

Warner Robins Air Logistics Complex

**Model It Anyway;
the Intuitive Solution was Wrong**



Matt Walker
AnyLogic Simulation Conference
5 & 6 September 2023

Approved for public release #78ABW-2023-0094



Overview



- Overview of WR-ALC
- Radome repair process
- Problem – not meeting customer agreement
- The “Solution”
- Model – interactive display
- New business rules

WR-ALC – Warner Robins - Air Logistics Complex



Overview of WR-ALC



■ Robins Air Force Base, GA

- Warner Robins Air Logistics Complex (WR-ALC) is one of many tenant units on Robins AFB
- WR-ALC is part of the Air Force Sustainment Center (AFSC)
- Repairs and overhaul's the United States Air Forces' largest aircraft
- Due to the nature of depot level repair and overhaul WR-ALC operates much like a manufacturing company



C-5	feet	meter
Length	247	75
Wingspan	228	70

C-17	feet	meter
Length	174	53
Wingspan	170	52

C-130	feet	meter
Length	96	29
Wingspan	130	40

F-15	feet	meter
Length	64	19.5
Wingspan	43	13

WR-ALC – Warner Robins - Air Logistics Complex, AFSC – Air Force Sustainment Center



Radome Repair Process



- **Aircraft Radome**

- **The aircraft nose cone**
- **Houses the radar and is transparent to radio waves**



- **Arrives in batches of 8 to 10 Radomes**
- **Repair Turnaround Time (RTAT) agreement**
- **RTAT = 60 calendar days = 43 working days**

CMXG – Commodities Maintenance Group, EMXG – Electronics Maintenance Group, RTAT – Repair Turnaround Time

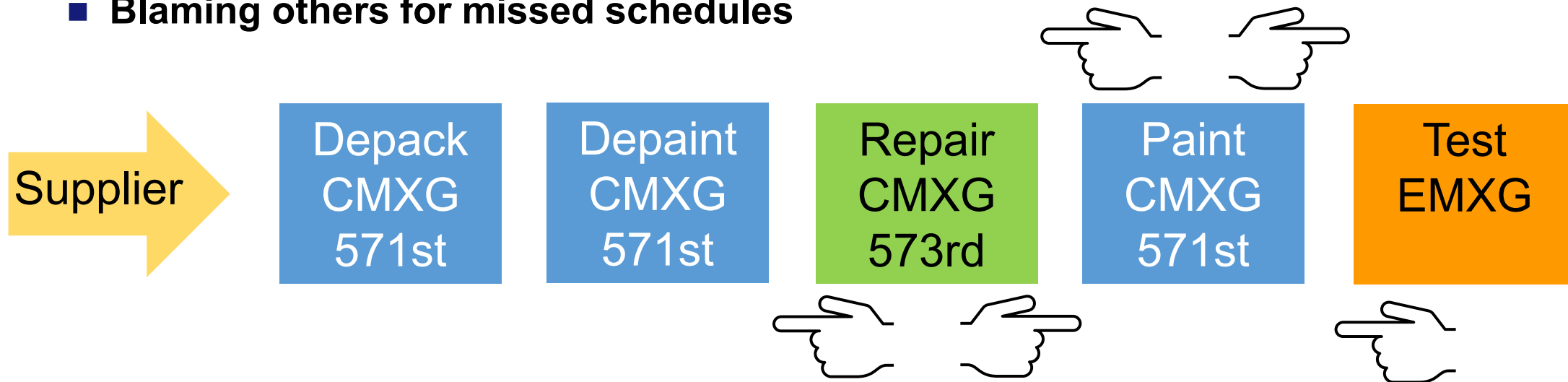


Radome Repair Process



- The blame game

- Missed the agreed upon RTAT back to the supplier
- Overly long wait times before starting the next process
- Blaming others for missed schedules



CMXG – Commodities Maintenance Group, EMXG – Electronics Maintenance Group, RTAT – Repair Turnaround Time

