



Enhancing the Group Dining Experience

Team 3 - Industry Project
February 12, 2024



Agenda

Part One: Data & UX Research

-  Meet Our Team
-  Introduction
-  Initial Research
 - One-on-One Interviews
 - Exploratory Data Analysis
-  Refined Problem Space
-  How Might We Statement
-  User Persona
-  SWOT Analysis: Clover

Part Two: UX Design & Engineering

-  Exploratory Mockups
-  Accessibility, Coloring, & Logo
-  Final Design Prototype
-  API Overview
-  Minimum Viable Product
-  Key Learnings
-  Our Future (Prioritization Matrix)
-  Resources

Meet Our Team

Software Engineering (Full Stack)



Bryce Borer



Rozan Karimi



Tsering Dhondup



Tony Sun



Albin Sony

Data Science



Yumemi
Kinsella



Matthew
Lui-Tankersley



Aaron
Slabysz



User Experience



Anita Ounalom

In today's fast-paced world, restaurant patrons often find themselves pressed for time and seeking efficient dining experiences. Since 2020, Patrons have increasingly prioritized convenience and excellent service during their dining experience.

How might Fiserv leverage technology to help restaurants improve their customer's dining experience?

Key Insights

\$1.7b

"Fiserv logs 30% Revenue growth, Zelle Transactions surge 44%."

The Payments and Network segment reported 4% organic revenue growth to \$1.7 billion. Momentum was underpinned by 44% growth in Zelle transactions and 23% growth in the number of segment clients.

5/5

All of the Interviewee's mentioned that when they are ready to pay and leave, their **server is overwhelmed** and can **take a long time to get back** to them for checkout.

3/5

Patrons prefer not to rely on digital solutions when dining at upscale, fine dining establishments. As they believe that **everything should be taken care of from the business to ensure a positive experience.**

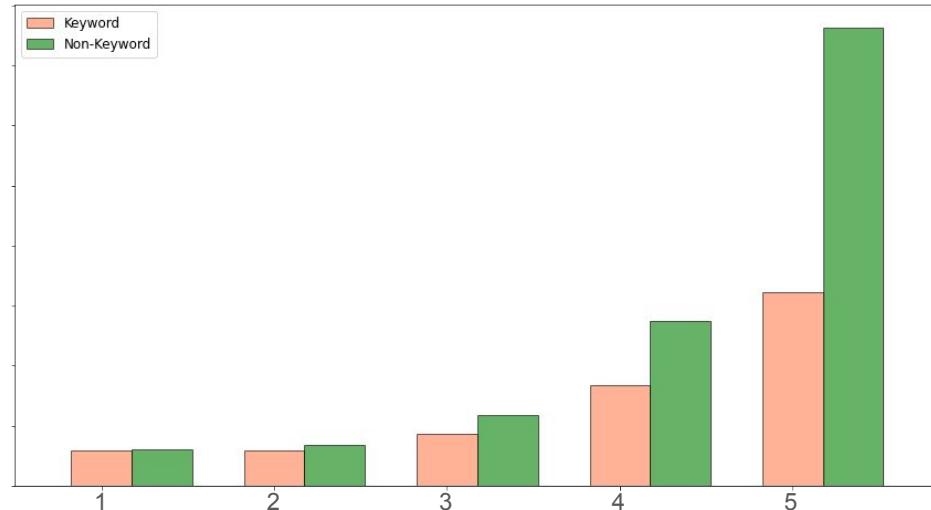


Exploratory Data Analysis: Yelp Review CSV - Kaggle

19896 Reviews, 2010 - 2021

Methodology:

- 1** Start with key terms associated with checkout time (i.e. "search", "leave", "payment", etc.)
- 2** Cosine similarity expand key terms list
- 3** Separated all reviews by presence or lack of key terms
- 4** Compared mean rating distribution via Wilcoxon ranked sum as distributions were highly left-skewed



Results: There was a statistically significant difference in the mean value of the 2 samples ($p < 0.001$)

Keyword matched reviews: n=7058
Mean Rating: 3.90

Non-Keyword reviews: n=12838
Mean Rating: 4.26



Groups dining out frequently encounter issues during restaurant checkout, resulting in long wait times and overall this can create a negative dining experience.

