Process design & BPMS

PV207 – Business Process Management

Spring 2015

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Last lecture summary:

- Course content & goals
- Team of lecturers and tutors
- BPM intro & history
- Organization
  - Lectures & seminar-sessions organisation
  - Homework assignments
  - Continuous feedback
  - Team project
  - Evaluation and examination
- Information sources
- Questions and intentions

Last lecture recap

- BPM

Last lecture recap

- BPM
- BPM Motivation

Last lecture recap

- BPM
- BPM Motivation
- BPM use cases

Lecture overview

- Processes
  - What is business process?
  - What is BPM?
  - What is BPM adoption?
  - Why BPM ?
  - Roles in BPM
  - Process life-cycle
  - Phases of process based development
- BPMS
  - BPMS components
  - Architecture
  - Human Tasks
  - Business Rules
  - BAM
  - Existing BPMS

Business process definition

Definition:

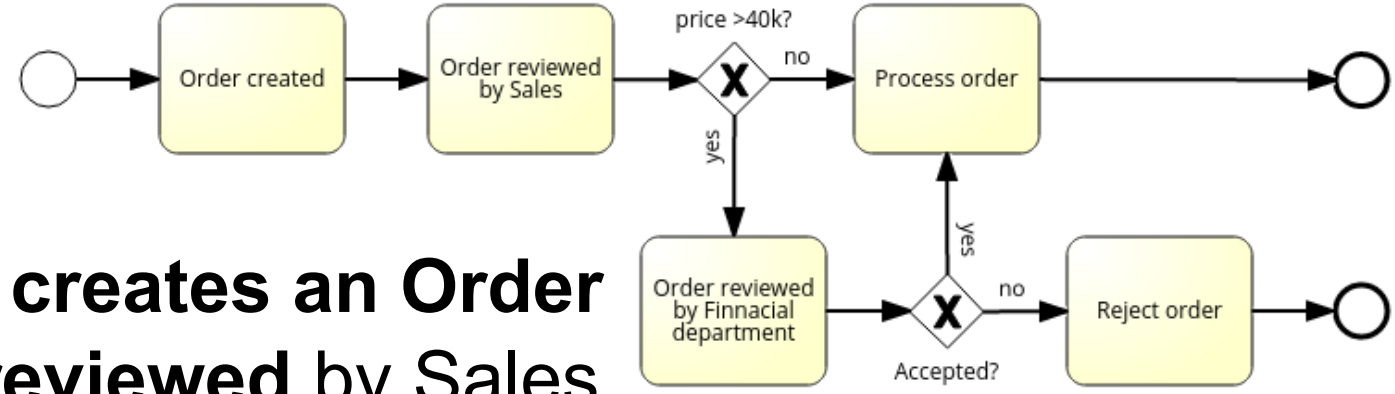
Series of logically related activities or tasks (such as planning, production, sales) performed together to produce a defined set of results.

-- Business Dictionary:

*A repeatable sequence of **logically related** activities, which contributes to fulfilment of **one or more** business objectives*

-- Jiří Kolář

Process Example: Order



1. Customer **creates an Order**
2. **Order is reviewed** by Sales
   2.1. If price of the Order is **lower** than 40 000$, it is accepted
   2.2. If price is **over** 40 000$ it have to be confirmed by Financial department
   2.3. Order can be rejected by the department
3. Otherwise the order is processed

Business Process Management

Management discipline for systematic **definition**, **execution** and **measurement of processes** in organizations

Picture downloaded from http://www.what-is-bpm.com/bpm_primer/bpm_primer.html

BPM adoption - definition

*A **change** in target organization **towards the** establishment of a **process-driven management** model.*

*This can, but does not necessarily have to, lead to the **automation** of some processes in a **process-oriented Information Systems**.*

*Such systems can be eventually based on a **Business Process Management Suite***

BPM adoption in practice

- Organisational and management changes towards a process-oriented approach
  - Rengineering
  - Efficiency & quality measurement
  - Certifications, standards & legal compliance

- Tailoring organisation's Information Systems towards process-oriented principles
  - Business integration (direct link business <-> IT)
  - High level technologies
  - Integration of legacy systems

Business Process Management vs. Workflow Management

- Workflow ~= Business process
- **Work-flow management** = definition + management of work-flows
- **Business Process Management** = definition + execution + monitoring + improvement
  - Standardization involved

- **Workflow system** = usually a proprietary system for execution of defined sequences of activities

Why to adopt BPM?

