Lab spreading

input → **Zones** **transport delay** → **Labs** **capacity**
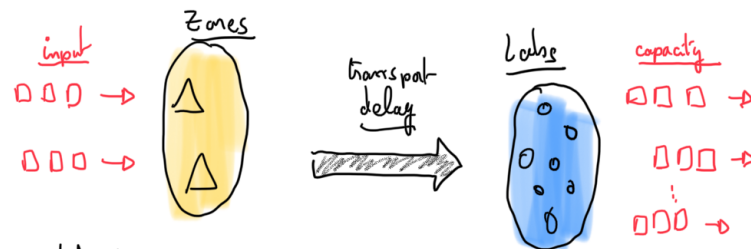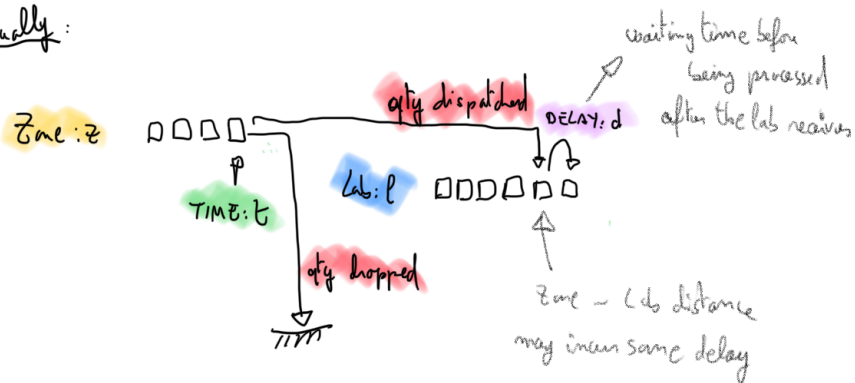
Dispatch decisions :

- at each time slot and for which zone
- what quantity are sent to which lab
- and how long it will be backlogged

Drop decisions :

- at each time slot and for which zone
- what quantity are dropped

⇒ allow to find solutions to all problems but requires an optimisation

Visually :

Zone : z

TIME : t

Lab : ℓ

qty dispatched

DELAY : d

qty dropped

waiting time before being processed after the lab receives

Zone – Lab distance may incur some delay

Constraints:

- no lab over capacity
- no attributions with total delay (transport & waiting time) too large

Objectives:

- minimize drop
- minimize delay

Symmetries:

- two labs having same zone-to-labs distances can be merged

Extensions:

- could support some prioritization between labs (e.g. price to minimize)
- could assign some capacity increase with some price