Milestone No.6

PROCESS MODELING

SYNOPSIS

Process modeling is a technique for organizing and documenting the structure and flow of data through a system's processes and/or the logic, policies, and procedures to be implemented by a system's processes. In this milestone we focus on using and constructing data flow diagrams (DFDs) and decomposition diagrams to perform process modeling.

Data flow diagrams are tools that depict the flow of data through a system and the work or processing performed by that system. A decomposition diagram is a DFD planning tool that shows the top-down functional decomposition and structure of a system.

During this milestone you will first construct a *Context Diagram* to establish project scope and boundaries. Secondly, you will draw an *Event Decomposition Diagram* to partition the system into logical subsystems and/or functions. Thirdly, you will draw *Event Diagrams* to model individual processes. Finally you will construct a *Primitive Data Flow Diagram* for a single event process.

ASSIGNMENT

As a systems analyst you must learn how to draw decomposition and data flow diagrams to model business process requirements. The preliminary investigation and problem analysis phases of the methodology have been completed. You have already built the data model in Milestone 4 to document business data requirements for the new system. You now need to build the corresponding process models.

ACTIVITIES

1. Draw a <mark>*Context Diagram*</mark> using the accompanying narrative.

2. Given the accompanying use-case matrix, draw the <mark>*Event Decomposition Diagram*</mark>.

3. Given your decomposition diagram from above and the use-case matrix, draw <mark>*Event Diagrams*</mark>. Use your data model from milestone 4 as an attribute reference.

4. For all transaction processes described in the accompanying narratives, draw the <mark>*Primitive Data Flow Diagram*</mark>.

Exhibit 6.1

Use the following narrative to construct the Context Diagram for the Equipment Check-out System (ECS).

The purpose of the Equipment Check-out System (ECS) is to provide maintenance employees with the equipment needed to complete their maintenance jobs. Employees will occasionally request equipment check-outs. The Equipment Depot staff will maintain records of those check-outs and provide the employees with the appropriate equipment and an equipment check-out receipt.

When employees have finished with the equipment, the employee must conduct an equipment check-in at the Equipment Depot. In response to the equipment check-in, the Equipment Depot staff will maintain records of the equipment check-in and provide the employee with an equipment check-in receipt.

Occasionally, supervisors will make request an equipment purchase that results in the Equipment Depot staff needing purchase equipment through equipmentdeals.com. The supplier sends an electronic file showing the status of all orders on a daily basis, which will be imported into the system so that the Equipment Depot staff can field status requests from supervisors. When the Depot staff receives ordered equipment, they will use the packing slip to verify the shipment and notify the requesting supervisor of their availability.

The Safety Committee will periodically submit a list of skill classifications that can safely check-out any piece of equipment. Supervisors will submit the skill classifications for each employee.

Upon request the system will generate a report for supervisors showing listing employees having a history of excessive equipment losses or damage. Upon request the system will generate for employees a statement detailing what equipment they have checked out and are expected to have in their possession.

Exhibit 6.2

ECS System Use-Cases

Use-Case Name	Actor	Trigger	Responses
1. Check Out Equipment	Employee	Equipment Check-Out	Generate check-out receipt and create new Check-Out transaction record
2. Check In Equipment	Employee	Equipment Check-In	Generate check-in receipt and update Check-Out transaction record
3. Turn in Lost Equipment	Employee	Employee turns in equipment	Update Check-Out transaction record if possible
4. Report Check-Outs Over 30 Days	Time	Daily	Generate report for supervisor
5. Generate Equipment Checked-Out Report	Employee	Upon request	Generate report for employee
6. Import Order Status	Time	Nightly	Purchase Order status information is updated
7. Request New Equipment Purchase	Supervisor	Purchase request from supervisor or staff	Purchase Request is recorded
8. Update Order Status	Equipmentdeals.com	Packing slip is received	Purchase Order marked as being received
9. Send Hiring Notice	Supervisor	Hiring Notice	Employee is entered to the system and eligible to check-out equipment
10. Send Termination Notice	Supervisor	Employee Termination Notice	Employee is removed from the system
11. Submit Equipment Restriction Notice	Safety Committee	Equip Restriction Notice	Skill Classifications are recorded
12. Send Skill Classification Update	Supervisor	Skill Classification Update	Employee's skill classification is changed
13. Generate Employee Losses & Damage Report	Supervisor	Upon request	Generate report for Supervisor

Exhibit 6.3

Following is the narrative for the <mark>CHECK OUT EQUIPMENT</mark> event. Use it to create a <mark>Primitive Data Flow Diagram</mark>.

> The employee enters an Employee ID which the system validates. If the employee is found to be active, the system prompts for an Equipment ID. The employee enters the ID of the equipment s/he requires and the system checks that the ID is valid. It also checks whether the employee is qualified to operate the equipment based on the skill classification, and whether the requested piece of equipment is in stock.
>
> If the employee is authorized, not restricted, and the equipment is available, the check-out transaction is recorded. The employee is provided with a receipt detailing the check-out and location of the equipment so the Equipment Depot staff can pull it from inventory.