

Processes Online User Guide

Process Modelling for Process Automation

1 INTRODUCTION

Before we can automate a business process, we need to generate a model of the process. In *Processes Online*, we generate a model, called **State Transition Model**.

In *Processes Online*, the software that automates a business process will be a Java web application, comprising essentially of a number of JSPs. In **Processes Online User Guide – Process Automation Tutorial** we will show how to obtain the main JSPs from the State Transition Model.

In this User Guide, we will define the State Transition Model, and thereafter obtain the State Transition Model of a few example business processes.

2 STATE TRANSITION MODEL

State Transition Model Definition:-

A business process instance starts in a state, called *StartState*, then flows, not necessarily sequentially, through zero or more *intermediate states*, until it is terminated in one of the states. In each state, a corresponding *role* performs one or more activities. (See Figure 1).



Figure 1

Note 1:- A conventional application, abbreviated as *application*, supports a degenerate business process, which does not flow beyond the StartState (See Figure 2).

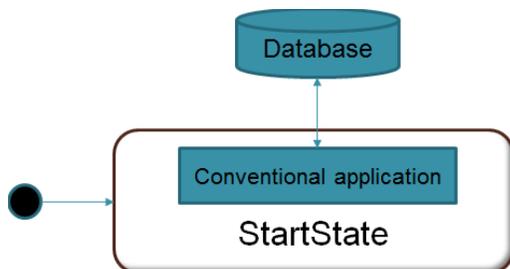


Figure 2

Note 2:- A business process instance can simultaneously be in more than one state, pending activities to be performed by the corresponding role players (actors). This can happen due to parallel workflow (See Figure 3).

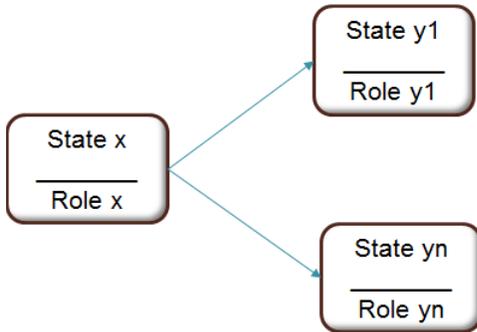


Figure 3

Shown in Figure 3 is a process that can simultaneously be in States y_1, \dots, y_n , since it flowed simultaneously, i.e., in parallel, from State x to States y_1, \dots, y_n .

3 STATE TRANSITION MODEL DEVELOPMENT

Each state is represented by a rounded rectangle. (See Figure 4). The name of the state, and the name of the role, are shown within the rounded rectangle. Attached notes list out

1. The activities performed in the state, and
2. The state transitions from out of the state.

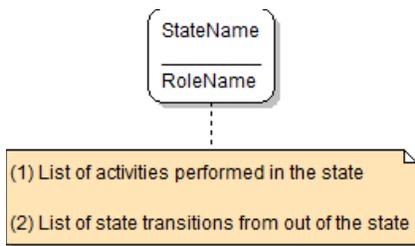


Figure 4

StartState is represented as shown in Figure 5.

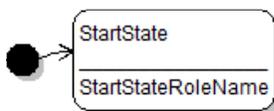


Figure 5

A state in which the process can be terminated is represented as shown in Figure 6.

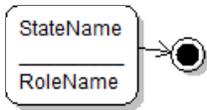


Figure 6

An arrow from one state to another represents a *potential* state transition (See Figure 7).

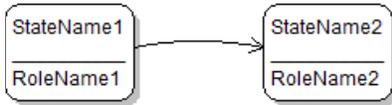


Figure 7

A flow chart for developing a State Transition Diagram is shown in Figure 8.

