Business Processes

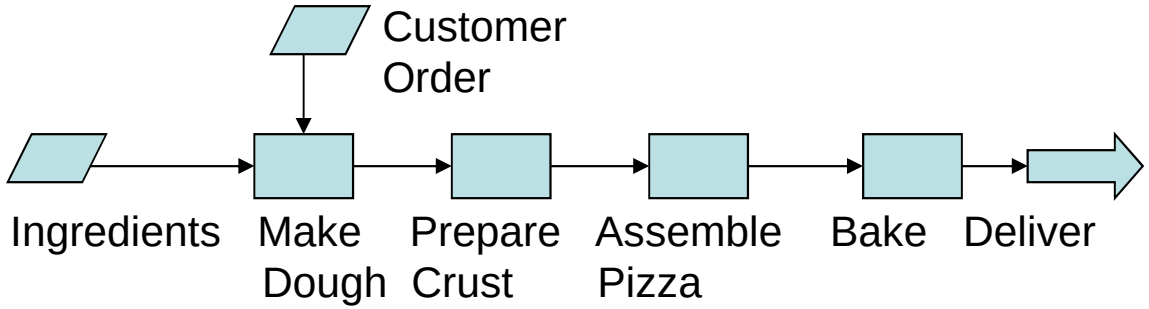
"A bad system will beat a good person every time."
-W. Edwards Deming

Not in book
Relates to Chapter 2

Business Process

Definition: sequence of tasks or activities to achieve a specific outcome; the way by which something is accomplished;.

Process Map or Flowchart



Kind of processes

- **Primary**: main value-added activities. Making a pizza, taking an order.
- **Support:** necessary, but non-value added activities. Billing a customer, ordering supplies.
- **Development:** improving other processes and outcomes. Creating a new menu, training employees.

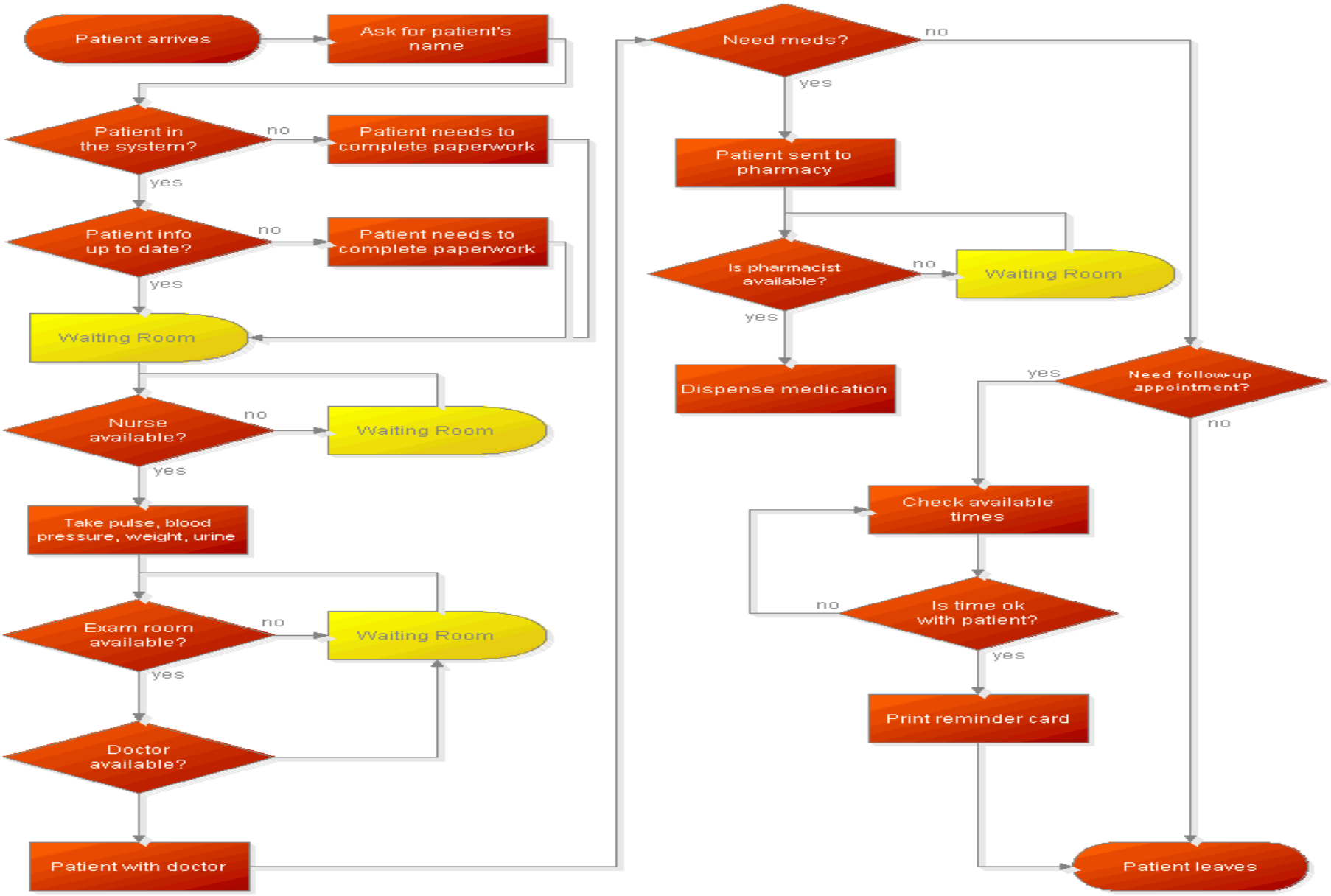
Defining Processes: Why Important

- Most processes are repetitive
- Want the best processes possible (provide exactly what is desired—voice of the customer—with minimal "waste"—lean)
- If the process is *not* defined
  - Everyone does the process a little differently. Output is inconsistent.
  - Cannot identify what is value-added, what is waste
  - Difficult to identify sources of problems
    - So, cannot improve the process
  - Cannot set standards for what is expected
    - Difficult to schedule work
    - Difficult to meet deadlines
  - Cannot replicate the process elsewhere
  - Cannot train people

