

Project Zero Waste

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Project Z.E.R.O.
AI-Based Restaurant IMS solution

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Implications



01

Background



Background

U.S. Food Waste

30-40% of the food supply in the United States is composed of food waste, according to the FDA.



Hunger in Georgia

In the state of Georgia, **1 in 7 people** struggles with hunger, according to Feeding America.

Personal Impact

The Atlanta Food Bank has **80,600 people** served each week, but still throws away donated goods.



Restaurant Waste

The Food Waste Reduction Alliance claims that **84.3%** of unused food in U.S. restaurants was thrown away in 2014.

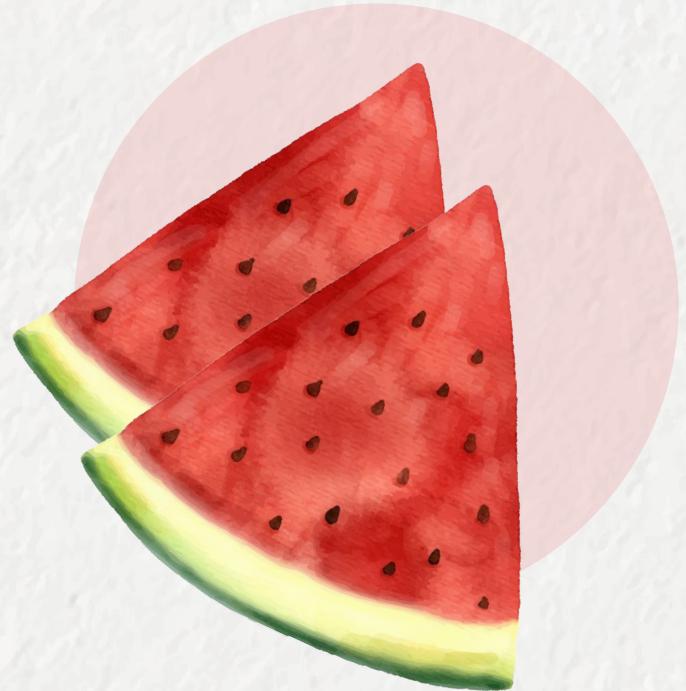
02

Problem Statement



Problem Statement

Hunger is not only a major national problem, but specifically affects the citizens of Georgia, right in our backyard. With the restaurant industry wasting \$162 billion worth of food annually, our team would like to propose a potential solution to mitigate food waste within the restaurant space, focusing explicitly on responsible consumption and production.

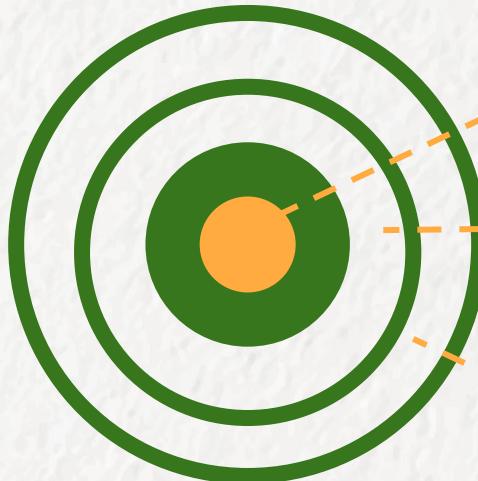


03

Research



Research



Owners of small, local restaurants

Conscious restaurant customers

Producers of food

Restaurant Interviews ~5

Q: Do you give mitigation of food waste in your restaurant a priority, if possible top priority?

A: *I don't know. Maybe. Highest priority goes for customers satisfaction*

Q: How does your restaurant (or food truck/fast food services) figure out how much food to portion per individual per order?

A: *This is decided by the cook in the kitchen. He has his own measuring cups to decide the portions.*

Q: If there are attempts to reduce food waste, what are your methods that you currently use?