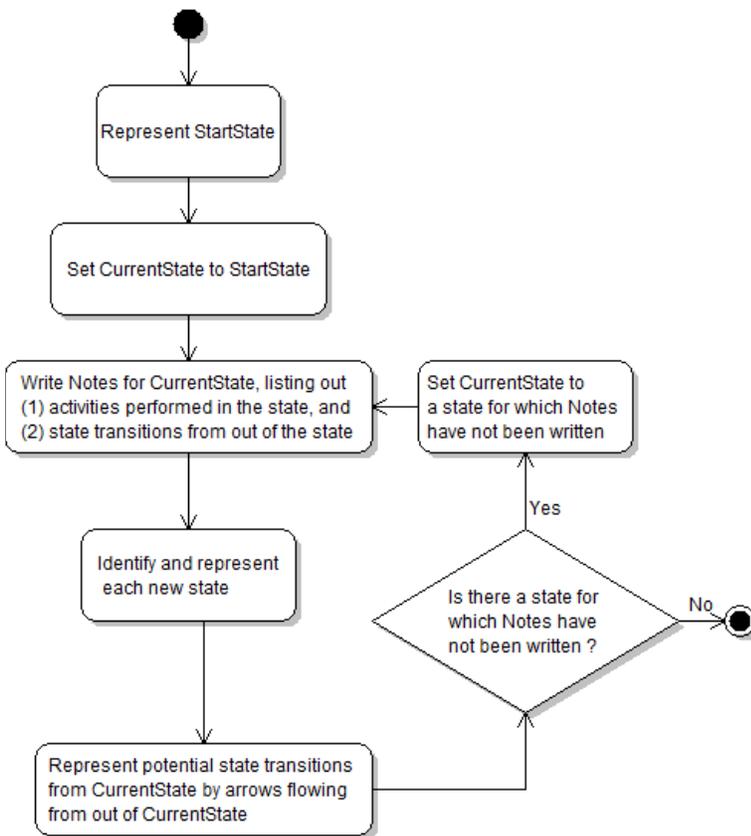


Figure 8

To create State Transition Diagrams, you can use any State Diagramming Tool. We have used Violet (See Figure 9), a free download from [Sourceforge](https://sourceforge.net).

