



# **Process Modeling—An Essential Tool for the Lean Supply Chain**

# Understanding Processes

- A process is...
  - A set of interrelated tasks and activities designed to achieve a specific objective
- Examples of process objectives (verb/noun format)...
  - Develop a new product
  - Fulfill customer orders
  - Evaluate and select suppliers
  - Forecast customer demand

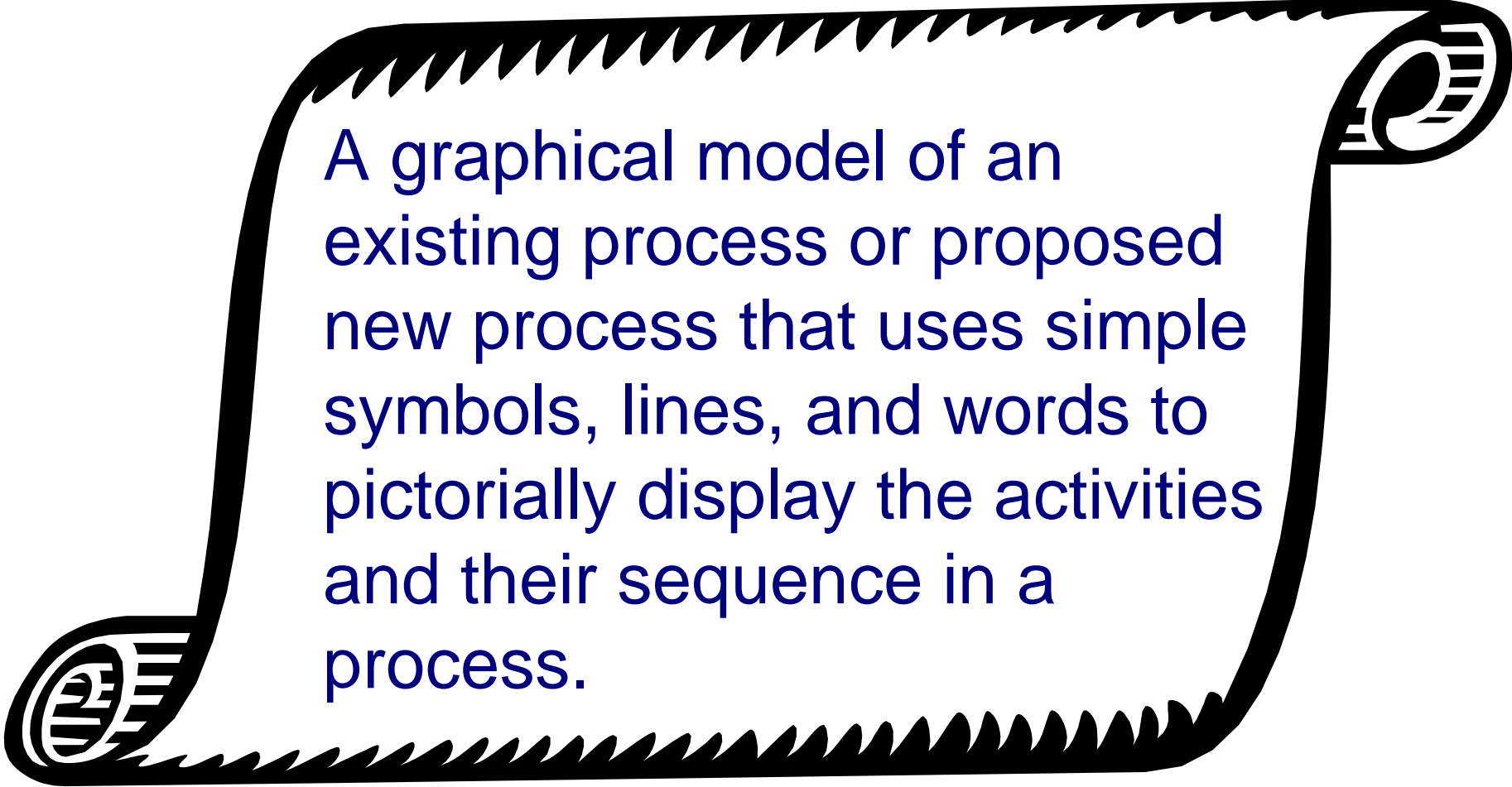
# Modeling

- Models are a representation of reality
- Models can be
  - Physical
  - Mathematical
  - Schematic or graphical
- We will focus on schematic or graphical modeling

