Business Process Management (BPM)

Lab 6

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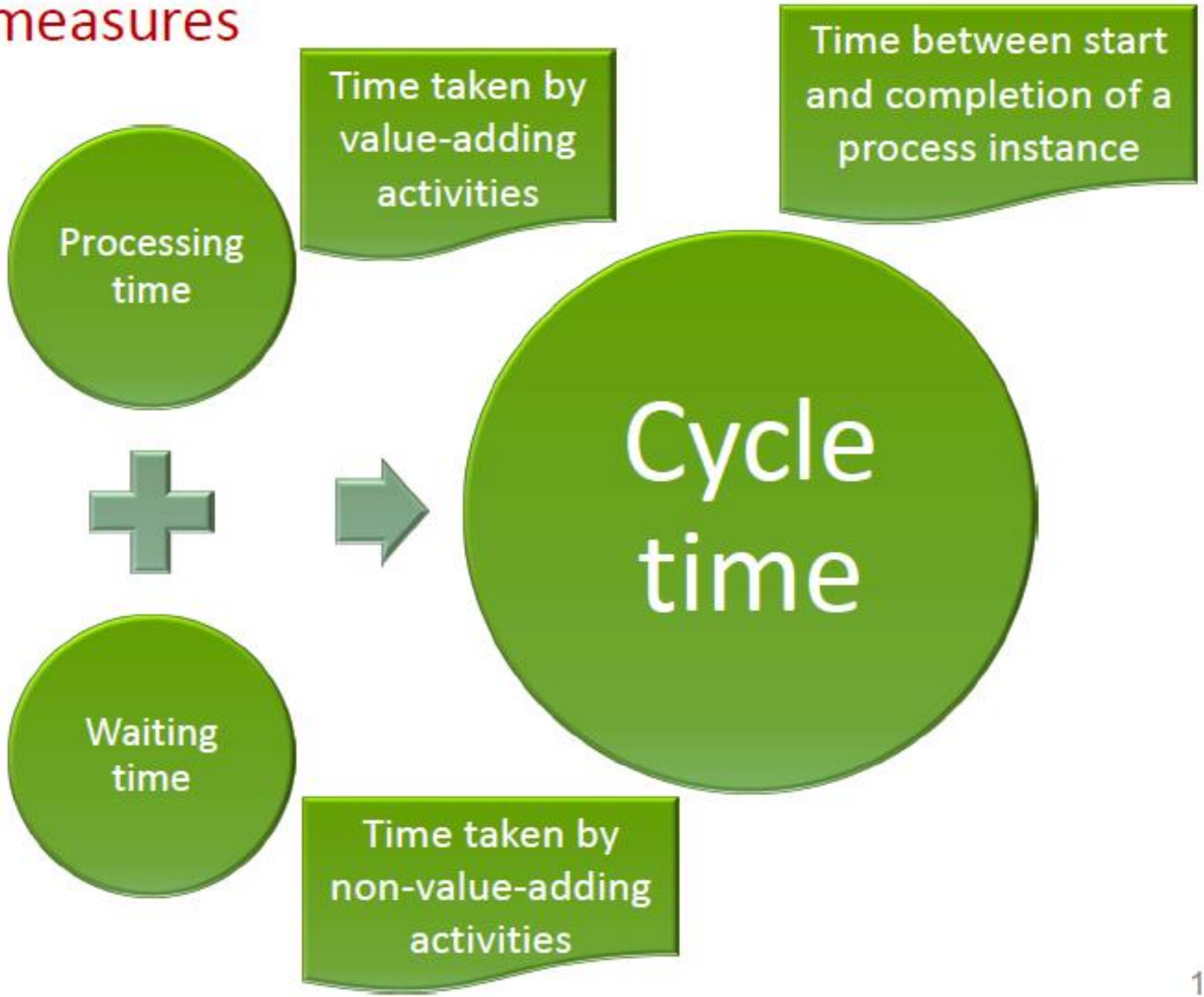
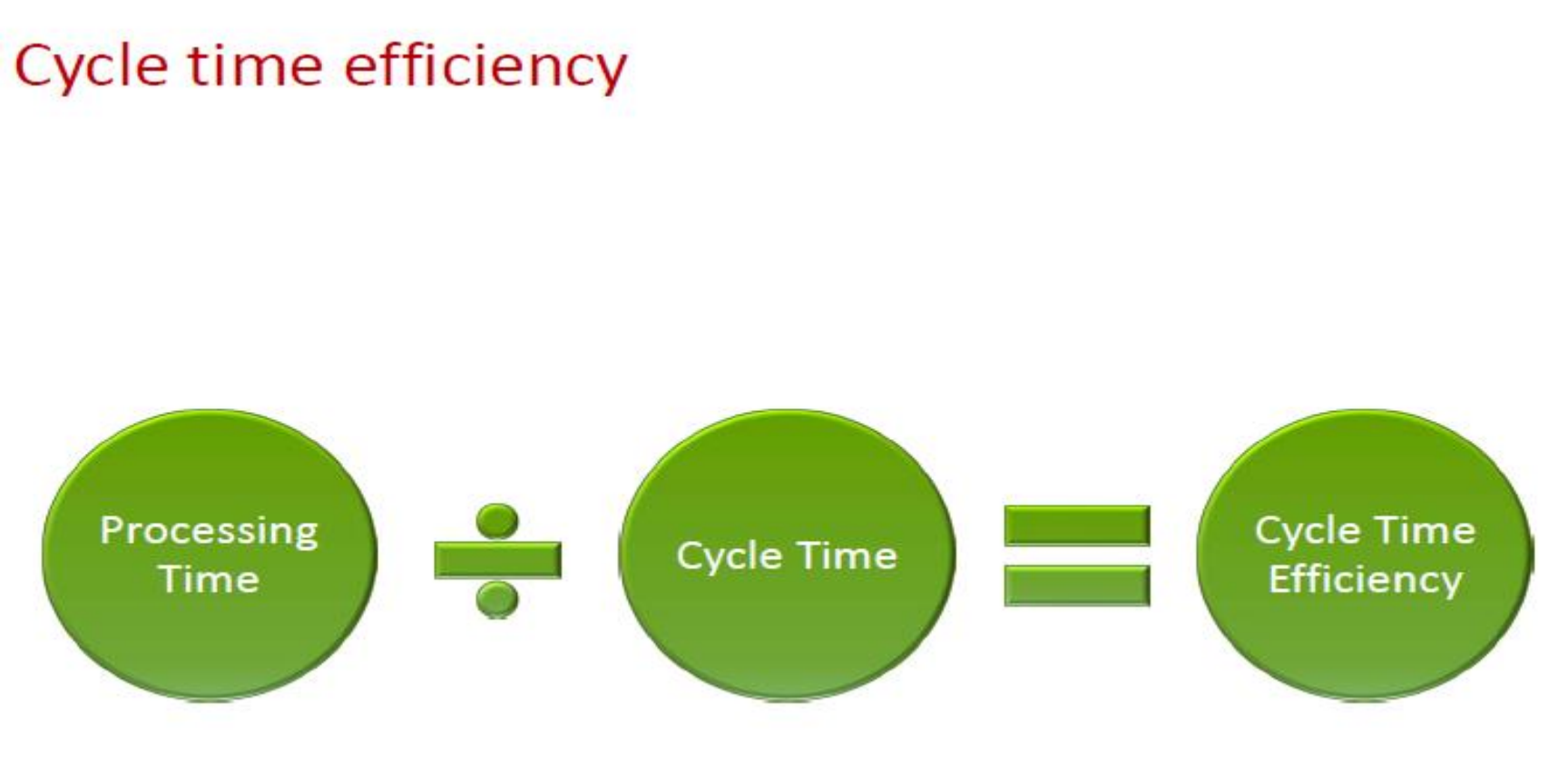
Time measures

