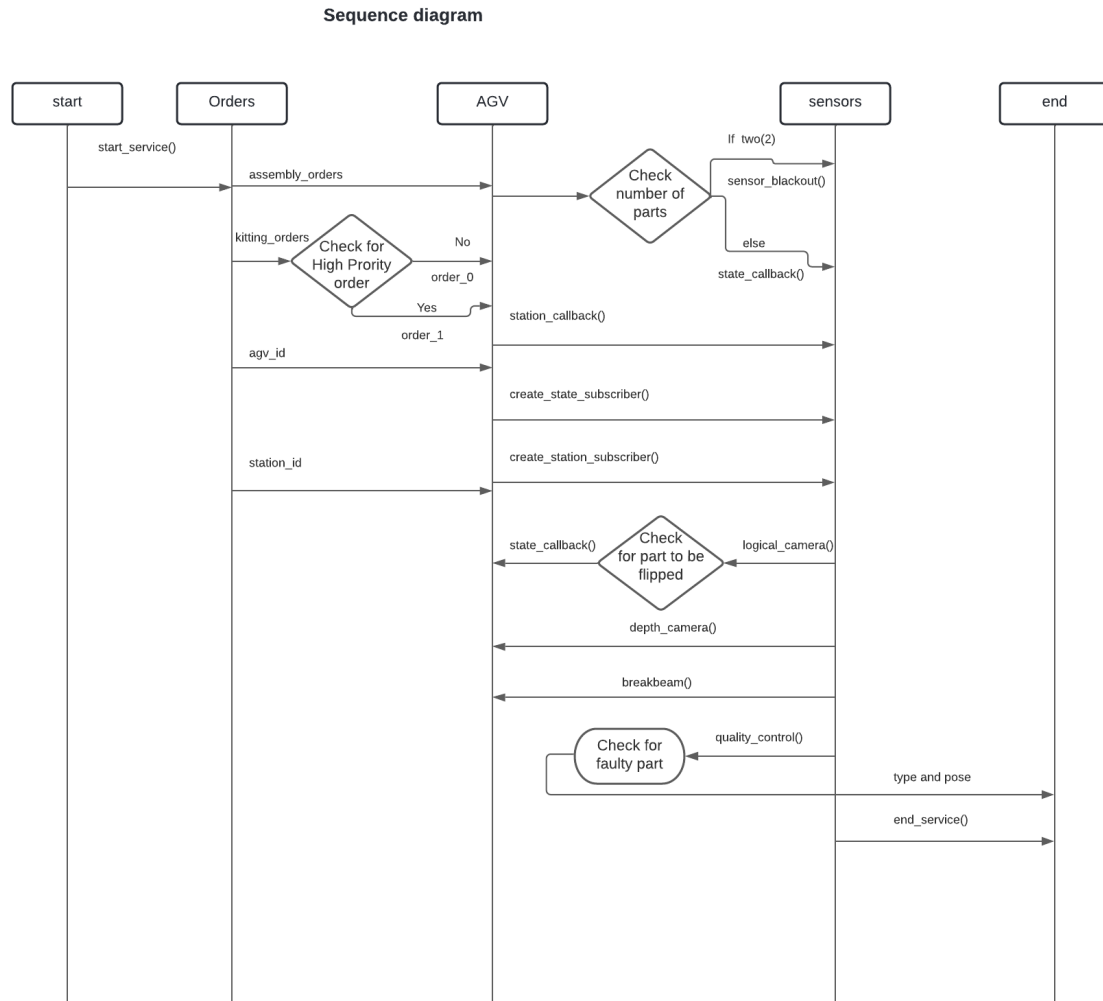# ENPM 663: RWA-2

Group 4

6.1 Sensor/Camera setup:

The following image shows our ARIAC workspace with all the logical cameras at its appropriate locations to capture all the 16 parts in the workspace.

There are 18 logical cameras: two over the bins, four for each of the AGVs at ks1, ks2, ks3 and ks4, four for the AGVs at as1 and as3, four for the AGVs at as2 and as4 and 4 for the briefcases.

6.2 Agility Challenges:

Sequence Diagram:

Sequence diagram

The following are the ability challenges introduced to the sequence diagram:

1. <u>In-process Order Change</u> – After order_0 is passed, the kitting operation takes place.
- Once the first red pump is placed, order_1 is announced as a high priority order and is called.

2. Sensor blackout – If the number of parts on the AGV is 2, sensor blackout takes place for 10 simulation seconds.
3. Faulty Part – The faulty part is detected and the type of product and its appropriate pose in the workspace, which describes the pose of the sensor itself in the world frame.
4. Flipped part – The logical camera checks the orientation of the parts placed and gives the order to flip the desired one.

The following is the output of our ARIAC launch file, after the competition has started:

```
[INFO] [1647230315.858859]: Waiting for the competition to be ready...
[gazebo_unpauser-15] process has finished cleanly
log file: /home/blade/.ros/log/00d01146-a34b-11ec-8e58-28d0ea6b9437/gazebo_unpauser-15*.log
[INFO] [1647230321.577359]: Competition is now ready.
[INFO] [1647230321.578070]: Requesting competition start...
[INFO] [1647230321.580027]: Competition started!
[ WARN] [1647230321.582559813, 5.054000000]: Force enabling conveyor because power set by task manager.
[ INFO] [1647230321.584591873, 5.055000000]: Announcing order: order_0

[ WARN] [1647230327.453292509, 10.217000000]: spawnSDFModel service called
Error [parser_urdf.cc:3167] Unable to call parseURDF on robot model
Error [parser.cc:406] parse as old deprecated model file failed.
[ INFO] [1647230328.584985622, 11.050000000]: Announcing order: order_1

[ WARN] [1647230338.436480221, 19.345000000]: spawnSDFModel service called
Error [parser_urdf.cc:3167] Unable to call parseURDF on robot model
Error [parser.cc:406] parse as old deprecated model file failed.
[INFO] [1647230338.674737]: Faulty Part Detected:
[INFO] [1647230338.676153]: [type: "model"
pose:
  position:
    x: 0.725191434276
    y: 0.0105493944828
    z: -0.0780072234464
  orientation:
    x: -0.491568607499
    y: -0.498684774932
    z: -0.500647301474
    w: -0.50894604714]
[ INFO] [1647230339.602052368, 20.050000000]: Triggering sensor blackout because 2 products detected.
```