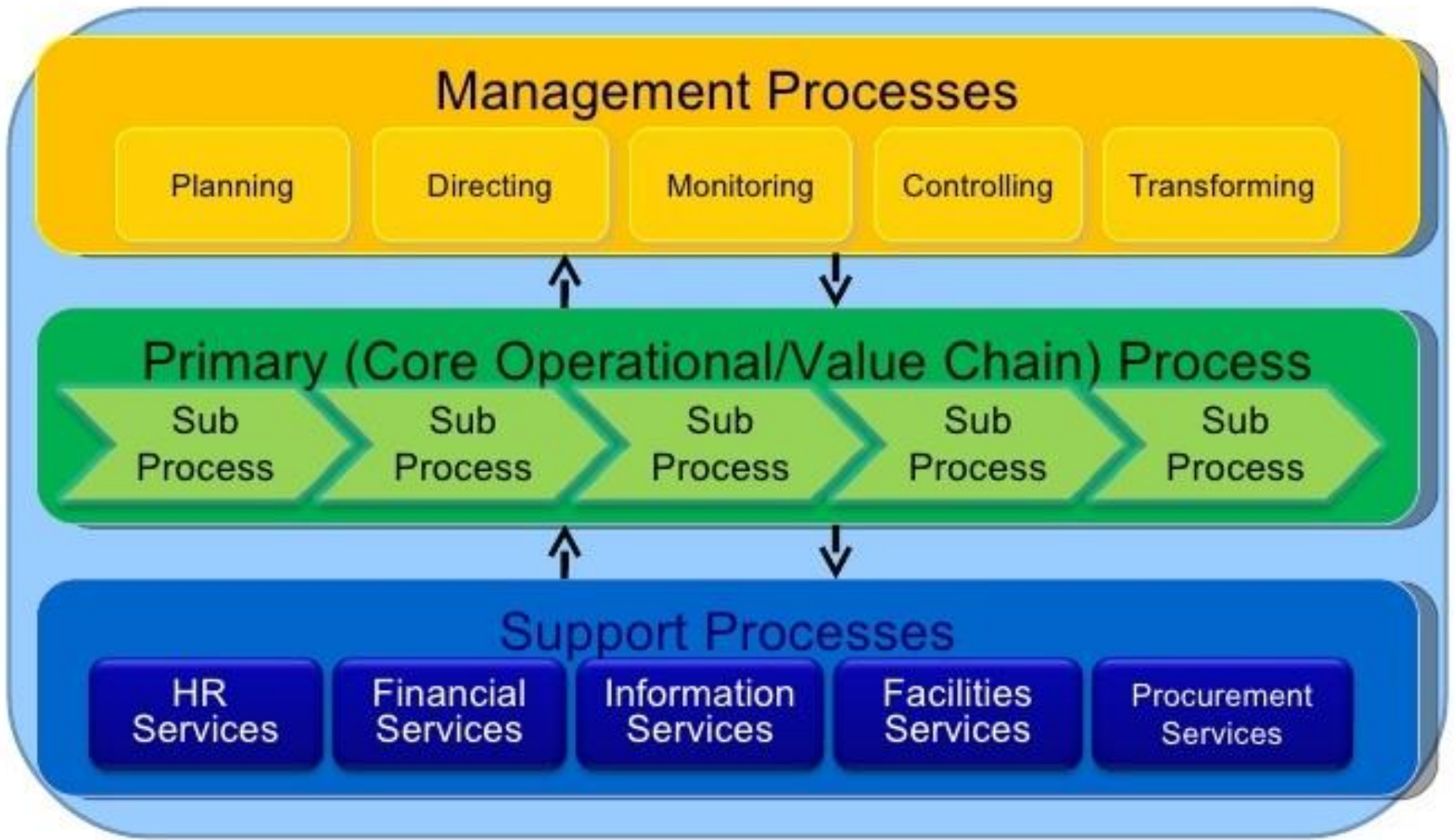


# PLM – Complex Set of Activities



# Typical IT Infrastructure

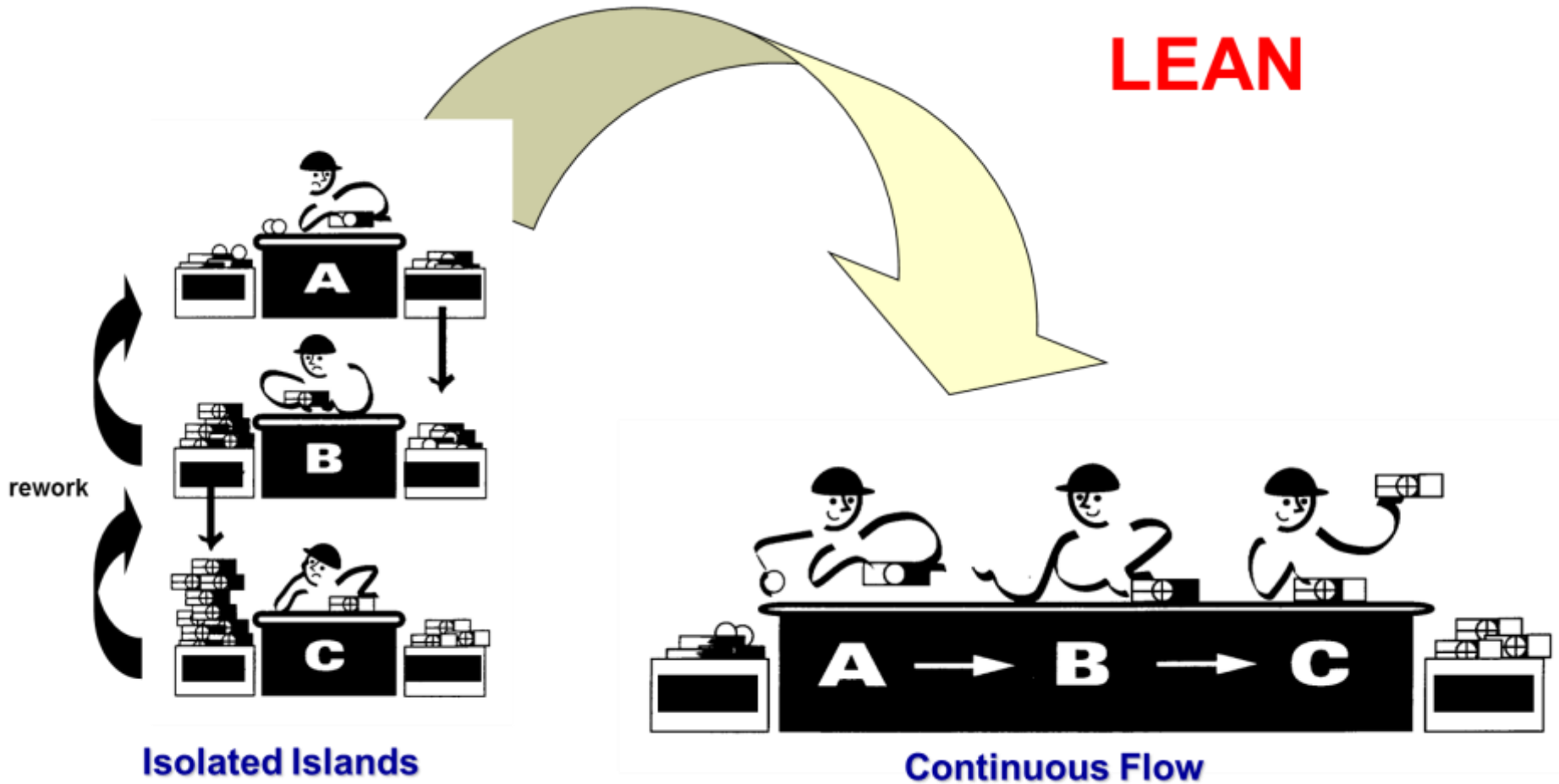




Source: ABPM

# Remove Barriers $\Rightarrow$ Build Bridges

**LEAN**

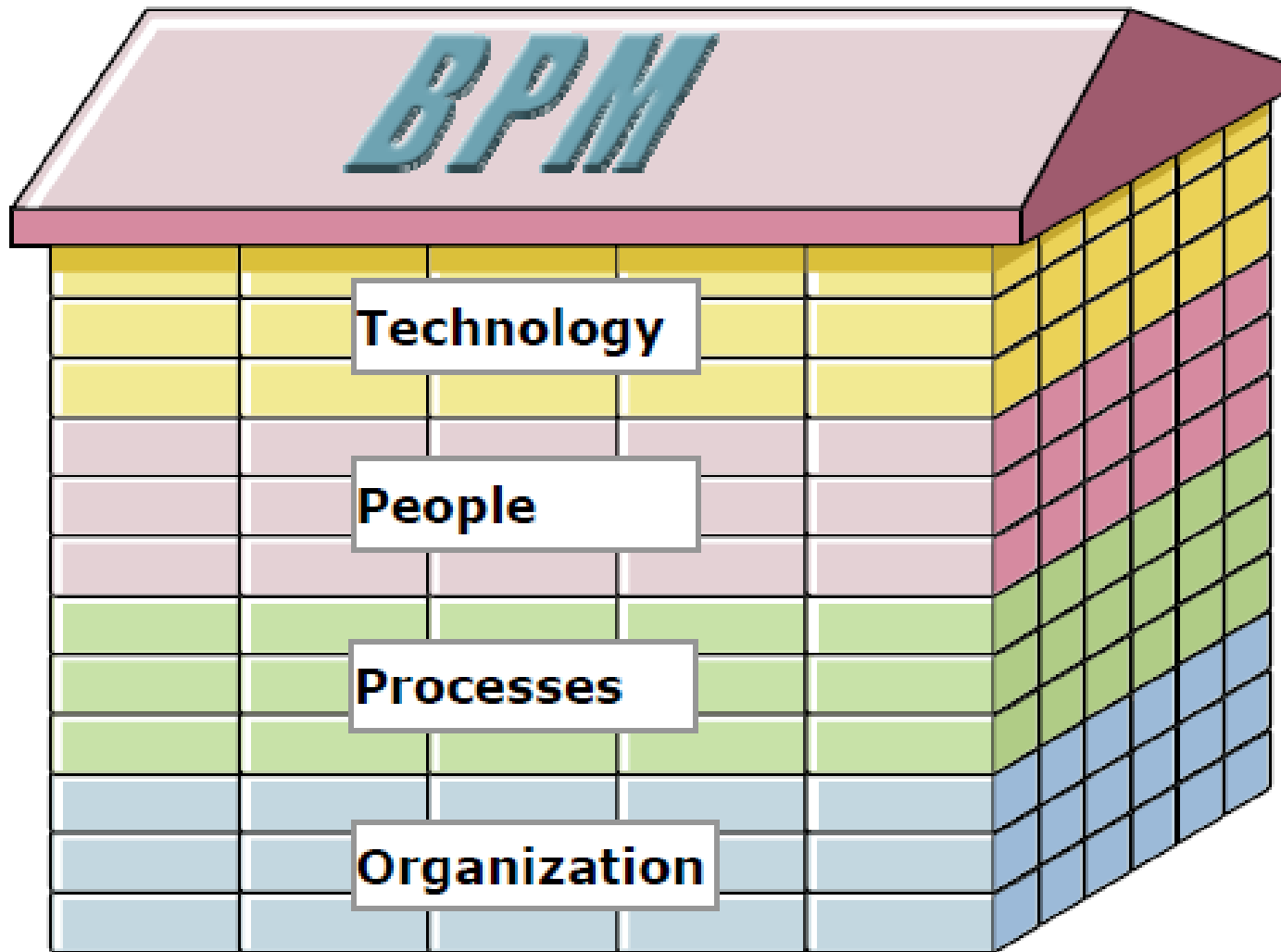




## BPM Vision

- BPM is the means by which companies and governments improve their operations by leveraging internal business expertise in new, scalable ways. This is achieved by directly **engaging** business people in the design, definition, and creation of enterprise-class process applications.

# BPM Building Blocks



## Process definition

- A set of activities that takes specific inputs and converts them into specific outputs in a defined, predictable fashion.