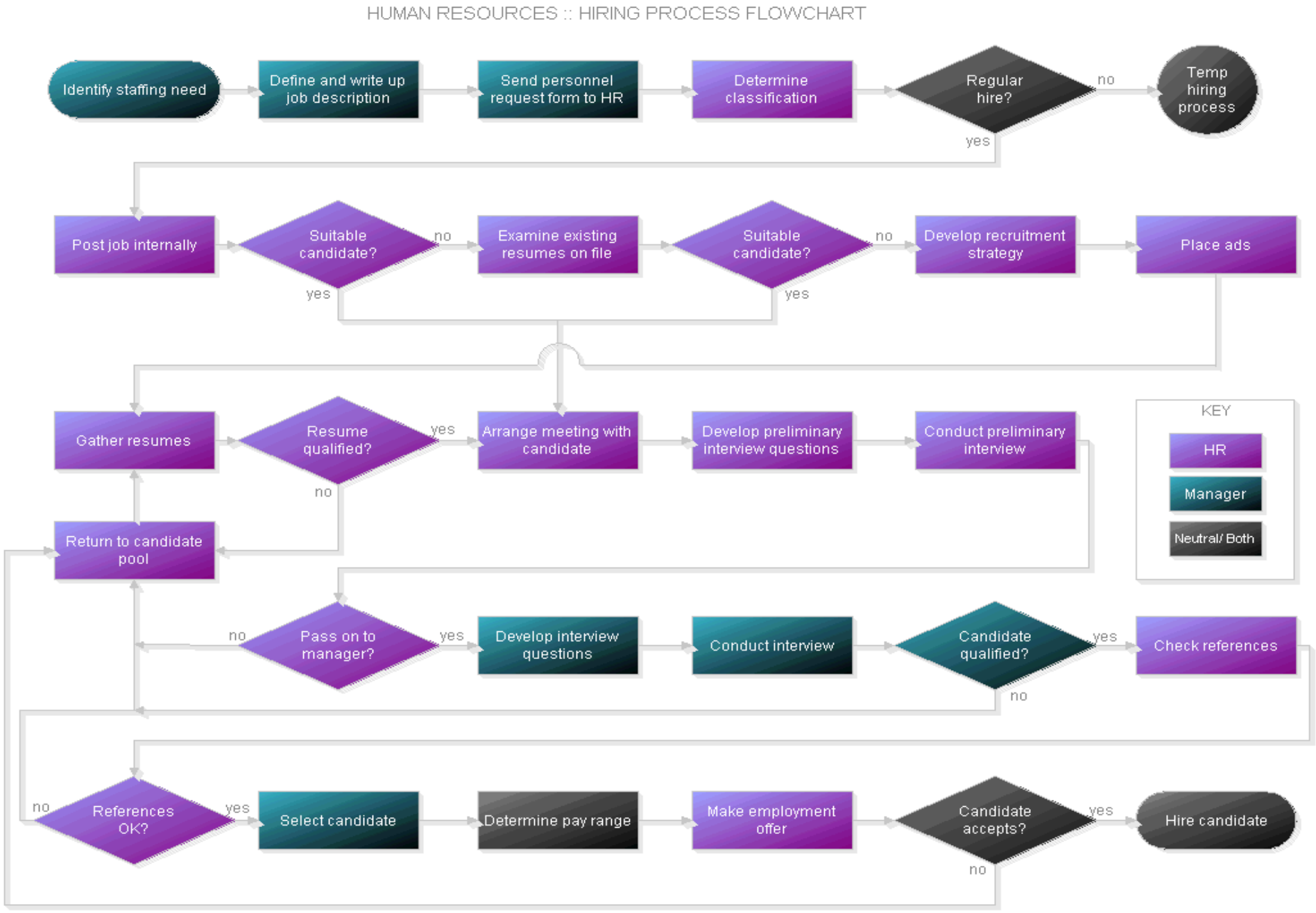
Examples from Google

http://images.google.com/images?hl=en&q=process+flowchart

Medical Process Flowchart

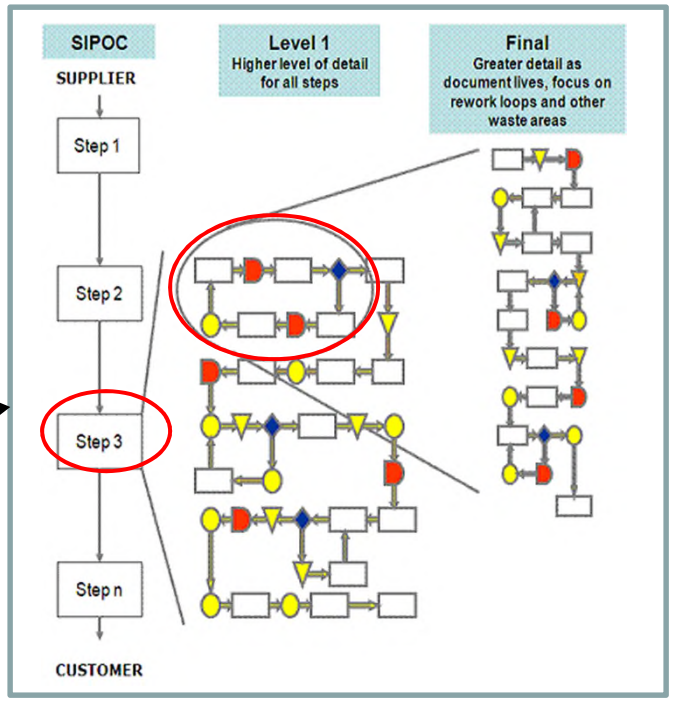


Human Resources: Hiring Process Flowchart



Defining the Process:
Process Mapping or Flowcharting

- Identify
  - Focal point or output of process
  - Boundaries of process
  - Level of detail
- Investigate tasks
  - Interview process participants
  - Observe the process
  - Record tasks and the sequence of tasks
- Create a map or flow chart of the process
- Identify *value-added* versus *waste* in the process

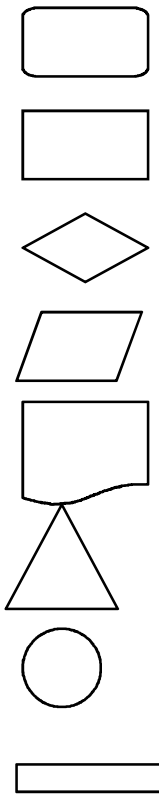


These are done in a "Process Mapping Workshop"

Creating the Process Map—Workshop

Creating Process Map using Post-its

Common Mapping Symbols



Start or finishing point

Step or activity in the process

Decision point (typically requires a “yes” or “no”)

Input or output (typically data or materials

Document created

Delay or wait

Inspection

Move activity

These symbols are typical, but others may be used as appropriate

Process Flowchart: Luigi's Pizzeria

Step or activity in the process

Decision point (typically requires a "yes" or "no")

Input or output (typically data or materials

Document created

Delay or wait

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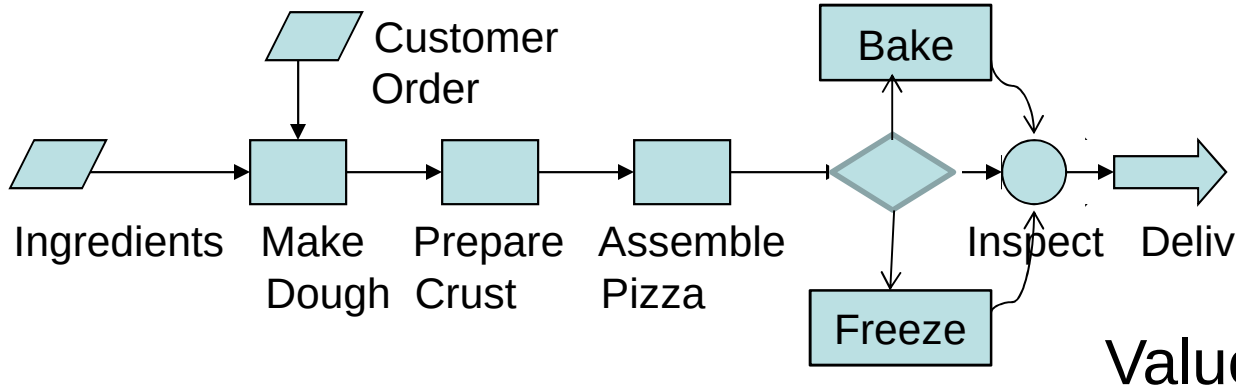


Valued-added steps?