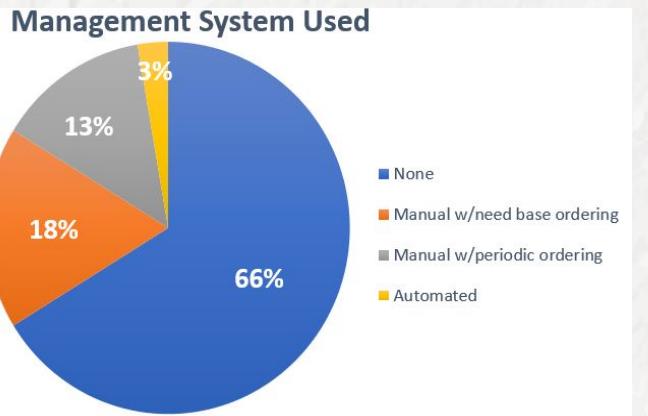
A: *Using measuring cups and scales.*

Research

- What kind of restaurant did you work in?
- What was your position in this restaurant?
- To what extent did the restaurant seem concerned about food waste?
- Did the restaurant use an inventory management system for food?
- If the restaurant used an inventory system, what was it? (If you don't know, just say "N/A") (i.e. Manual order, periodic delivery, etc.)
- What was your restaurant's top priority?
- Did you experience food being wasted in the kitchen frequently?
- How did your restaurant get their produce?