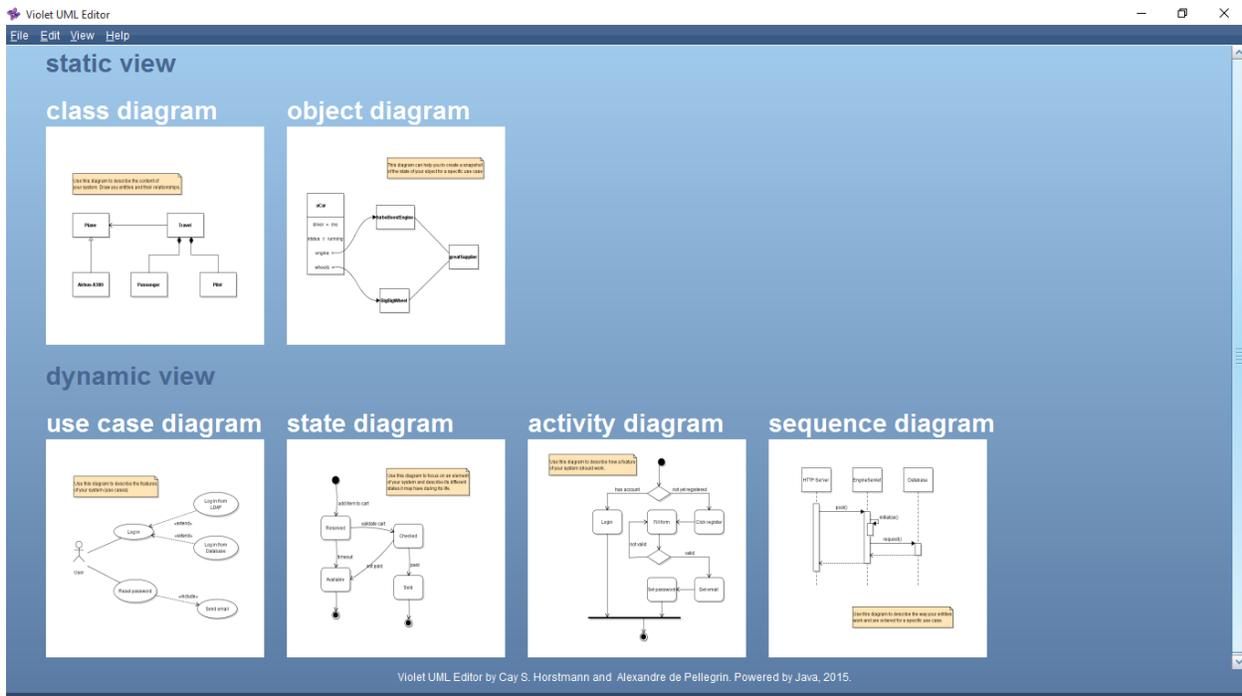


Figure 9

4 EXAMPLE: LEAVE APPLICATION PROCESS

The employees of Premium Products Inc can go on leave only after due approval. One of the employees plays the role of HRManager, who is the final authority to approve leave. Typically, every employee has a Supervisor (i.e., “boss”); however, there are a few senior employees who do not have Supervisors. In case an employee has a Supervisor, the latter’s approval is also required for going on leave.

Leave Application Process is as follows:-

- LeaveApplicant starts the process by inputting (i) Leave Start Date, and (ii) Number of Days of Leave Required. In case the LeaveApplicant has a Supervisor, the Leave Application goes to the Supervisor; otherwise, it goes straight to HRManager.
- Supervisor either approves, or disapproves, the Leave. If he / she approves, the Leave Application goes to the HRManager; otherwise, it returns to the LeaveApplicant.
- HRManager either approves, or disapproves, the Leave. In either case, the Leave Application returns to the LeaveApplicant.
- LeaveApplicant terminates the process.

Leave Application Process – StartState is shown in Figure 10. Caution: State names and role names should be alphabetic strings without blank spaces.

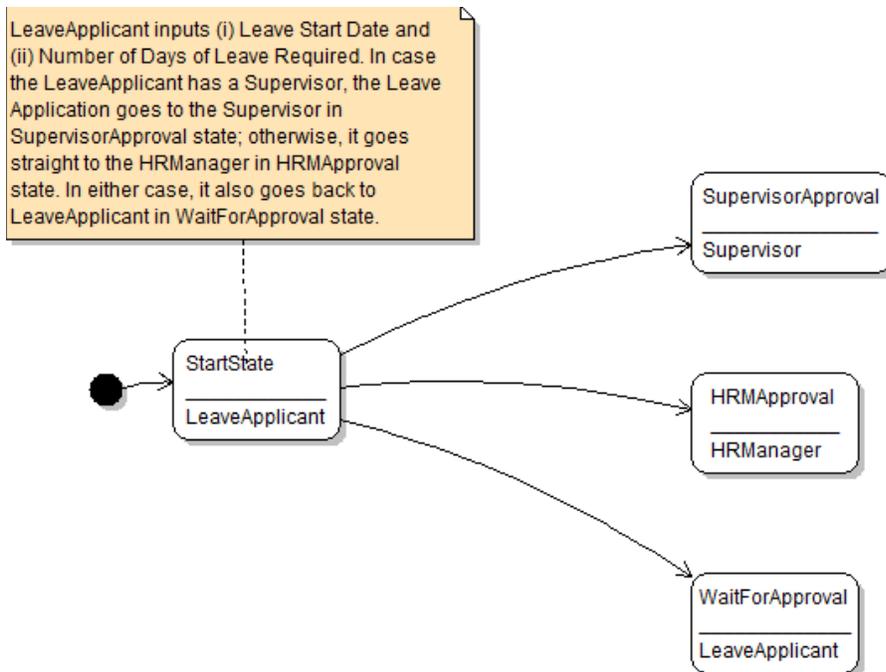


Figure 10

Leave Application Process – SupervisorApproval state details are added on, and shown in Figure 11.

