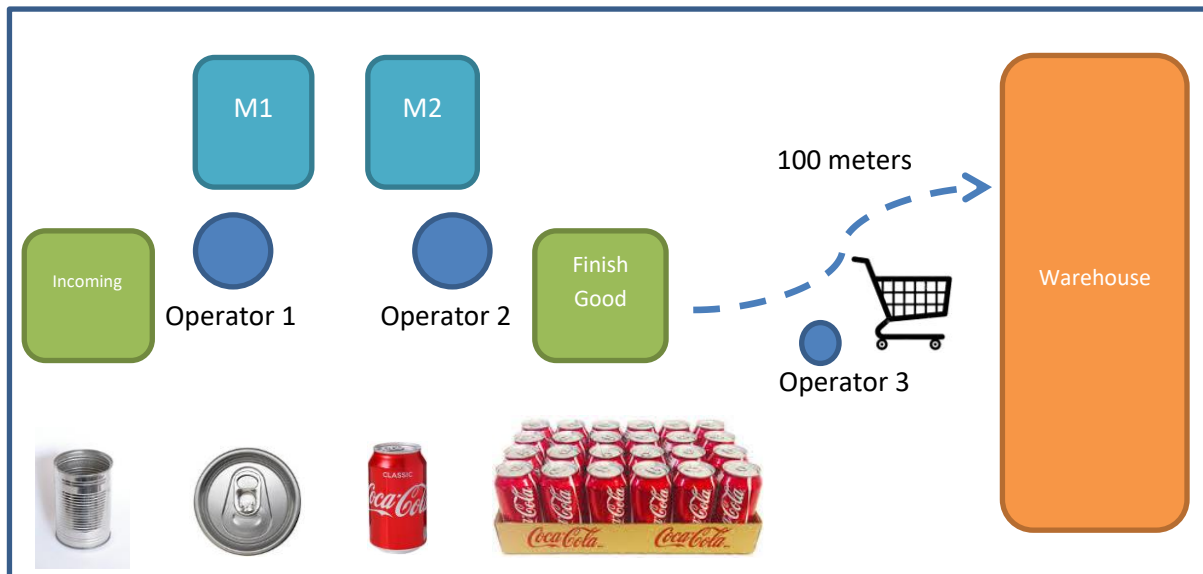


**Assignment 2**  
**Robot Technology for Automation SKEM 4153**  
**Semester 2 2018/2019**

**Assignment Tasks:**

5 of you (or less) are in an Automation Team in an engineering company. Your team has been requested by your manager to prepare an automation proposal to a potential customer. They are doing packaging business. Following is the illustration:



- This company is producing soft drink can.
- Currently, one production line is carried out by 3 operators/8 hours for 2 shifts.
- Following are the process:
  - Raw can arrives at 'incoming' tray
  - Operator 1 pick one can from 'incoming' tray and put to Machine 1 (M1). M1 is to press a cover to the can which took about 10 second.
  - Once M1 done, Operator 2 picks the can from M1 and proceeds to M2. M2 is to print the label to external can. The process took around 10 seconds also.
  - Once M2 done, operator 2 picks the can from M2 and place to 'Finish Good' tray.
  - One 'Finish Good' tray has 24 cans, Operator 3 will pick the carton using trolley and push it to warehouse which is about 50 meter away and it took the operator close to 20 minutes to deliver.
  - Assume raw is continuous available in Incoming tray.
  - Assume the size of machine and trays are 1m x 1m. Assume size of can is a normal can's size.
  - Other info which is not available, you can make your own assumption.

- Your manager requested you to prepare a simulation proposal to use automation and robotics in this process and to present to customer. Following are the requirement
  - Two Simulations
    - Use [www.flexsim.com/](http://www.flexsim.com/) to show the overall simulation to replace all the 3 operators.
    - Use <https://www.universal-robots.com/download/?option=18940> to simulate the UR10 movement.
  - Robot
    - To use one unit of **Collaborative Robot UR10** from **Universal Robot**.
    - To use one unit of **Automated Guided Vehicle (AGV) Zalpha-MG-S** from **DF Automation & Robotics**.

### Deliverables

You will need to submit **proposal, power point slide and simulation videos** on 2<sup>nd</sup> May 2019 via **hardcopy** and **email** to [cfyeong@utm.my](mailto:cfyeong@utm.my) (with title **SKEM4153 Assignment 2**). The proposal should not more than 10 pages (print both sides) and should consist of following:

- Front page with members name
- Introduction
- Proposal with description of both simulations (include screen shot, cycle time, dashboard, etc)
  - Flexim
  - URSim or other robot simulator or real robot demo (ABB, Kuka, UR, etc)
- Conclusions

You will need to present with slide not more than 10 mins and 2 mins Q&A as in real proposal meeting with customers. The presentation should include introduction of current process, explain your proposal with Flexim (include info such as cycle time, waiting time, etc), explain how the robot movement (how you design the arm and program briefly), the improvement, ROI and why they must buy from you. Please download and edit the video if required to ensure your presentation is on time.

### Marks Given

Items	Marks	
<b>Proposal and Presentation</b>	50	
<b>Demo</b> <ul style="list-style-type: none"> <li>• Very complex (25 marks)</li> <li>• Complex (20 marks)</li> <li>• Average (15 marks)</li> <li>• Simple (10 marks)</li> <li>• Too simple (5 marks)</li> <li>• Not working (0)</li> </ul>	<b>Flexim</b>	25
	<b>URSim</b>	25