How might we help **fiserv move money and information** for restaurant patrons during the group checkout process to enable quick and hassle-free payments to enhance their overall dining experience?

By leveraging data analytics and integration with restaurant management systems, such as Clover, we aim to enhance the group's patron check-out journey in mid-sized restaurants by a mobile web application through a business owned device.



Name: Angela Smith

Age: 33 years old

Occupation: Art Director

Location: New York, NY

User Description:

Angela is a busy Art Director who has a fast-paced lifestyle. She believes skill acquisition, collaboration and hard work are the key to success. During her free time, she enjoys going out to eat with her friends.

"Every minute counts. As a busy individual, I want to make use of my time so I can spend more time with my friends and family."

Personal Characteristics:

- Willing to learn
- Solution-oriented

Hobbies and Interests:

- Trail running
- Cycling

Goals:

- To find an easy-to-use payment app to help with her group bill
- To expand her digital skills

Challenges:

- Increase in complex emerging online applications
- Lack of available, up-to-date learnings apps

Needs:

- Simple and seamless app or platform to help with her group payments to limit server interaction.

Sources of Info:

- News
- Online media

User Persona

Strengths

- Offers **highly customizable solutions** tailored to the specific needs of businesses across different industries.
- Integrates seamlessly with a **wide range of applications and services**.
- Provides **robust reporting and analytics** capabilities, allowing businesses to track sales, inventory, and **customer data in real-time**.

Weaknesses

- While Clover POS offers scalable pricing plans suitable for businesses of all sizes, some **users may find the pricing structure complex or expensive**.

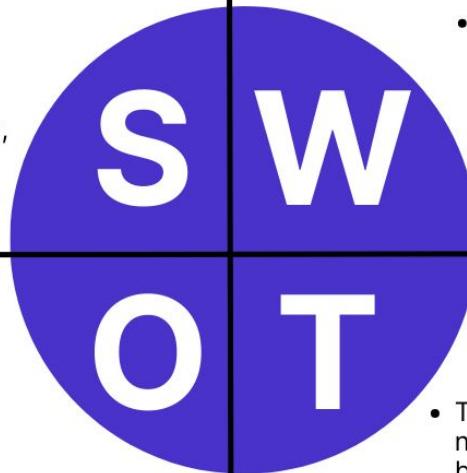
- Relies on a stable internet connection to function properly, which may pose a **pain point in areas with unreliable connectivity, can potentially disrupt operations and lead to downtime for businesses**.

Opportunities

- **Expansion in New Markets:** Restaurant and Hospitality Industry by targeting businesses with specific needs or niche requirements.
- **Partnerships and integrations with other tech providers** can be leveraged to enhance its offerings and provide value to future customers.

Threats

- The POS Market is highly competitive, with numerous players offering similar solutions to businesses.
- Rapid advancements in tech and changing customer expectations pose a threat if tech fails to innovate and keep pace with industry trends.



Exploratory Mockups

Gratuity (18%) \$30.08
Order Total \$197.20

Enter Gift Card

Review Items (9 Items)

Payment Method
 Pay with Card
 Pay with

Payment Options
 Pay Total \$197.20
 Pay Evenly \$65.73
 Pay by Seat

uni sushi
33 E 20th St, New York, NY, 10003
(212) - 000 - 0000

Thank You for Dining with Us

Order Summary 3 Guests
Subtotal \$153.50
NYC Tax (8.875%) \$13.62
Gratuity (18%) \$30.08
Order Total \$197.20

Enter Gift Card

Review Order (9 Items)

Payment Method
 Pay with Card - 1213
 Pay with Apple Pay

Payment Options
 Pay Total \$197.20
 Pay Evenly \$65.73

[unisushinyc.com/checkout](#)

uni sushi
33 E 20th St, New York, NY, 10003
(212) - 000 - 0000

Thank You for Dining with Us

Add a Debit or Credit Card

Name on Card

Card Number

MM/YY CVV

Zipcode

Save Payment for future use

Add Card

Review Items (9 Items)		
Seat 1	Orange is the New Black Qty: 1	\$18.00
	Asahi Qty: 2	\$10.00
Seat 2	Soy Cute Gold Set Qty: 1	\$60.00
	Gyoza Qty: 1	\$10.00
	Green Tea (H) Qty: 1	\$5.50
Seat 3	Rice to Meet You Set Qty: 1	\$40.00

As a patron, I want to be able to easily view my bill on the web app, broken down by items ordered, taxes, and any additional charges, so that I can verify the accuracy of the charges before proceeding with payment.