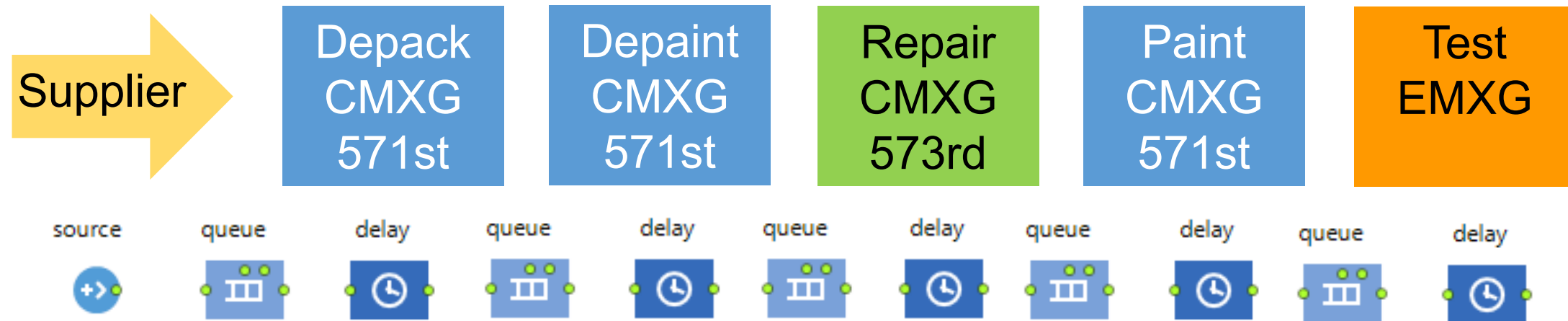


Radome Repair Process



- A solution was suggested
 - 1 month+ to implement
 - Estimated costs of \$25K

- So, let's model it in the meantime



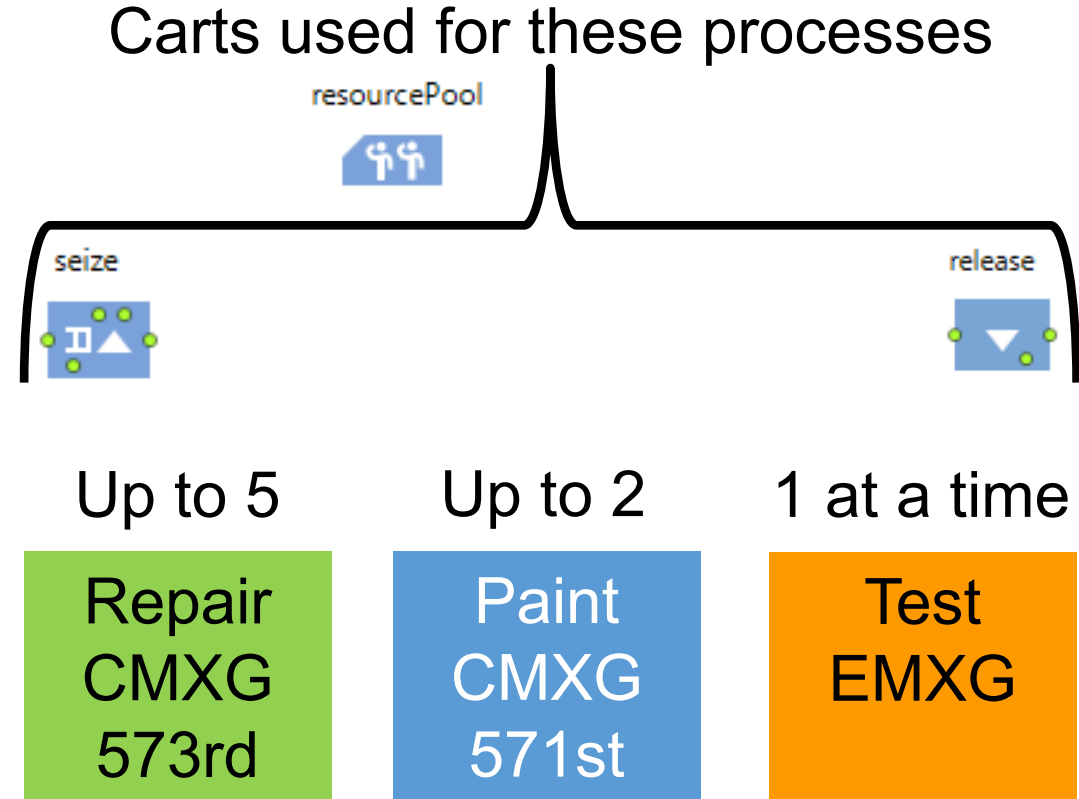
CMXG – Commodities Maintenance Group, EMXG – Electronics Maintenance Group