# Supply Chain Process Modeling

- Important part of process improvement efforts
- Tool for understanding an individual supply chain process as well as relationships between processes (systems view)
- Flowcharting is the most commonly used technique (also known as “process mapping”)

# Flowcharts

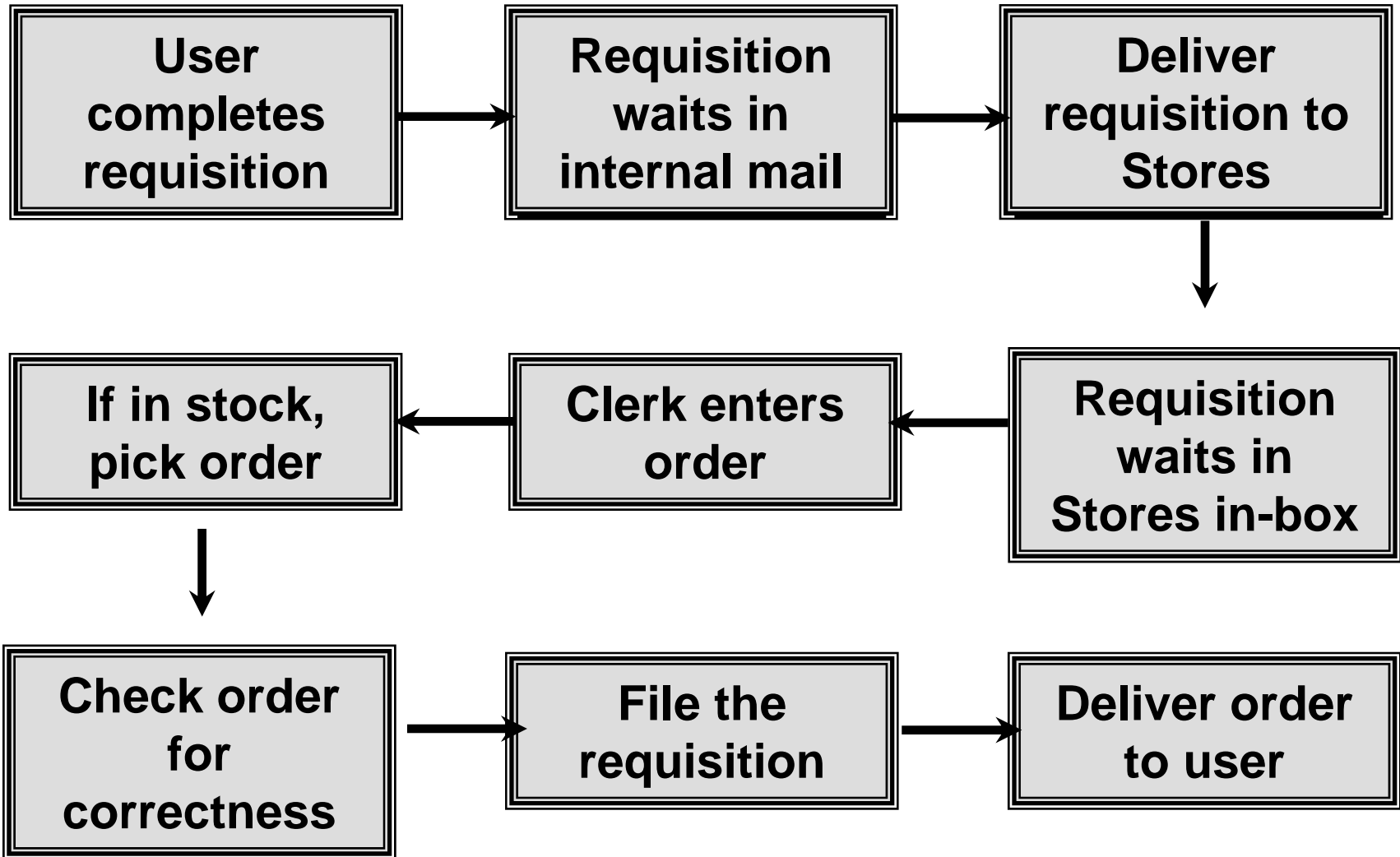


A graphical model of an existing process or proposed new process that uses simple symbols, lines, and words to pictorially display the activities and their sequence in a process.