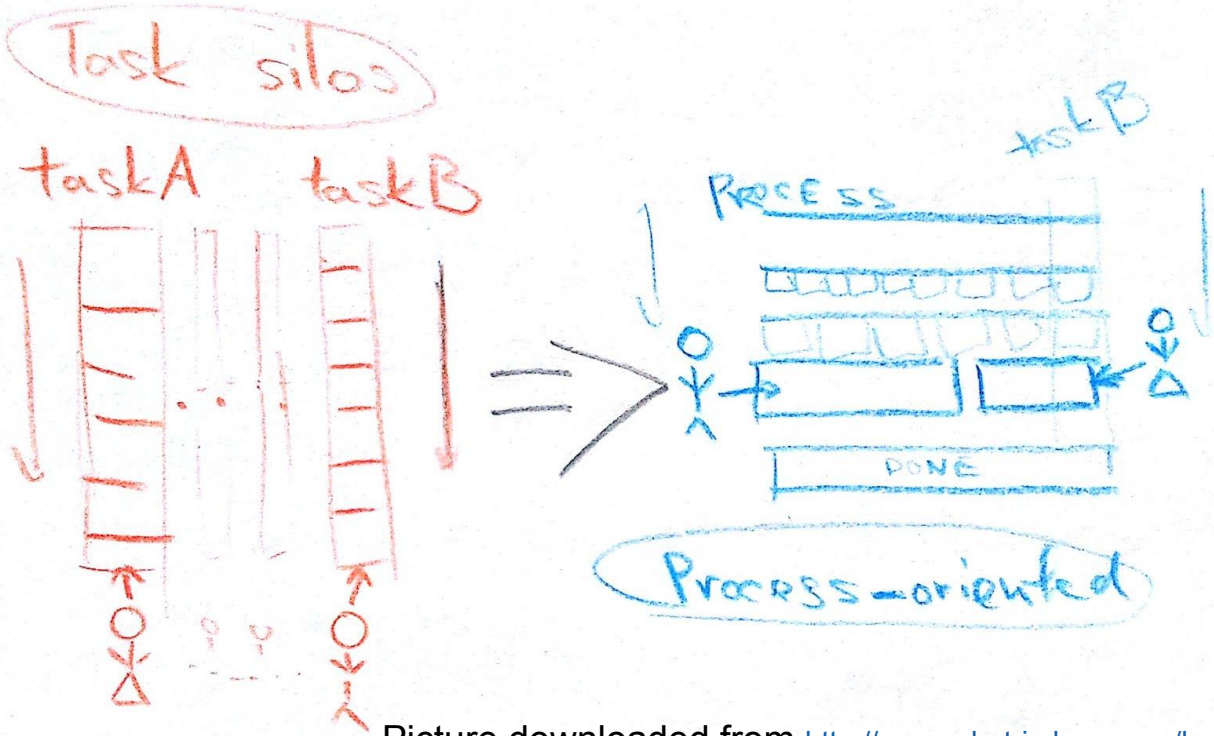
- **Know-how codification**
  - **Value** of processes as a **know-how is increasing** in today's **knowledge economy**
  - Less vulnerability caused by employee fluctuation
- Performance and costs **measurement**
- Better business-change management
  - Changes can be performed easier
  - Impact of change can be measured
  - Important to choose good level of process rigidity
- Increased **transparency**

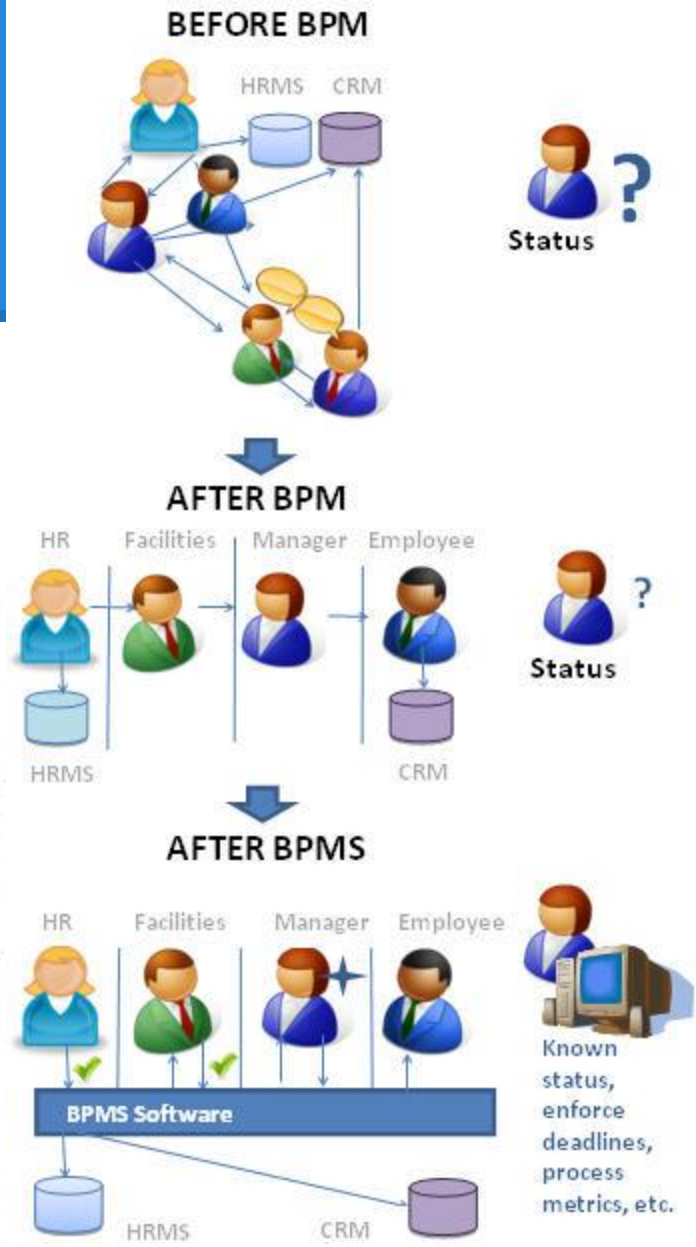
Why to adopt BPM? (cont.)

- **Outsourcing** and business services integration
  - Measurement of outsourced services quality
- Increase of **quality**
  - Better **error detection** and **exception handling**
  - **Detection of bottlenecks** & weak points of organisation
  - Compliance with ISO standards (2000X, 9001)
- Better organisation of work-flow /process
  - **Higher efficiency** = reduction of costs
  - **Early detection of problems**

Why to adopt BPM?