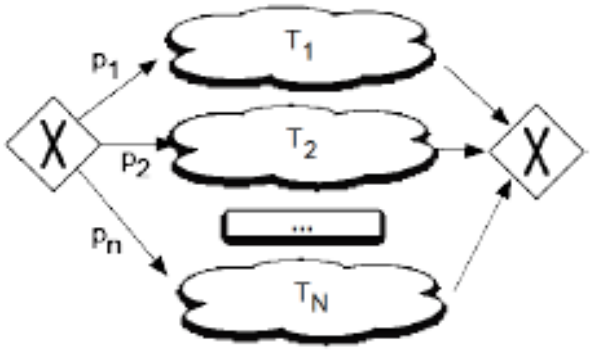


CTE

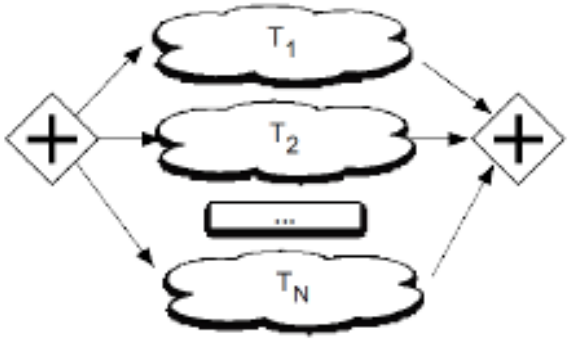

Cycle time efficiency
Processing Time
Cycle Time
Cycle Time Efficiency

Flow analysis equations for cycle time

$$CT = T_1 + T_2 + \ldots + T_N$$



$$CT = p_1 * T_1 + p_2 * T_2 + \ldots + p_n * T_N$$

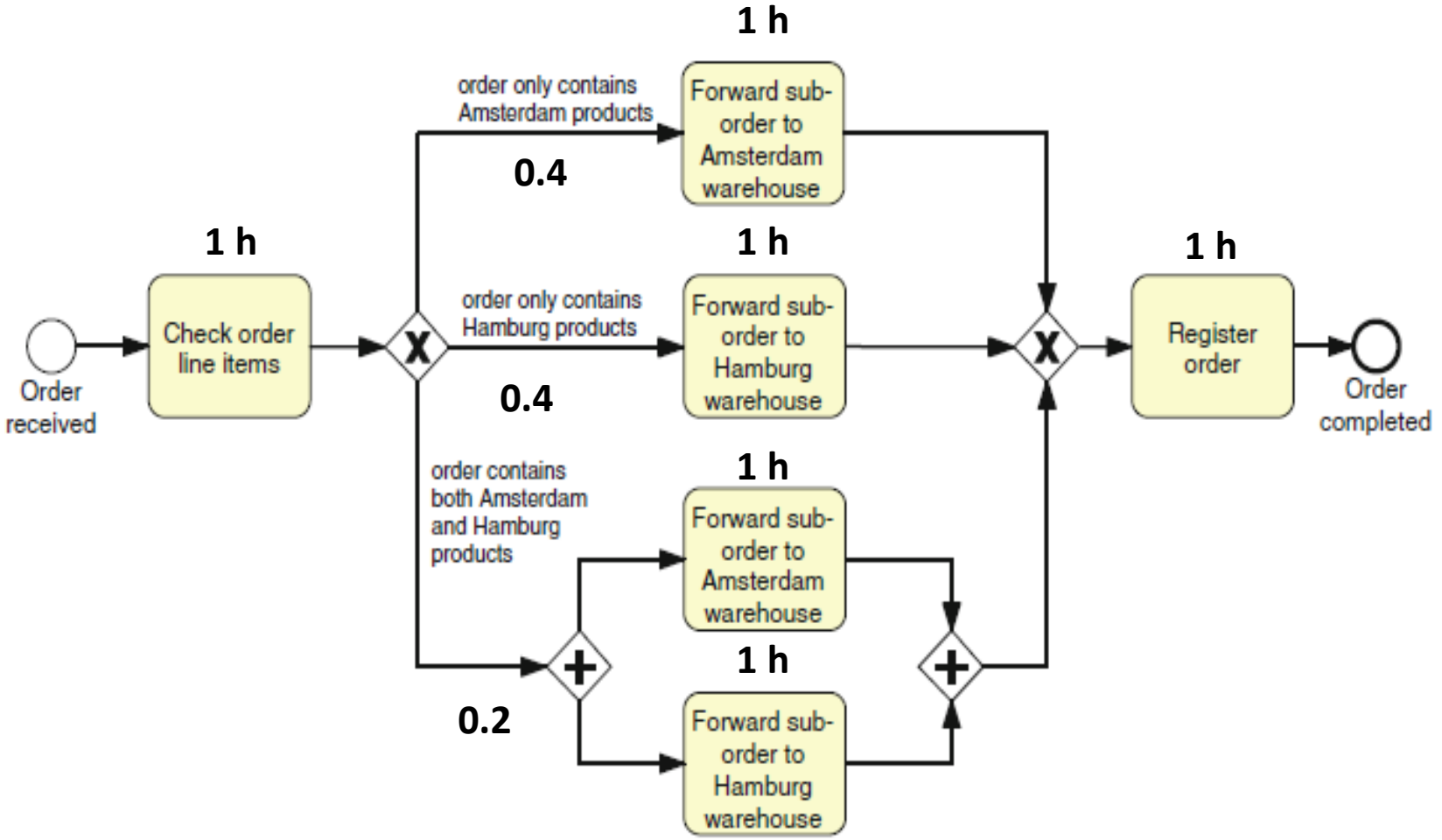


$$CT = \max(T_1, T_2, \ldots, T_N)$$

$$CT = T / (1-r)$$

Exercise 7.1

- Consider the process model given in Figure 3.8 (page 86). Calculate the cycle time under the following assumptions:
  - ✓ Each task in the process takes 1 h on average.
  - ✓ In 40% of the cases the order contains only Amsterdam products.
  - ✓ In 40% of the cases the order contains only Hamburg products.
  - ✓ In 20% of the cases the order contains products from both warehouses.


