

How Quick-Service Restaurants Use Simulation to Improve Speed, Capacity and Profitability

From Restaurant Design to Daily Operational Excellence

Agenda

AnyLogic Conference 2026

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1. About SimWell
2. Decision Problems in QSR
3. Why Simulation?
4. Decisions that can be made using Simulation
5. QSR Model Architecture
6. Use cases
7. How to Operationalize?
8. Conclusion and key take aways
9. Questions?

SimWell

- Delivering Decision Intelligence
- World leader in Simulation
- Team of 80 and growing
- Global footprint
 - USA, Canada, Australia, Netherlands, India
- We have worked with clients who are industry leaders
- Multi-disciplinary team built to deliver Digital Twins at scale



RioTinto

BHP

SIMWELL
How decisions get made.



ABInBev

amazon



Newmont™

Johnson & Johnson

Google

BlueScope

BOEING

July 21, 2026

3

Simulation

- Scenario, Capacity, & Master Planning
- Risk Analysis
- Facility Design

Digital Twin

- Plant Digital Twin
- Supply chain digital twin
- Resilient and Sustainable Production

Production Planning and Scheduling

- Dynamic Scheduling
- Scenario testing
- Risk Analysis and mitigation
- System integration

Optimization

- Strategic Network Design
- Transportation/Routing Optimization
- Inventory Optimization

Data Science

- Big Data & Transformation
- Data Pipeline and BI Dashboarding
- Machine learning and analytics