- **Flattening** organisation's hierarchy
  - Elimination of "**silo effect**"
  - **Horizontal job character**





Picture downloaded from http://www.what-is-bpm.com/bpm_primer/bpm_primer.html

BPM adoption drawbacks :(

- **High initial costs**
  - Technologies & tools are expensive and not widely available
  - Change is always expensive
- **Change in people's mindset** is necessary (it hurts ;)
- Changes in organization structure
  - Fear of the change
  - Fear of job loss
- Agreement of all major decision-makers is crucial (not so easy)

Potential risks of BPM adoption

- **Loss of business flexibility**
  - Too high process rigidity
- Demotivated/Annoyed employees
- **High investments** in BPM solution
- Inefficient management changes
- Technological overkill
- Non-realistic process definitions

Basic roles in BPM adoption

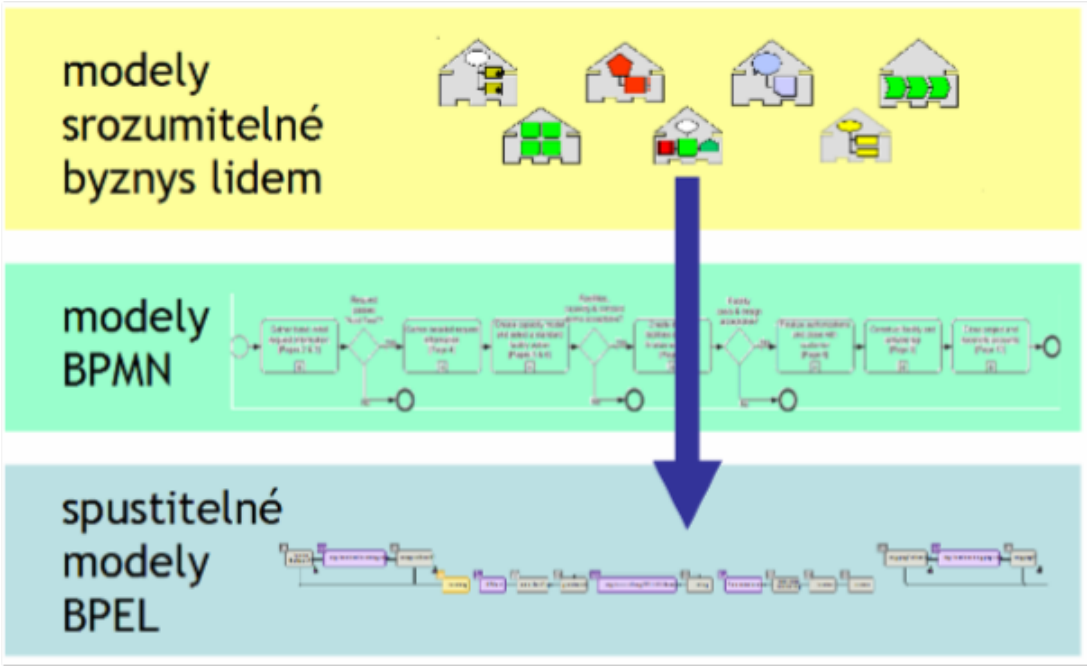
Organisation's stakeholders (Owners, Management, Customers, Partners etc.)

- Everybody involved in system context

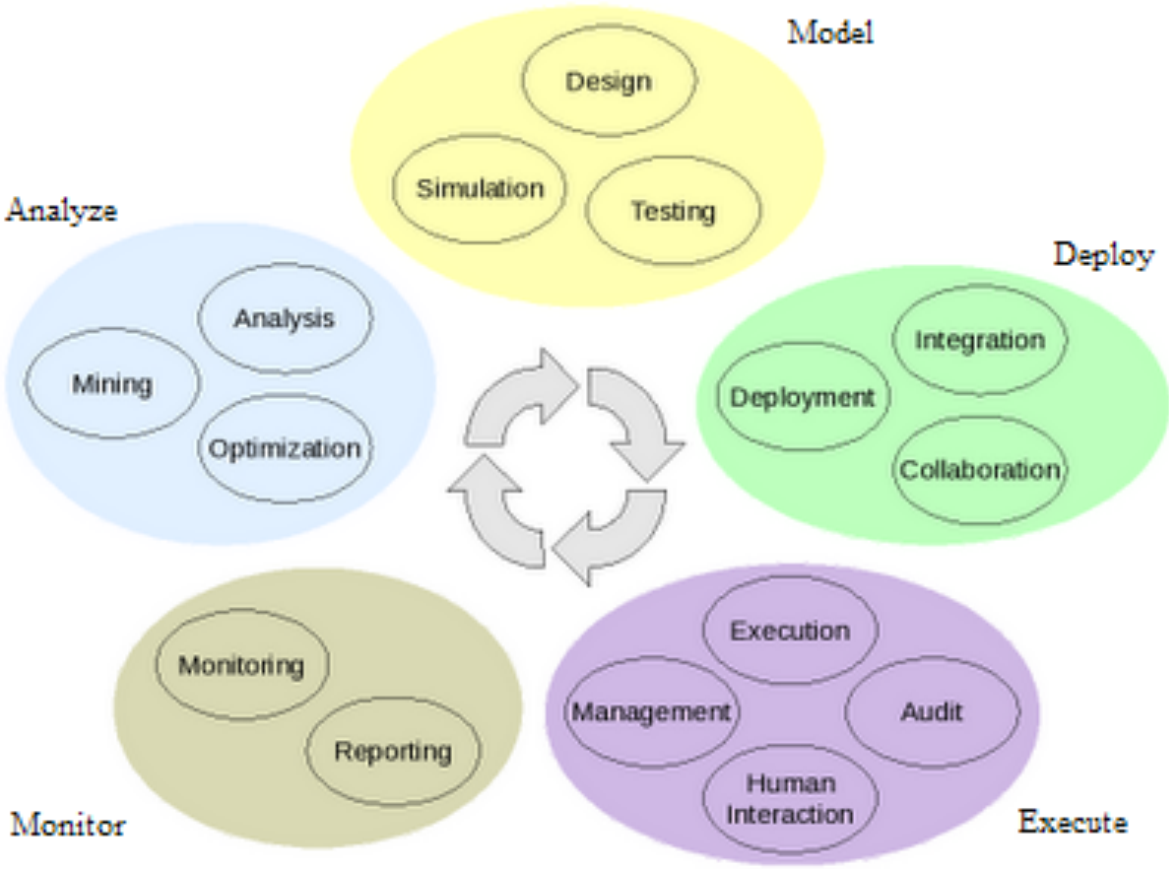
- Business analyst
  - Identifies and define processes that fulfil goals
- Process specialist
  - Model and implement processes, design service integration
- System developer (Integration specialist)
  - Implements services and underlying system components