Research

~75
responses



04

Solution

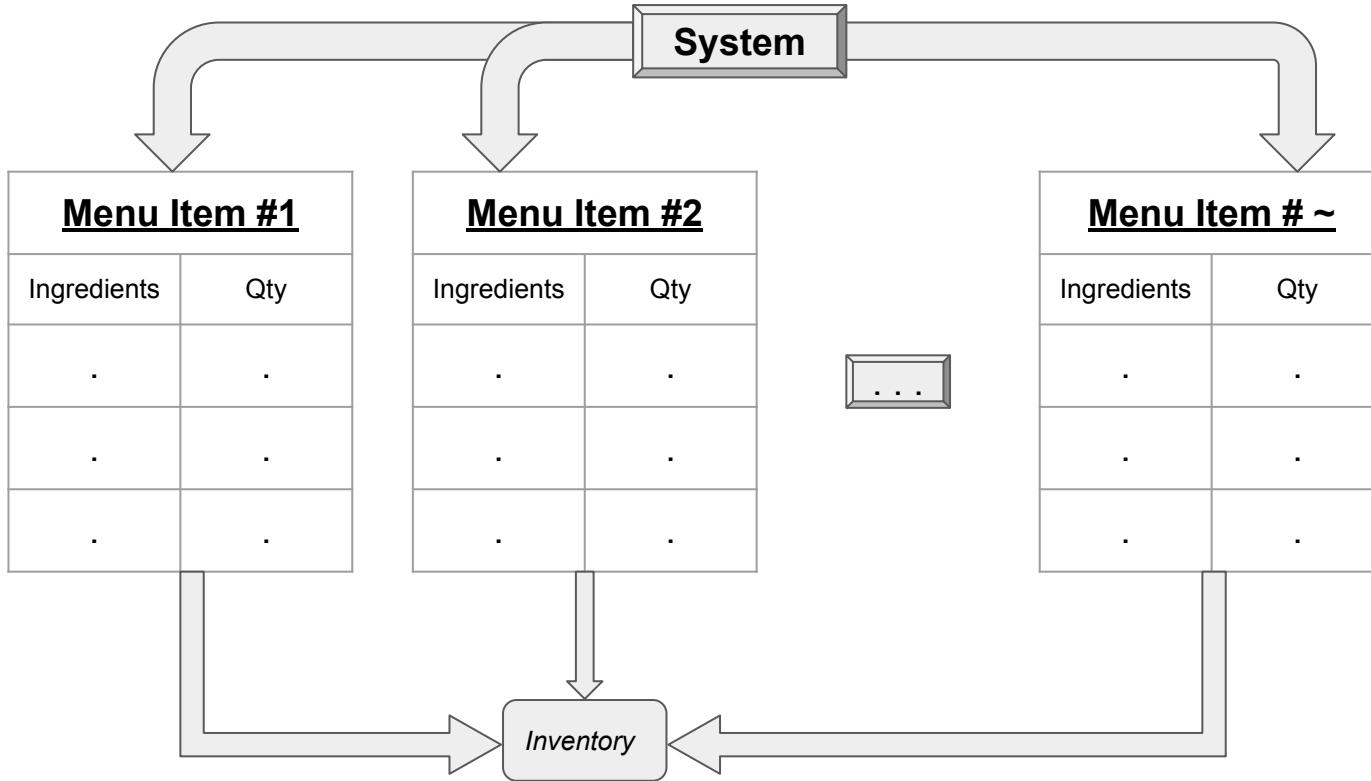


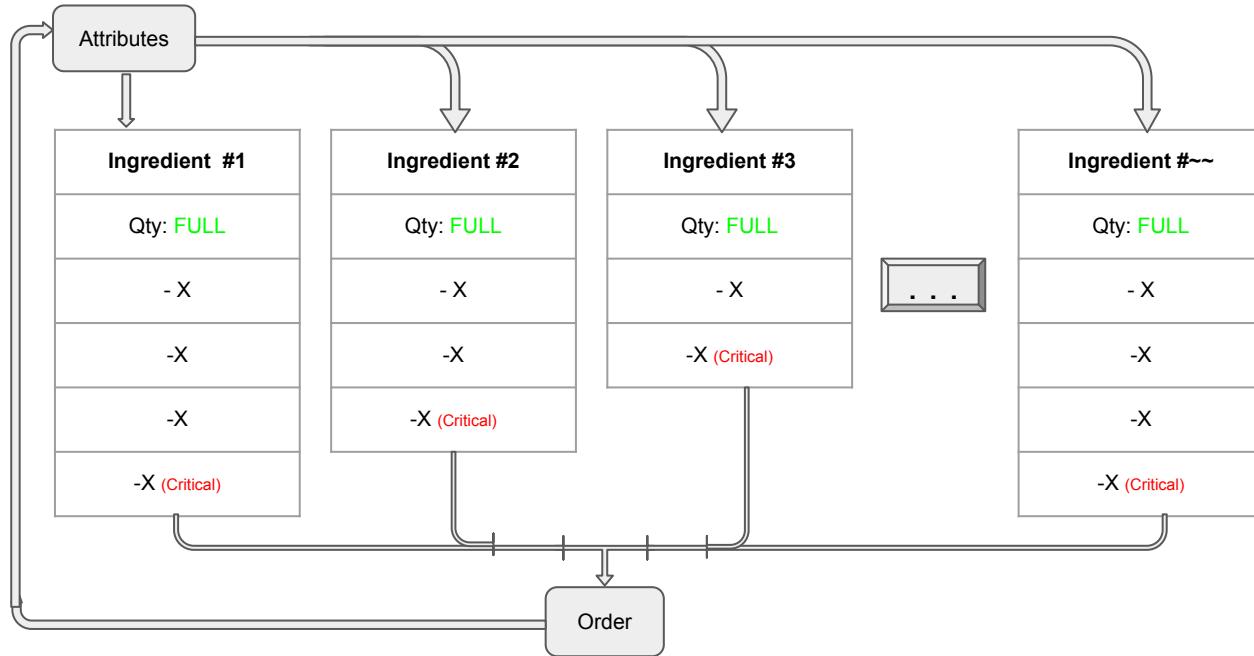
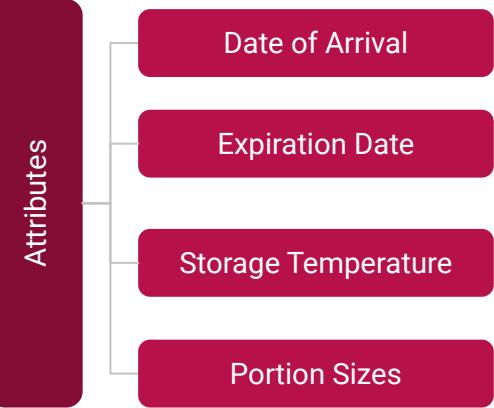
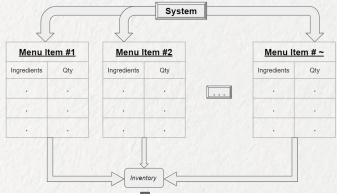
Parsley vs Restaurant365 vs Toast POS vs xtraCHEF

