CSE1204 - Information Systems 1

Process Modelling
Using Data Flow Diagrams –

Building and Levelling Them;
Process Modelling Using Function Decomposition

Example system:
- a generic warehouse-inventory information system

Levelling Data Flow Diagrams
- any "real" system is too large to represent as a single data flow diagram
- the solution is to decompose the system into a hierarchy of levels of processing
- the process model of the system then consists of a set of levelled data flow diagrams
- levelling of DFDs improves their readability and usefulness as a communication tool

Levelling of DFDs
Levelling creates a hierarchical decomposition of the processing within the system

Context Diagram
- the highest level data flow diagram is the context diagram
- the context diagram shows the interaction of the system with its environment in terms of data flows
- the context diagram defines the boundary of the system (the scope of the system)
- only the data flows which leave the system and the data flows which come from outside the system are shown
**Example Context Diagram**

- Sales Order System
- Inventory System
- Warehouse
- Accounts Department
- Suppliers

**Level Zero Diagram**

- The level zero data flow diagram is the diagram at the level immediately below the context diagram.
- It "expands" the single process on the context diagram to show the major, high-level processes (or functions) within the system.

**Example Level Zero Diagram**

- Order Entry System
- Stock file
- Accounts Department
- Suppliers

**Levelling DFDs**

- Context diagram
- Level zero diagram

**Level 1 diagrams**

- A set of data flow diagrams is created at Level 1.
- There is one Level 1 diagram for each of the processes at Level zero.
- Each diagram decomposes a Level zero process into several processes.
Level 1 and lower level diagrams

- Each Level 1 diagram and diagrams at lower levels (e.g., Level 2, Level 3) show only a part of the processing.
- Level 1 processes are numbered 1.1, 1.2, 1.3, and 2.1, 2.2, 2.3 etc.
- That part is shown in more detail than on the Level zero diagram.
- No external agents are shown on a Level 1 or lower diagrams, as the entire system is not being represented.

Example Level zero diagram

- Customers
- Sales orders
- Inventory
- P.O. number
- Product
- Order
- QTY
- Delivery
- Order
- Qty
- Customer
- Invoice
- Product
- Details
- Product
- Qty
- Customer
- Credit
- Status

Example Level 1 diagram

- Context
- Level 0
- Level 1
- Level 2

Levelling of DFDs

References