Prob [Felix was in Box 1 at time 0 AND he didn't move ; OR Felix was in Box 2 at time 0 AND he moved]

= Prob[Felix was in Box 1 at time 0 AND he didn't move] + Prob[Felix was in Box 2 at time 0 AND he moved]

= Prob[he didn't move | Felix was in Box 1 at time 0] Prob[Felix was in Box 1 at time 0] + Prob[he moved | Felix was in Box 2 at time 0] Prob[Felix was in Box 2 at time 0]

= (1 – 0.4) * 0.3 + 0.2 * (1 – 0.3)

Prob[A or B] = Prob[A] + Prob[B] – Prob[A and B]

Prob[A and B] = Prob[A] Prob[B | A]

Probability [0 arrivals in δ]
$= (\lambda\,\delta)^0 \exp(-\lambda\,\delta) / 0!$
$= \exp(-\lambda\,\delta)$
$= 1 - \lambda\,\delta + (\lambda\,\delta)^2 / 2 + \ldots.$
$\cong 1 - \lambda\,\delta$

Probability [1 arrival in δ]
$= (\lambda\,\delta)^1 \exp(-\lambda\,\delta) / 1!$
$= \lambda\,\delta\,(1 - \lambda\,\delta + (\lambda\,\delta)^2 / 2 + \ldots.)$
$\cong \lambda\,\delta$

Probability [2 arrivals in δ]
$= (\lambda\,\delta)^2 \exp(-\lambda\,\delta) / 2!$
$= (\lambda\,\delta)^2\,(1 - \lambda\,\delta + (\lambda\,\delta)^2 / 2 + \ldots.) / 2!$
$\cong 0$

$\exp(-\lambda\,\delta)$
$= 1 - \lambda\,\delta + (\lambda\,\delta)^2 / 2 + \ldots.$

Probability [0 arrivals in δ] = $1 - \lambda \delta$
Probability [1 arrival in δ] = $\lambda \delta$
Probability [2 or more arrivals in δ] = 0

Probability [a job will finish its service in next δ seconds] = $\mu \delta$
Probability [a job will NOT finish its service in next δ seconds] = $1- \mu \delta$

	Meaning
λ	Arrival rate (= 1/mean inter-arrival time)
μ	service rate (= 1 / mean service time)