

INDU 311 PROJECT PRESENTATION

Atlanta Airport

Presented by: Group 14



INTRODUCTION

- Simulation of all the operations at the Hartsfield-Jackson Atlanta International Airport.
- Arena simulation software incorporated with real-world data.



WEIGHT

ORIG. TRIP

SEOUL

SOUTH KOREA

FLIGHT NO.

DATE

90-46-28

SEOUL

ASSUMPTIONS

- 2 types of Aircrafts
- Fully booked flights
- One baggage per traveler
- Half-tank capacity fueling
- Number of resources and transporters
- Fixed Gate Assignments

DATA GATHERING

Category	Domestic	International
Fueling	UNIF(10,15)	UNIF(20,30)
Catering Unloading Truck + Loading Kitchen	UNIF(10,30) + UNIF(15,30)	UNIF(20,45) + UNIF(20,45)
Cleaning	UNIF(15,25)	UNIF(20,40)
Visual Check	UNIF(15,30)	UNIF(20,35)
Baggage Handling	UNIF(20,25)	



ARENA MODEL

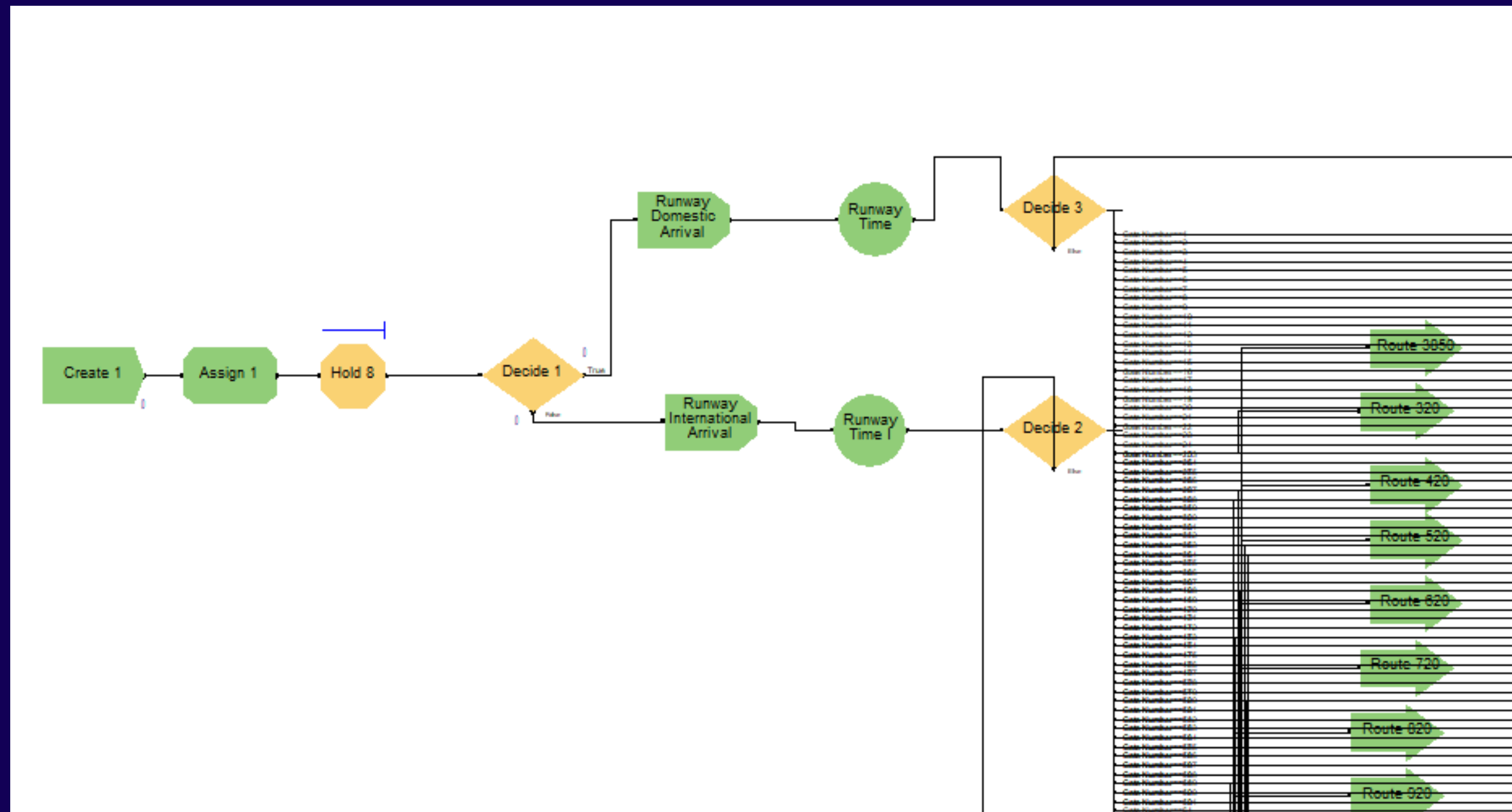
- Variable table:
 - Number of flights =455
- 192 gates
- 7 Concourses; 5 Domestic & 2 International.
- 4 Runways; 2 for Landing & 2 for Departure, one of each for Domestic & International flights