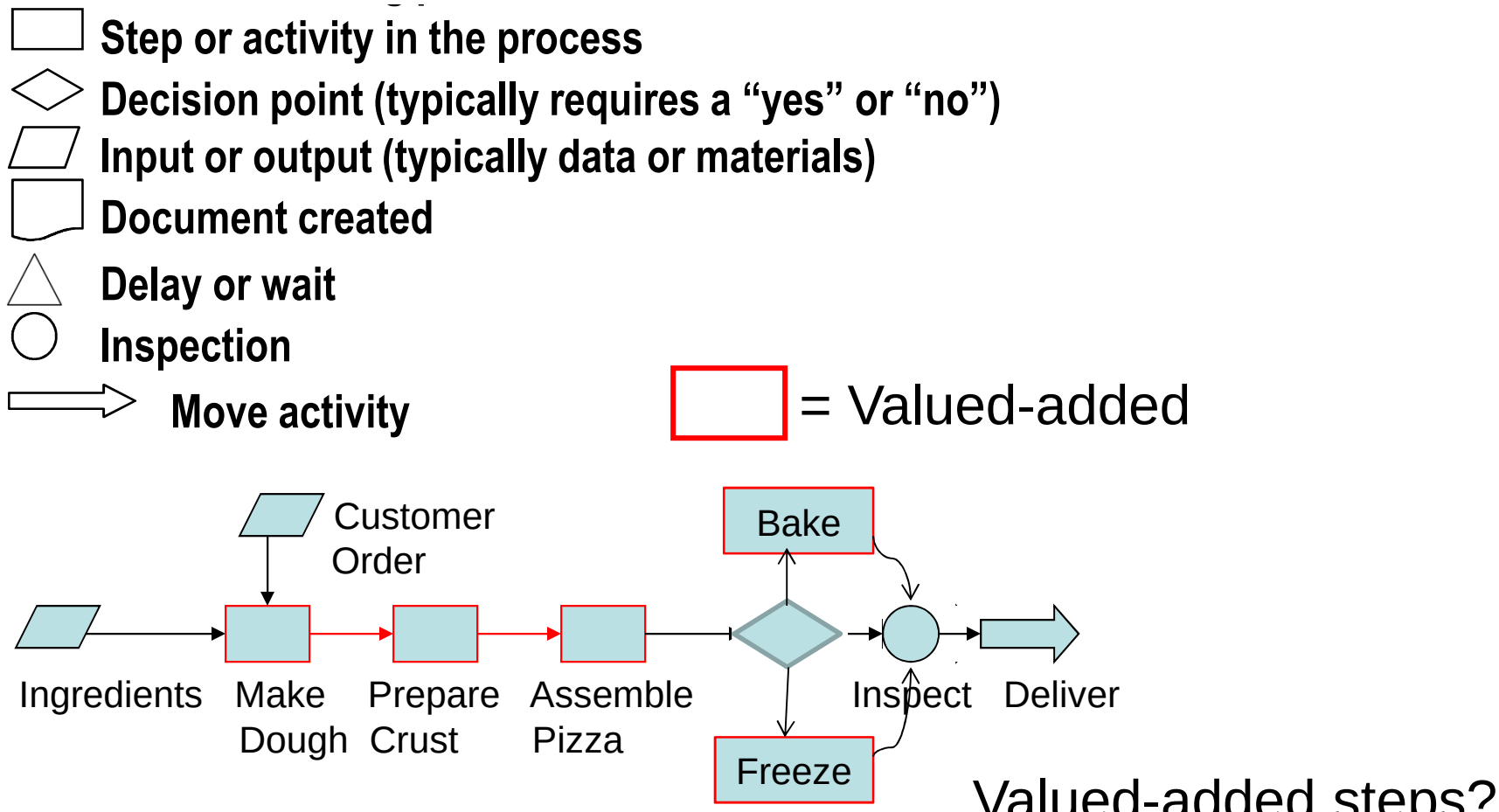
Value-Added Steps

- Add direct value to the product or services as seen or experienced by the customer