## “Key Insights” about Business Processes



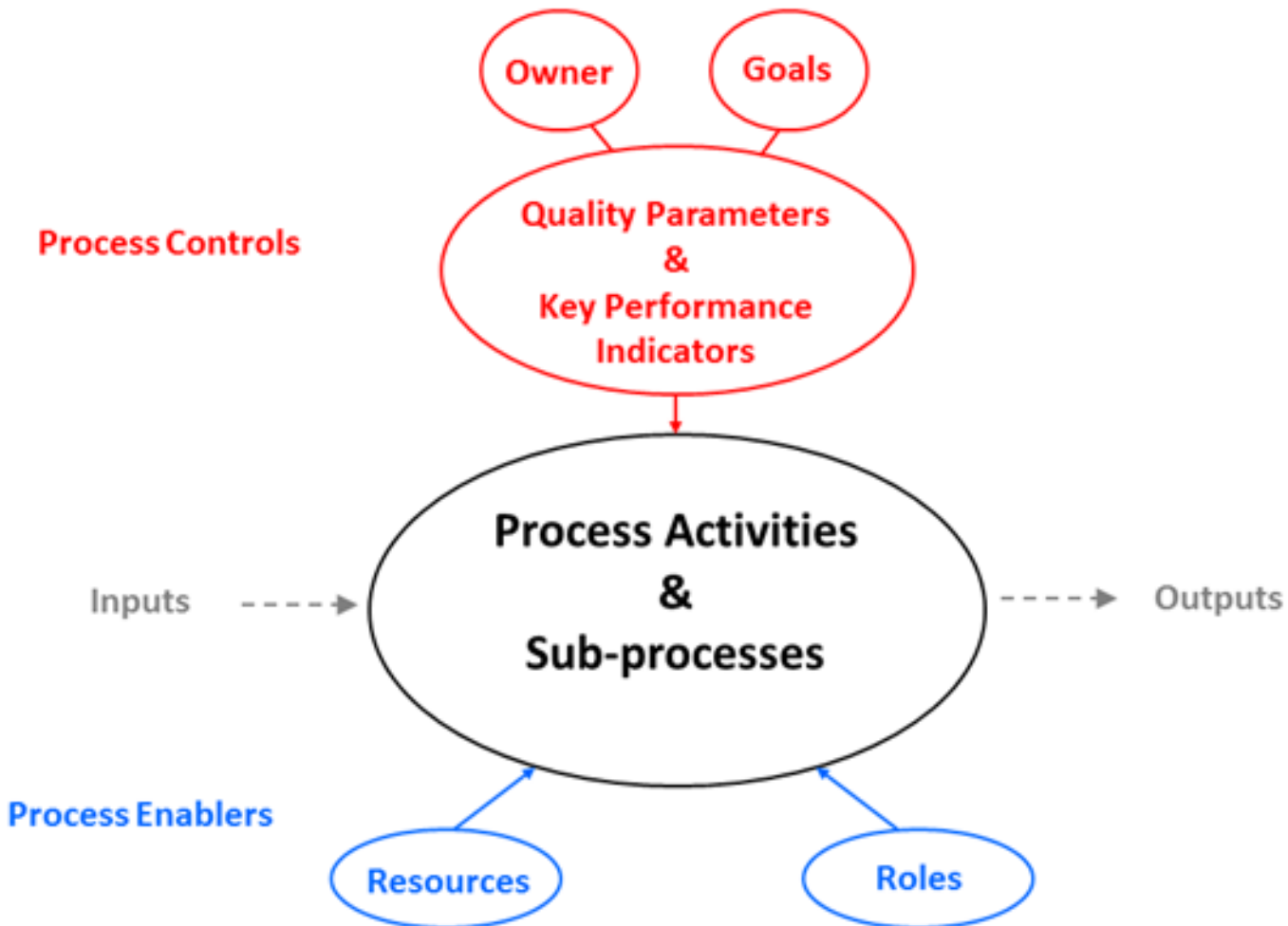
# ***Dr. Michael Hammer***

***IDS Scheer ProcessWorld***

- 1. “A bad process is better than no process!”**
- 2. “A good process is better than a bad process!”**
- 3. “Even a good process can be made better!”**



# Universal Process Model

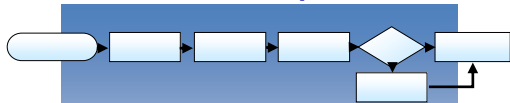


Universal Process Model • Version 2.5 • © 2013 Paul A. Holt • All Rights Reserved

# Which Process is the Correct Process?

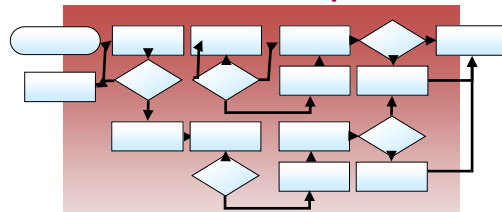
- There exist three different types of process description:

***„I think“*** the proces is...



Typical state of knowledge in time  
we start to analyze processes

***„I know“*** the proces is...



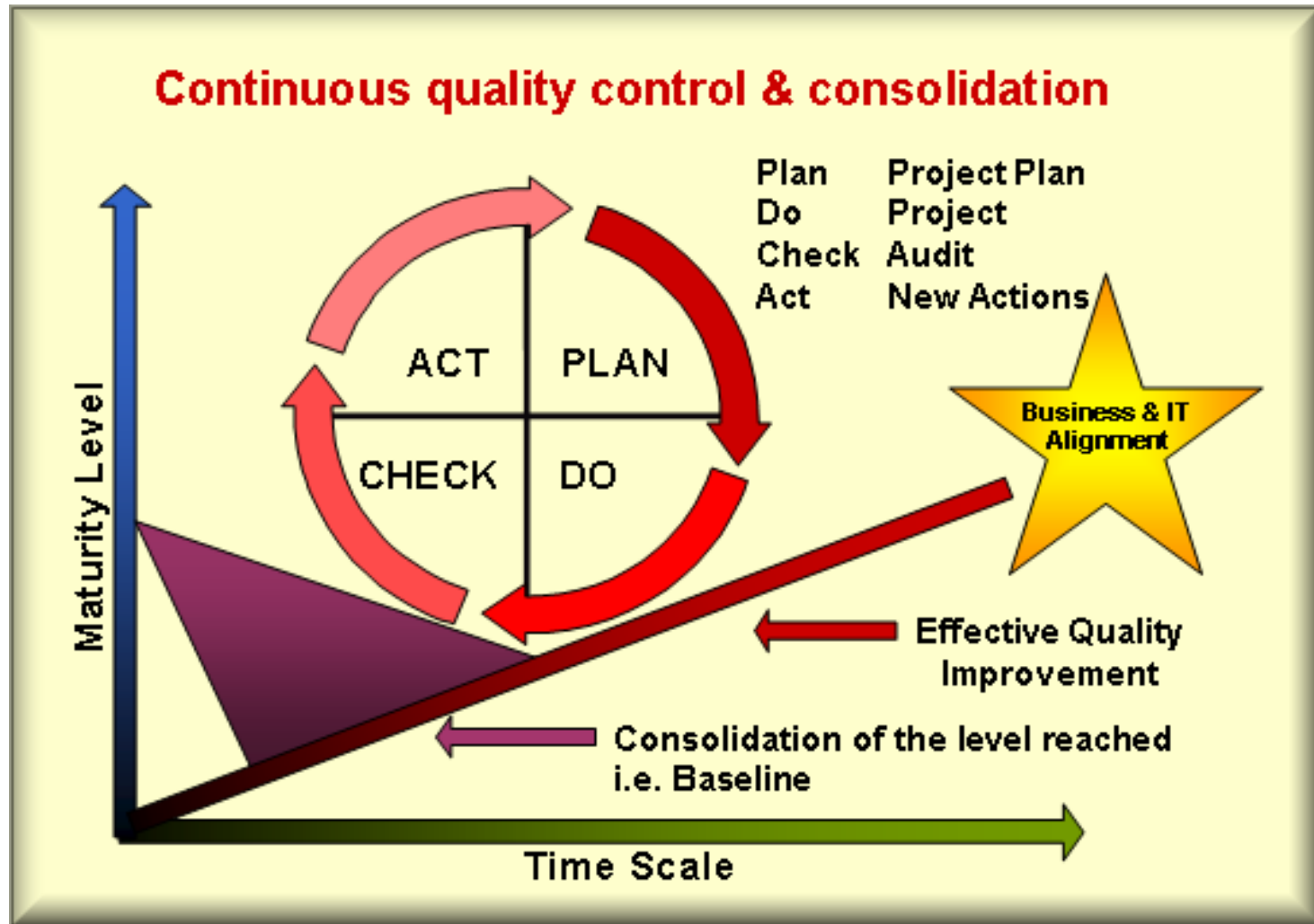
**AS-IS**

Possible future process...

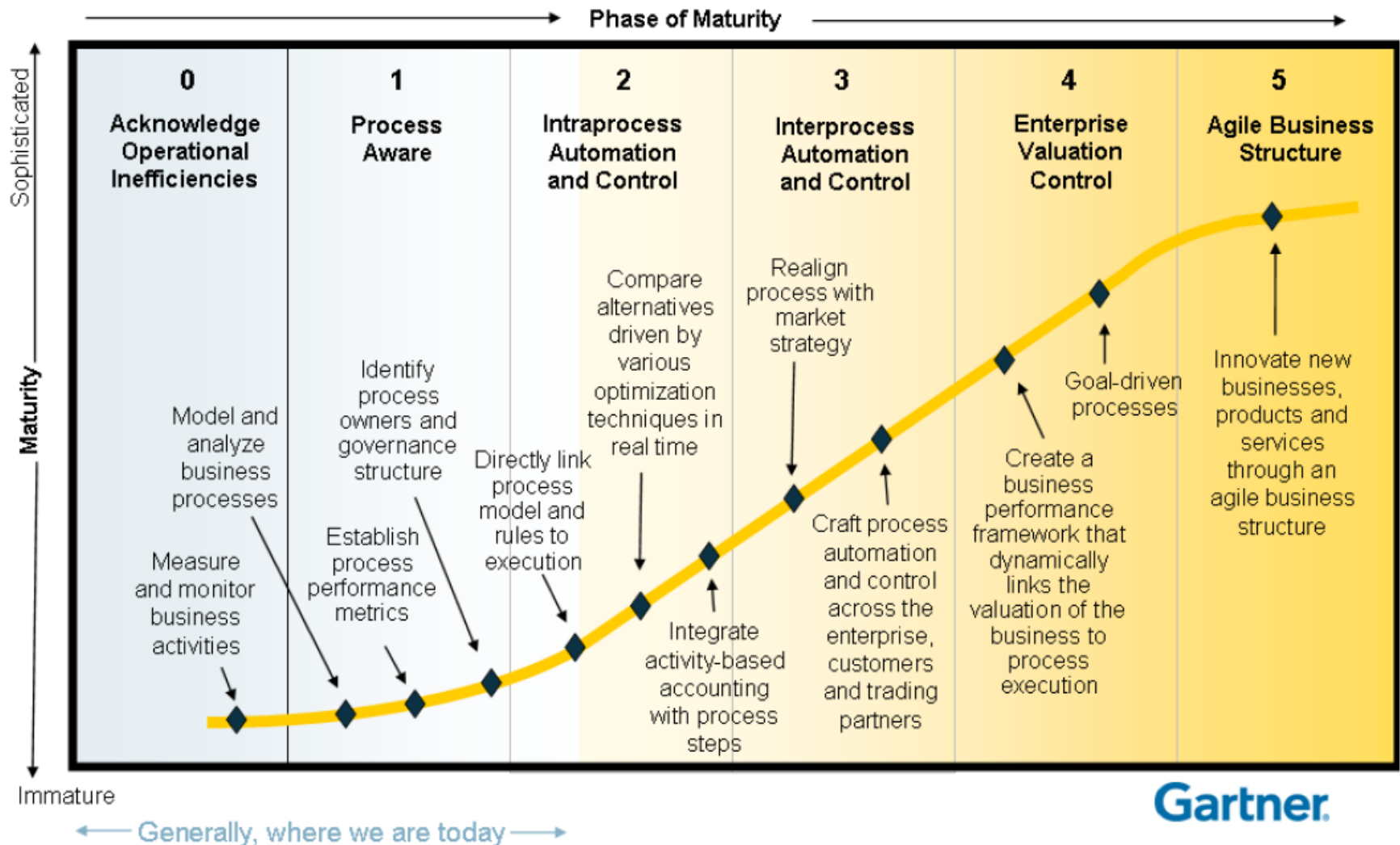


**TO-BE**

# Demming Cycle



# BPM example roadmap to organizational maturity





# Discover the value of Business Process

Reduced process costs	10 - 15%
Increased quality / reduced number of errors	10 - 30%
Reduced process throughput times	10 - 30%
Reduced training time / expenses	10 - 30%
Reduced number of (internal) support requests	15 - 30%
Reduced number of customer complaints	20 - 30%
Increased forecast accuracy	15 - 30%

**Total BPM project investment** (including all costs) represents **< 20%** of the identified and validated **cost savings potential**.

**Reduction of waiting times** for customers by **half**, **increase in the number of contracts** that can be concluded without further inquiries by **28%**, and **reduction of the number of complaints** by **60%**.

**Reduction of process variants** by approx. **30%** in the offer-to-cash process and of **investment payback period** to approx. **1.5 years**.