	 Parsley by Parsley Software	 Restaurant365 by Restaurant365	 Toast POS by Toast	 xtraCHEF by xtraCHEF
	Visit Website	Visit Website	Visit Website	Visit Website
Starting Price	\$45.00/month	\$159.00/month	\$79.00/month	\$99.00/month
Best For	Restaurants and restaurant groups, caterers, prepared meal, and packaged food manufacturers	Manage accounting, inventory, and scheduling on one platform with extraordinary reporting. Integrate directly with POS systems, banking, and vendors. Ideal for multi-location restaurant groups.	Toast is designed exclusively for foodservice. While other POS systems are split up between industries, Toast has always been focused on addressing the specific challenges of foodservice providers.	xtraCHEF serves all segments of the restaurant industry, caterers, dining management companies as well as bookkeepers and accountants.
Rating	 4.8 / 5 (6) Read All Reviews	 4.1 / 5 (32) Read All Reviews	 4.3 / 5 (225) Read All Reviews	 (0)
Ideal number of Users	1 - 1000+	500-999	1 - 1000+	1 - 1000+
Ease of Use	 5 / 5 Not enough reviews	 4.1 / 5 Not enough reviews	 4.4 / 5 Not enough reviews	 4.0 / 5 Not enough reviews
Customer Support	 5 / 5 Not enough reviews	 4.7 / 5 Not enough reviews	 4.1 / 5 Not enough reviews	 4.0 / 5 Not enough reviews
Platform	Web/Installed    Mobile  	Web/Installed    Mobile  	Web/Installed    Mobile  	Web/Installed    Mobile  
Support	 24/7 (Live Rep)  Business Hours <input type="checkbox"/> Online	 24/7 (Live Rep)  Business Hours <input type="checkbox"/> Online	 24/7 (Live Rep)  Business Hours <input type="checkbox"/> Online	 24/7 (Live Rep)  Business Hours <input type="checkbox"/> Online
Training	<input checked="" type="checkbox"/> In Person <input checked="" type="checkbox"/> Live Online <input checked="" type="checkbox"/> Webinars <input checked="" type="checkbox"/> Documentation	<input checked="" type="checkbox"/> In Person <input checked="" type="checkbox"/> Live Online <input checked="" type="checkbox"/> Webinars <input checked="" type="checkbox"/> Documentation	<input checked="" type="checkbox"/> In Person <input checked="" type="checkbox"/> Live Online <input checked="" type="checkbox"/> Webinars <input checked="" type="checkbox"/> Documentation	<input checked="" type="checkbox"/> In Person <input checked="" type="checkbox"/> Live Online <input checked="" type="checkbox"/> Webinars <input checked="" type="checkbox"/> Documentation

