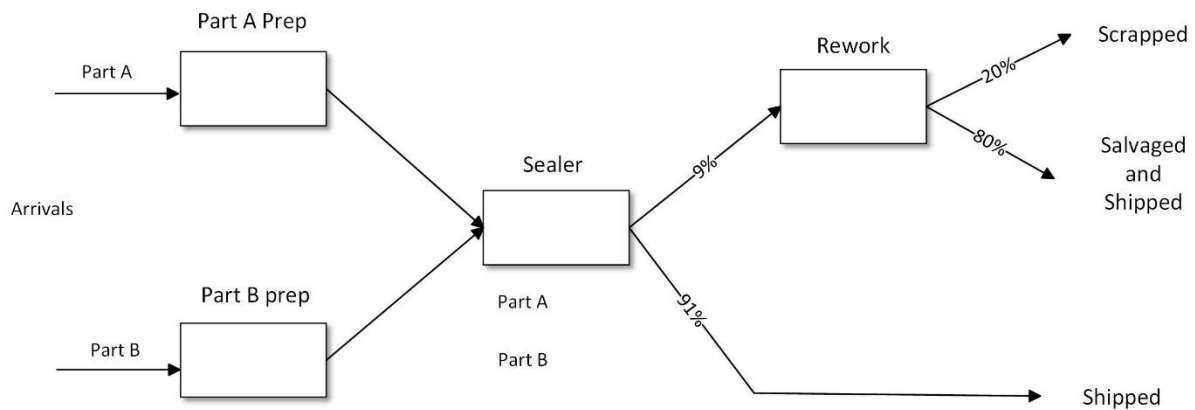# An Electronic Assembly and Test System

This system represents the final operations of two different sealed electronic units in the following figure. The arriving parts are cast metal cases that have already been machined to accept the electronic parts.

The first units, named part A are produced in an adjacent department, outside the bounds of this model, with interarrival times to our model being ***exponentially***. Upon arrival, they're transferred to the part A prep area. At the part A prep area, the meeting faces of the cases are machined to assure a good seal, and the part is then deburred and cleaned; the process time of the combined operation at the part A prep area follows a ***Triangular*** distribution. The part is then transferred to the sealer.

The second units, named Part B, are produced in a different building, also outside this model's bounds, where they are held until a batch of four units is available; the batch is then sent to the final production area we are modeling. The time between the arrivals of successive batches of Part B to our model is ***exponential***. Upon arrival at the part B prep area, the batch is separated into four individual units, which are processed individually from here on. The processing at the part B prep area has the same three steps as the part A prep area. The part is then sent to the sealer.

At the sealer operation, the electronic components are inserted, the case is assembled and sealed, and the sealed unit is tested. The total process time for these operations depends on the part type: ***Triangular*** for part A and ***Normal*** for part B. Ninety-one percent of the parts pass the inspection and are transferred directly to the shipping department, whether a part passes is independent of whether any other parts pass. The remaining parts are transferred to the rework area where they are disassembled, repaired, cleaned, assembled, and re-tested. Eighty percent of the parts processed at the rework oven are salvaged and transferred to the shipping department as reworked parts, and the rest are transferred to the scrap area. The time to rework a part follows an ***exponential*** distribution and is independent of the part type and the ultimate disposition (salvaged or scrapped).

	Distribution – Units minute
Inter- Arrival of Part A	EXPO (5)
Inter- Arrival of Part B	EXPO (30)
Part A Preparation -Process time-	TRIA (1,4,8)
Part B Preparation -Process time-	TRIA (3,5,10)
Sealer Process time for Part A	TRIA (1,3,4)
Sealer Process time for Part B	NORM (2.5, 0.519)
Rework Process time	EXPO (45)

We want to collect statistics in each area on resource utilization, number in queue, and cycling time.