» Process-oriented realignment **increased productivity by 30%**. «

**VORWEG GEHEN**

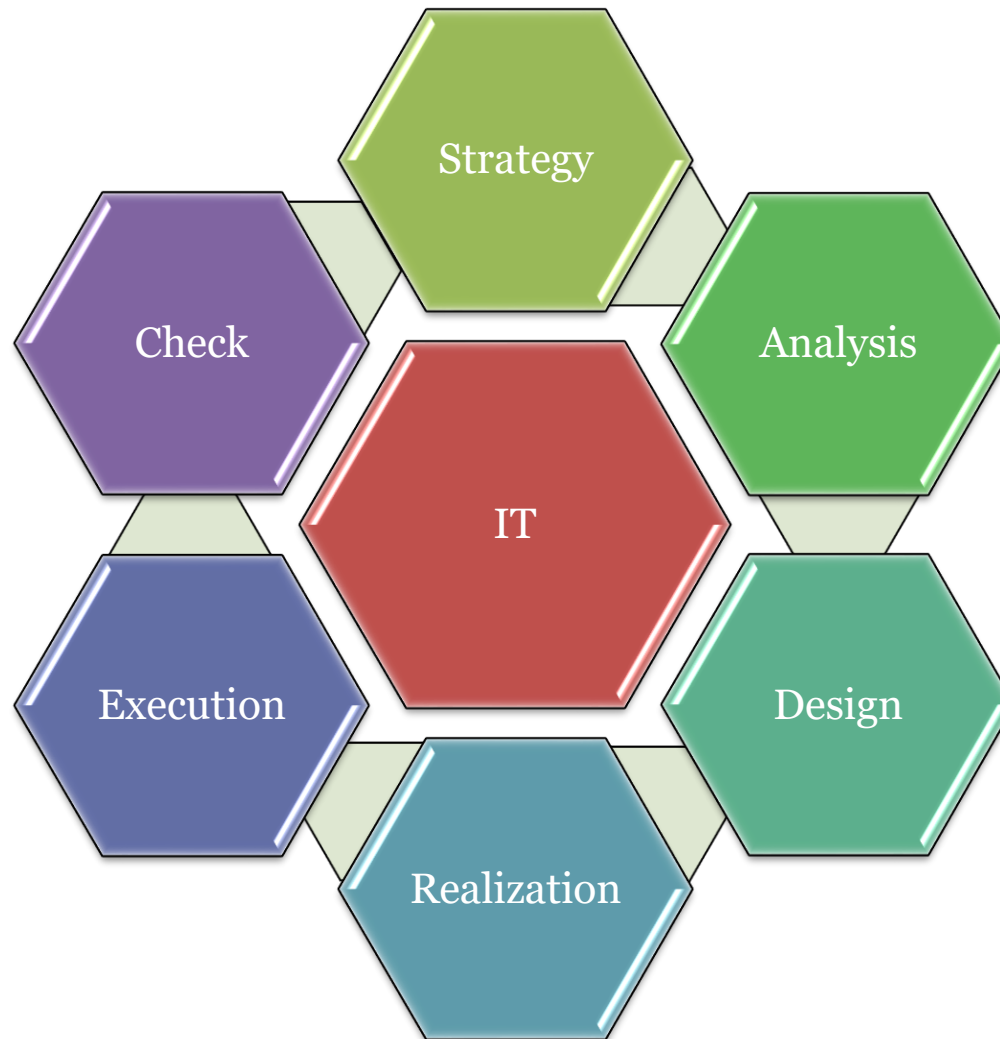
Frank Bertenhoff  
Head of account and process management, RWE Kundenservice GmbH

Establishment of **BPM governance** delivered **99% standardization**, thereby boosting margins by **5%** and reducing average administration costs by **a third**, marketing and sales expenditure by **10%**, and IT costs by **25%**.

» We are **saving three million euros a year** in operating costs. «

Stefan Trägler, Organizational Director, Landesbank Berlin

# Business Process Excellence



# Road to „Process Excellence“

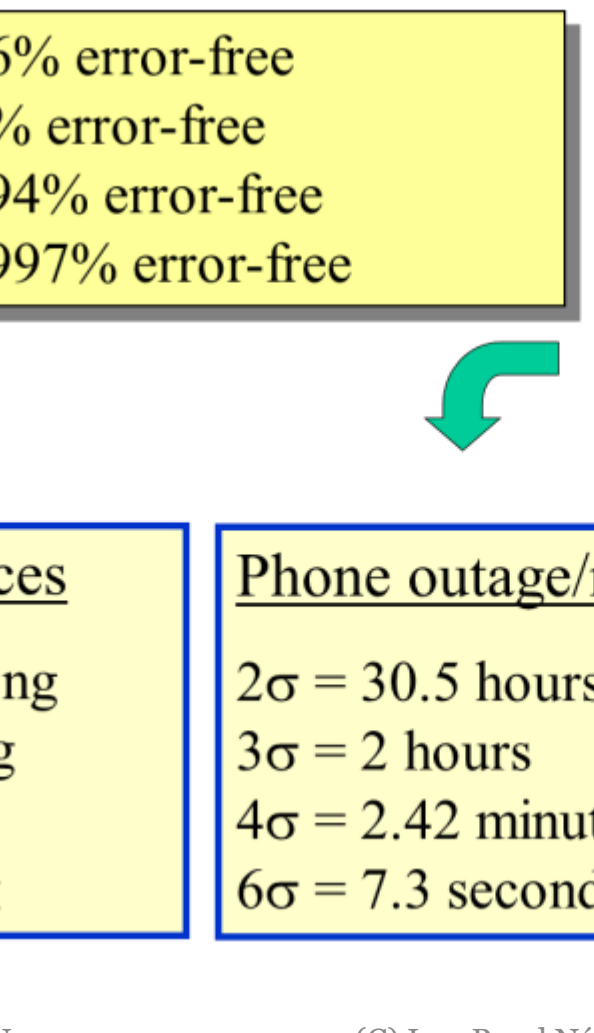
- Elimination of Waste
  - Lean
- Standardization
  - Best practices
- Minimization of Variability
  - Six Sigma
- Elimination of Constraints
  - Theory of Constraints (TOC)
- Improvement
  - Kaizen



改善  
**KAIZEN**  
空  
会手

# 6σ as a Main Goal

2 Sigma = 95.46% error-free  
 3 Sigma = 99.7% error-free  
 4 Sigma = 99.994% error-free  
 6 Sigma = 99.9997% error-free



Z(st)	Defects per Million Opportunities (DPMO)
2	308,537
3	66,807
4	6,210
5	233
<b>6</b>	<b>3.4</b>

