Adaptive Goal Management

MVP website: https://adaptive-goal-management.herokuapp.com/

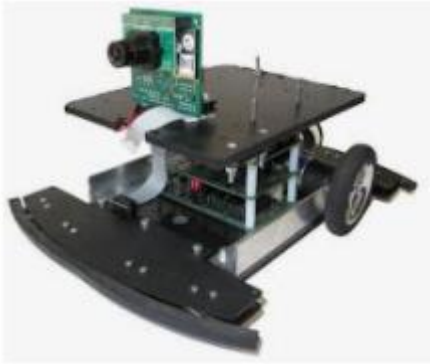
Github: https://github.com/mukmalone/AdpativeGoalManagement

By Michael Muldoon

michael.muldoon.home@gmail.com

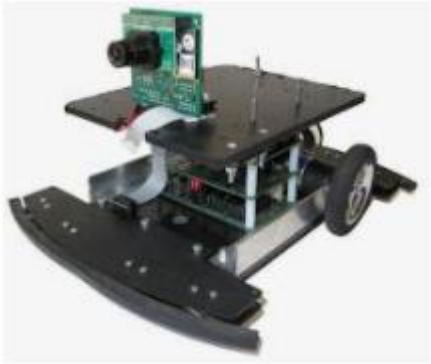
What is it?

- An adaptive goal execution system
- Designed for robotics and drones connected to the Internet



What does it do?

- Dynamically manages a series of steps or goals for a robot to perform



How does it work?

Let’s use an example in a manufacturing context

Definitions

First some language, everything is built around aerospace manufacturing terminology and practices:

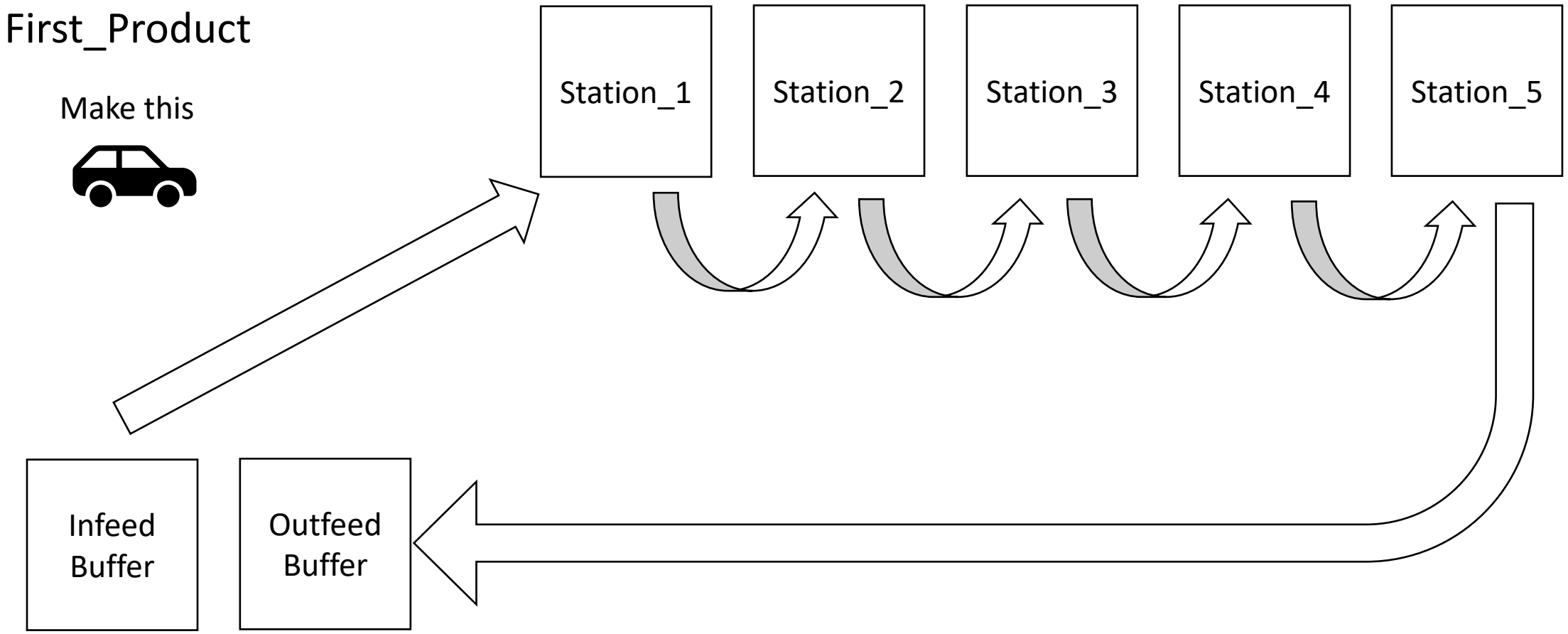
- Worker = your robot/drone
- Workstation = target source or destination location where something happens
- Routing = A set of manufacturing steps needed to complete a product or activity
- Customer = Who is this work being performed for
- Part number = A defined combination of a customer and routing which will deployed