Your Decision
Intelligence Partner

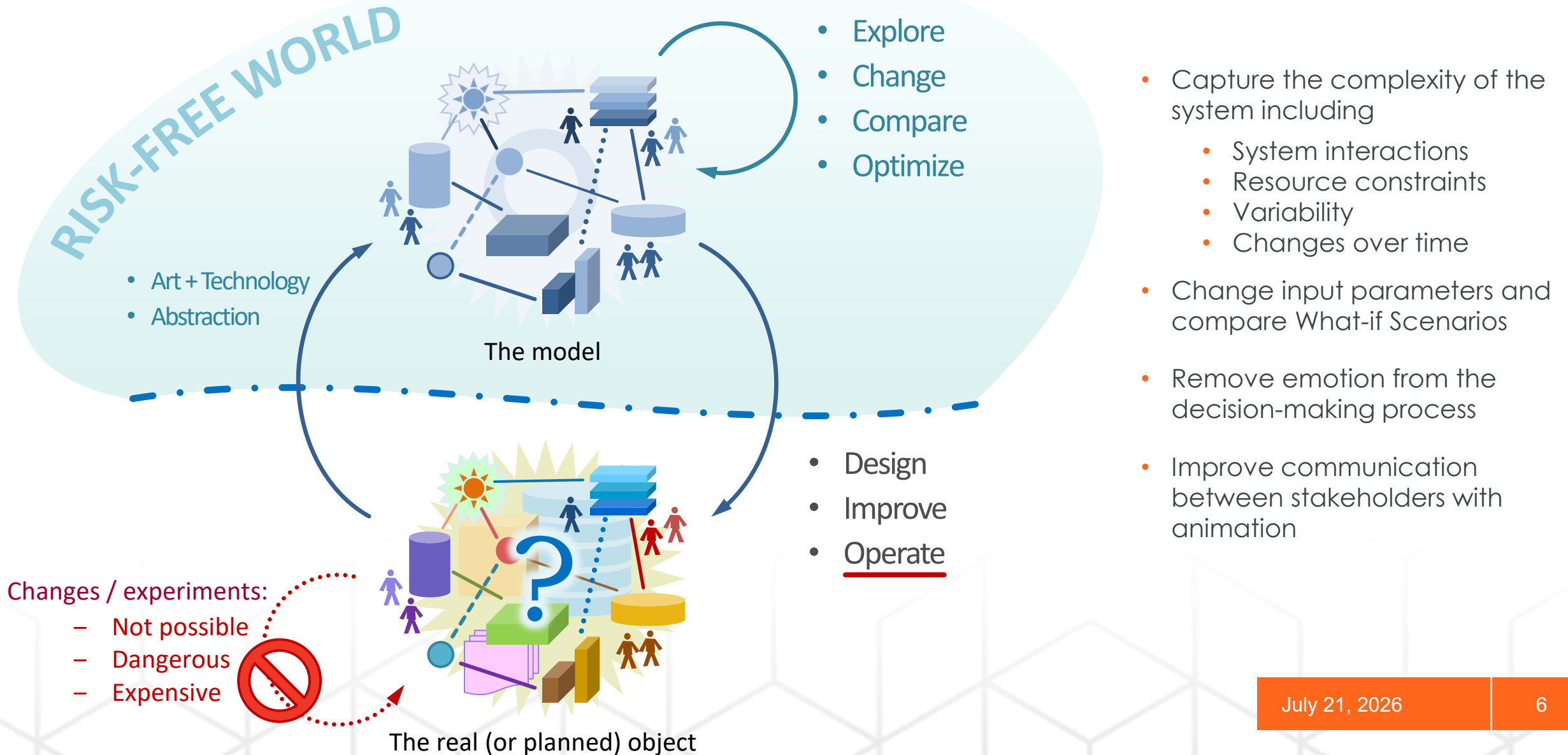
Decisions in QSR

Every QSR operator or Manager makes hundreds of decisions.

- Staffing level and skill mix?
- Number of equipment. Do we need another fryer?
- Will a small change in layout improve flow?
- Do we need another kiosk or order taker?
- Why is the drive-through queue so long?
- Why is food wastage so high?
- Should we prepare fries in batches or on-demand?
- etc.

Simulation is the tool that can guide to make these decisions with confidence

Why simulation?



Traditional Decision Making

QSR Manager
Experience and gut
feel



Spreadsheet
analysis (static)



Test in Pilot Stores



Implement
and
Hope it works!

Decision Intelligence based

Create Sim Model



Generate alternatives
and test in Model (use
Experience)



Compare and
understand trade-
offs



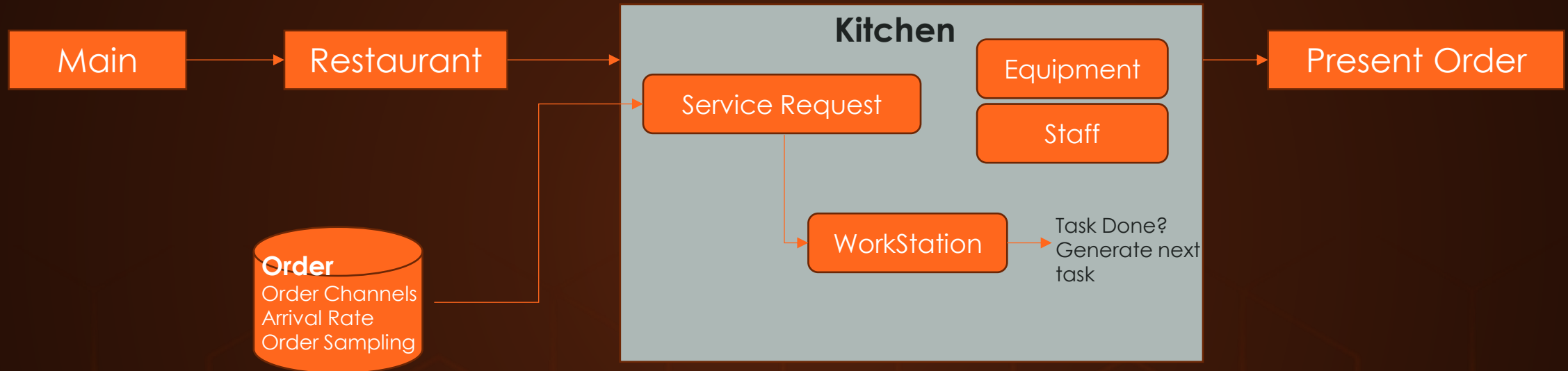
Deploy best
alternative.
Iterate.