## 100,000 invoices

2σ = 4,540 wrong  
 3σ = 300 wrong  
 4σ = 6 wrong  
 6σ = 0.3 wrong

## Phone outage/month

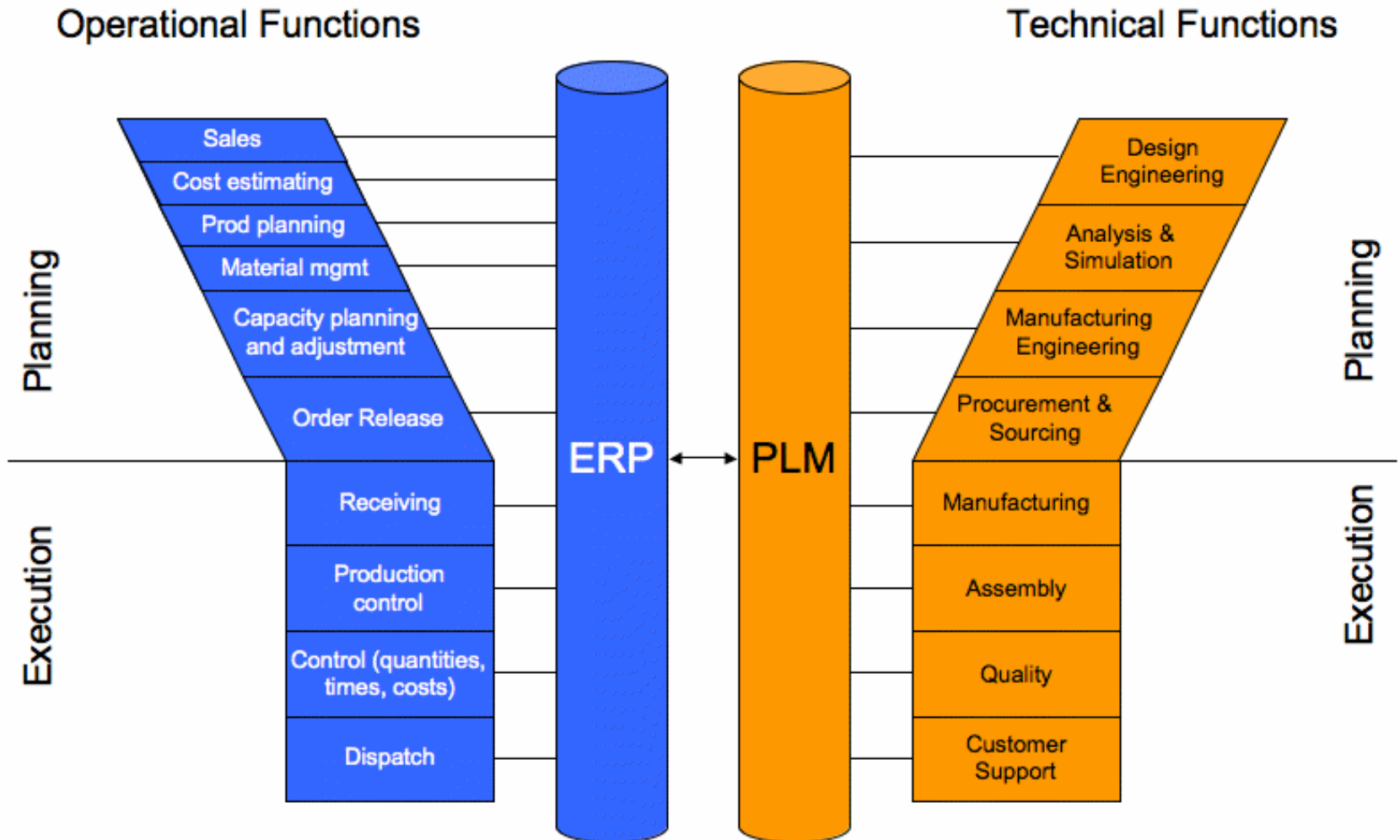
2σ = 30.5 hours  
 3σ = 2 hours  
 4σ = 2.42 minutes  
 6σ = 7.3 seconds

## Lights outage/week

2σ = 7.6 hours  
 3σ = 30 minutes  
 4σ = 36 seconds  
 6σ = 2 seconds



# PLM Processes



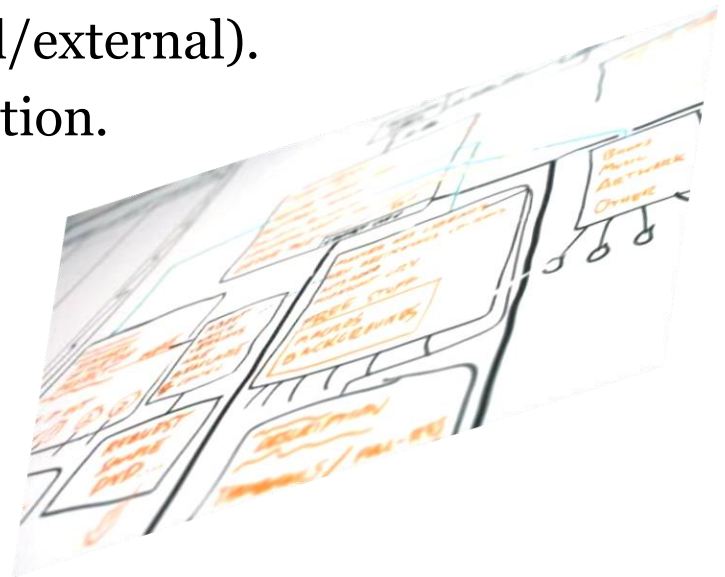
# Typical Application Areas of BPM in IT

- **System Integration**
  - Integration-centric
  - ESB, SOA architecture
- **Document Oriented Systems**
  - Document-centric
  - Content management, ECM
- **User Oriented Systems**
  - Human-centric
  - Complex support, including user activities