As a patron, I want to split my bill with other members of my party directly within the app, so that I can process my bill efficiently without the need of a server.

[More User Stories here](#)

1

uni sushi
33 E 20th St, New York, NY, 10003
(212) - 000 - 0000

Order Summary

Subtotal	\$153.50
NYC Tax (8.875%)	\$13.62
Gratuity (18%) <small>Update</small>	\$30.08
Order Total	\$197.20

+ Apply coupon or gift card

Review Items (9 Items)

Seat 1	Orange is the New Black Qty: 1	\$18.00
	Asahi Qty: 2	\$10.00
Seat 2	Orange is the New Black Qty: 1	\$18.00
	Asahi Qty: 2	\$10.00

Payment Method

- Pay with Card Add Card
- Pay with Apple Pay

Payment Options

- Pay Total \$197.20
- Pay Evenly \$65.73 Share with Friends
- Pay by Seat Select Seat

2

9:41

uni sushi
33 E 20th St, New York, NY, 10003
(212) - 000 - 0000

Thank You for Dining with Us Tonight

Order Summary 3 Guests

Subtotal	\$153.50
NYC Tax (8.875%)	\$13.62
Gratuity (18%) <small>Update</small>	\$30.08
Order Total	\$197.20

+ Apply coupon or gift card

Review Items (9 Items)

Seat 1	Orange is the New Black Qty: 1	\$18.00
	Asahi Qty: 2	\$10.00
Seat 2	Orange is the New Black Qty: 1	\$18.00
	Asahi Qty: 2	\$10.00

Payment Method

- Pay with Card
- Pay with Apple Pay

Pay \$197.23

Pay Total \$197.20

Pay Evenly \$65.73 Share with Friends

Pay by Seat Select Seat

3

uni
33 E 20th St, New York, NY, 10003
(212) - 000 - 0000

Order Summary

Subtotal	\$153.50
NYC Tax (8.875%)	\$13.62
Gratuity (18%) <small>Update</small>	\$30.08
Order Total	\$197.20

+ Apply coupon or gift card

Review Items (9 Items)

Seat 1	Orange is the New Black Qty: 1	\$18.00
	Asahi Qty: 2	\$10.00
Seat 2	Orange is the New Black Qty: 1	\$18.00
	Asahi Qty: 2	\$10.00

Payment Method

- Pay with Card Add Card
- Pay with Apple Pay

Payment Options

- Pay Total \$197.20
- Pay Evenly \$65.73 Share with Friends
- Pay by Seat Select Seat

4

uni
33 E 20th St, New York, NY, 10003
(212) - 000 - 0000

Order Summary

Subtotal	\$153.50
NYC Tax (8.875%)	\$13.62
Gratuity (18%) <small>Update</small>	\$30.08
Order Total	\$197.20

+ Apply coupon or gift card

Review Items (9 Items)

Seat 1	Orange is the New Black Qty: 1	\$18.00
	Asahi Qty: 2	\$10.00
Seat 2	Orange is the New Black Qty: 1	\$18.00
	Asahi Qty: 2	\$10.00

Payment Method

- Pay with Card
- Pay with Apple Pay

Payment Options

- Pay Total \$197.20
- Pay Evenly \$65.73 Share with Friends
- Pay by Seat Select Seat

5

Review Items (9 Items)

Seat 1	Orange is the New Black Qty: 1	\$18.00
	Asahi Qty: 2	\$10.00
Seat 2	Orange is the New Black Qty: 1	\$18.00
	Asahi Qty: 2	\$10.00