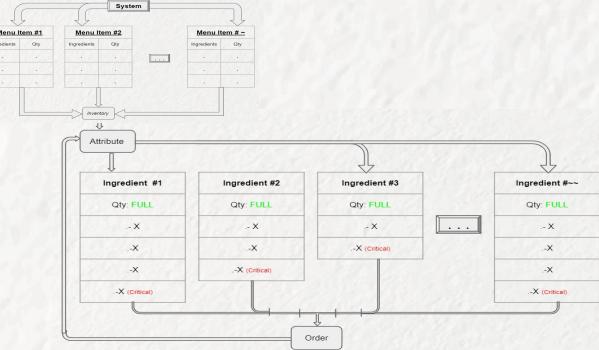
 Parsley by Parsley Software	Visit Website	 Restaurant365 by Restaurant365	Visit Website	 Toast POS by Toast	Visit Website	 xtraCHEF by xtraCHEF	Visit Website
Features & Functionality	 4.7 / 5 Not enough reviews	 3.8 / 5 "Inputting recipes can take quite a bit of time but worth it in the end."	 4.2 / 5 "Master Chart of Accounts, Vendors, and Customers. Easy to navigate for inexperienced users."	 Not enough reviews			
Value for Money	 5 / 5 Not enough reviews	 4.3 / 5 Not enough reviews	 4.1 / 5 "Awesome product, completely cost effective and easy to work with."	 Not enough reviews			
Product Features	<input checked="" type="checkbox"/> Billing & Invoicing <input type="checkbox"/> Built-in Accounting <input type="checkbox"/> Employee Management <input checked="" type="checkbox"/> Inventory Management <input checked="" type="checkbox"/> Kitchen Management <input checked="" type="checkbox"/> Menu Management <input type="checkbox"/> Point of Sale (POS) <input checked="" type="checkbox"/> Reporting/Analytics <input type="checkbox"/> Reservations Management <input type="checkbox"/> Table Management <input type="checkbox"/> Wait List Management	<input checked="" type="checkbox"/> Billing & Invoicing <input type="checkbox"/> Built-in Accounting <input type="checkbox"/> Employee Management <input checked="" type="checkbox"/> Inventory Management <input checked="" type="checkbox"/> Kitchen Management <input checked="" type="checkbox"/> Menu Management <input type="checkbox"/> Point of Sale (POS) <input checked="" type="checkbox"/> Reporting/Analytics <input type="checkbox"/> Reservations Management <input type="checkbox"/> Table Management <input type="checkbox"/> Wait List Management	<input checked="" type="checkbox"/> Billing & Invoicing <input type="checkbox"/> Built-in Accounting <input type="checkbox"/> Employee Management <input checked="" type="checkbox"/> Inventory Management <input checked="" type="checkbox"/> Kitchen Management <input checked="" type="checkbox"/> Menu Management <input type="checkbox"/> Point of Sale (POS) <input checked="" type="checkbox"/> Reporting/Analytics <input type="checkbox"/> Reservations Management <input type="checkbox"/> Table Management <input type="checkbox"/> Wait List Management	<input checked="" type="checkbox"/> Billing & Invoicing <input type="checkbox"/> Built-in Accounting <input type="checkbox"/> Employee Management <input checked="" type="checkbox"/> Inventory Management <input checked="" type="checkbox"/> Kitchen Management <input checked="" type="checkbox"/> Menu Management <input type="checkbox"/> Point of Sale (POS) <input checked="" type="checkbox"/> Reporting/Analytics <input type="checkbox"/> Reservations Management <input type="checkbox"/> Table Management <input type="checkbox"/> Wait List Management			

Product Outline





**PROJECT
Z.E.R.O.**



Artificial Intelligence

- ★ Weather
- ★ Loyalty Program
- ★ Party and reservations
- ★ Historical to predictive analytics

Collaborative AI-Cloud Network

- ★ Self-extraction of data
- ★ Exponentially increases accuracy



PROJECT Z.E.R.O.

Real-Time Analytics

- ★ Adaptive software controls
- ★ Documentation feature

Features

- ★ Billing & Invoicing
- ★ Inventory and Menu Management
- ★ Reporting/analytics

DASHBOARD

- Home
- Notification History
- Analytics
- Manage Inventory
- Manage Orders
- Invoice History
- Calendar

PAGES

- Restaurant Profile
- Loyalty Customers
- Delivery Schedules

Notifications



Nov 11-2019

**Item X - Approaching critical point**

Current qty: 20 stocks
Estimated potential: 2 days

10-11-2019

**Item Y - Critical point reached**

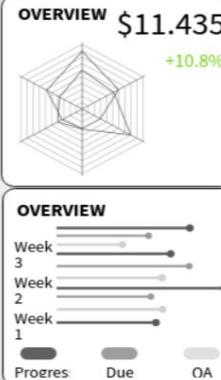
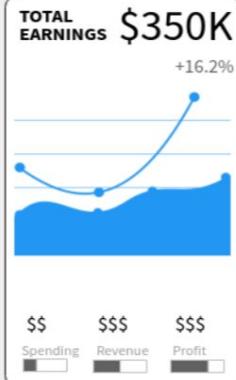
Order initiated - delivery ETA: 1 day
Current qty: 20 stocks
Estimated Potential: 2 Days