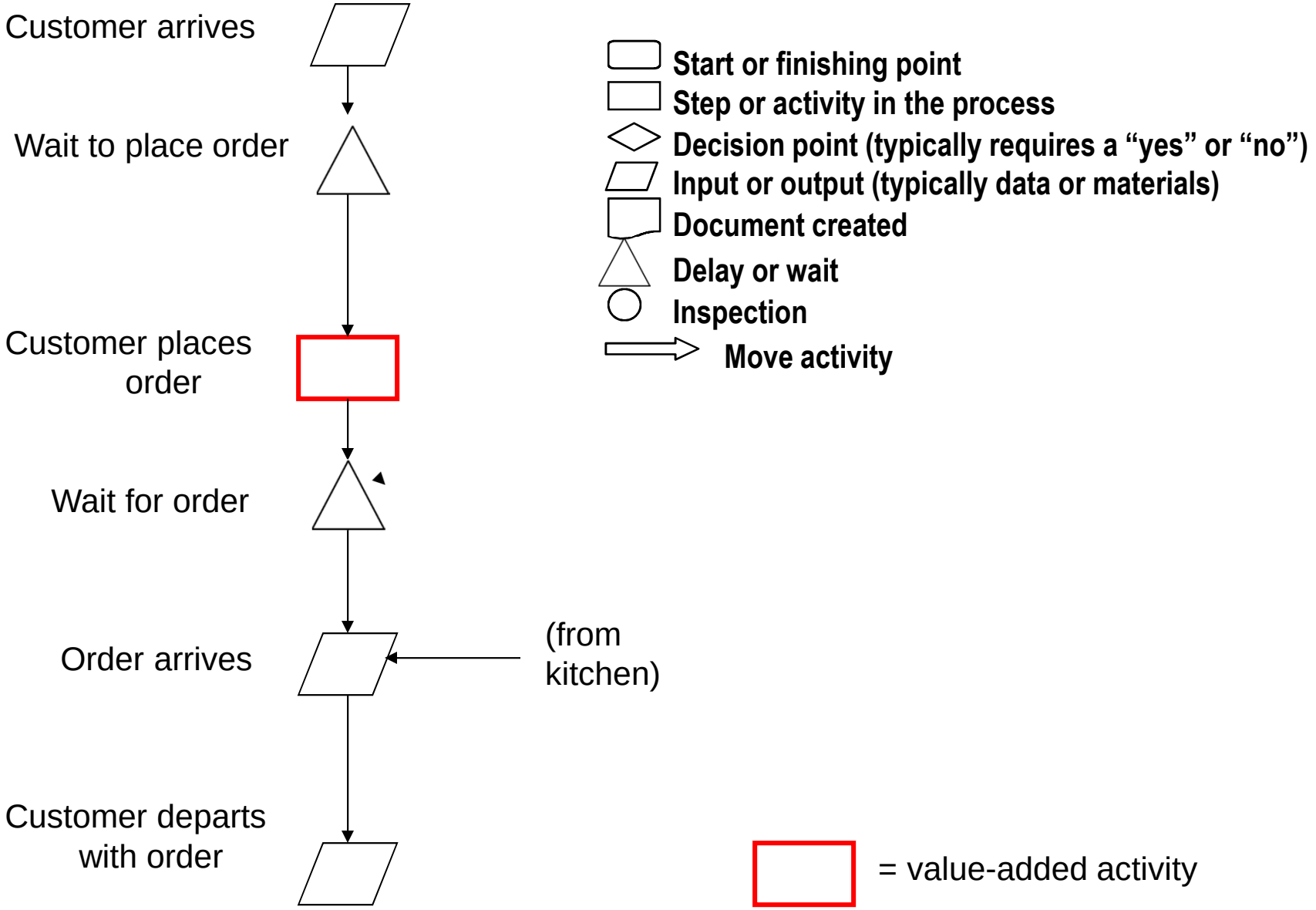
Non-value added steps

- Waste, should be eliminated
- *Necessary* non-value added steps: waste, but difficult to eliminate (e.g., some kinds of planning, scheduling, etc.)