Process development

- Analysis
- Design
- Implementation



BPM lifecycle



0. phase:Business analysis

- **Roles identification**
- Business **Goals definition**
- **Objectives definition**
- Identification of **existing processes**
- **Process architecture** (relationships)
- **Reengineering** of existing processes and **definition of new** ones
- **Metrics/KPI/KRI** definition (Key Performance/Result Indicators) for Goals/Objectives

1. phase: Process definition

- **Which objective** is **being fulfilled** by the process?
- What is the **value created** by the process?
- What are **Inputs and Outputs** of the process?
- Which **metrics** should be on the process?
- Who is **Process owner**?
- Which **roles** participate on process?
- **Goal:**Obtain valid and measurable processes

2. phase: Process modeling

- Model logical structure of the process
- Should be readable by all lifecycle participants
- (BPMN) Business Process Modeling Notation
  - Graphical notations
  - Portability (Standard)
  - Based on Petri-Nets formalism
- Modeling tools
  - Stand-alone
  - Part of BPMS

3. phase: Implementation

- **BPMN-executable** (Level 3)
  - BPMN execution engine
  - Services implemented
  - Human task engine
- **BPEL** (Business Process Execution Language)
  - Getting **deprecated**
  - Language for **service orchestration**
  - XML , Block language
  - BPEL skeleton (template) often generated from BPMN
- **XPDL** and other minor stuff

4. phase: Monitoring

- **Reasons** for process monitoring
  - **Fault/Error detection**
  - **Performance measurement**
  - Information for **process improvement**
- **Business Activity Monitoring**
  - Real-time process monitoring
  - Measurement of process metrics
- Key Performance/Result Indicators
  - **Business performance**
  - Derived from process metrics

Tracking of **business goals fulfillment**

5.phase : Process improvement

- Reasons:
  - Measured **gaps in performance**
  - **Changes of process** in real world
- Continuous process improvement:
  - Detection of **inefficient parts** of process
  - **Bottlenecks**, **cost inefficiency**
  - **Design and validation** of change (simulation)
  - **Process modification**
  - **Deployment** of optimised version
  - **Monitoring**
  - <> repeat until dead;

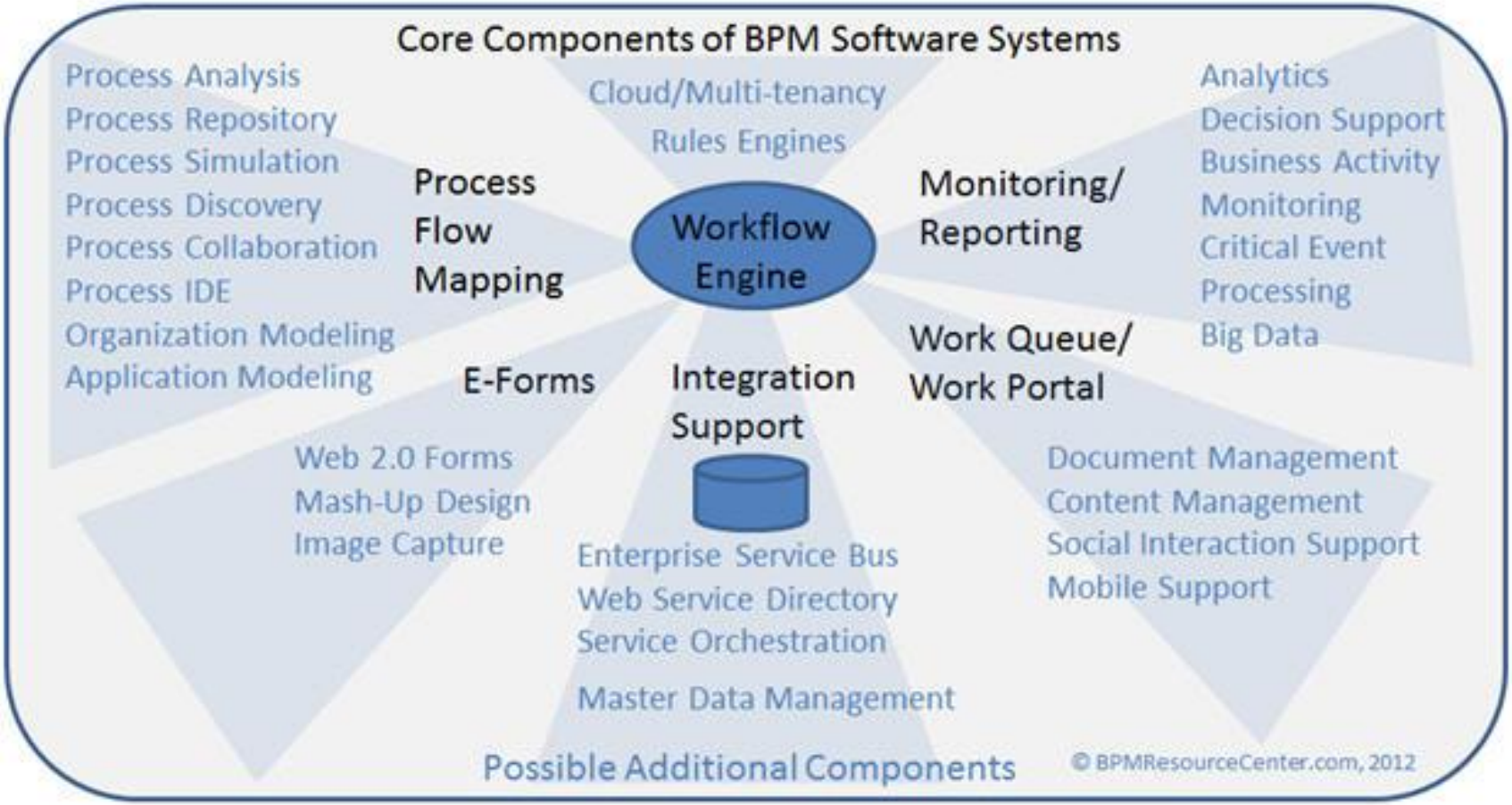
Questions?