“Solution”



- Resource constraints
 - Only 5 Radome carts are available
- Possible solution
 - The resource constrained process holds more than the number of carts in the process
 - Manufacture more radome carts



Depack
CMXG
571st

Depaint
CMXG
571st

Repair
CMXG
573rd

Paint
CMXG
571st

Test
EMXG

CMXG – Commodities Maintenance Group, EMXG – Electronics Maintenance Group



Model the “Solution”



■ Resource constraints

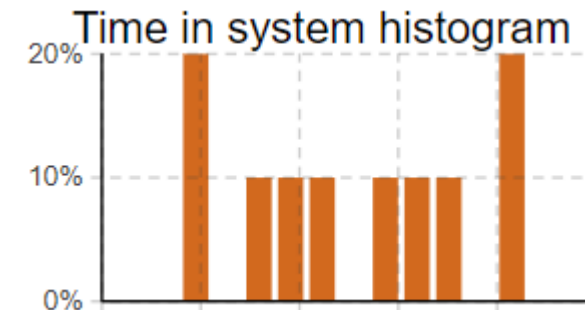
- Add 5 more Radome Carts
- Repair normally works 2 at a time
- With and without capacity limits in Repair Gate

Up to 5

Repair
CMXG
573rd

■ Model Results

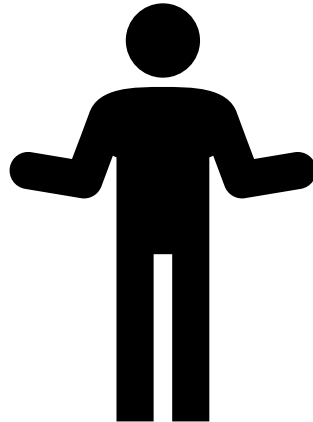
- Each radome has its own cart
- No change for the quantity of on-time Radomes
- Reduced maximum time by only 10 days
 - From 150 to 140 days



CMXG – Commodities Maintenance Group, EMXG – Electronics Maintenance Group



Now What?



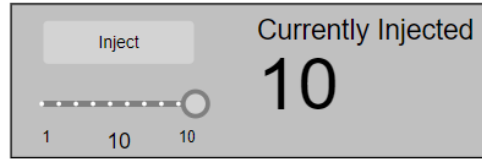
- **Add the ability, in the model, to change parameters before and during model runs**
- **Get the stakeholders in a room together and test scenarios**