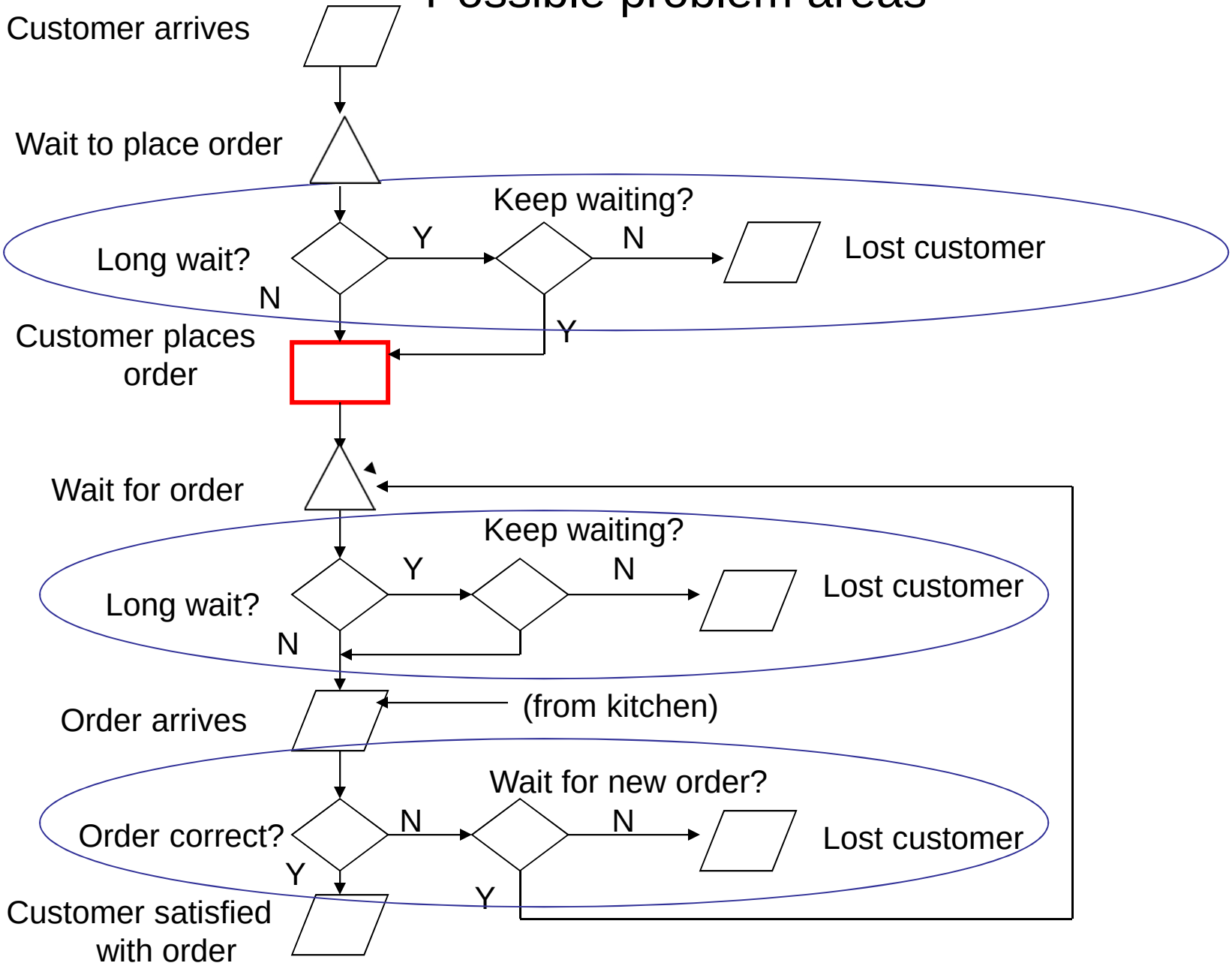
Process Flowchart: Luigi's Pizzeria



Walk-in Customer Order Process Flowchart: Luigi's



Walk-in Customer Order Process Flowchart, Expanded
Possible problem areas

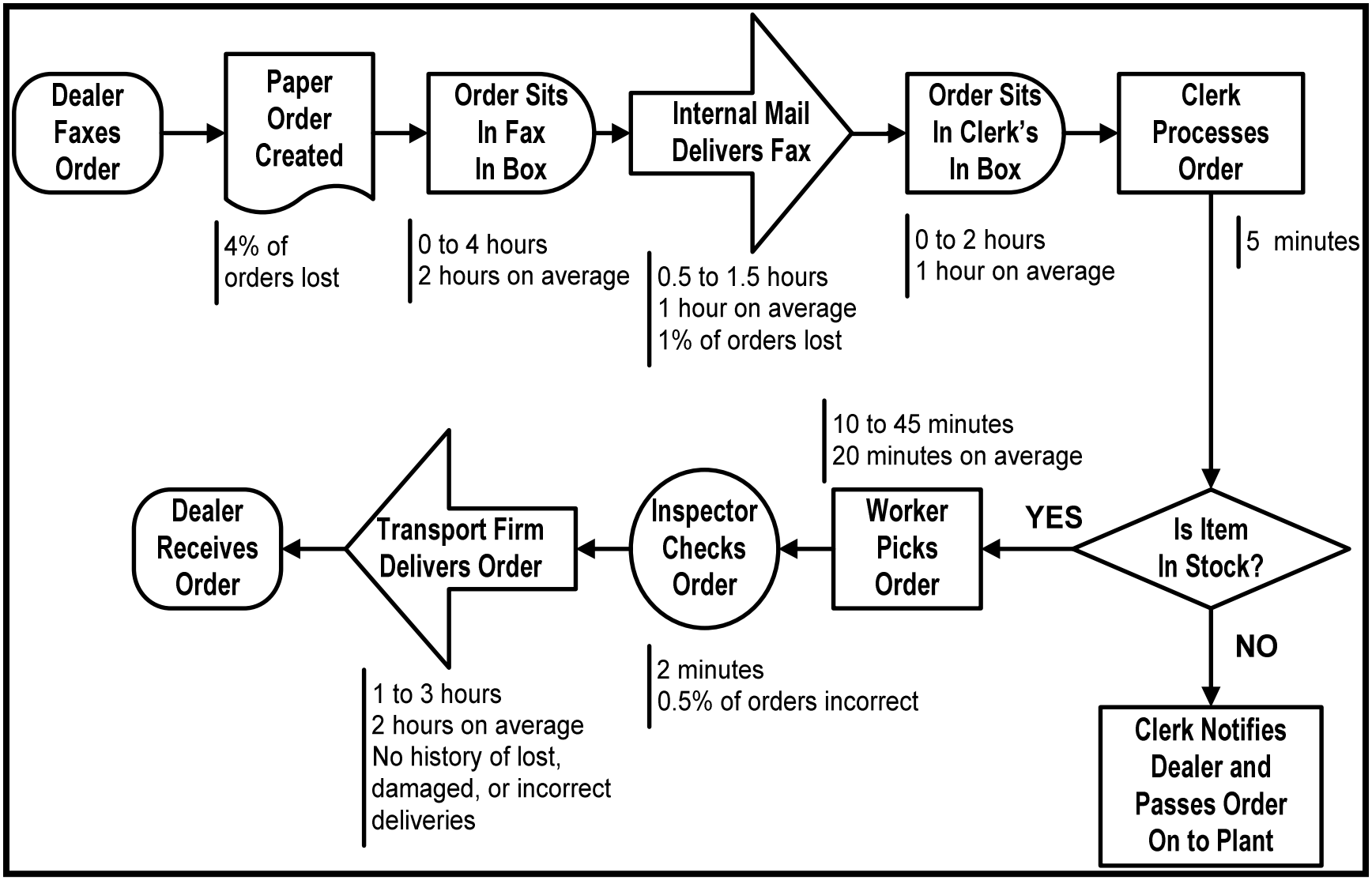


What other processes at Luigi's?

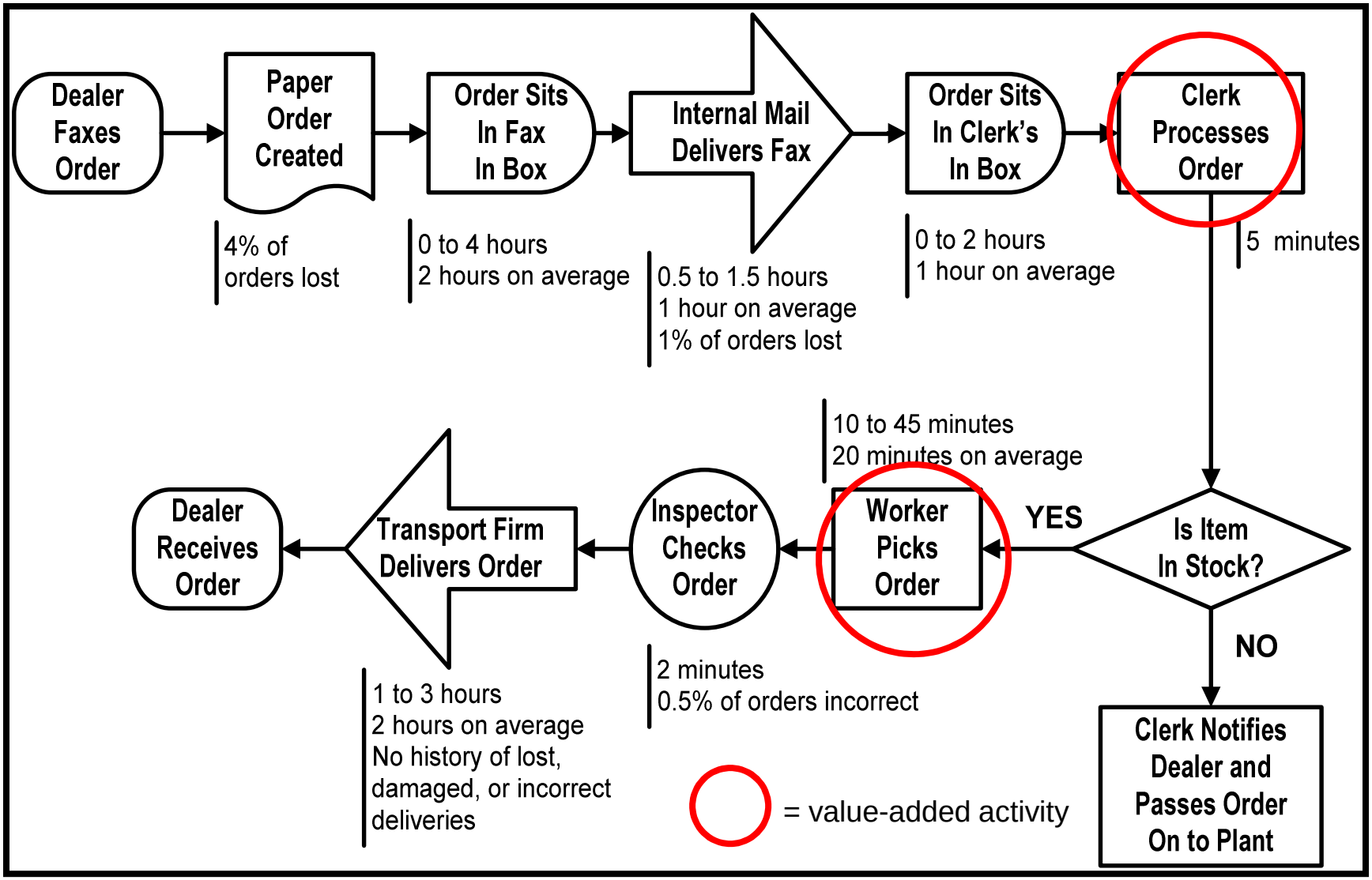
Processes for:

- Order process from phone or email
- Order filling process in kitchen (food preparation and cooking)
- Delivery process
- Restaurant/kitchen/restroom cleanliness process
- Foodstuff/materials ordering process
- Staff hiring/training process
- What else?