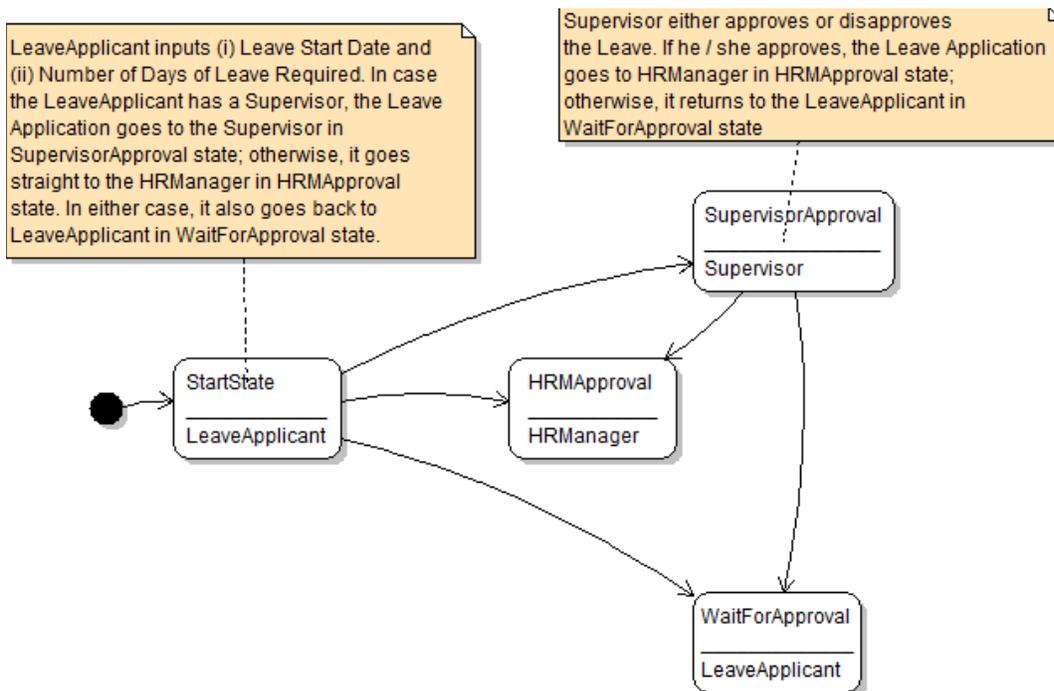


Figure 11

Leave Application Process – HRMApapproval state details are added on, and shown in Figure 12.

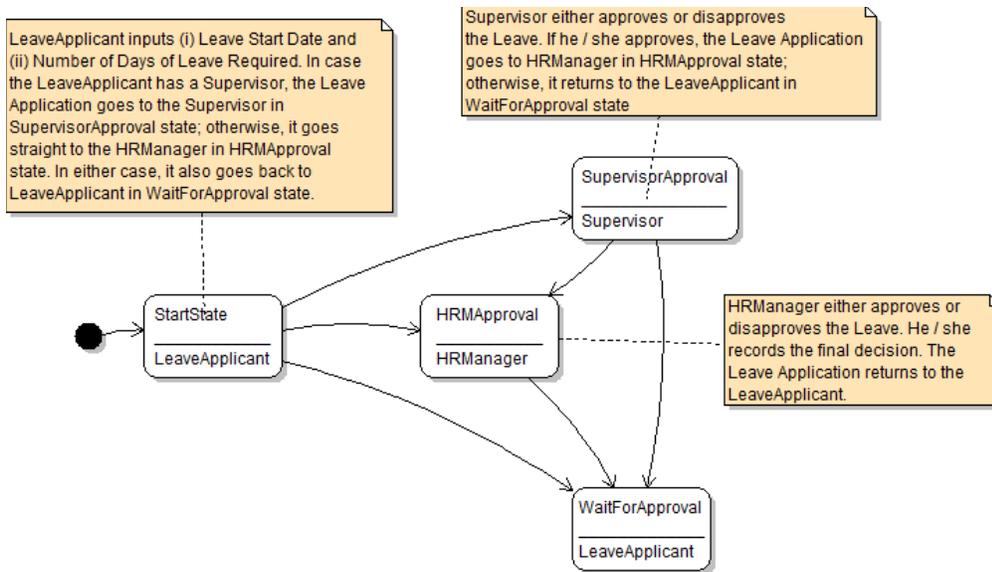


Figure 12

Leave Application Process – WaitForApproval state details are added on, and shown in Figure 13.