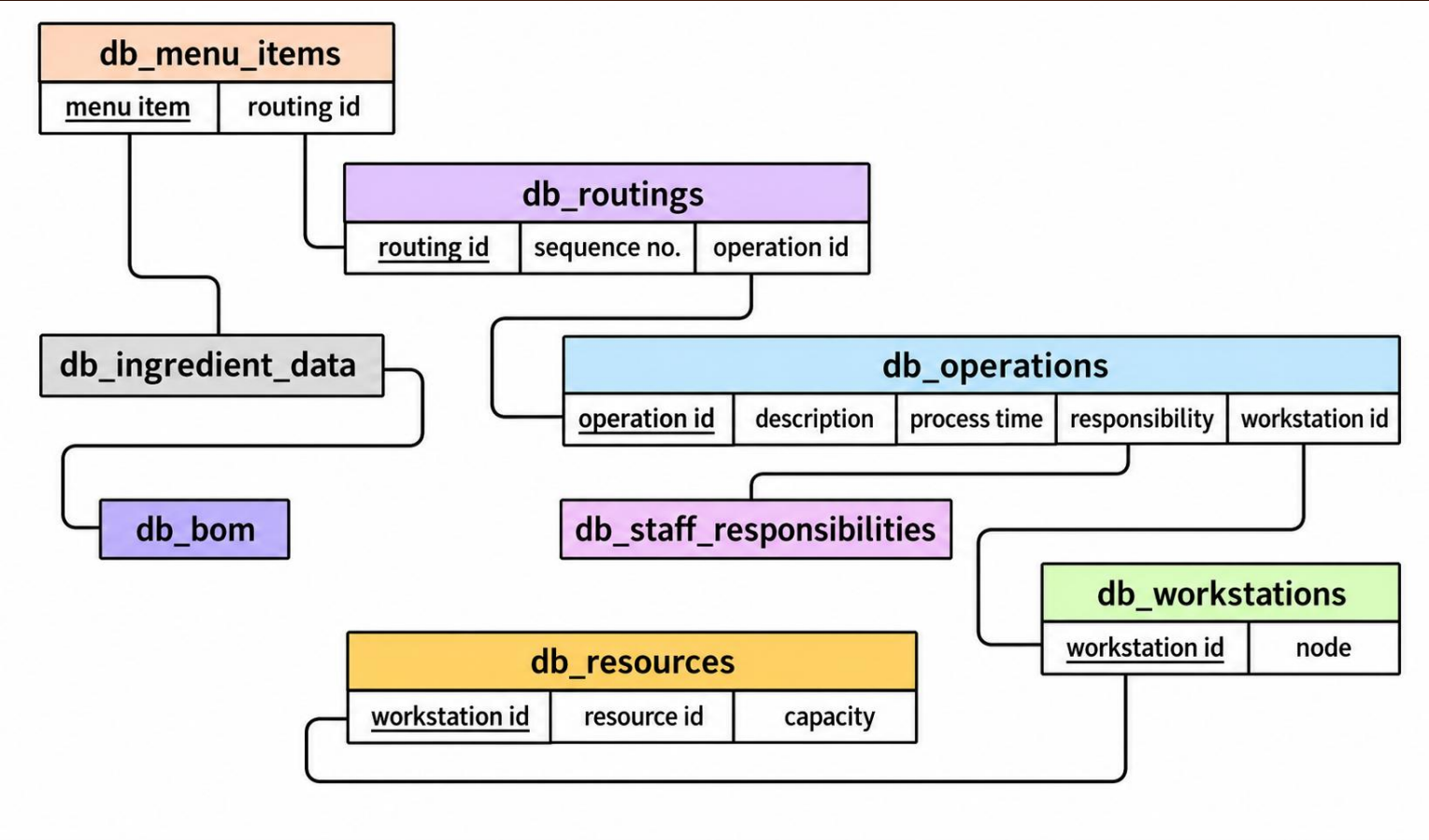
Decisions that QSR Model facilitate

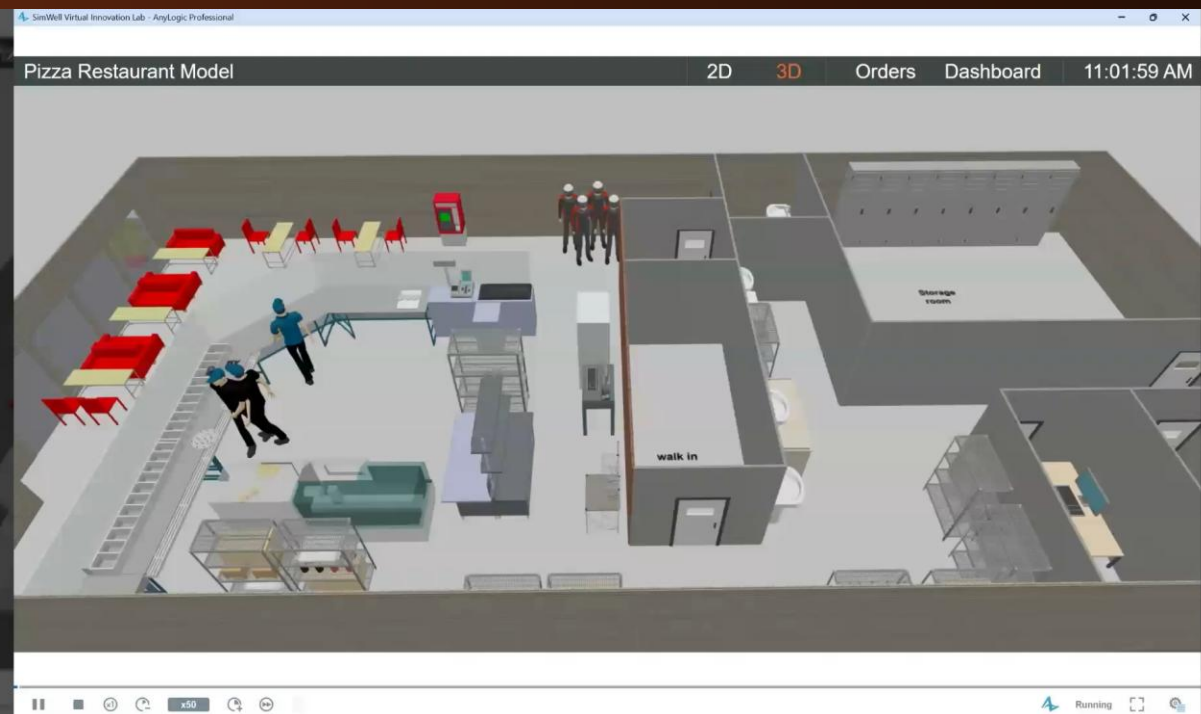
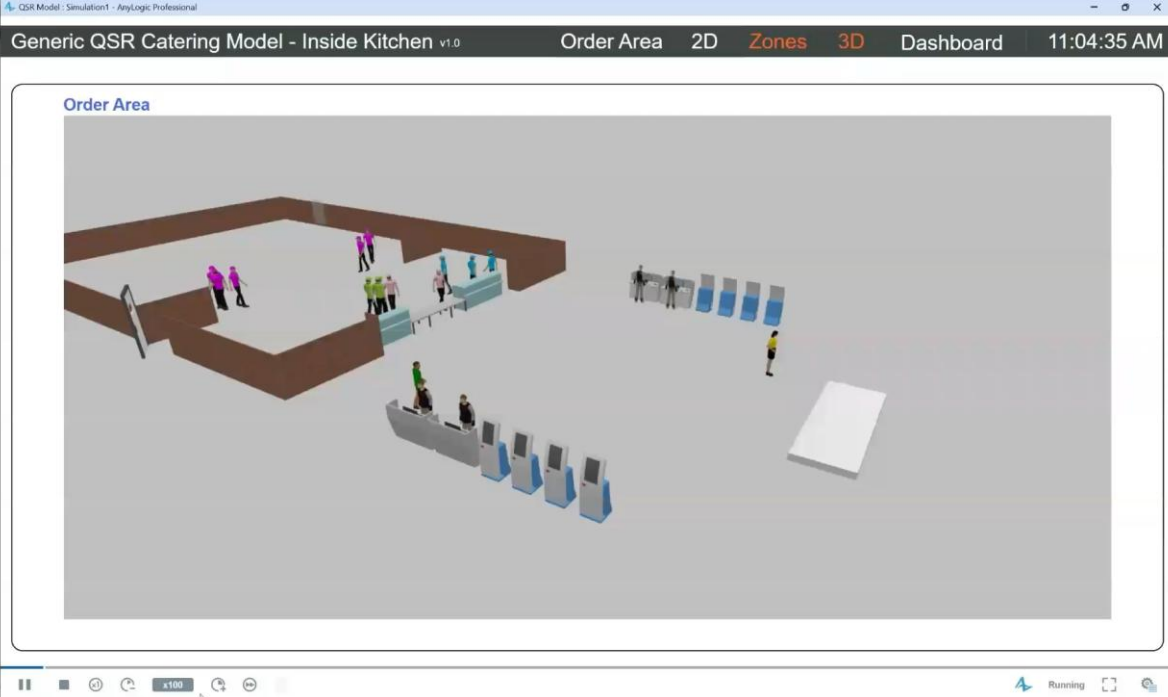
- For Design
 - Compare Restaurant layouts
 - Drive through layout, number of lanes, number of parking spots etc.
 - Plan for ideal number of staff and equipment based on expected volume and service level
 - Impact of increasing orders, shift in order channels
- For Operations
 - Optimize staffing across the day. Dynamic role allocation. Balance labor cost and service
 - Test impact of a new equipment or new process
 - Batch preparation vs make to order
 - Find bottlenecks, test strategies to de-bottleneck
 - Optimize batch sizes, balance freshness, wastage and service level
 - Number of Kiosks and order takers
 - Analyze customer journey and find improvements, seating capacity, drive through pull fwd
 - Test impact of add/remove menu items, change in process steps etc.