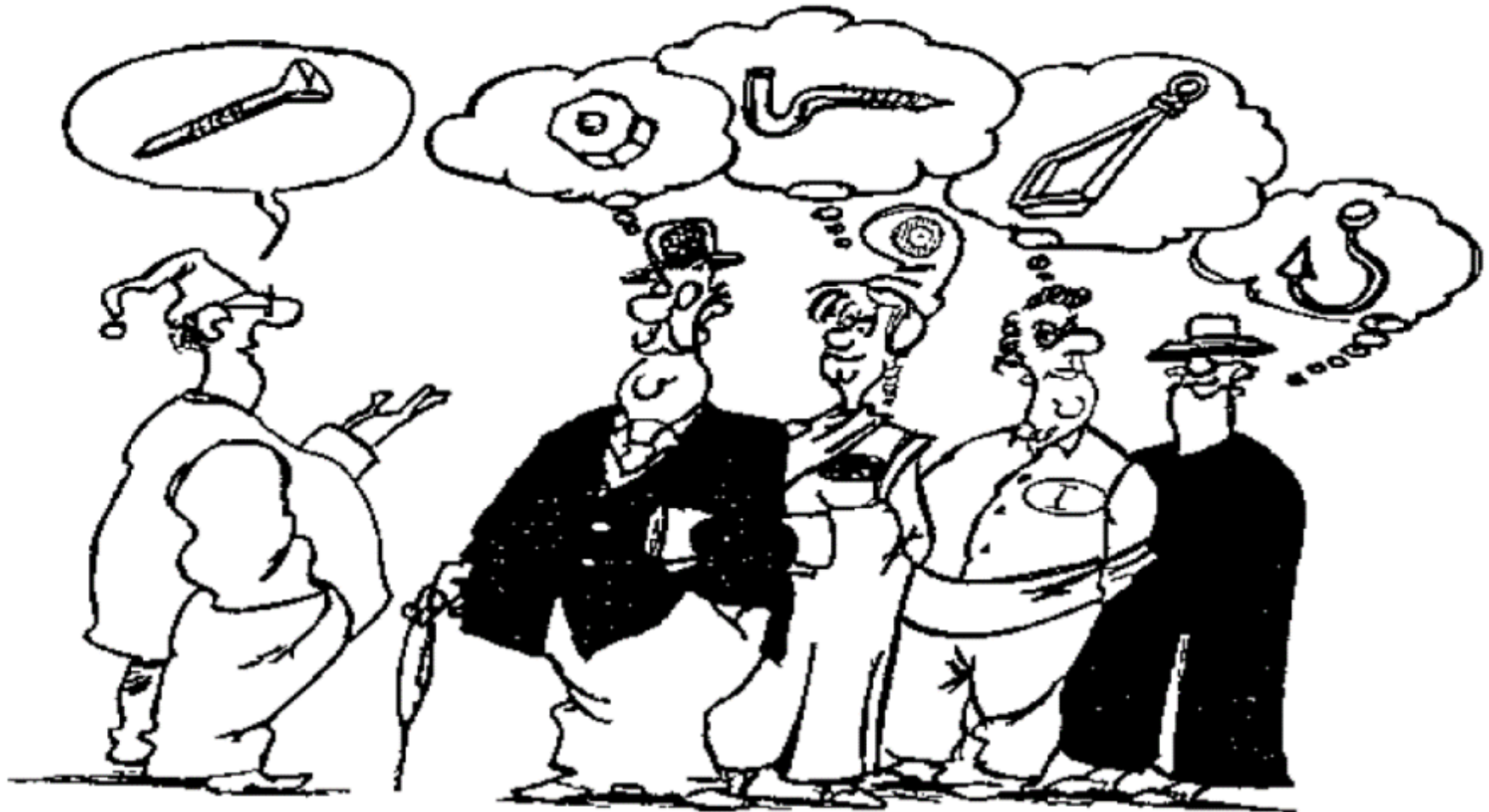


# Important Parts of BPM Implementation?

- Geary Rummler - Three Levels of Performance Framework
  - Relational map
    - Organizational structure (internal/external).
    - Relations inside/outside organization.
  - Cross-functional process map
    - „Workflow“ (?!)
    - Flow through the organization
    - „Swimlane“ diagram
  - Flowchart
    - Set of activities producing specific output