Payment Method

- Apple Pay
- Zelle

Or pay with card

Name on Card

Email Address for Receipt

Card Number MM/YY CVV Zip

Save Card for Future Use

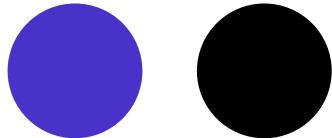
Payment Options

- Pay Total \$197.20
- Pay Evenly \$65.73 Share with Friends
- Pay by Seat Select Seat

unisushinyc.com/secure-checkout

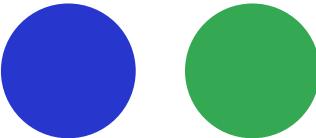
Accessibility, Coloring, and Logo

Primary Colors



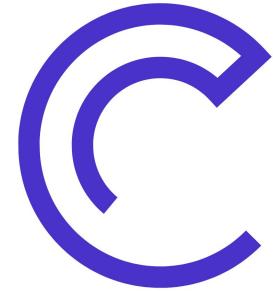
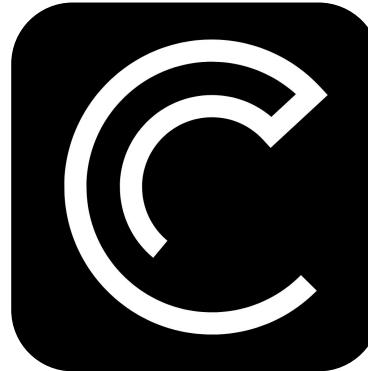
#4832CA #000000

Secondary Colors



#2737CD #34A853

App Logo (iOS 1024×1024)



Inter (Regular)

Header: 18px | Body Size: 14px

Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp
Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz

Inter (Bold)

**Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp
Qq Rr Ss Tt Uu Vv Ww Xx Yy Zz**

Designing for Accessibility (Coloring Cont.)

Foreground Color

#4832CA

Swap Colors

Background Color

#FFFFFF

Your Contrast Results

Your colors meet WCAG requirements

8.1:1

Enter your text color and background color above to see if your color combination is accessible and compliant for those with visual impairments.