As you get creative you can think of ways to deploy this in every setting.

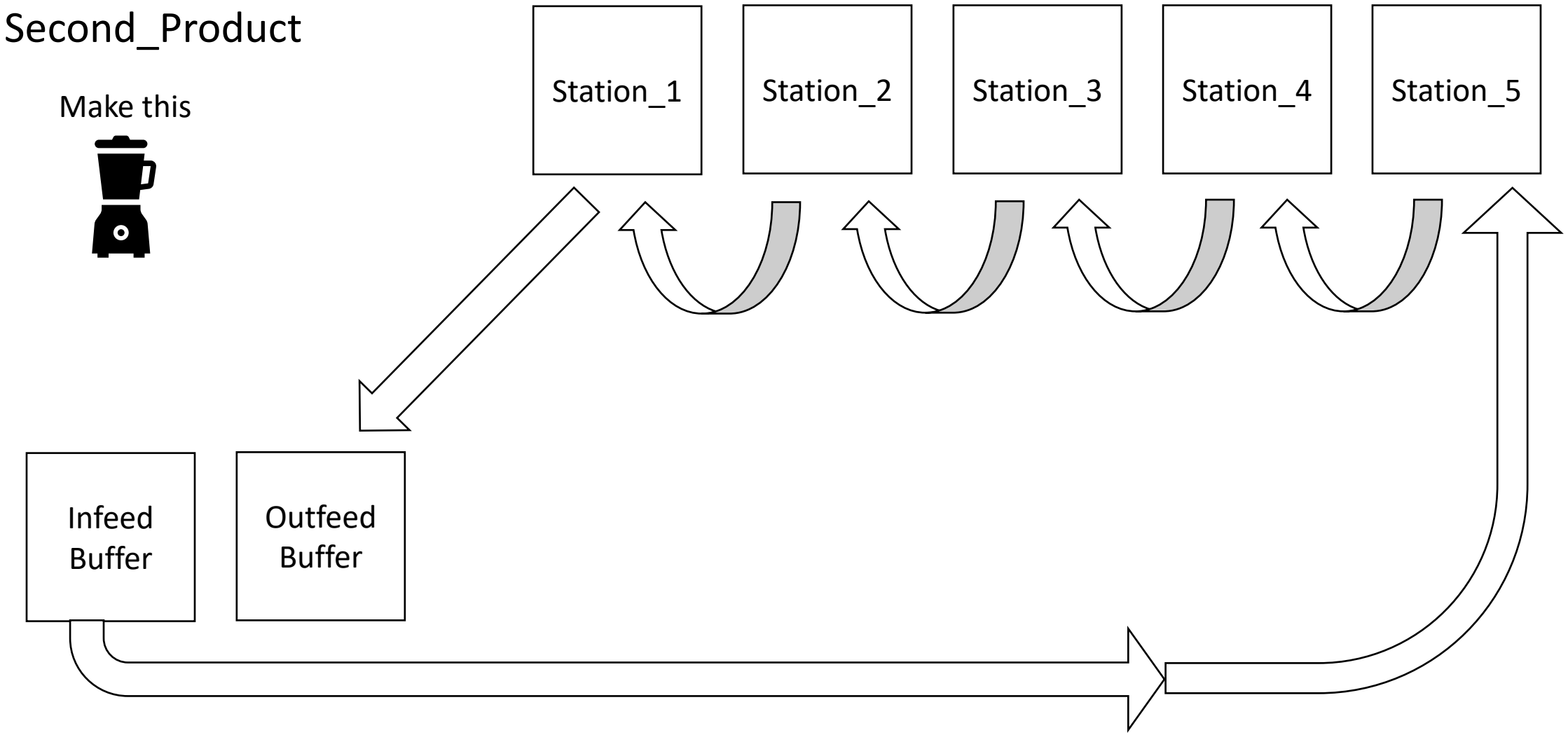
Communication

Worker talks to AGM through API using HTTP

What you need to accomplish



Another thing you need to accomplish



A third thing to accomplish

Fast_Product

Make this

Setting it up

Station_1 | Station_2 | Station_3 | Station_4 | Station_5

Workstations

Worker: Tesla

Routings

	name: First_Product Steps: - Station_1 - Station_2 - Station_3 - Station_4 - Station_5 - Outfeed Buffer