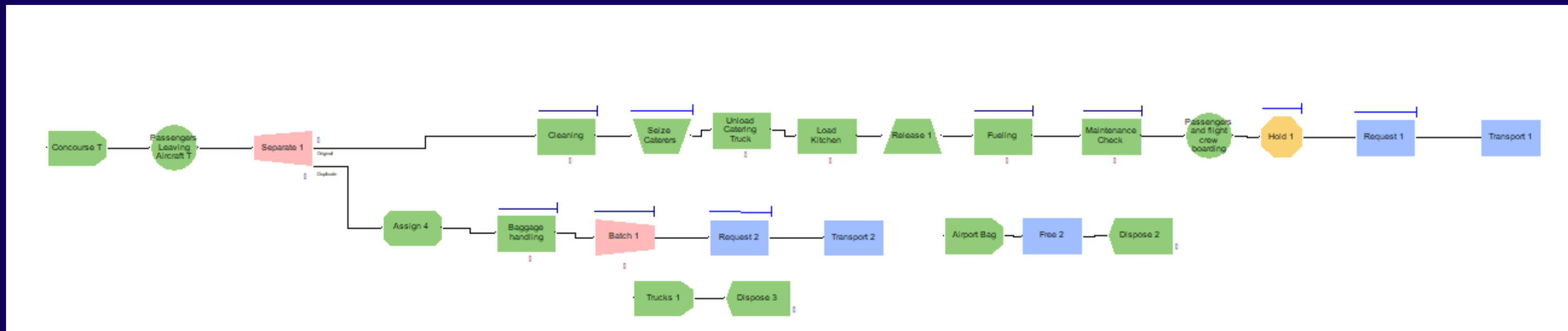
VARIABLE TABLE

Departure Time	Arrival Time	International or Domestic	Capacity	Flight Number	Gate Number
18.01	14.01	1	160	3068	35
18.04	14.04	2	400	980	179
18.04	14.04	1	160	5307	55
18.05	14.05	1	160	2976	41
18.05	14.05	1	160	763	123
18.08	14.08	1	160	1510	33
18.13	14.13	1	160	2547	31
18.15	14.15	1	160	782	25
18.15	14.15	1	160	3788	126
18.18	14.18	1	160	761	134
18.2	14.2	2	400	15	175
18.2	14.2	1	160	2951	56
18.21	14.21	1	160	1481	63
18.23	14.23	1	160	2755	28
18.24	14.24	1	160	1248	16
18.25	14.25	1	160	2681	67
18.26	14.26	1	160	2397	52
18.27	14.27	1	160	1704	89
18.27	14.27	1	160	2013	13
18.27	14.27	1	160	5157	114
18.28	14.28	1	160	1642	150
18.28	14.28	1	160	2490	20
18.29	14.29	1	160	1522	24
18.29	14.29	1	160	2923	55
18.3	14.3	1	160	4991	38
18.3	14.3	1	160	3022	38
18.31	14.31	1	160	3151	99
18.31	14.31	1	160	664	24
18.33	14.33	1	160	1281	8
18.35	14.35	1	160	1384	89