Share Contrast Results

Your Compliance

Small Text

Level AA PASS Level AAA PASS

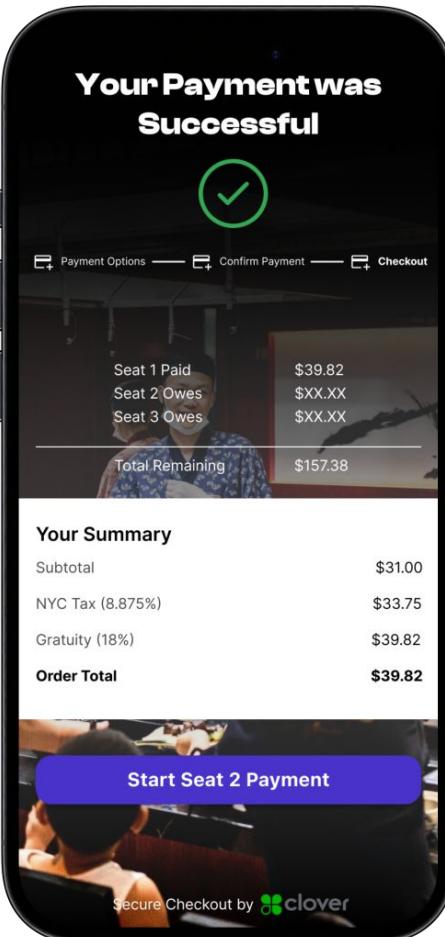
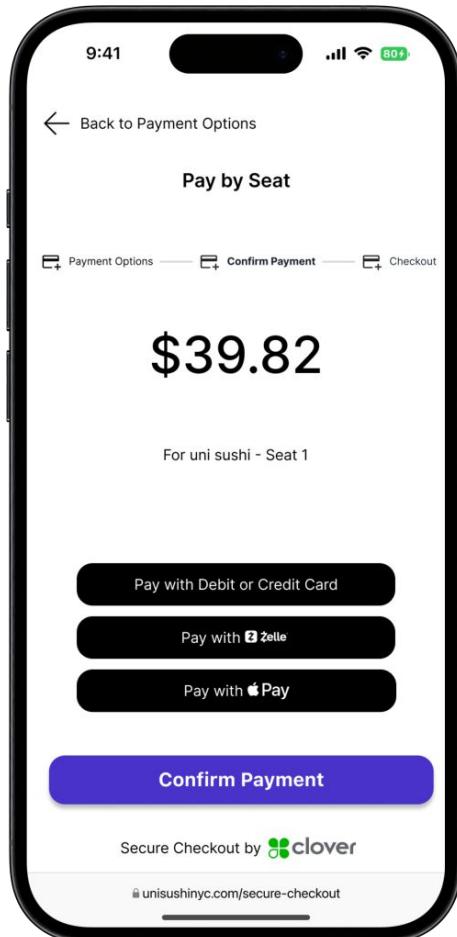
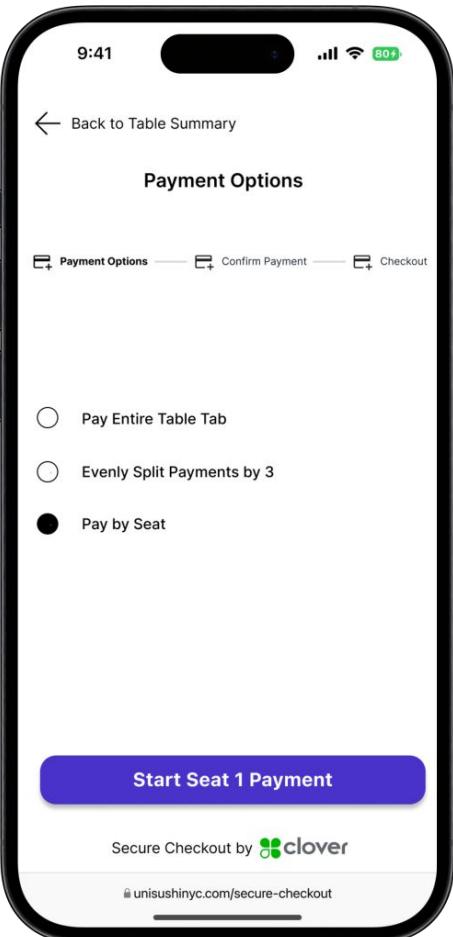
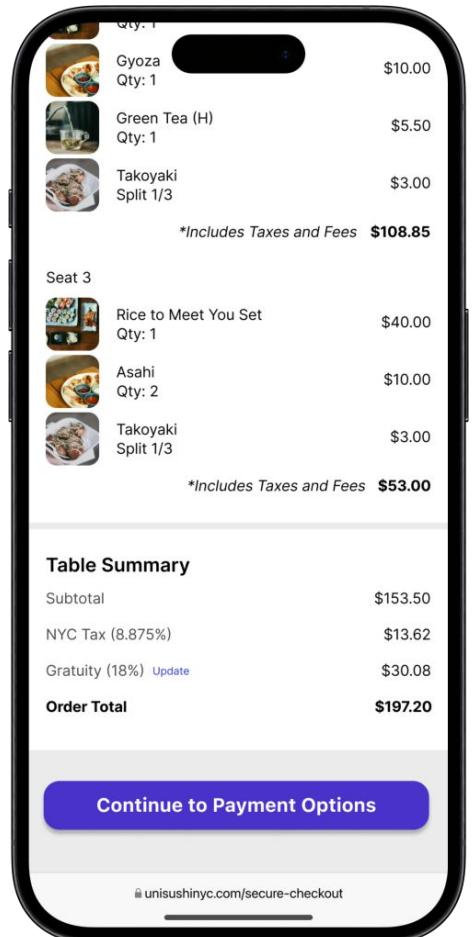
Large Text

Level AA PASS Level AAA PASS

Graphics & UI Components

Level AA PASS

WCAG Guidelines [Here](#)