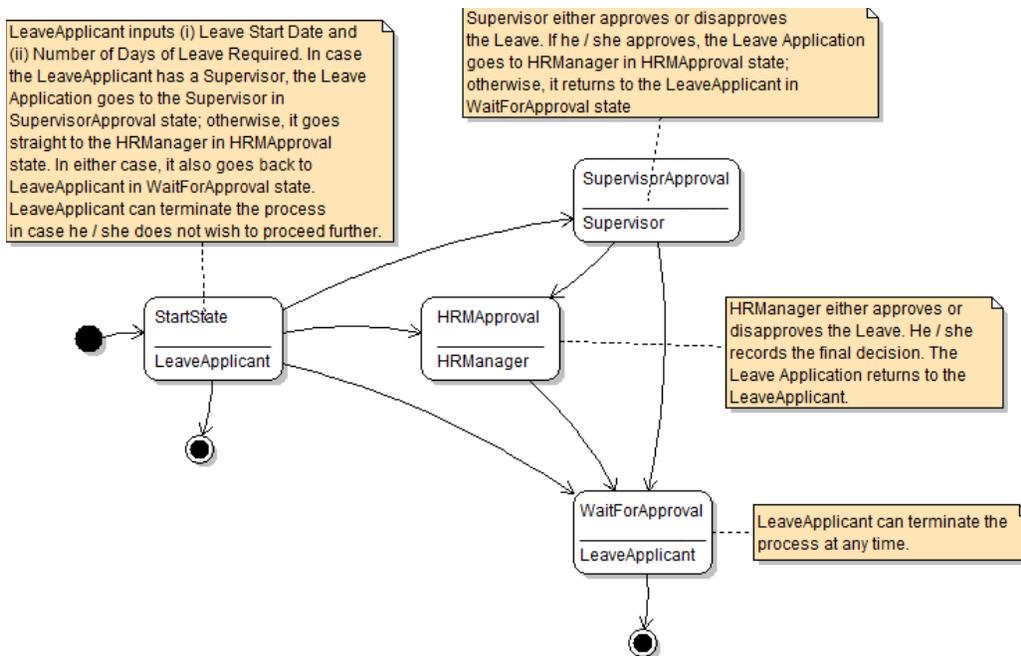


Figure 13

The final Leave Application Process – State Transition Model is now shown in Figure 14.