# Types of Flowcharts

- Block diagrams
  - Advantage: Simplicity
- Flow-process charts
  - Advantage: Identifies both flow and activity types
- American National Standard Institute (ANSI) flow charts
  - Advantage: Universal, flexible

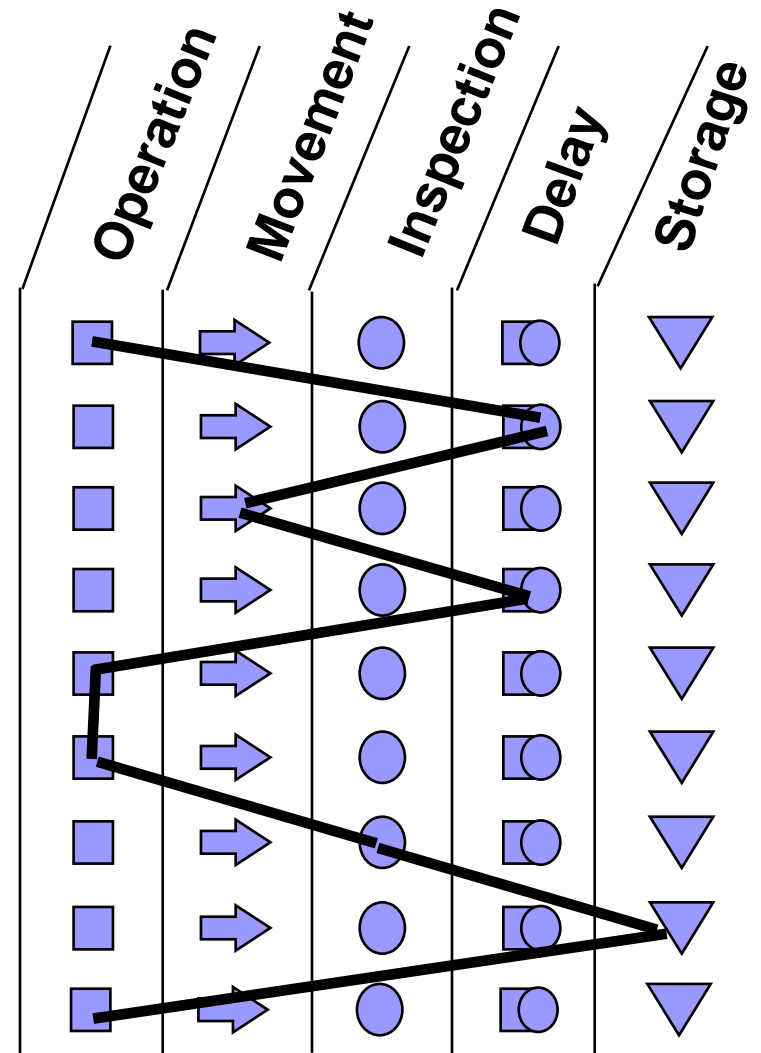
# Block Diagram: A Stores Requisition Process



# Flow Process Chart: A Stores Requisition Process

## Stores Requisition: Details of method

1. User completes requisition
2. Wait in internal mail
3. Deliver requisition to Stores
4. Wait in Stores in-box
5. Clerk enters order
6. If in stock, pick order
7. Check order
8. File requisition
9. Deliver to user

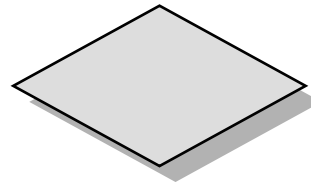




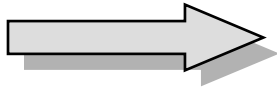
# Standard ANSI Process Flow Chart Symbols