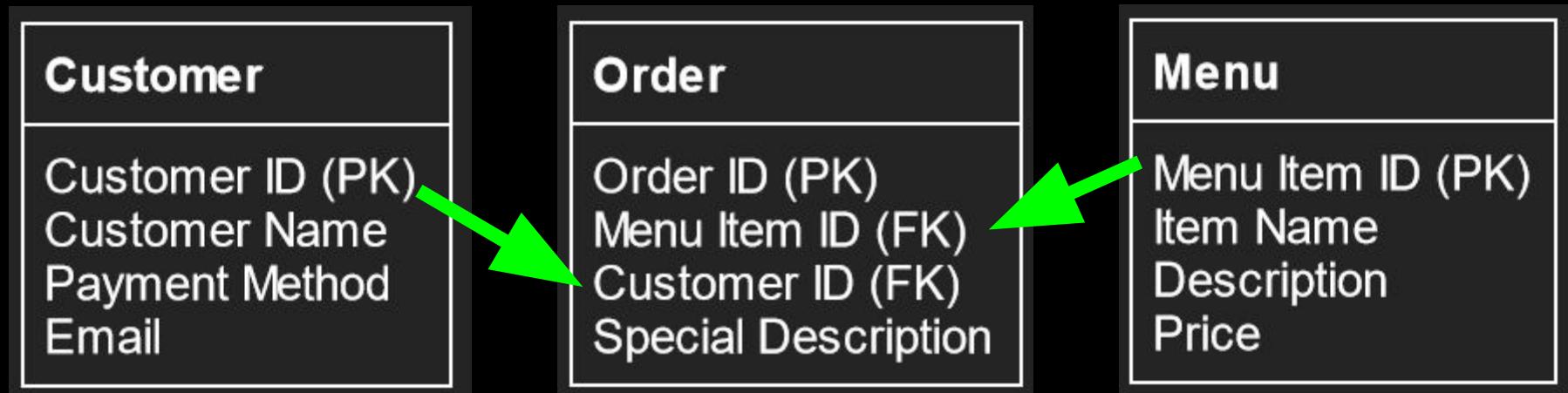
Final High-Fidelity Prototype [Here](#)

Role of Our API

- Store the data
- Provide Scalability
- Assist with Data Management

```
"dependencies": {  
    "cors": "^2.8.5",  
    "dotenv": "^16.4.1",  
    "express": "^4.18.2",  
    "knex": "^3.1.0",  
    "mysql": "^2.18.1",  
    "nodemon": "^3.0.3",  
    "router": "^1.3.8",  
    "seed": "^0.4.4",  
    "uuid": "^9.0.1"
```

How the Database is Structured



The Journey: MySQL

```
CREATE TABLE order (
    order_id INT AUTO_INCREMENT PRIMARY KEY,
    menu_item_id INT,
    ordering_party INT,
    special_instructions VARCHAR(60),
    FOREIGN KEY (menu_item_id) REFERENCES
menu_items(item_id) ON UPDATE CASCADE,
    FOREIGN KEY (ordering_party) REFERENCES
customers(customer_id) ON UPDATE CASCADE
);
```

Translated to: Knex

```
return knex.schema.createTable('order', function (table) {
  table.increments('order_id').primary();
  table.integer('menu_item_id').unsigned();
  table.integer('order_quantity').unsigned();
  table.integer('ordering_party').unsigned();
  table.string('special_instructions', 60);
  table.foreign('menu_item_id').
    references('menu_items.item_id').onDelete('CASCADE');
  table.foreign('ordering_party')
    .references('customers.customer_id').onDelete('CASCADE');
});
```

API Request

```
const getOrder = () => {
  axios
    .get("http://localhost:8080/order")
    .then((response) => {
      setOrder(response.data);
    })
    .catch((err) => {
      console.log(err);
    });
};
```

API Response

GET /order

Everything we need, but...

```
{  
    "order_id": 2,  
    "menu_item_id": 5,  
    "order_quantity": 1,  
    "ordering_party": 1,  
    "special_instructions": null  
},  
{  
    "order_id": 3,  
    "menu_item_id": 18,  
    "order_quantity": 1,  
    "ordering_party": 2,  
    "special_instructions": "Sprite"  
},  
2
```