10-11-2019

**Item Y - RESTOCKED**

Order Received || Status: Full
Current Qty: 90 Stocks
Estimated Potential: 9 Days

10-11-2019



**PROJECT
Z.E.R.O.**

Key Take-Away

- ★ Simple home dash
- ★ Notifications / Alert
- ★ General restaurant overview

**DASHBOARD**

Home
Notification History

Analytics
Manage Inventory

Manage Orders
Invoice History

Calendar

PAGES

User Profile
Groups
Delivery Schedules

Restaurant Inventory

 Highlight items to reorder?

Inventory ID	Name	Description	Unit Price	Quantity in Stock	Inventory Value	Reorder Level	Reorder Time in Days	Quantity in Reorder	Discontinued?
IN0001	Item 1	Desc 1	\$51.00	25	\$1,275.00	29	13	50	
IN0002	Item 2	Desc 2	\$93.00	132	\$12,276.00	231	4	50	
IN0003	Item 3	Desc 3	\$57.00	151	\$8,607.00	114	11	150	
IN0004	Item 4	Desc 4	\$19.00	186	\$3,534.00	158	6	50	
IN0005	Item 5	Desc 5	\$75.00	62	\$4,650.00	39	12	50	
IN0006	Item 6	Desc 6	\$11.00	5	\$55.00	9	13	150	
IN0007	Item 7	Desc 7	\$56.00	58	\$3,248.00	109	7	100	
IN0008	Item 8	Desc 8	\$38.00	101	\$3,838.00	162	3	100	
IN0009	Item 9	Desc 9	\$59.00	122	\$7,198.00	82	3	150	
IN0010	Item 10	Desc 10	\$50.00	175	\$8,750.00	283	8	150	
IN0011	Item 11	Desc 11	\$59.00	176	\$10,384.00	229	1	100	
IN0012	Item 12	Desc 12	\$18.00	22	\$396.00	36	12	50	
IN0013	Item 13	Desc 13	\$26.00	72	\$1,872.00	102	9	100	
IN0014	Item 14	Desc 14	\$42.00	62	\$2,604.00	83	2	100	
IN0015	Item 15	Desc 15	\$32.00	46	\$1,472.00	23	15	50	
IN0016	Item 16	Desc 16	\$90.00	96	\$8,640.00	180	3	50	
IN0017	Item 17	Desc 17	\$97.00	52	\$5,529.00	98	10	50	Yes

STOCK CALC	Daily Usage Tracker									
	Day 1	Day 2	Day 3	Day X
Ingredient 1	24	30	12	-	-	-	-	-	-	-
Ingredient 2	12	19	24	-	-	-	-	-	-	-
Ingredient 3	22	12	30	-	-	-	-	-	-	-
.	-	-	-	-	-	-	-	-	-	-
.	-	-	-	-	-	-	-	-	-	-
.	-	-	-	-	-	-	-	-	-	-
.	-	-	-	-	-	-	-	-	-	-
Ingredient ~	-	-	-	-	-	-	-	-	-	-

Key Take-Away

★ Inventory tracker

DASHBOARD

- Home
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Filter

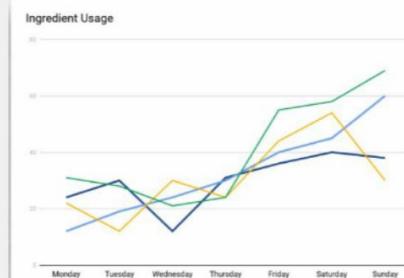
Menu Item 1
Menu Item 2
Menu Item 3
Menu Item 4