1 h
order only contains Amsterdam products
Forward sub-order to Amsterdam warehouse
0.4
1 h
1 h
1 h
Order received
Check order line items
order only contains Hamburg products
Forward sub-order to Hamburg warehouse
Register order
Order completed
0.4
1 h
order contains both Amsterdam and Hamburg products
Forward sub-order to Amsterdam warehouse
1 h
0.2
Forward sub-order to Hamburg warehouse

Solution

- $\boldsymbol{Cycle\ Time}$
  $= 1 + \big((0.4 \times 1) + (0.4 \times 1) + (0.2 \times 1)\big) + 1 = 3$

Exercise 7.2

- Calculate the **overall cycle time**, **theoretical cycle time**, and **cycle time efficiency** of the ministerial enquiry process introduced in Example 3.7 (page 90). Assume that the **rework probability** is 0.2 and the waiting times and processing times are those given in Table 7.3.

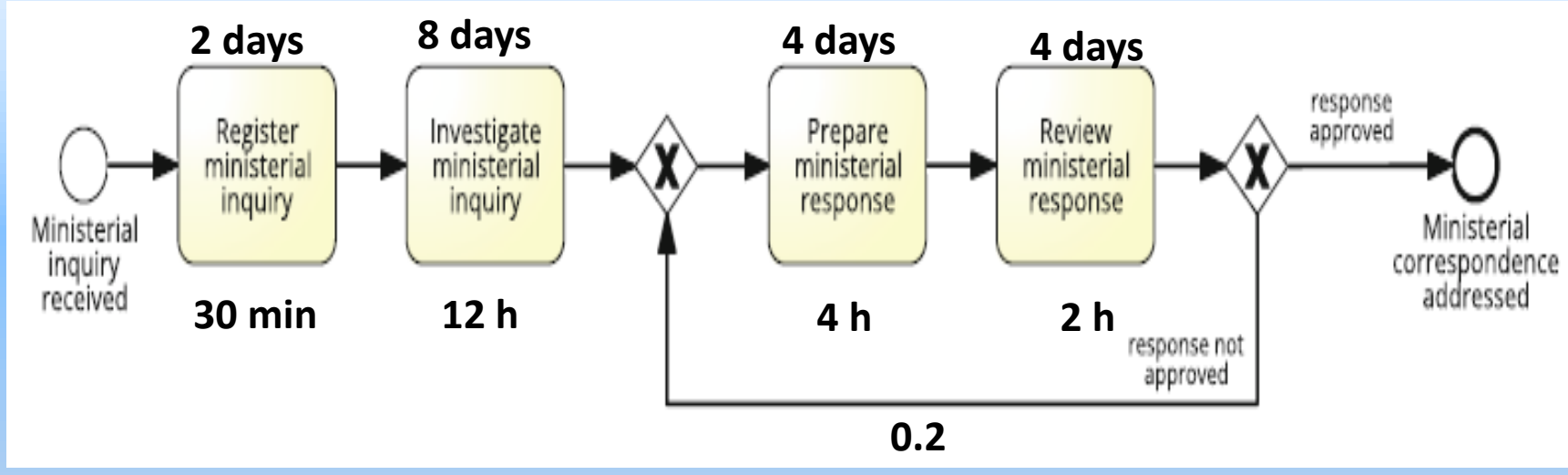


Table 7.3 Task cycle times and processing times for ministerial enquiry process

Task	Cycle time	Processing time
Register ministerial enquiry	2 days	30 min
Investigate ministerial enquiry	8 days	12 h
Prepare ministerial response	4 days	4 h
Review ministerial response	4 days	2 h

Solution

- $\boldsymbol{Cycle\ Time} = 2 + 8 + \frac{4+4}{1-0.2} = 20\ days$

  $= 160\ Hours$

  Hint : assume that day is 8 hours

- $\boldsymbol{Processing\ Time} = 0.5 + 12 + \frac{4+2}{0.8} = 20\ Hours$

- $\boldsymbol{CTE = Processing\ Time\ \div Cycle\ time}$

  $= 20\ \div (20 \times 8) = 20 \div 160 = 12.5\%$

Signavio Tool link

- https://academic.signavio.com/p/explorer#/directory/3e8c9484916e44b486182912d635447b