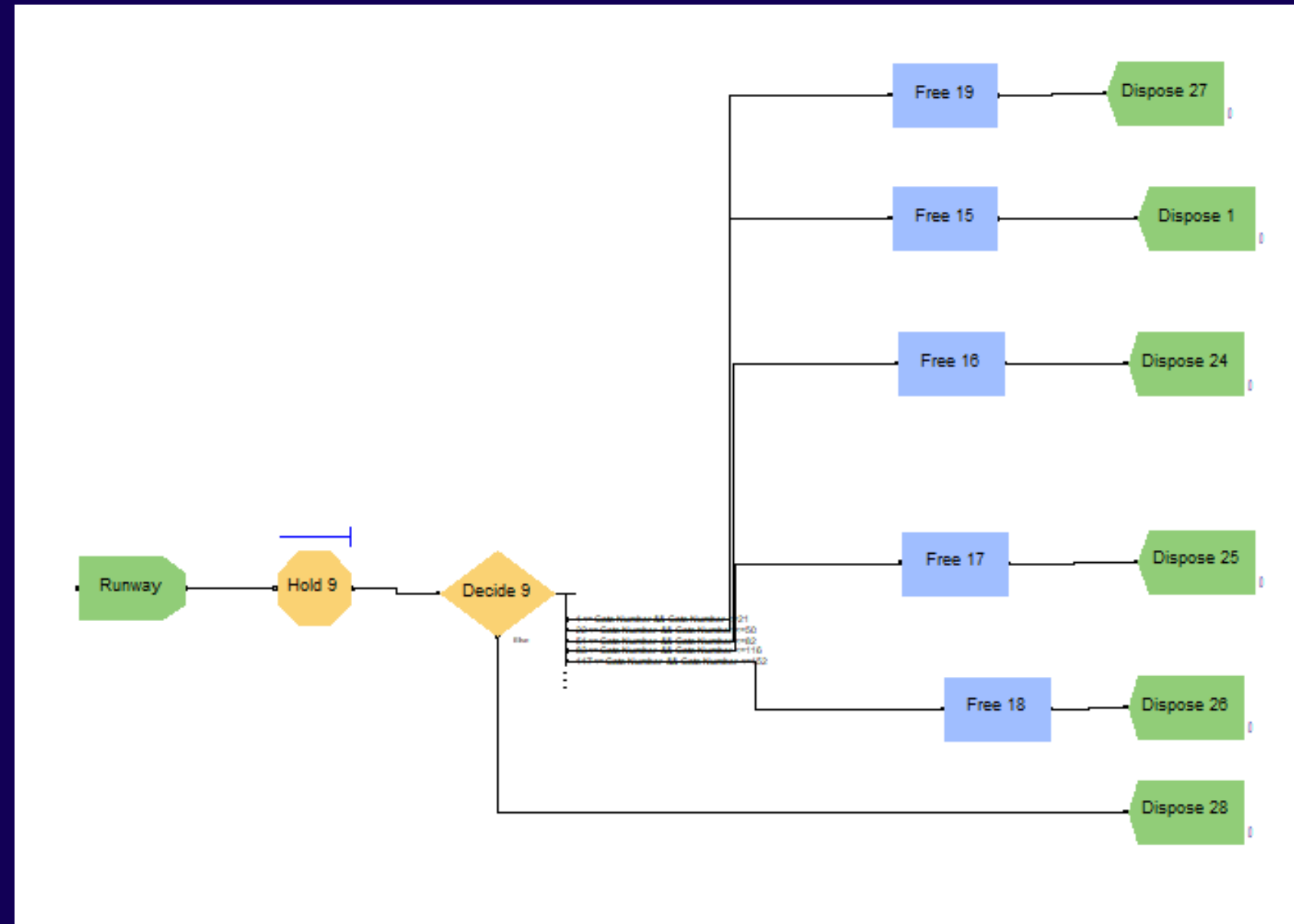
ROUTING TO GATES



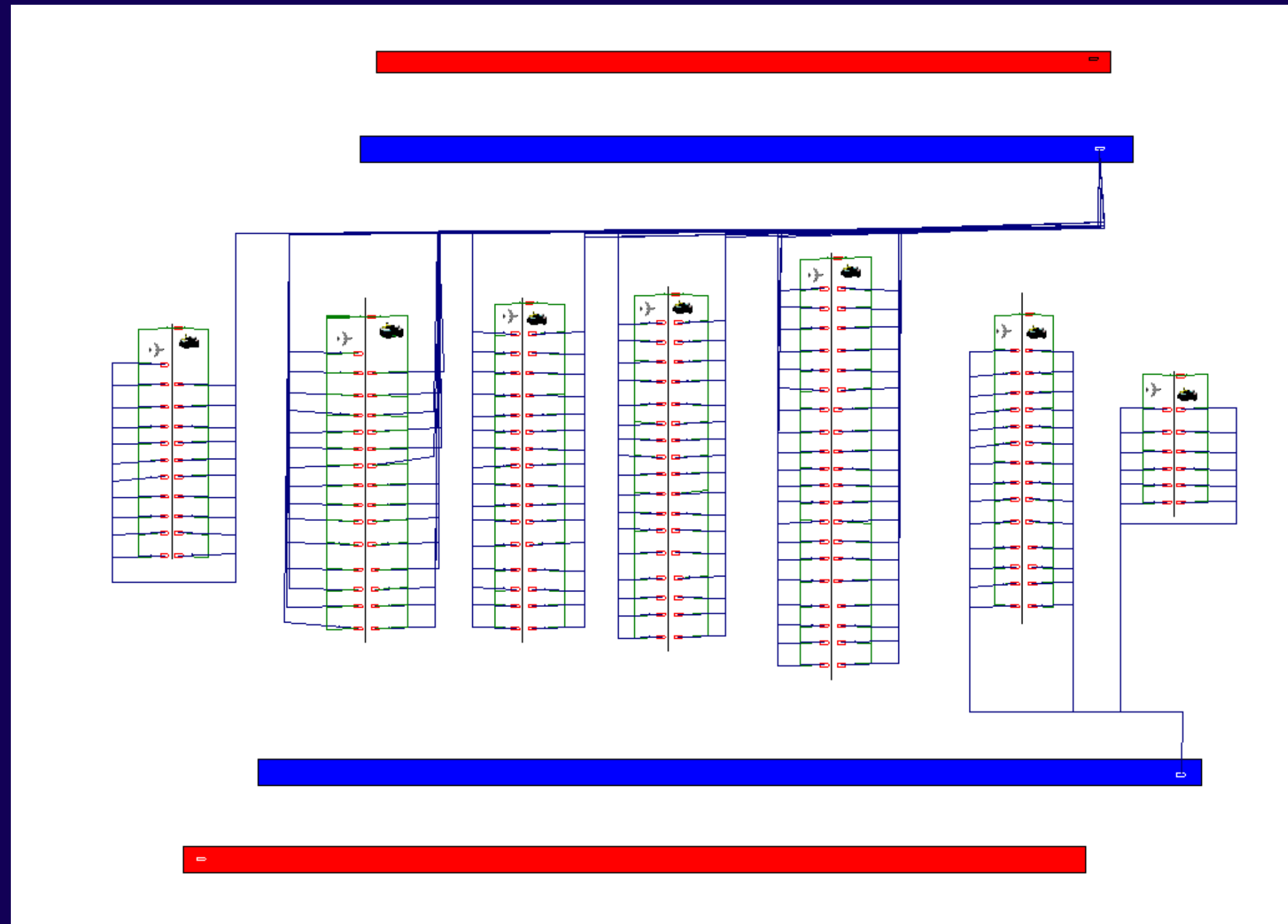
GROUND OPERATIONS



RUNWAY



ANIMATION



REPLICATION PARAMETERS

Run Setup

Run Speed
Run Control
Reports
Project Parameters
Replication Parameters
Array Sizes
Arena Visual Designer