Order Processing at Jack's Trucking Company



Order Processing at Jack's Trucking Company



Analysis: Order Processing at Jack's

- Throughput time = Σ times for steps, start to finish
  = 120 + 60 + 60 + 5 + 20 + 2 + 120 = 387 min average
  (range: 107- 682 min)

- Analysis of steps:
  - Delay: 180 min
  - Transport: 180 min
  - Inspection: 2 min
  - Work: 25 min

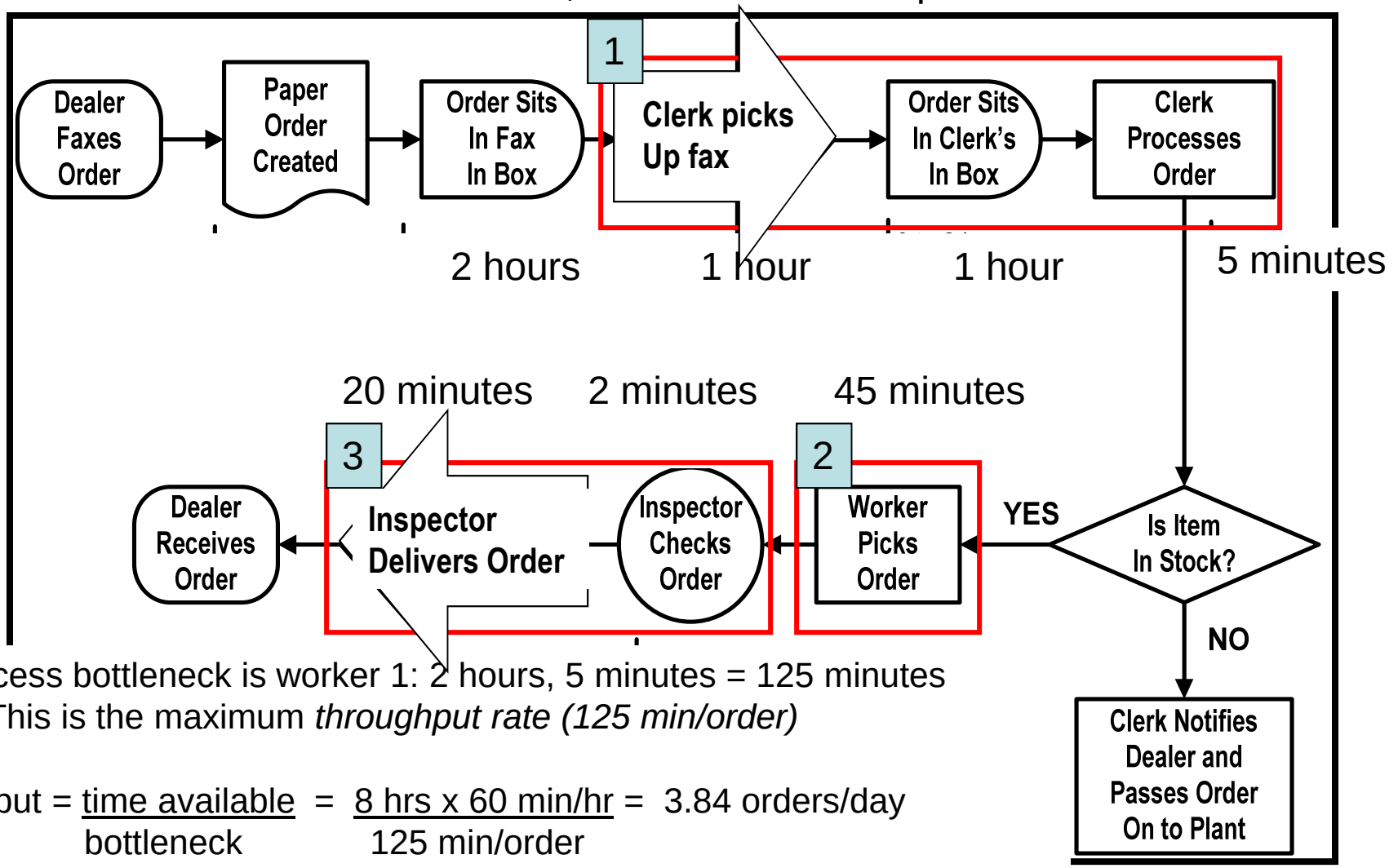
- % value added time = 25/387 = 0.0646 = 6.5% !
  (93.5% of throughput time is non-value added waste)

- Other wastes:
  - Lost orders, 5%
  - Errors, 0.5%

- Everything gets even worse if item is not in stock!

Order Processing at Jack's Trucking Company

What is the maximum number of orders that can be processed per 8-hour day?
Assume 3 workers, each must wait for previous worker



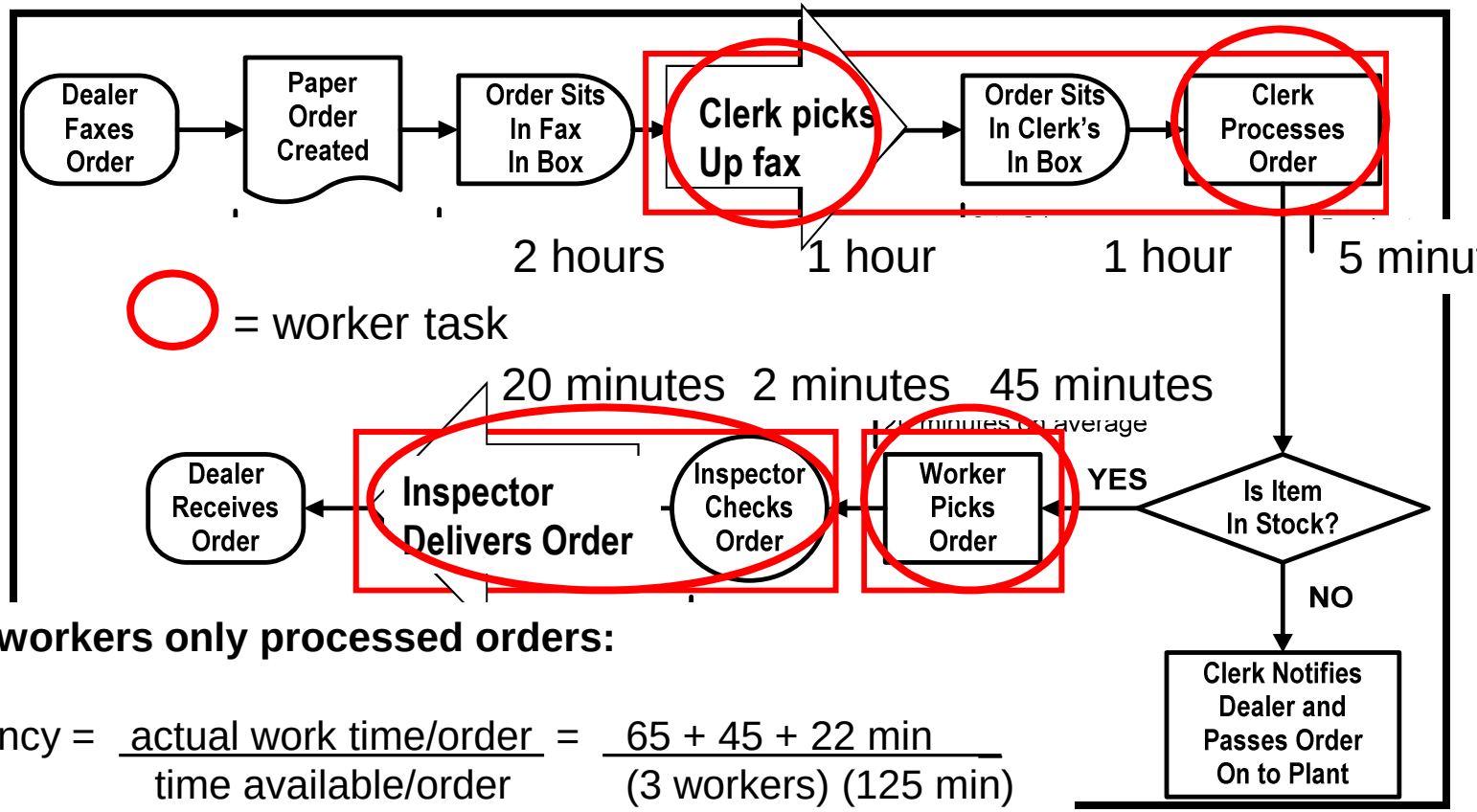
Process bottleneck is worker 1: 2 hours, 5 minutes = 125 minutes
This is the maximum *throughput rate (125 min/order)*

Output = $\frac{\text{time available}}{\text{bottleneck}} = \frac{\text{8 hrs x 60 min/hr}}{\text{125 min/order}} =$ 3.84 orders/day

What is labor efficiency?