Autoincrement ID 07/01/2016 07/31/2016 Status Filter Export to CSV

Order #	Purchased On	Bill To Name	Ship To Name	Subtotal	Income	Status	Actions
#145000070	2016-07-30 04:49:42	[REDACTED]	[REDACTED]	\$455.00	\$409.50	Complete	<button>View</button> <button>Ship</button>
#145000069	2016-07-30 04:41:44	[REDACTED]	[REDACTED]	\$455.00	\$409.50	Pending	<button>View</button> <button>Ship</button>
#145000068	2016-07-30 04:28:25	[REDACTED]	[REDACTED]	\$455.00	\$409.50	Pending	<button>View</button> <button>Ship</button>
#145000067	2016-07-29 15:16:47	[REDACTED]	[REDACTED]	\$190.00	\$171.00	Pending	<button>View</button> <button>Ship</button>
#145000065	2016-07-28 08:50:57	[REDACTED]	[REDACTED]	\$134.00	\$120.60	Processing	<button>View</button> <button>Ship</button>
#145000063	2016-07-28 08:06:40	[REDACTED]	[REDACTED]	\$510.00	\$459.00	Pending	<button>View</button> <button>Ship</button>

Order # Purchased On [REDACTED] Subtotal Income Status Actions



Generate Report

Key Take-Away

- ★ Weather-Item analysis
- ★ Invoice tracker
- ★ Item tracker

05

Future Implications



Local Implications

- ★ Reduction of food waste means less expenses which leads to increase in the net profit.
- ★ Purchasing ingredients as needed save storage space and keeps food more fresh and healthier.
- ★ Tracking of menu items ingredients consumption over time, gives indication of hidden problems. Problems could be inappropriate pricing, low quality of a menu item, or marketing problem.
- ★ Collected data has a value in itself and should be useful to other restaurants and startups.
- ★ Restaurants will contribute at the top of Reduce, Reuse and Recycle hierarchy.



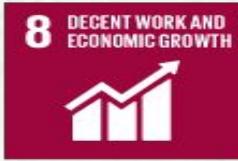
Global Implications

- ★ Reduce squandering of limited earth resources leads to conserving biological wealth. (SDG 12)
- ★ Decrease the demand to supply ratio, which cause prices of food to decrease to become affordable to poor consumers and reduce hunger. (SDG 1 & 2)
- ★ Collected data could be efficiently used to create better technologies and industries. (SDG 9)



SUSTAINABLE DEVELOPMENT GOALS

17 GOALS TO TRANSFORM OUR WORLD



Reflection

- ★ Initial surveys were not informational. We could have given more thought to how to interview our stakeholders to get useful information
- ★ We could have asked for more feedback from restaurants when creating out IMS in order to have a system that caters to their specific needs

THANKS!



Questions?

RESOURCES

- ★ Statistics:
 - "Facts and Stats." *Atlanta Community Food Bank*, Atlanta Community Food Bank, <https://acfb.org/facts-stats>.
 - "Food Waste and Loss." *U.S. Food and Drug Administration*, FDA, 30 Oct. 2019, <https://www.fda.gov/food/consumers/food-waste-and-loss>.
 - "Hunger in Georgia." *Feeding America*, Feeding America, <https://www.feedingamerica.org/hunger-in-america/georgia>.
 - Tetreault, Allison. "New Study Finds Restaurant Food Waste Amounts to \$2 Billion in Lost Profits." *Toast POS*, Toast, Inc., 27 Feb. 2019, <https://pos.toasttab.com/blog/restaurant-waste-statistics>.
 - Verrill, Courtney. "American Restaurants Are Wasting an Incredible Amount of Food - Here's the Proof." *Business Insider*, Business Insider, 17 May 2016, <https://www.businessinsider.com/solving-food-waste-in-americas-restaurants-2016-5>.
 - Verrill, Courtney. "American Restaurants Are Wasting an Incredible Amount of Food - Here's the Proof." *Business Insider*, Business Insider, 17 May 2016, <https://www.businessinsider.com/solving-food-waste-in-americas-restaurants-2016-5>.