Model Architecture



Data Model

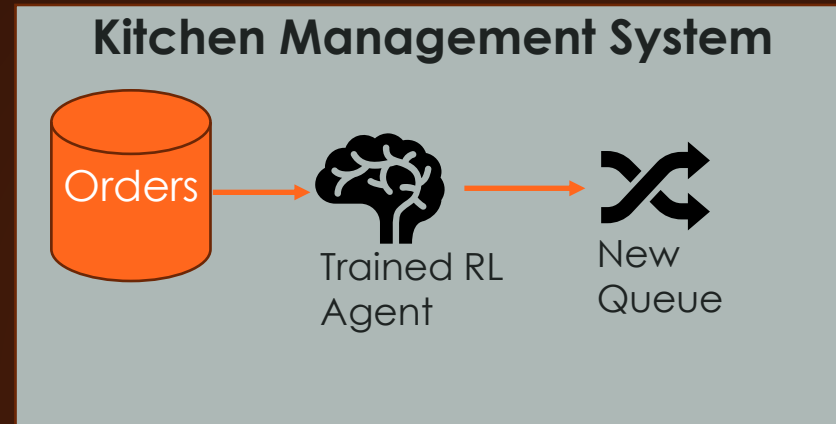




AI for Improving Customer Experience

Order Channels:

Walk-In
Drive-Through
Mobile orders



Print Next Order
to work on

Objective: Improve Customer Experience by determining order priority using AI, reducing service time for customers

Approach: Shuffling the orders inside the Kitchen management system using AI

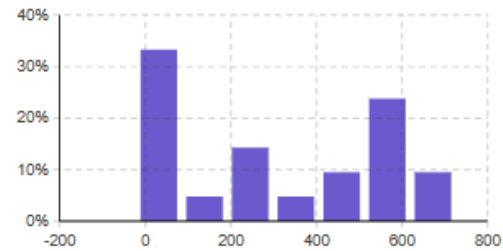
- Reinforcement Learning agent is trained inside a simulation model of the restaurant, then deployed as a web service.
- Kitchen management system sends the orders in-queue to the reinforcement learning agent to decide which order to do next.