Order Processing at Jack's Trucking Company

What is the labor efficiency?



If the three workers only processed orders:

$$\text{Labor efficiency} = \frac{\text{actual work time/order}}{\text{time available/order}} = \frac{65 + 45 + 22 \text{ min}}{(3 \text{ workers})\ (125 \text{ min})}$$

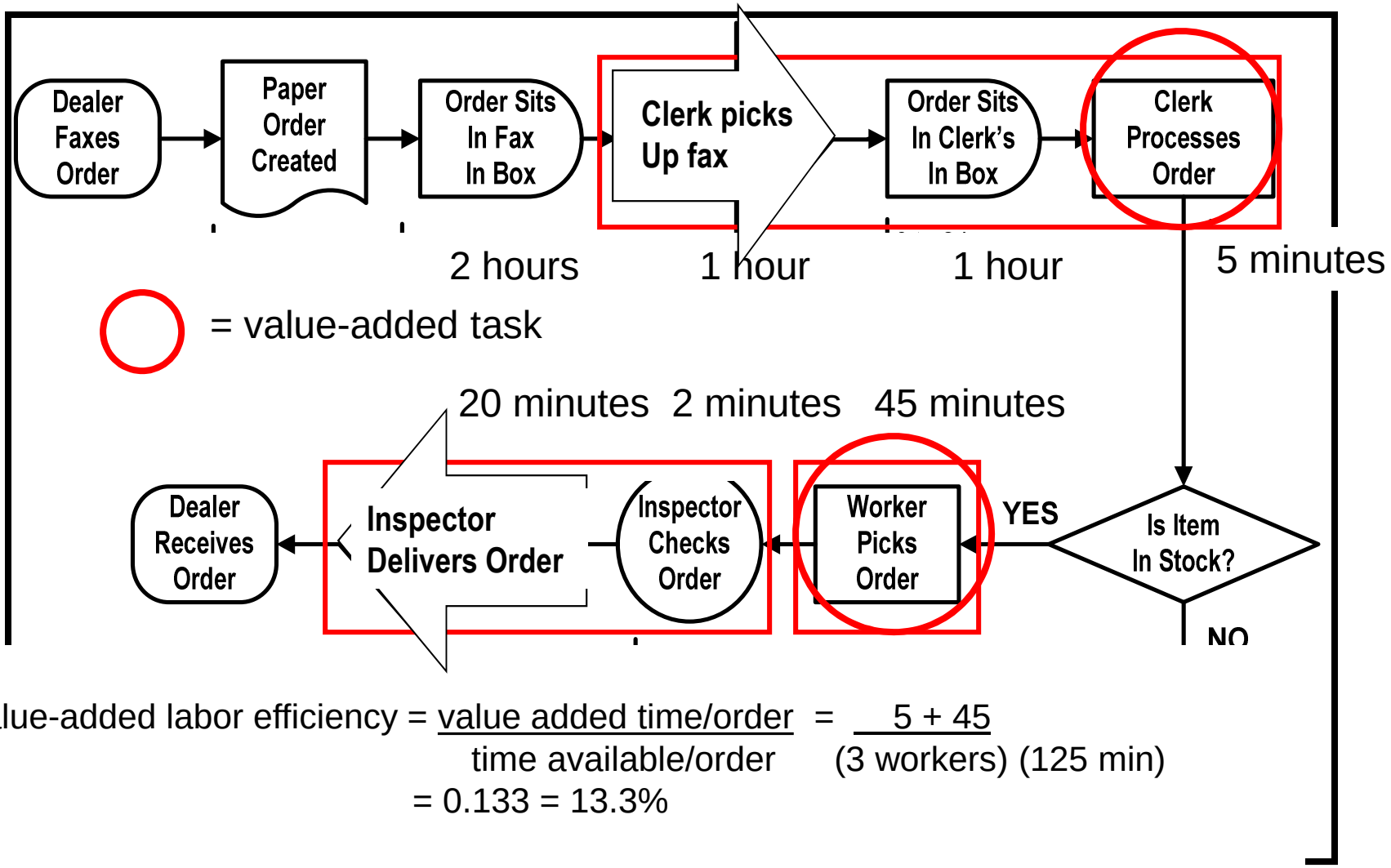
$$= 0.352 = 35.2\%$$

i.e., Of the total labor time available to process each order, only 35% of the time the workers are *working on orders* (the remaining time they are "idle" or doing something else)

What is value-added labor efficiency?

Order Processing at Jack's Trucking Company

What is the *value-added* labor efficiency?



Value-added labor efficiency = $\frac{\text{value added time/order}}{\text{time available/order}} = \frac{5 + 45}{(3 \text{ workers})\ (125 \text{ min})}$

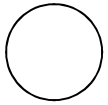
$= 0.133 = 13.3\%$

Only 13.3% of the time available to process orders is value-added work!

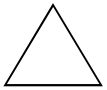
- With a defined process
  - Can set standards for what is expected
  - Can replicate the process and train people
  - Everyone does the process the same way (output is consistent)
  - Can identify what is value-added, what is waste
  - Can improve the process

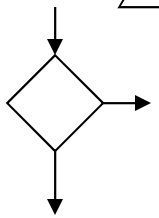
Assignment

Create a flowchart for a process you are familiar with (preferably a *business process*). Use the following symbols:

Start or finish of the process 

Process step 

Waiting or delay 

Decision 

Try to use a process with 15-20 symbols (i.e., avoid a process that is too simple or too complex).

Identify places in the process that are obviously wasteful and could be improved.