Break 10mins

Business Process Management System

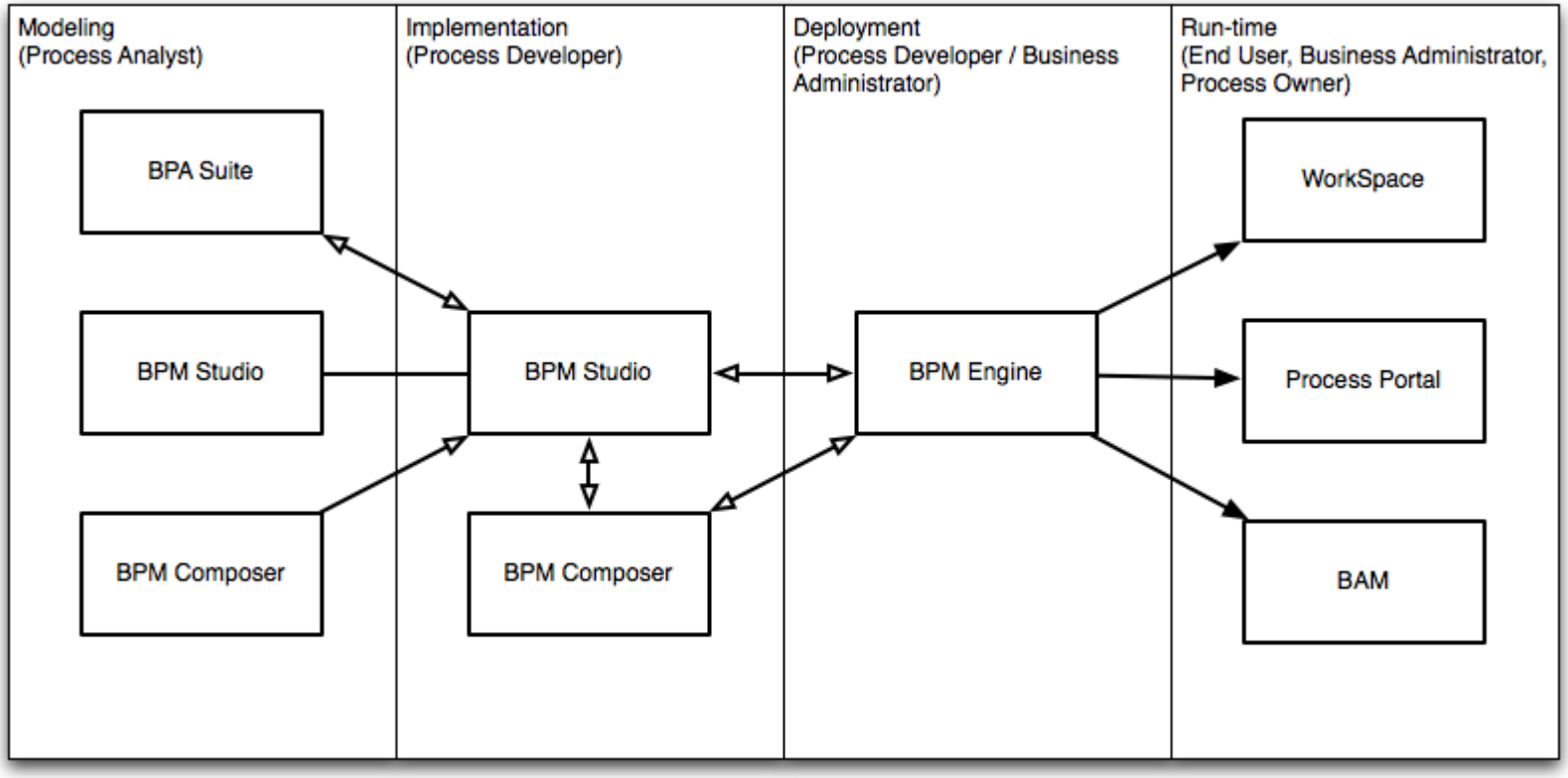
- Software suite (related SW tools)
  - modeling, execution and monitoring of processes
  - SW Tools of the process life-cycle phases
- BPMS components
  - Process modeller (OSS, commercial) **-modeling**
  - Process simulator (commercial with some exceptions)
  - Execution engine (OSS, commercial)
  - Process console (OSS, commercial)
  - Human tasks engine (commercial with exceptions)
  - Business Rule engine (few OSS, commercial)
  - Business activity monitoring (commercial).