Outcome: Reduced the service time for in-store and drive-thru customers by ~10%, with low impact on mobile order pickup

Scenario Settings:

Scenario Type: Gainsville
 Num Order Takers: 1
 Num Order Presenters: 2
 Num Staff: 11
 Pull Forward Size: 4

Total Experience Time



Guest Statistics

Channel	Guests Entered	Guests Served	Avg Exp Time	Avg Svc Time
Community Table:	6	4	193.117	154.54
Mobile Order:	9	8	41.722	41.722
Curbside:	0	0	0	0
Delivery:	0	0	0	0
Drive Thru:	21	14	509.622	223.879

Staff Utilization

55%	Staffid: 11 workArea:M staffNum 1
56%	Staffid: 10 workArea:K staffNum 1
24%	Staffid: 9 workArea:K staffNum 2
70%	Staffid: 8 workArea:F staffNum 1
65%	Staffid: 7 workArea:F staffNum 2
49%	Staffid: 6 workArea:D staffNum 1
55%	Staffid: 5 workArea:D staffNum 2
61%	Staffid: 4 workArea:D staffNum 3
83%	Staffid: 3 workArea:A staffNum 1
79%	Staffid: 2 workArea:A staffNum 2
75%	Staffid: 1 workArea:A staffNum 3

Resource Utilization

0%	Id: MachineB Soda Fountain
0%	Id: MachineC Ice Machine
0%	Id: MachineD Turbochef
1%	Id: MachineE Induction Burner
3%	Id: MachineF Toaster
0%	Id: MachineG Shave Ice Machine
0%	Id: MachineH King's Whip Machine
6%	Id: MachineI Fryer 2 Fries
1%	Id: MachineJ Fryer 1 Protein
24%	Id: MachineL Griddle
0%	Id: MachineM Rational cooker
0%	Id: MachineN Microwave
0%	Id: MachineO Grill
6%	Id: MachineP Donut Fryer
1%	Id: MachineQ Soda Fountain 2

