Little's law

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Definition:

It is the law that defines the theory of queues.

It binds waiting time, work in process and flow of the process

It is used to manage queues. It is also used to calculate the time passed through a stock in a VSM study.

The principle:

Little's law applies to any type of process, whatever its variability.

- WIP = Work In Process
- T: flow per unit time
- LT: Lead Time (average cycle time spent in the system)

$$WIP = T \; x \; LT$$

In a VSM, it is used to calculate the time passed through a stock:

$$LT = \frac{WIP}{T}$$

Sample calculation:

Through time of a stock:

- Outstanding: 11600 pieces
- Machine Speed: 8 pieces / minute
- Daily hours: 400 minutes

$$LT = \frac{11600}{8 \; x \; 400} = 3.6 \; jours$$

Email waiting to be answered:

- Treatment of 35 emails per day
- Desired average response time : 3 days

$$Max. number \; of \; waiting \; emails = 35 \; x \; 3 = 105 \; emails$$

Meaning:

This law shows that reducing the Lead Time, increase throughput or reduce work in process.

In general, it is much easier to reduce work in process than increase the throughput that often depends on technical constraints.