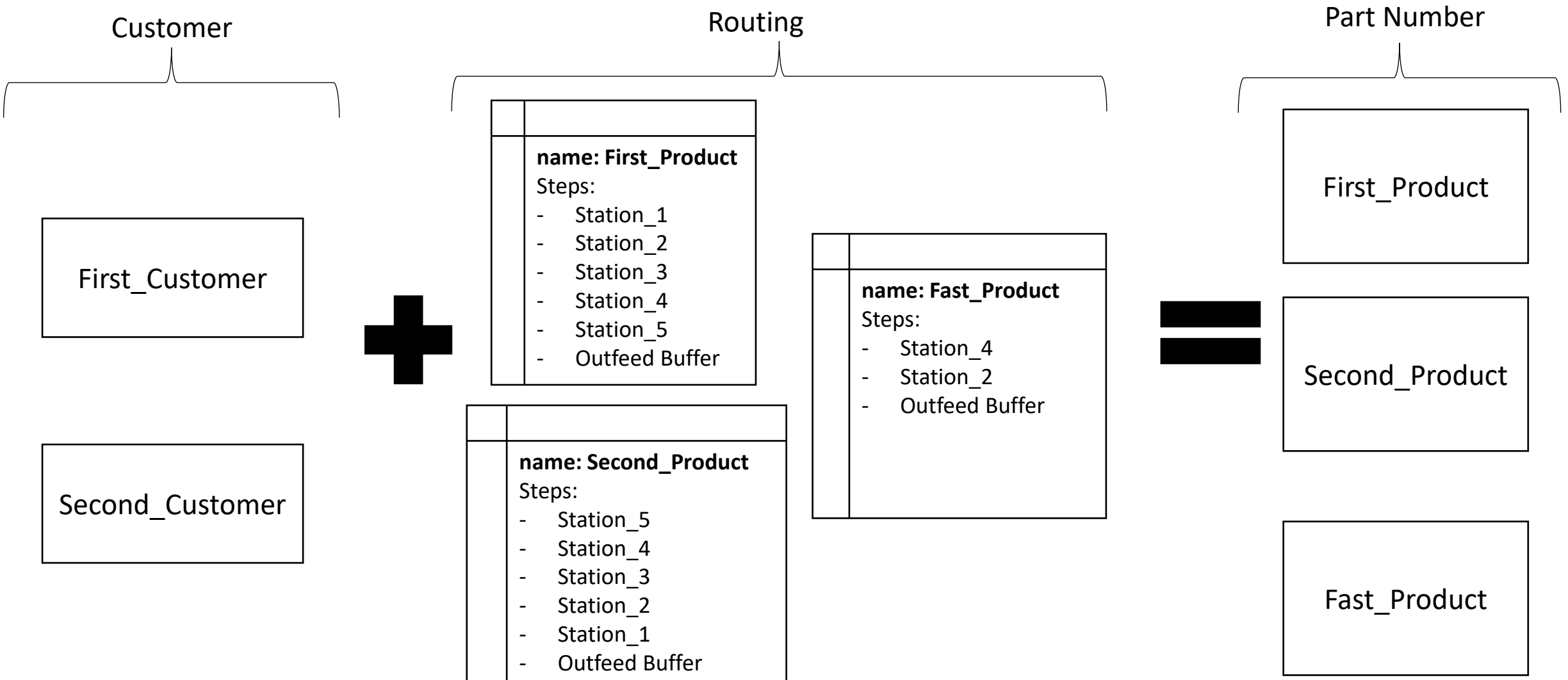
	name: Second_Product Steps: - Station_5 - Station_4 - Station_3 - Station_2 - Station_1 - Outfeed Buffer