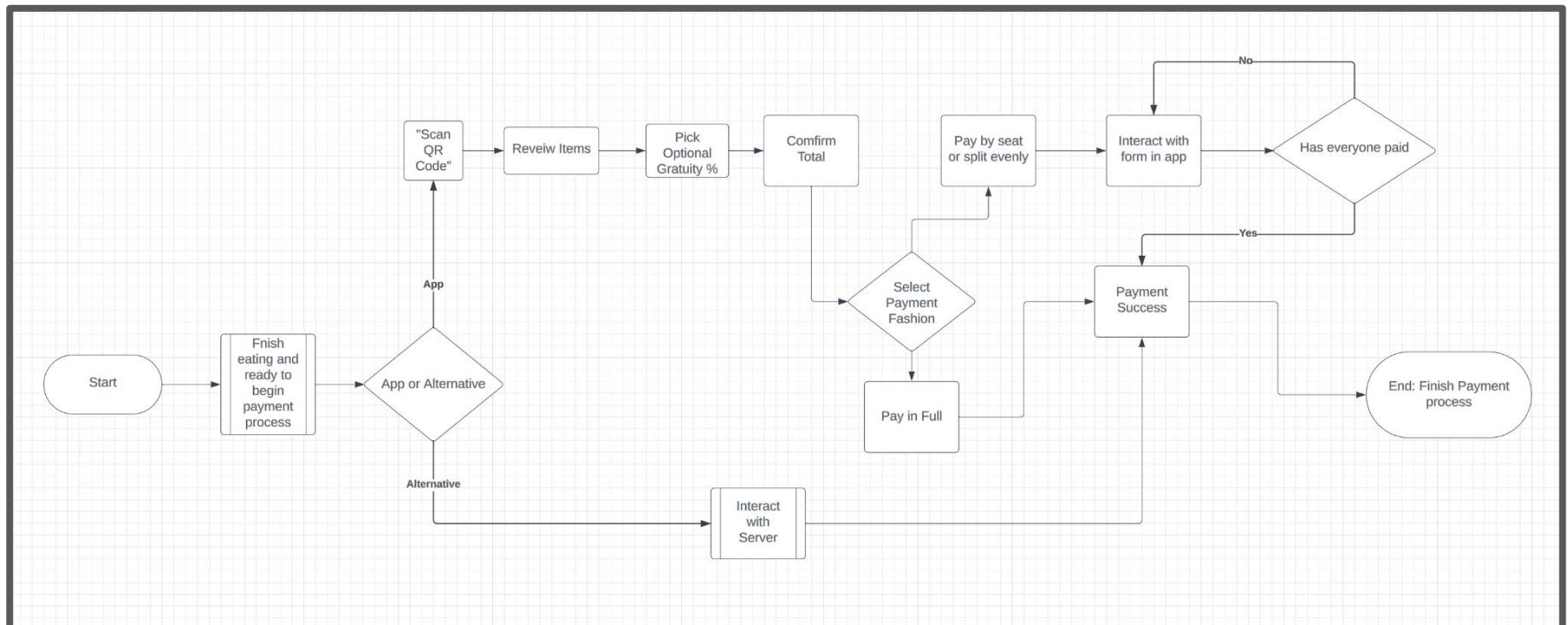
We Can Make This Easier!

GET /review

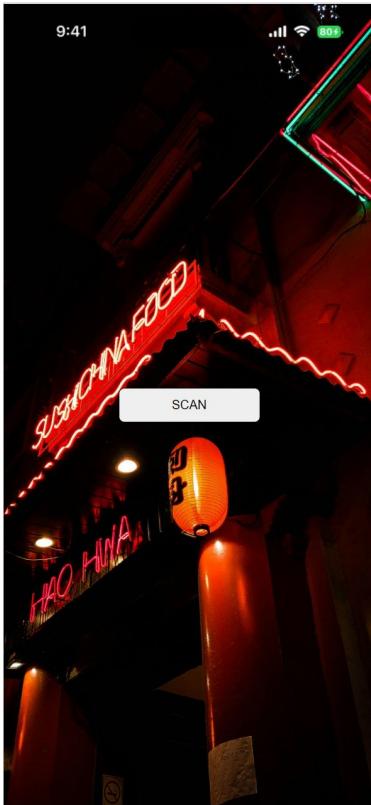
Everything we need, in a single API call.

```
"order_id": 1,  
"menu_item_id": 2,  
"item_name": "Spicy Tuna Roll",  
"price": 9.49,  
"order_quantity": 2,  
"item_total": 18.98,  
"ordering_party_subtotal": 32.97,  
"item_image": "https://images.unsplash.com/photo-1617196035154-1e7e6e28b0db?w=800&auto=format&fit=crop&q=60&ixlib=rb-4.0.3&ixid=M3wxMjA3fDB8MHxwaG90by1yZWxhdGVkfDJ8fHxlbnwwfHx8fHw%3D",  
"ordering_party": 1,  
"customer_name": "Angela",  
"special_instructions": null,  
"group_subtotal": 134.83
```