# Methodology/Notation for Process Description



Zdroj: Software AG

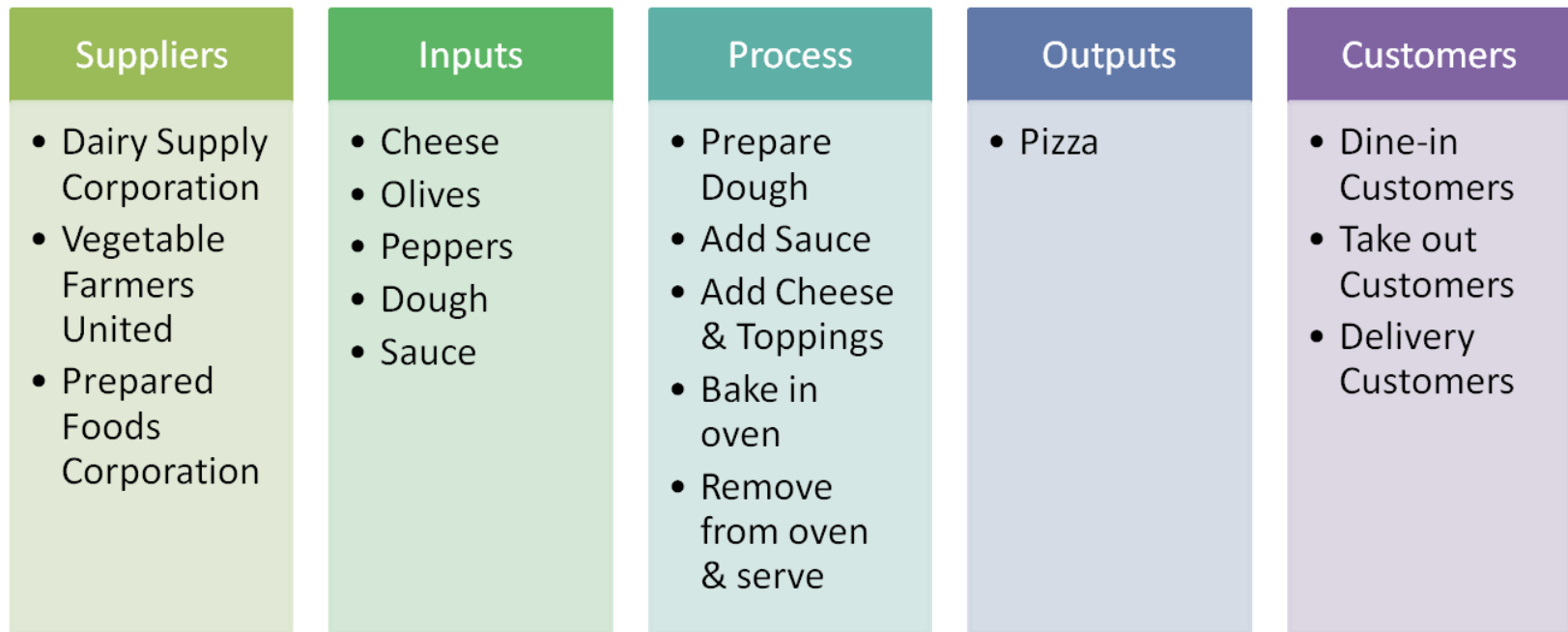
# Different Notations





# SIPOC Diagram

## Pizza Process



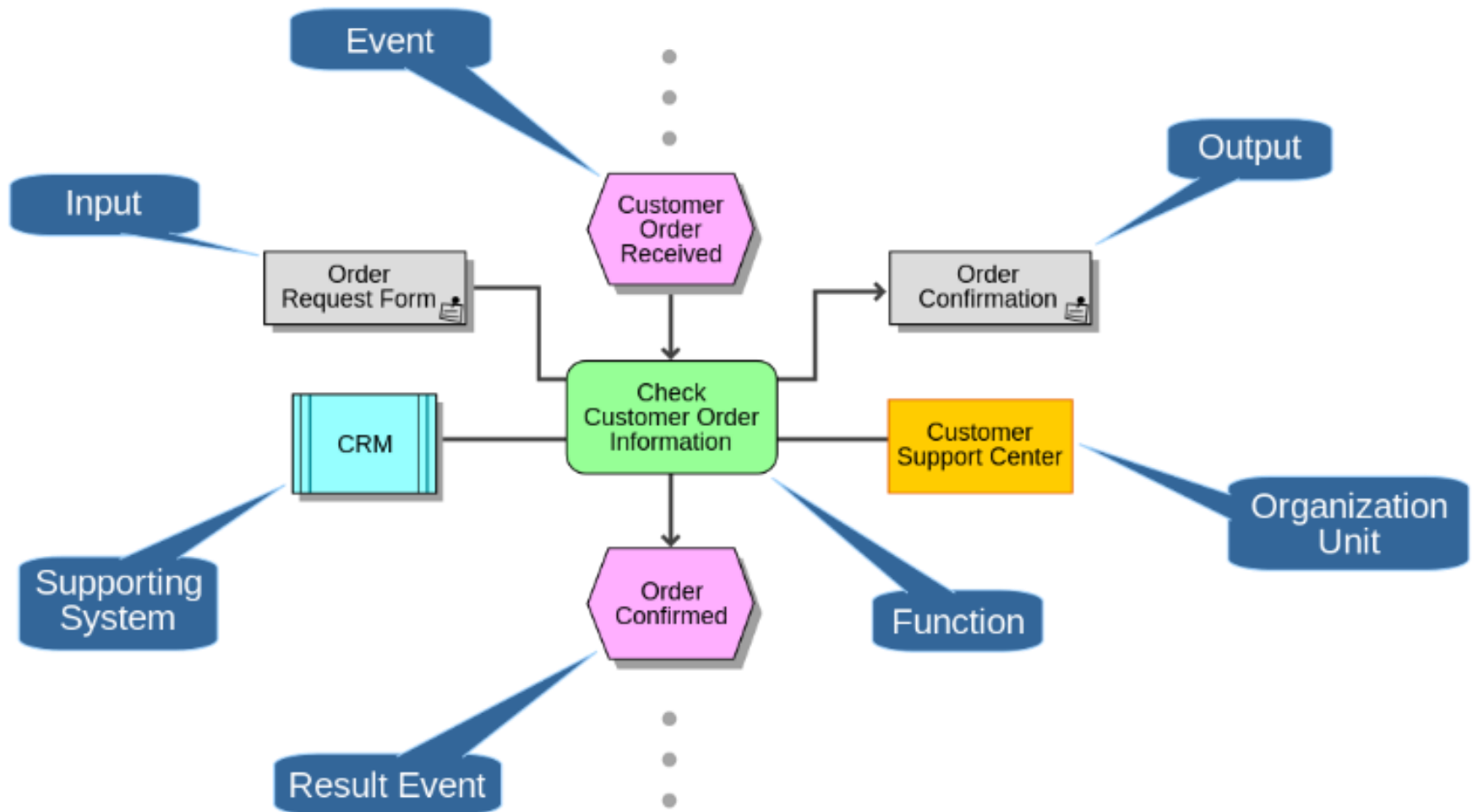
# Event-driven Process Chain (EPC)

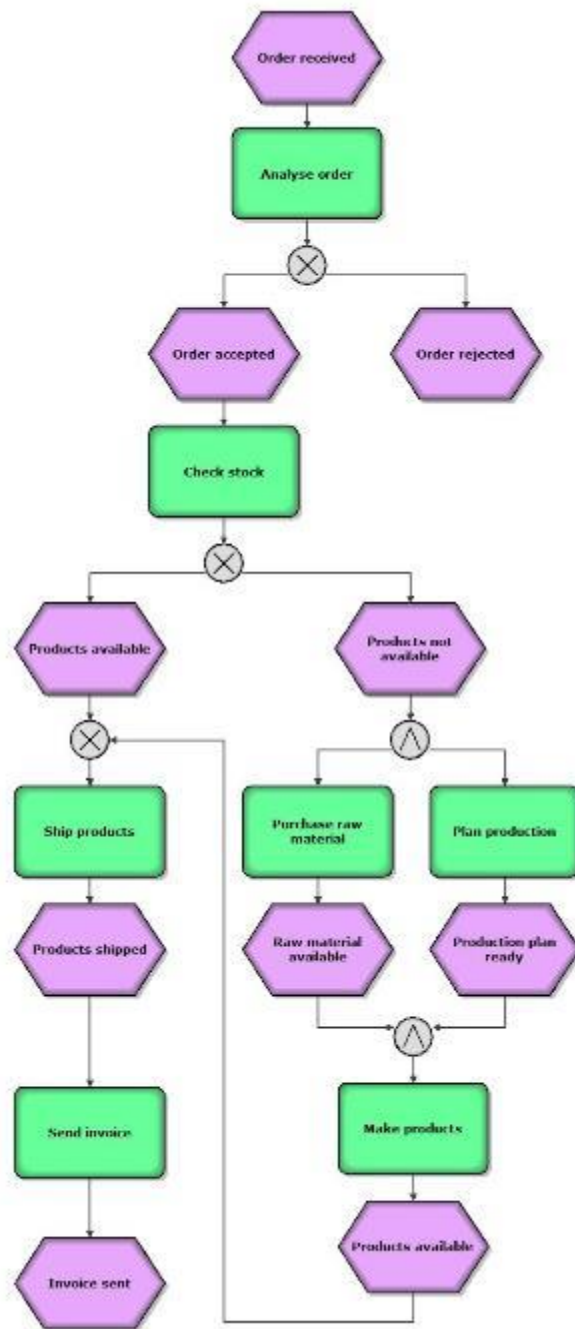
- Flowchart used for business process modelling.
- EPCs can be used for configuring an enterprise resource planning (ERP) implementation, and for business process improvement.
- The method was developed within the framework of Architecture of Integrated Information Systems (ARIS) by August-Wilhelm Scheer at the Institut für Wirtschaftsinformatik, Universität des Saarlandes (Institute for Business Information Systems at the University of Saarland) in the early 1990s.

## EPC Definition

- *An Event-driven process chain (EPC) is an ordered graph of events and functions. It provides various connectors that allow alternative and parallel execution of processes. Furthermore it is specified by the usages of logical operators, such as OR, AND, and XOR. A major strength of EPC is claimed to be its simplicity and easy-to-understand notation. This makes EPC a widely acceptable technique to denote business processes.*

# Elements of an Event-Driven Process Chain








# ARIS EXPRESS

- EPC modelling tool based on Java
- Freeware, downloadable from:
  - <http://www.ariscommunity.com/aris-express/>
  - Requires registration
  - Possible to download additional materials





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