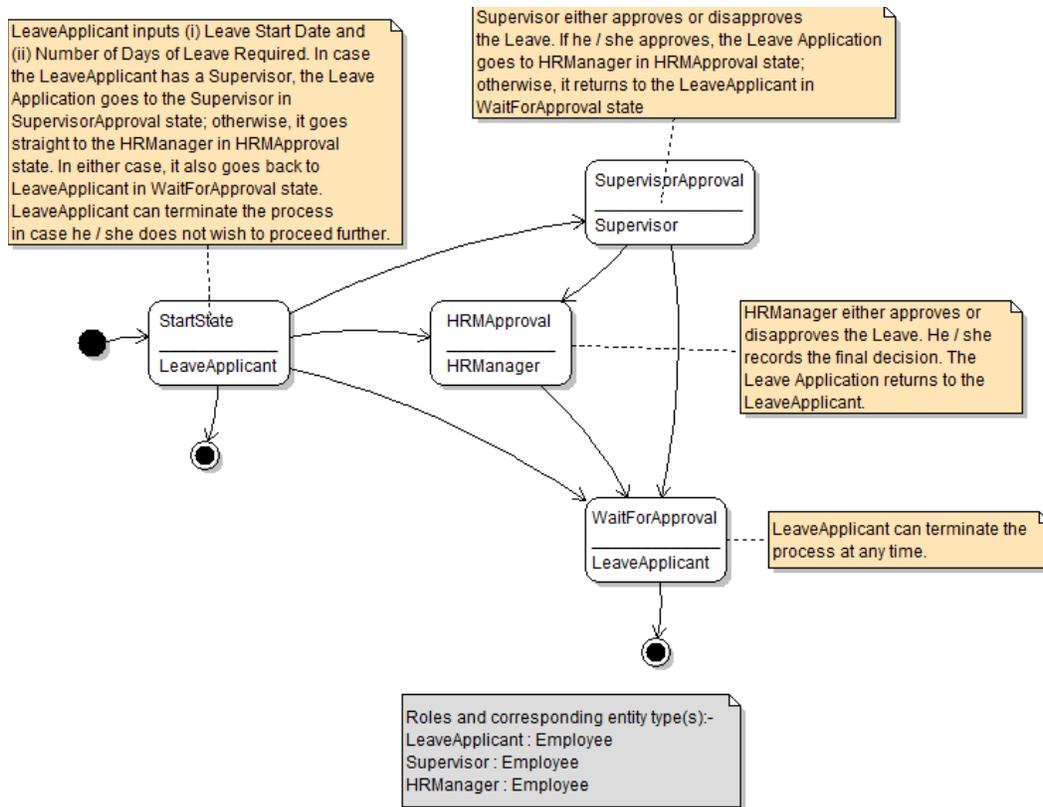


Figure 14

5 EXAMPLE: CUSTOMER HELPDESK

Customer Helpdesk process of Premium Products Inc is initiated by a Customer entity of the company. The Customer states his / her problem; next, the process flows to the designated Support Staff of the company. Thereafter, there is a dialog between the Customer and the Support Staff, until the Customer's problem is resolved.

The final **Customer Helpdesk – State Transition Model** is now shown in Figure 15.

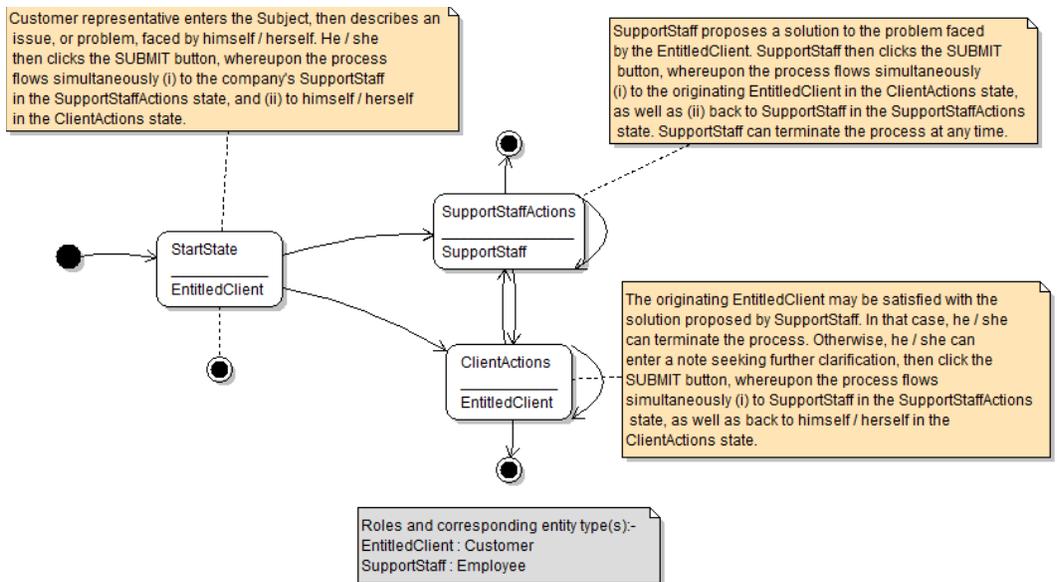


Figure 15