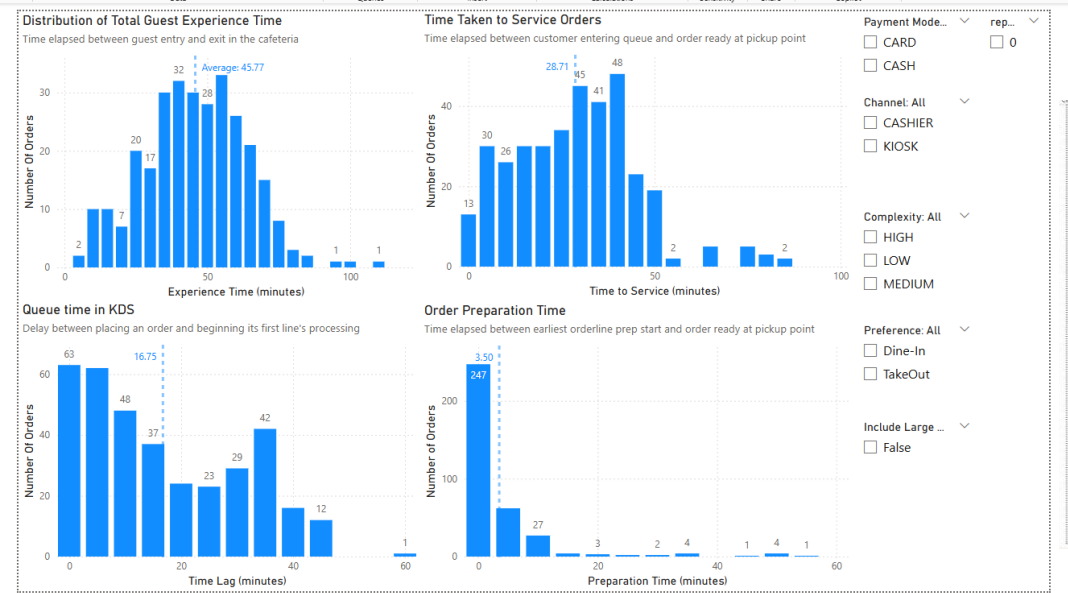
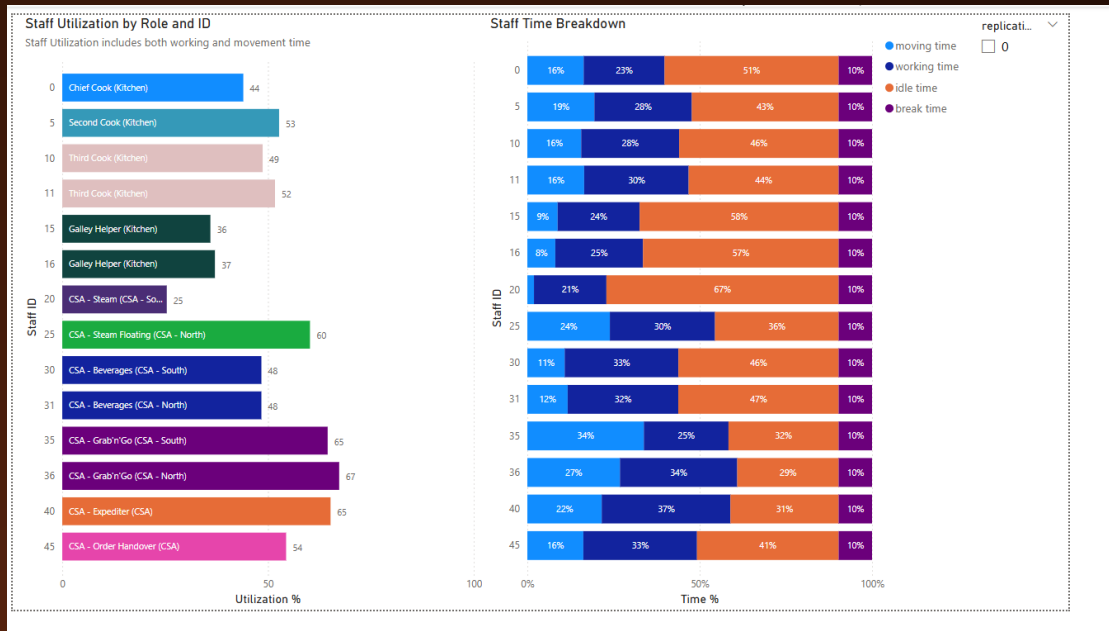
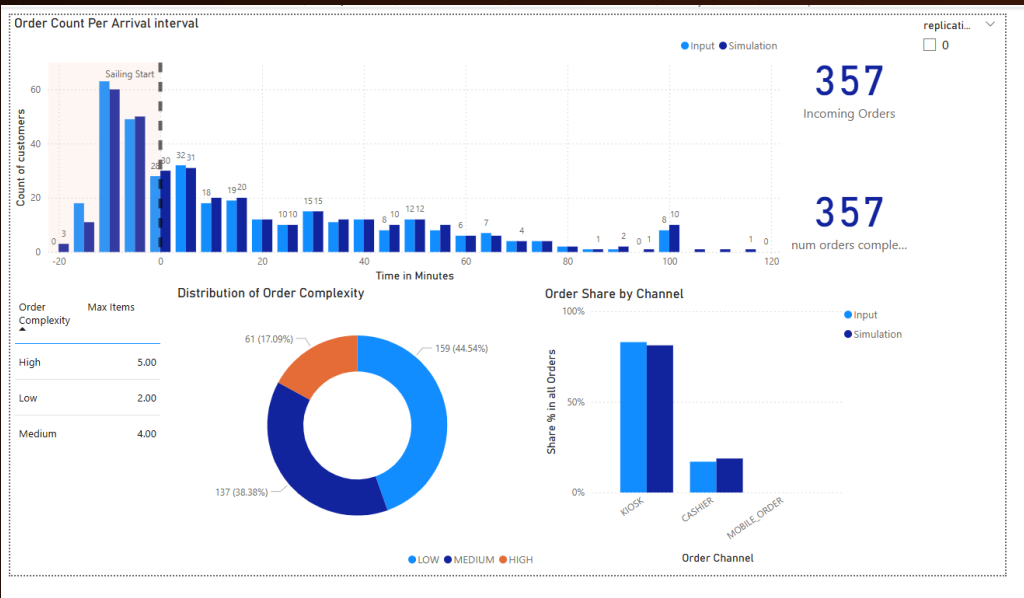
Stock Outs