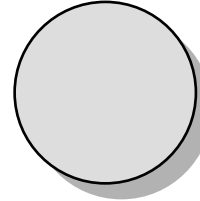
**Operation**



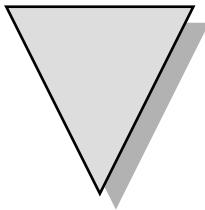
**Decision**



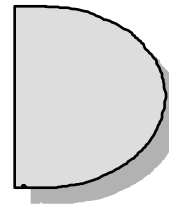
**Transport**



**Inspection/  
Approval**

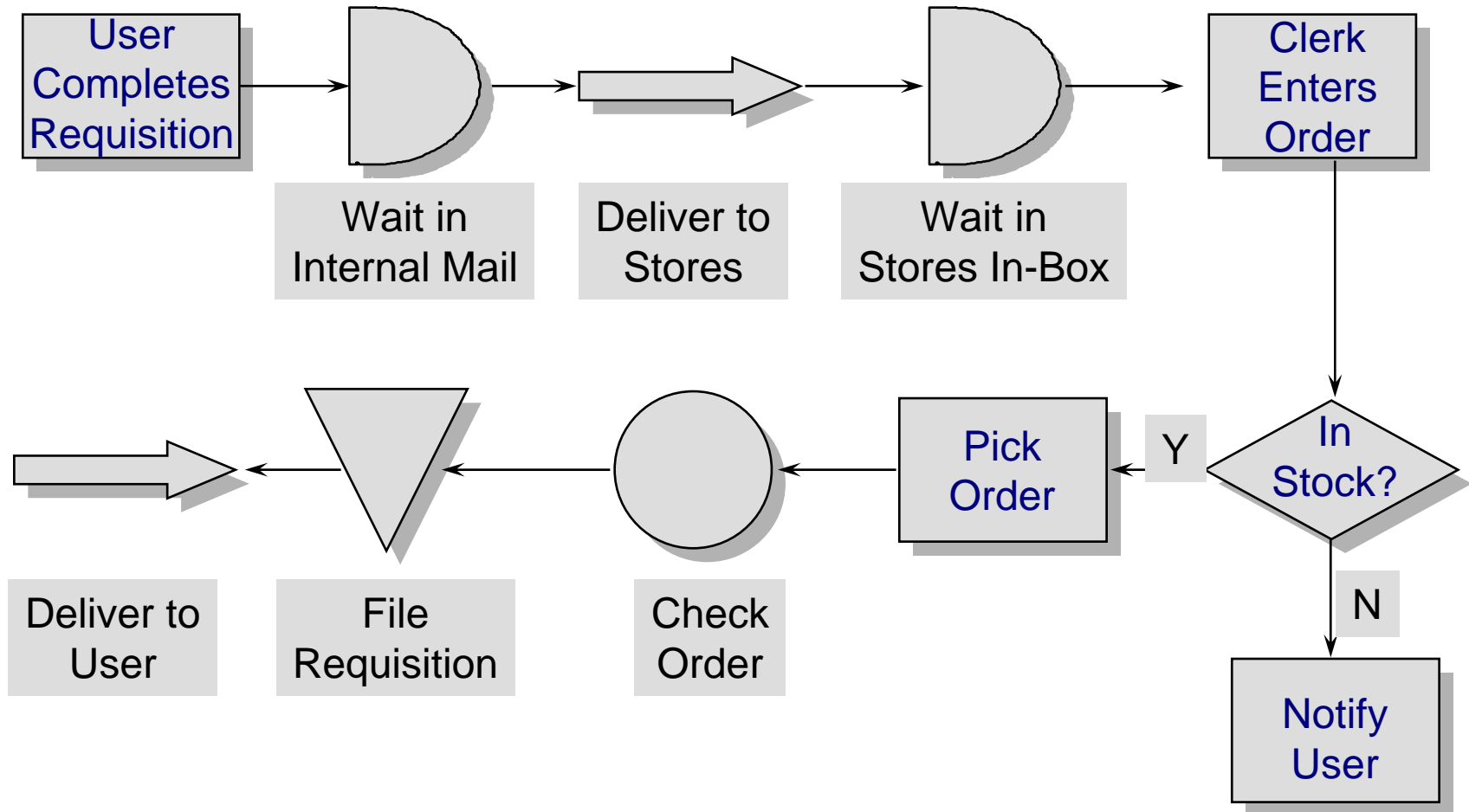


**Storage**



**Delay**

# ANSI Process Flow Chart: A Stores Requisition Process





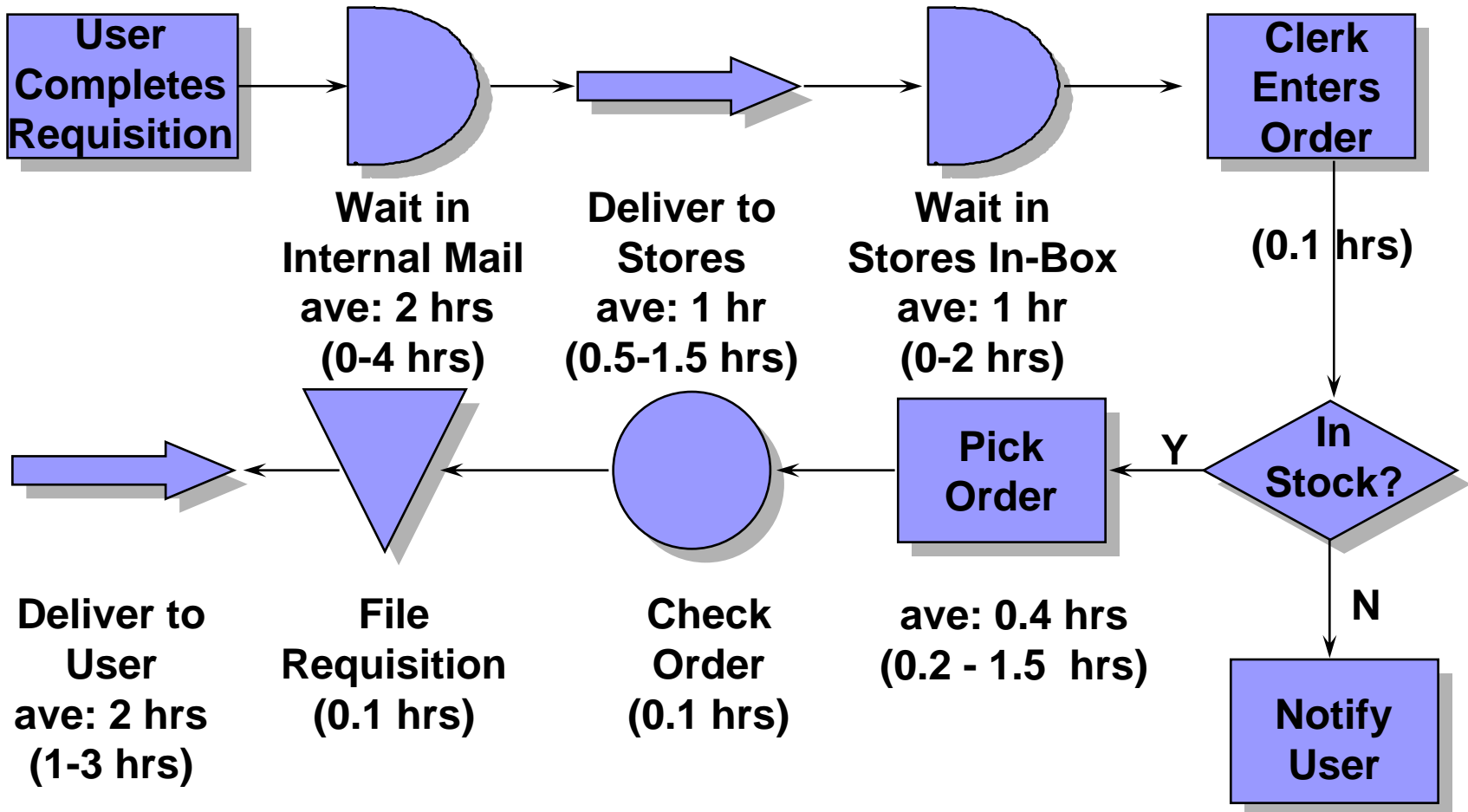
# Process Flow Charting Considerations

- Document the process as it IS before you redesign the process
- Scope - how much of the process do you want to look at?
- Detail - how finely do you want to break down the process?

# Process Flow Charting Considerations

- Additional dimensions may be included in a flow chart:
  - Information flows
  - Time element
    - Operations, inspections, delays, transports
    - Average and range (or maximum)
  - Distance moved
  - Resources required
  - Capacity

# Process Flow Chart: A Stores Requisition



# Process Flow Charting Benefits

- Gain a clear understanding of how the process *actually* works
  - Capacities
  - Cycle times
- Highlight potential improvement opportunities
  - Unnecessary steps
  - Redundant steps
  - Inefficient sequencing of steps
  - Identification of bottlenecks



# Summary

- Process modeling is a useful tool for understanding and analyzing processes
- A variety of process modeling tools are available
- These tools help us understand exactly how a process is performed, and to highlight opportunities for process improvement and waste elimination