Interactive Display



Control arrivals



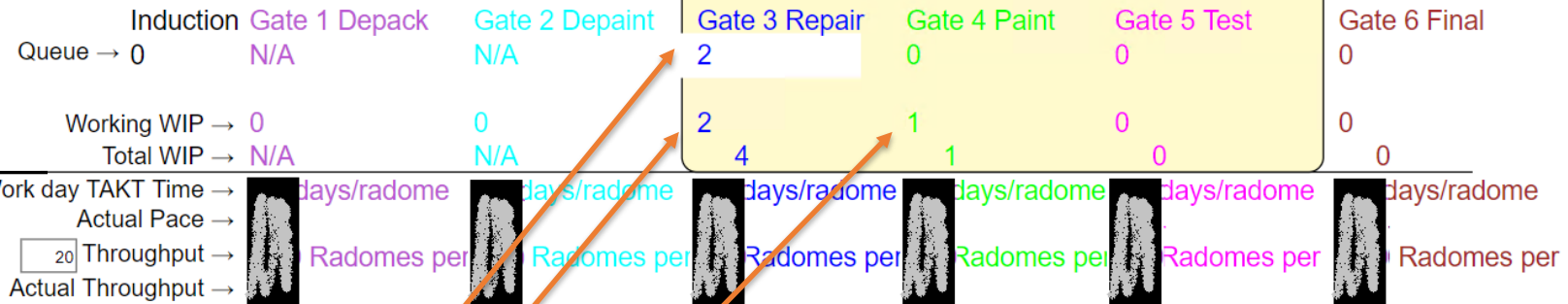
Production Days Calendar Days

Run

Radome

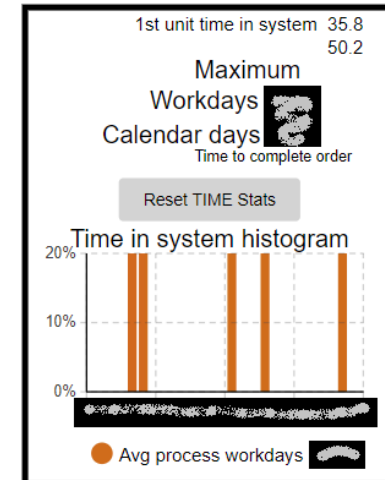
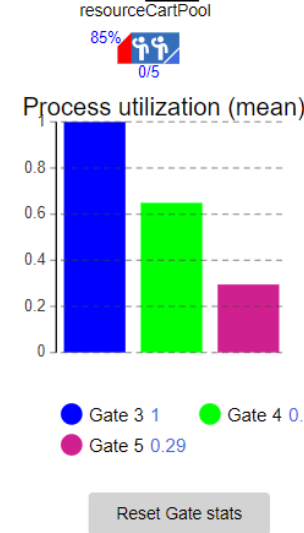
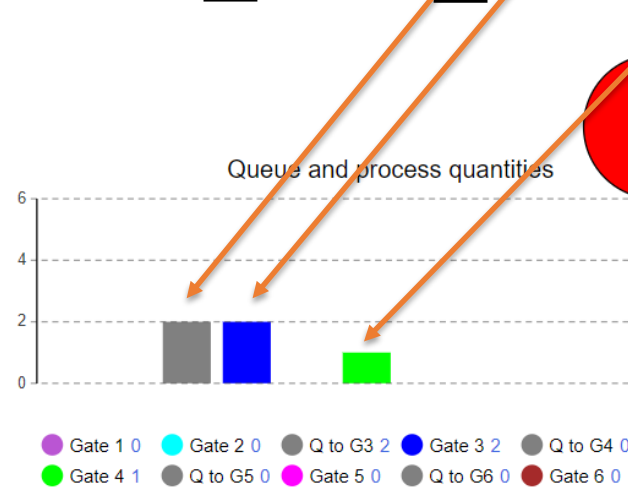
System Out Processed = 5
 Average Flowdays =
 Avg Order Flowdays =

Watch work in process



Designed & actual pace in the run

- WIP bar chart
- Utilization
- Time for each Radome



Minimum Workdays 35.8
Calendar days 50.2



New Business Rules



Supplier

Repair
CMXG
573rd

Paint
CMXG
571st

Test
EMXG

- Can you send in 3 at a time
- One mechanic repairs two Radomes at the same time
- If a 3rd Radome and cart are available, then send another mechanic to do it
- Redefined their priority matrix
- If you have one of these Radomes waiting, then schedule it normally
- If you have two waiting, then the next test must be one of these Radomes

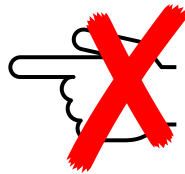


The New - Radome Repair Process



- We now meet target times!

- Everyone is happy!



- The solution was free!
 - \$25K cost avoidance



We Deliver Better Airpower....Period!!!