Stock Levels

10	id: 101 Garlic Rice
10	id: 102 Mochiko Chicken Bites
13	id: 138 Menchi Katsu Patties
13	id: 140 Over-Easy Egg
16	id: 160 Bulgogi Beef
17	id: 171 Potato Mac Salad

Avg age (hours)

9.69	id: 101 Garlic Rice
9.68	id: 102 Mochiko Chicken Bites
8.85	id: 138 Menchi Katsu Patties
8.85	id: 140 Over-Easy Egg
2	id: 160 Bulgogi Beef
7.08	id: 171 Potato Mac Salad

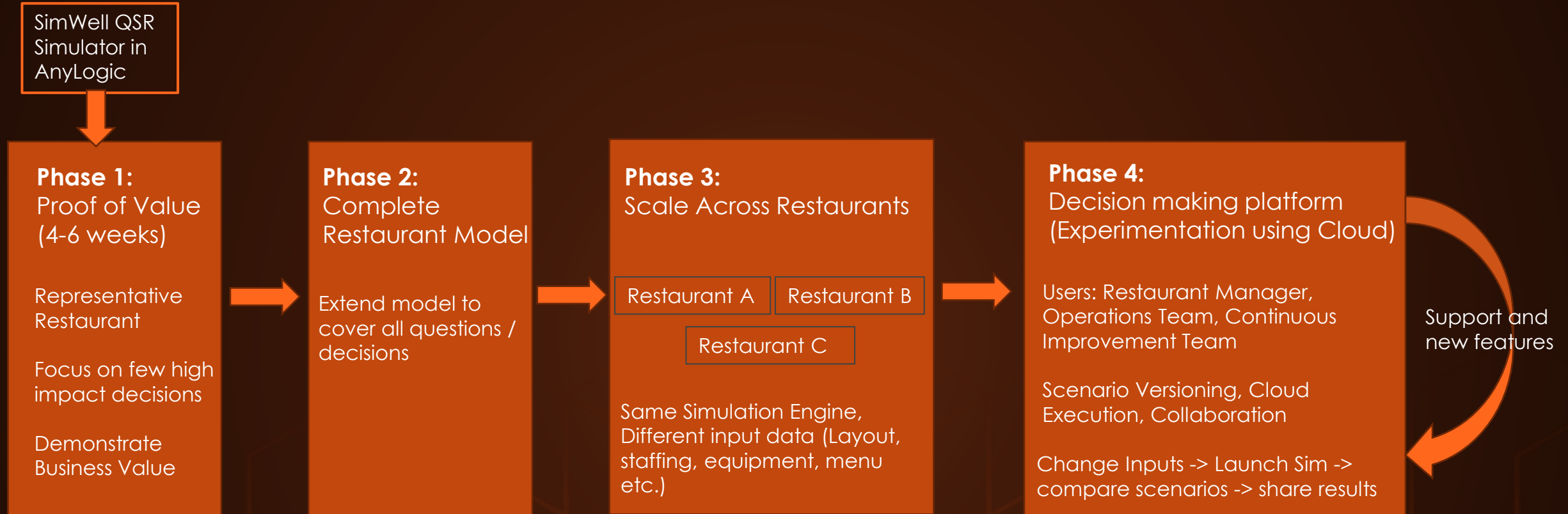


How decisions get made.

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14

How to operationalize?



We don't just build Simulation models, we help organizations build an operational decision making capability

Key take aways



Make evidence based decisions with confidence using Simulation model



Start with a PoV and scale company wide



Operationalize the simulation model using Cloud based experimentation platform

Questions?

Find us at: <https://www.simwell.io/>

Contact us at:

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Stay on top of the latest trends and use cases.

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→ Present your work

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