	name: Fast_Product Steps: - Station_4 - Station_2 - Outfeed Buffer

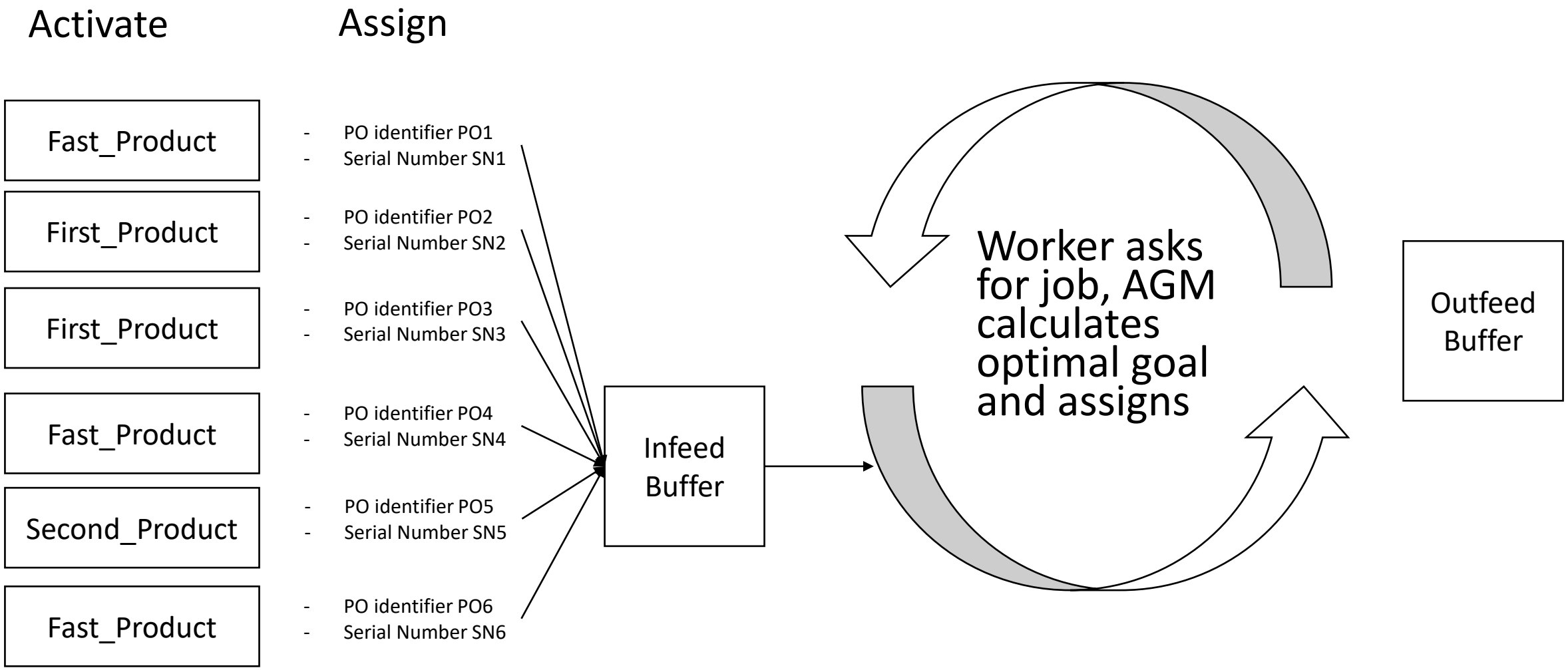
Infeed Buffer | Outfeed Buffer

Workstations

Setting it up cont'd



Setting things in motion



How a worker knows what to do

Worker: Tesla

1. NEXTJOB

Job Queue
po: PO1
Source: Infeed Buffer 1
Destination: Station 1
Step #: 0

PO in Station: empty

2. ACTIVATEJOB

Job Active
po: PO1
Source: Infeed Buffer 1
Destination: Station 1
Step #: 0

PO in Station: empty

3. MOVEWORKER source

Infeed Buffer

4. TAKEPART

Job Active
po: PO1
Source: Infeed Buffer 1
Destination: Station 1
Step #: 0

PO in Station: PO1

5. MOVEWORKER Destination

Station_1

6. LOADPART

Job Active
po: PO1
Source: Infeed Buffer 1
Destination: Station 1
Step #: 0

PO in Station: empty

7. ARCHIVEJOB

Job Queue
po:
Source: Destination:
Step #:

PO in Station: empty

Start over

Example 2: Mixing multiple robots & jobs

Worker: Robot_Assemble

workerGroup: Assembly

Worker: Robo_Inspect

workerGroup: Inspection

Infeed Buffer

Assembly

Inspection

Outfeed Buffer

Worker: Robo_Mover

workerGroup: PO Movement

Questions/want to test/want to contribute

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