BPMS components



Picture downloaded from http://www.what-is-bpm.com/bpm_primer/bpm_primer.html

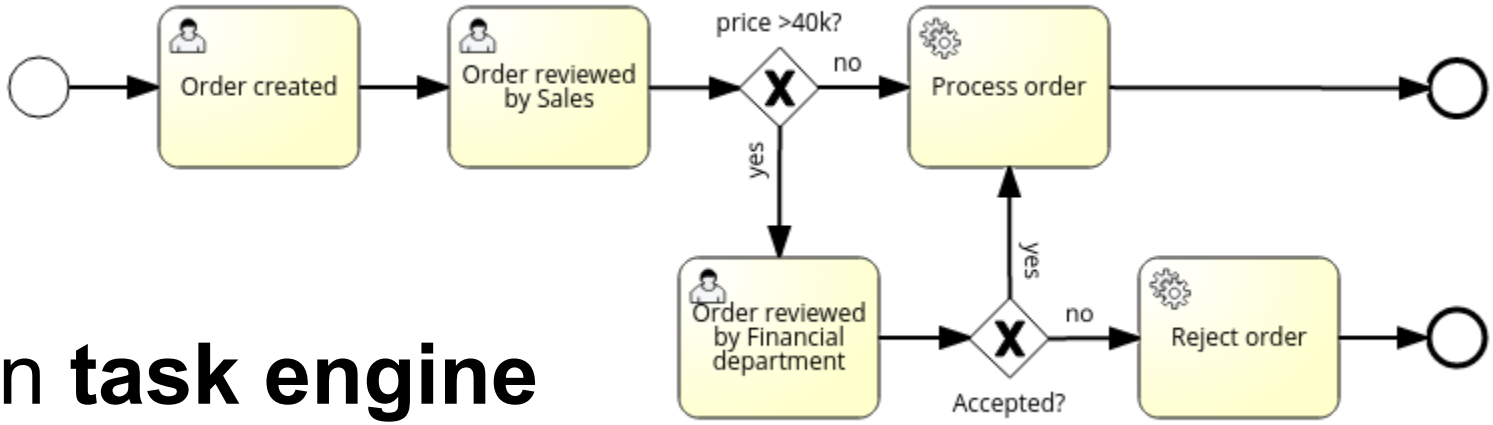
BPM lifecycle again



Picture downloaded from: http://docs.oracle.com/cd/E23943_01/user.1111/e15175/bpmug_intro_bpm_suite.htm

Human tasks

Human tasks = process **activities with necessary human interaction**



- Human **task engine**
  - **front-end user interface** for human tasks
  - **access control according to roles** and business objects from process
  - **mostly proprietary** solutions, portals are widely used

Human tasks

- Standards
  - **BPMN** (Level 3) define human tasks on process level
  - **BPEL4People**
  - WS-BPEL Extension for People
    - Web Services Human Task
    - Notifications, escalations, timeouts, forwarding, attachments
  - Implementation
    - Portal technologies
    - Web 2.0 form frameworks
    - Proprietary form solutions in BPMS

Business Rules

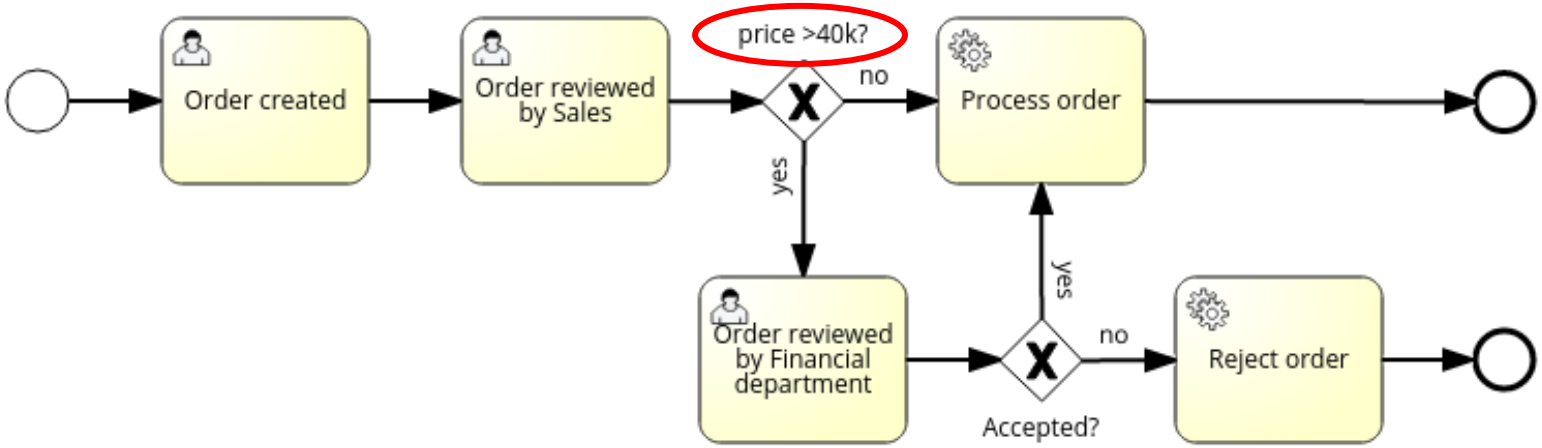
- Rules **stored aside from process**
- External **rules repositories**
  - Databases
  - XML files
  - Excel tables
- Simple scripting language for **rules evaluation**
- Rules are evaluated by Business Rules Engine
- **Rule + Input Business object => Output**

Business Rules (cont.)