Establish replication-related options for the current model. Settings include the number of simulation replications to be run, the length of the replication, the start date and time of the simulation, warm-up time length, time units, and the type of initialization to be performed between replications.

Replication Parameters

Number of Replications: 30

Start Date and Time: ☐ Sunday, December 15, 2024 5:35:44 PM

Warm-up Period: 0.0 Hours

Replication Length: 5 Days

Hours Per Day: 24

Terminating Condition:

Base Time Units: Hours

Parallel Replications

☐ Run Replications in Parallel ☐ Disable Parallel Replications Status Dialog

Number of Parallel Processes: 16

Parallel Replication Input Data Files:

Data File Add

OK Cancel Apply Help

RESOURCES

TRANSPORTERS

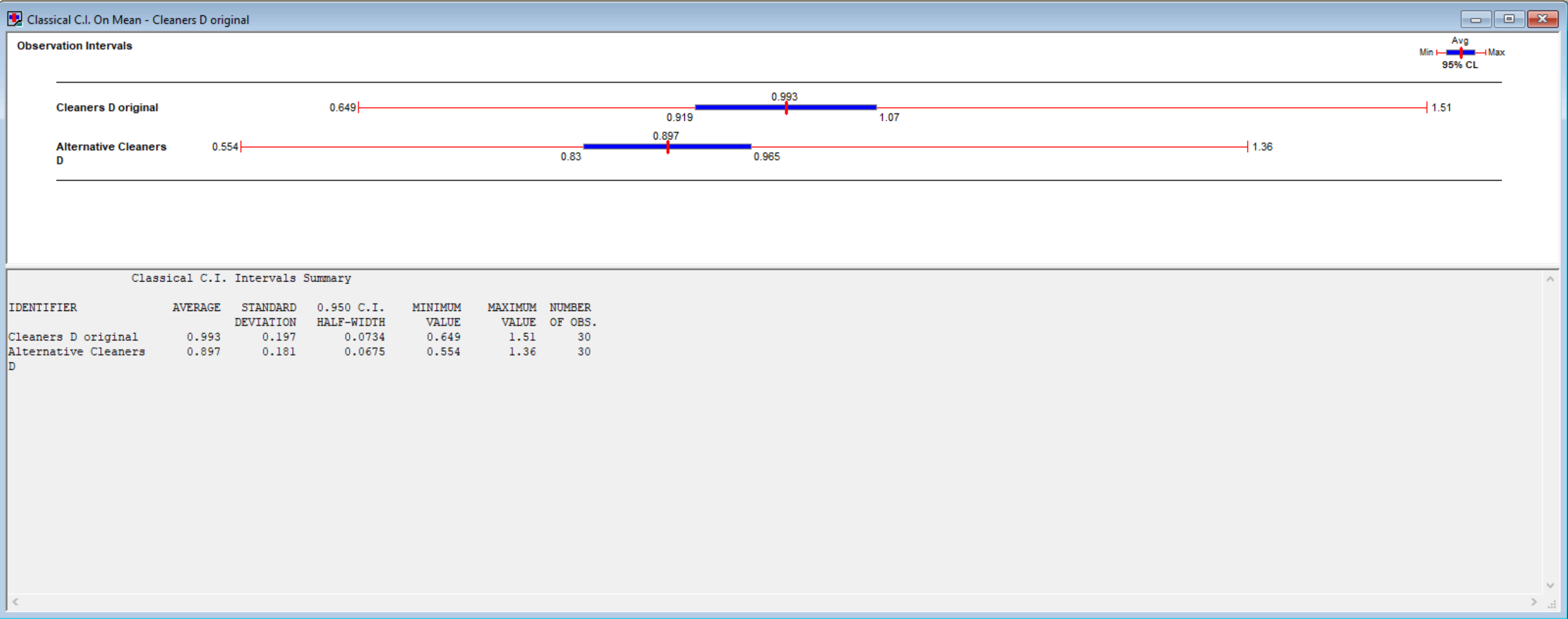
	Name	Type	Capacity	Busy / Hour	Idle / Hour	Per Use	StateSet Name	Failures	Report Statistics	Comment
1	Cleaners	Fixed Capacity	50	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
2	Staff	Fixed Capacity	10	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
3	Flight Crew	Fixed Capacity	10	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
4	Caterers	Fixed Capacity	20	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
5	Cleaners 1	Fixed Capacity	20	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
6	Caterers 1	Fixed Capacity	10	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
7	Staff 1	Fixed Capacity	10	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
8	Flight Crew 1	Fixed Capacity	10	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
9	Baggage handler	Fixed Capacity	10	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
10▶	Baggage handler 1	Fixed Capacity	20	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	

