Automated factory : robot arms take items from a conveyor belt and place them in a box, which is then replaced by a new empty box when nearly full.

EQP1

constant

A number of robot arms pick items from a conveyor belt and place them in a box.

FUN2

no event for returning objects to the conveyor belt and once an item is picked it must be placed in a sufficiently empty box

Arms cannot return items to the conveyor belt. They can only place them in the box.

FUN3

event without guard

The conveyor belt can provide items continuously.

FUN4

picking an item is the same as choosing a value non-deterministically in the right range

Every item can have a different non-zero weight that is only known once it's been picked up by an arm.

FUN5

constant

All items are under a fixed maximum weight.

FUN6

constant

item's max weight $\leq$ box's max capacity !

There's a fixed maximum weight that the box can hold.

FUN7

Boxes can hold at least the maximum weight of an object.

FUN8

no need to model the conveyor belt, only arms picking random values in the right range (maybe we can add realism in later refinements)

Robot arms can pick any item which appears on the conveyor belt.

FUN9

modelling arms as partial functions

Robot arms pick items one at a time.

FUN10

all arms without an item can pick one (a random value in the right range)

All arms can pick items independently (they don't need to synchronize).

FUN 11

A robot arm can leave its load in the box only if this doesn't make the total weight of the items in the box exceed the maximum weight the box can hold. leaving items in the box has that guard

FUN 12

replacing box event with a guard checking the items being held

The box must be replaced if and only if it's not possible to deposit a new item without exceeding the maximum weight the box can hold (it's not necessary to maximize the box load).

FUN 13

There's an unlimited supply of empty boxes.

FUN 14

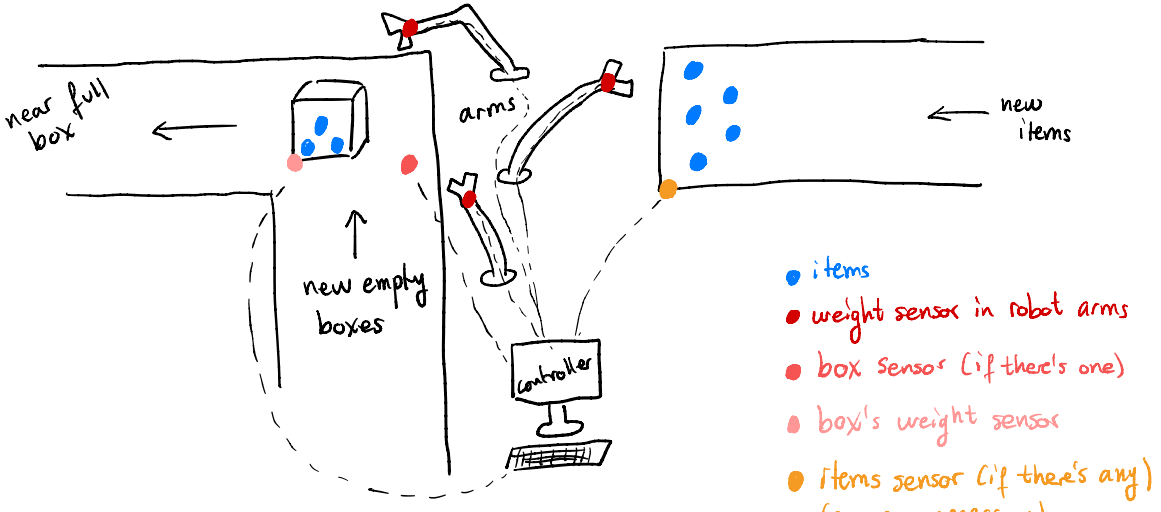
Robot arms can only leave items in the box one by one (they need to synchronize). control that only one arm is leaving items in the box (and moreover, the controller must wait until the box's weight sensor updates its value to let any other arm leave an item in the box)

FUN 15

Replacing boxes takes some time. Arms shouldn't drop items until a new empty box is in place. control that arms can't leave items until the box has been replaced, which means having a sensor of wether there's a box and letting the controller to read that value (and showing it to arms)

FUN 16

There's a sensor that detects the weight of the items in the box.



That above were my first impressions about the model after reading the requirements.