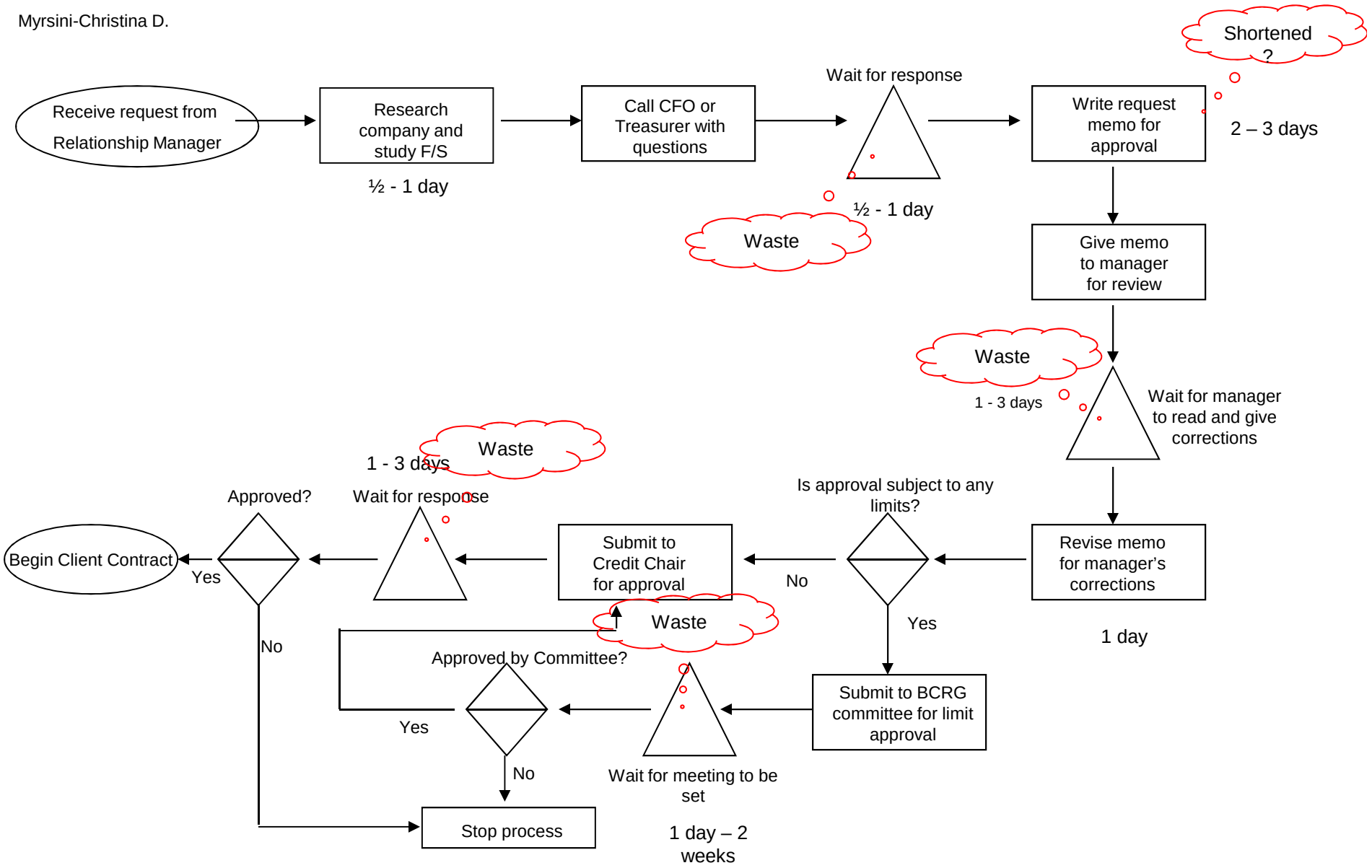
Title the process.

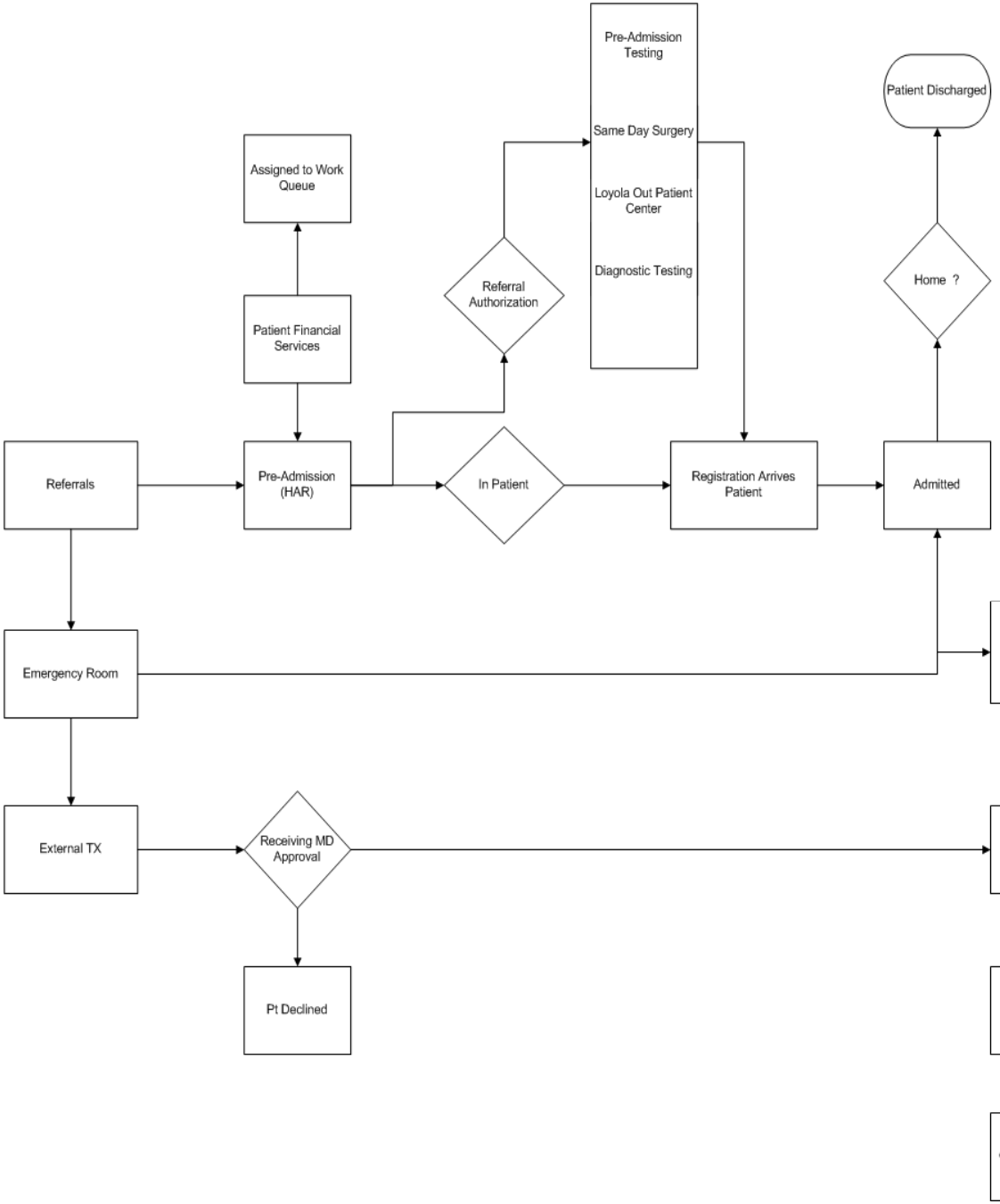
Optional: use Powerpoint and send to instructor before class.

Tricia S.
Jessica S.
Nick P.
Andrew K.
Myrsini-Christina D.

Example: Credit Request Approval Process

This flow chart is pretty good!





This flowchart is *inadequate!*

- Doesn't show *everything (*like all the places where the patient has to *wait*).
- Doesn't point out places that are wasteful of opportunities for improvement.
- Doesn't have a title!