	Name	Number of Units	Type	Distance Set	Velocity	Units	Initial Position Status	When Freed	Home Station	Report Statistics	Comment
1	Tow Tractor T	11	Free Path	Tow Tractor T.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks 1	<input checked="" type="checkbox"/>	
2	Bag Truck T	11	Free Path	Bag Truck T.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks 1	<input checked="" type="checkbox"/>	
3	Bag Truck A	13	Free Path	Bag Truck A.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks 2	<input checked="" type="checkbox"/>	
4	Tow Tractor B	16	Free Path	Tow Tractor B.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks 3	<input checked="" type="checkbox"/>	
5	Tow Tractor A	13	Free Path	Tow Tractor A.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks 2	<input checked="" type="checkbox"/>	
6	Bag Truck B	16	Free Path	Bag Truck B.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks 3	<input checked="" type="checkbox"/>	
7	Tow Tractor C	17	Free Path	Tow Tractor C.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks C	<input checked="" type="checkbox"/>	
8	Bag Truck C	17	Free Path	Bag Truck C.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks C	<input checked="" type="checkbox"/>	
9	Tow Tractor D	20	Free Path	Tow Tractor D.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks D	<input checked="" type="checkbox"/>	
10	Bag Truck D	20	Free Path	Bag Truck D.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks D	<input checked="" type="checkbox"/>	
11	Tow Tractor E	14	Free Path	Tow Tractor E.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks E	<input checked="" type="checkbox"/>	
12	Bag Truck E	14	Free Path	Bag Truck E.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks E	<input checked="" type="checkbox"/>	
13	Tow Tractor F	6	Free Path	Tow Tractor F.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks F	<input checked="" type="checkbox"/>	
14▶	Bag Truck F	6	Free Path	Bag Truck F.Distance	40	Per Hour	1 rows	Go to Home Station	Trucks F	<input checked="" type="checkbox"/>	

ALTERNATIVE

	Name	Type	Capacity	Busy / Hour	Idle / Hour	Per Use	StateSet Name	Failures	Report Statistics	Comment
1	Cleaners	Fixed Capacity	70	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
2	Staff	Fixed Capacity	10	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
3	Flight Crew	Fixed Capacity	10	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
4	Caterers	Fixed Capacity	20	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
5	Cleaners 1	Fixed Capacity	20	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
6	Caterers 1	Fixed Capacity	10	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
7	Staff 1	Fixed Capacity	10	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
8	Flight Crew 1	Fixed Capacity	10	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
9	Baggage handler	Fixed Capacity	10	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	
10 ▶	Baggage handler 1	Fixed Capacity	20	0.0	0.0	0.0		0 rows	<input checked="" type="checkbox"/>	

OUTPUT ANALYZER





THANK YOU
FOR LISTENING!

Don't hesitate to ask any questions!