- User interface for **rules management**
- Typically IF – THEN
- **Rules types**
  - Validation rules
  - Transformation rules
- Business Rulesets
- Business Rule Engine **often as a Web Service**

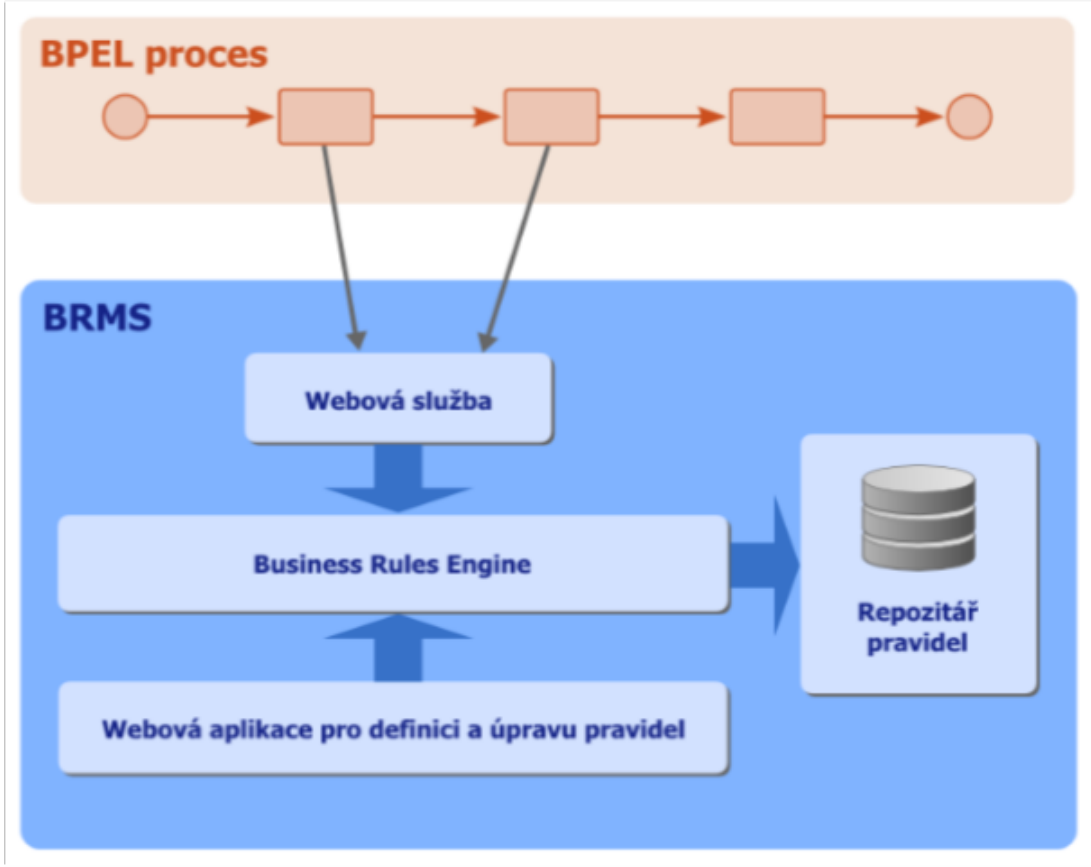
Business Rules – Example

- Rules decision in Order process:
  - Rule has **parameter (40 000$)**



  - We **change parameter** or **replace rule**
  - Rules can be changed **dynamically**

Business Rules Management system



Business Rules example:

