Solution Assessment:

Please find the requested details.

**1.1: NEW Sequence diagram:**

Human

Material Tracking System

Tool B

Tray tracking System

Tool A

(g) (f)

1. (b)

(c) (e)

(h)

(d)

**Phase-1**

1. Tool A Update the Status of the Tray Completed to Tray Tracking System (TTS).
2. Send the completed Tray for Quantity Validation to Tool B.
3. Tool B updates the quantity information to Tray Tracking System (TTS)

**Phase-2**

1. Now Tray tracking System will update the Material Tracking system (MTS) with Process status as Completed and also additional Information will be shared to MTS to put the material on HOLD (if the Input vs Output quantity is greater than 5%).
2. MTS Will notify Human that material is on Hold and need to be reviewed Manually.
3. If Human decide that it can proceed to Next step, the Release status is sent to MTS. In case Human decides result for the sorting can be incorrect, MTS will be updated to send back for Resorting.
4. MTS will update the Same to Tool A to start Resorting.
5. MTS will notify User that Material is released.

**1.2: Flowchart for the quantity validation logic (after the material with 3 trays are fully processed**).

(a)

(b)

(c)

END

(e)

(d)

Yes

NO

(f)

(g)

(h)

Yes

END

(j)

(i)

NO

(k)

1. Once the flow Stars, the Input quantity is retrieved from the Database X
2. Next Output quantity will be retrieved from the Tray Tracking System.
3. Calculate the Difference between Input and Output Quantity.
4. If Difference is <=5% of Input Quantity.
5. Mark as Success and send to next processing step the logic end here.
6. If Difference is >5% of Input Quantity, Update the Material Tracking System to Put Material on Hold.
7. Notify Human Intervention is needed.
8. Human will review the Material
9. Now Human Decides If the Ready to next Process or it need to be sent back to Resorting
10. Release the material and send it to Next processing step. Logic ends here
11. The material will send back to Tool A for Resorting, later it will follow the same process from (b).