Business Process Management (BPM)

Lab 10

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Process Implementation with Executable Models

- In the previous chapters, we have learned how to create **conceptual process models** and use them for documentation and analysis purposes. Because of their purpose, i.e., they do not provide technical implementation details.

- This means that conceptual process models must be systematically reworked into ***executable process models*** to be interpreted and automatically executed by a software system, such as a **BPMS**.

- A **Business Process Management System (BPMS)** is a system that supports the design, analysis, execution, and monitoring of business processes.

Process Implementation with Executable Models

- In this chapter, we propose a **five-step method** to incrementally transform **a conceptual process** model into an **executable one**.
- The steps are:
  1. Identify the automation boundaries.
  2. Review manual tasks.
  3. Complete the process model.
  4. Bring the process model to an adequate level of granularity.
  5. Specify execution properties.

Note

1. **Identify the Automation Boundaries**
   - we distinguish three types of tasks, in line with the BPMN language: ***automated*** , ***manual***, and ***user*** **tasks**. **Automated tasks** are performed by the **BPMS** itself or by an external service. **Manual tasks** are performed by **process participants** without the aid of any software. **User tasks** sit between automated and manual tasks. A **user task** is a task that is performed by a **participant** with the assistance of the worklist handler of the **BPMS** or an external task list manager.

   - The distinction between **automated, manual, and user tasks** is captured in BPMN via **specific markers** on the **top-left corner** of the **task box**. **Manual tasks** are marked with **a hand**, while **user tasks** are marked with a **user icon**.

Note

- **Automated tasks** are further classified into the following subtypes in BPMN:
  - ***Script* (script marker)**, if the task executes some code (the script) internally to the BPMS. This task can be used when the functionality is simple and does not require access to an external application.
  - ***Service* (gears marker)**, if the task is executed by an external application, which exposes its functionality via a service interface.
  - ***Business rule* (table marker)**, if the task triggers a business rule to be executed by a rules engine external to the BPMS.
  - ***Send* (filled envelope marker)**, if the task sends a message to an external service.
  - ***Receive* (empty envelope marker)**, if the task waits for a message from an external service.

Exercise 10.1

- Assume you have to automate the loan assessment process model of Solution 3.8 (page 111) for the loan provider. Start by classifying the tasks of this process into manual, automated, and user tasks. Then, represent them with appropriate task markers.

Solution

- Solution : Fig 10.10 page 401

Exercise 10.2

- Consider the loan assessment model that you analyzed in Exercise 10.1. Review the manual tasks of this model in order to link them to a BPMS.

Note

2. **Review Manual Tasks**
   - Once we have identified the type of each task, in the second step of our method we need to check whether we can link the **manual tasks** with the **BPMS**.
   - There are two ways of linking a manual task to a BPMS: we implement it either **via a user task** or **via an automated task.**

Note

- **Implement as User Task:**

  If the participant involved in the manual task can notify the BPMS of the task completion using the worklist handler of the BPMS, then the manual task can be turned into a user task. For example, the warehouse worker performing task “Retrieve product from warehouse” could check out a work item from the worklist to indicate that the task is being worked on, manually retrieve the product from the shelf, and then check in the work item back into the BPMS engine.

Note

- **Implement as Automated Task:**

  In some cases, a process participant may use **technology** that is integrated with the BPMS to notify the engine of a work item completion. For example, the warehouse worker could use a device such as a **barcode scanner** to scan the barcode of the raw materials that are picked up. If the device is connected to the BPMS, scanning the barcode will automatically signal the completion of task “Obtain raw materials from Supplier 1(2)”.

Solution

- All five manual tasks of this process, namely **“Appraise property”**, **“Prepare acceptance pack”, “Send acceptance pack”**, **“Send home insurance quote”** and **“Verify repayment agreement”,** can be implemented as user tasks.
- In **“Appraise property”**, the property appraiser is notified through the worklist that a new property has to be appraised. The information on the property is carried by the work item of this task (e.g., property type and address). The property appraiser physically goes to the property address for an inspection and checks the value of surrounding properties. Once done, he or she prepares the appraisal on an electronic form and submits it to the BPMS engine via the worklist handler.
- **“Prepare acceptance pack”, “Send acceptance pack”, “Send home insurance quote”** can be implemented as user tasks in a similar way.

Solution

- **“Verify repayment agreement”** appears in the loan officer’s worklist as soon as the acceptance pack and, optionally, the insurance quote have been sent to the applicant. The officer checks out this work item once the repayment agreement is received from the applicant by post. He or she manually verifies the agreement, digitizes it and attaches it as a file to the agreement summary—an electronic form associated with this work item and pre-populated with information extracted from the loan application. If the applicant accepted all loan conditions and agreed with the repayment schedule, the officer ticks the respective checkboxes in the agreement summary and submits this to the BPMS engine.

Exercise 10.11

- Identify the type of the tasks in Figure 4.13 (page 148), and represent them using appropriate BPMN markers.

Solution

- Solution: Figure 4.13 (page 148)