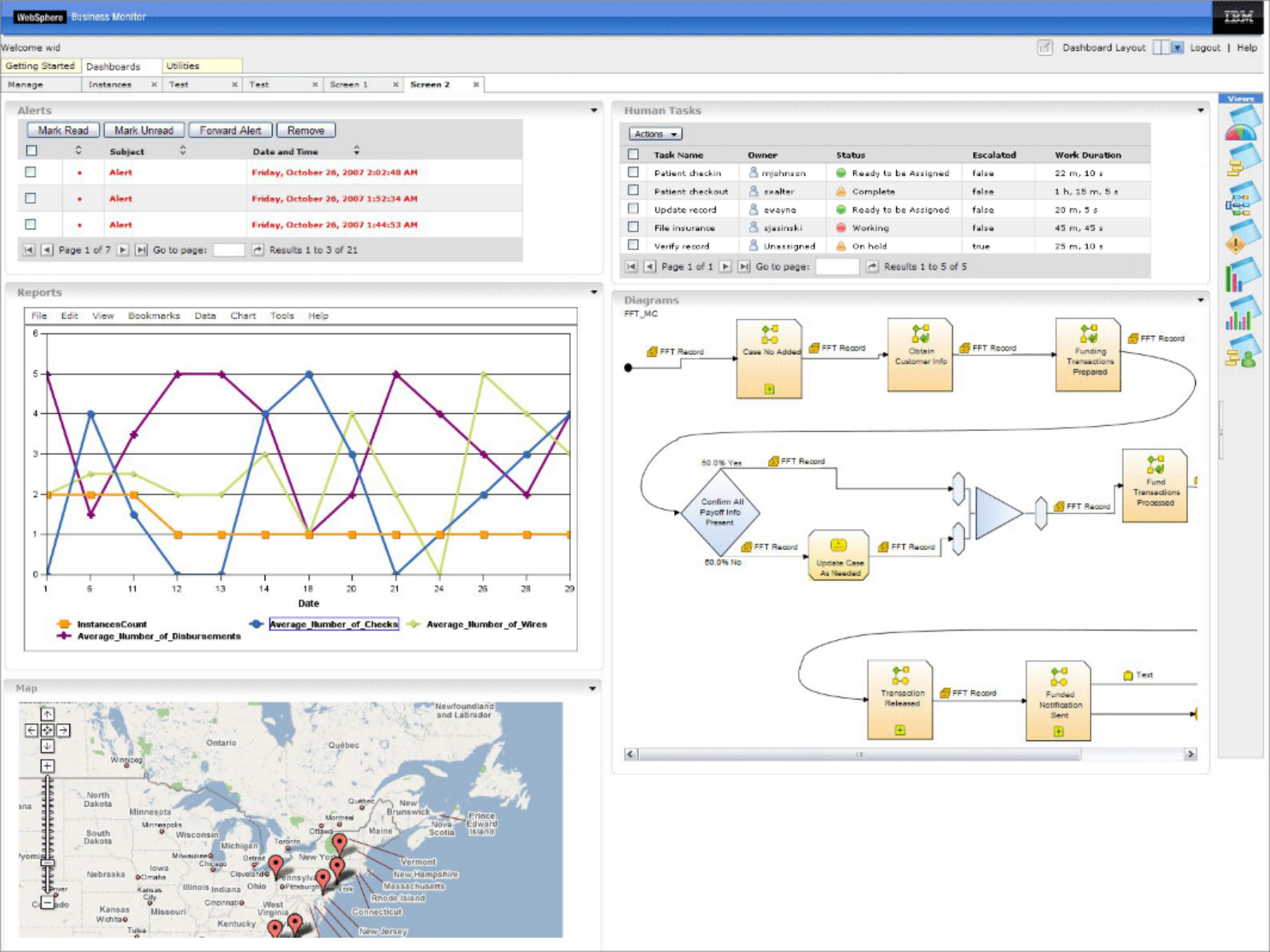
- Business object: Order
  - id – of an order
  - itemPrice – price of one item of order
  - quantity – quantity of item
- finDirDecisionNeeded – boolean identyfying if CFO's decesion is necessary
- Rule evaluation language:
  - Price of the order is bigger than {threshold}
  - order_price = Order(eval(quantity * itemPrice > {threshold}))
- Rule itself
    - WHEN order_price 40.000 THEN set finDirDecisionNeeded = true

Business Activity Monitoring

- Monitoring is important part of BPM lifecycle
  - Monitoring data are **inputs for process improvement**
  - **Early detection of problems**
- **Process metric examples**
  - Order processing time, Order total price, Order state
- **KPI examples**:
  - Average time of order processing per day
  - Sum of prices of all Orders for this week
  - Number of cancelled Orders this week
  - Percentage of Orders with delayed payment

Business Activity Monitoring - Dashboards

- Monitoring of process data in **real time**
- **Actions triggered** when certain metric value is reached
  - On screen, Email, SMS
    Trigger action/process
- Custom set of figures on one page
- Configurable for every user


WebSphere Business Monitor
Welcome wid
Dashboard Layout
Logout | Help
Getting Started
Dashboards
Utilities
Manage
Instances
Test
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Screen 2
Views
Alerts
Mark Read
Mark Unread
Forward Alert
Remove
Subject
Date and Time
Alert
Friday, October 26, 2007 2:02:48 AM
Alert
Friday, October 26, 2007 1:52:34 AM
Alert
Friday, October 26, 2007 1:44:53 AM
Page 1 of 7
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Results 1 to 3 of 21
Human Tasks
Actions
Task Name
Owner
Status
Escalated
Work Duration
Patient checkin
mjohnson
Ready to be Assigned
false
22 m, 10 s
Patient checkout
swalter
Complete
false
1 h, 15 m, 5 s
Update record
evayne
Ready to be Assigned
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20 m, 5 s
File insurance
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Working
false
45 m, 45 s
Verify record
Unassigned
On hold
true
25 m, 10 s
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Reports
File
Edit
View
Bookmarks
Data
Chart
Tools
Help
Date
InstancesCount
Average_Number_of_Checks
Average_Number_of_Wires
Average_Number_of_Disbursements
Diagrams
FFT_MC
FFT Record
Case No Added
Obtain Customer Info
Funding Transactions Prepared
50.0% Yes
Confirm All Payoff Info Present
50.0% No
Update Case As Needed
Fund Transactions Processed
Transaction Released
Funded Notification Sent
Text
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Ontario
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Newfoundland and Labrador
Winnipeg
North Dakota
Minnesota
South Dakota
Wisconsin
Michigan
Toronto
Ottawa
Montreal
New Brunswick
Nova Scotia
Prince Edward Island
Maine
Vermont
New Hampshire
Massachusetts
Rhode Island
Connecticut
New Jersey
Pennsylvania
New York
Ohio
West Virginia
Kentucky
Indiana
Illinois
Iowa
Nebraska
Kansas
Missouri
Colorado

Existing BPMS products

- **Open source**
  - Activiti
  - Intalio | BPMS Community Edition
  - NetBeans+OpenESB (BPEL)
  - PVM based
    - JBPM/Drool (Jboss)
    - Bonita
    - Orchestra
  - ApacheODE based
    - Project Levi
  - ++
- **Commercial BPMS**
  - IBM Lombardi
  - Bizagi
  - Appian 6
  - Opentext/Metastorm
  - Pegasystems
  - Savvion
  - Signavio
  - TIBCO iProcess Suite
  - Oracle BPM suite
  - ARIS enterprise BPMS
  - ++

FIN
Questions?

PV207 – Business Process Management

Spring 2012

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