Payment Process - Task flow



MVP



9:41 80+

uni
33 E 20th St, New York, NY 10003
(212) - 000 - 0000

Review Order(11 Items) 4 Guests

Seat 1

Spicy Tuna Roll	\$9.49
Tuna Sashimi	\$13.99
*Taxes and Fees Not Included \$32.97	

Seat 2

Soft Drink	\$1.99
Spider Roll	\$12.99
Soft Drink	\$1.99
*Taxes and Fees Not Included \$29.96	

Seat 3

Avocado Roll	\$6.99
California Roll	\$8.99
Ice Tea	\$1.99
*Taxes and Fees Not Included \$28.95	

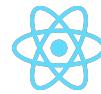
Seat 4

Rainbow Roll	\$14.99
Salmon Nigiri	\$11.99
Soft Drink	\$1.99
*Taxes and Fees Not Included \$42.95	

Table Summary

Subtotal	\$134.83
NYC Tax(8.875%)	\$11.97
Gratuity(0) Update	\$0.00
Order Total	\$146.80

Continue To Payment Options



React.js



Node.js

← Back to Table Summary

Payment Options

Payment Options — Confirm Payment — Checkout

- Pay Entire Table Tab
- Evenly Split Payment by 4
- Pay by Seat

Start Seat 1 Payment

Secure Checkout by clover

← Back to Payment Options

Split Payment

Payment Options — Confirm Payment — Checkout

\$39.82

For Uni Sushi - Seat 1

Pay with Debit or Credit

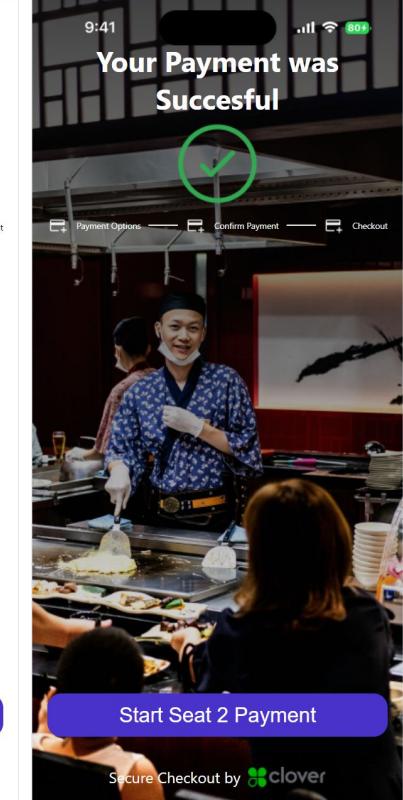
Pay with Zelle

Pay with Apple Pay

Confirm Payment

Secure Checkout by clover

9:41 80+
Your Payment was Successful



Key Learnings

Collaboration Drives Innovation 💙

*"Working together in pairs or groups when programming **help us find better solutions faster**"*

Rozan, Front-End Engineer

Rapid Iteration is Key 🔑

*"We had to ideate, prototype, and test our ideas. This iterative process allowed us to quickly identify what worked and what didn't in order to make improvements in a short amount of time. **We remained flexible and responsive to feedback.**"*

Anita, UX/UI Designer

Specialties Breed Smooth Solutions 🎉

*"Having defined 'lanes' for our skill sets allowed each group to work efficiently as a collective and trust the expertise of others. Everyone clearly knew what they were doing so **I didn't have to worry that we'd reach the end successfully.**"*

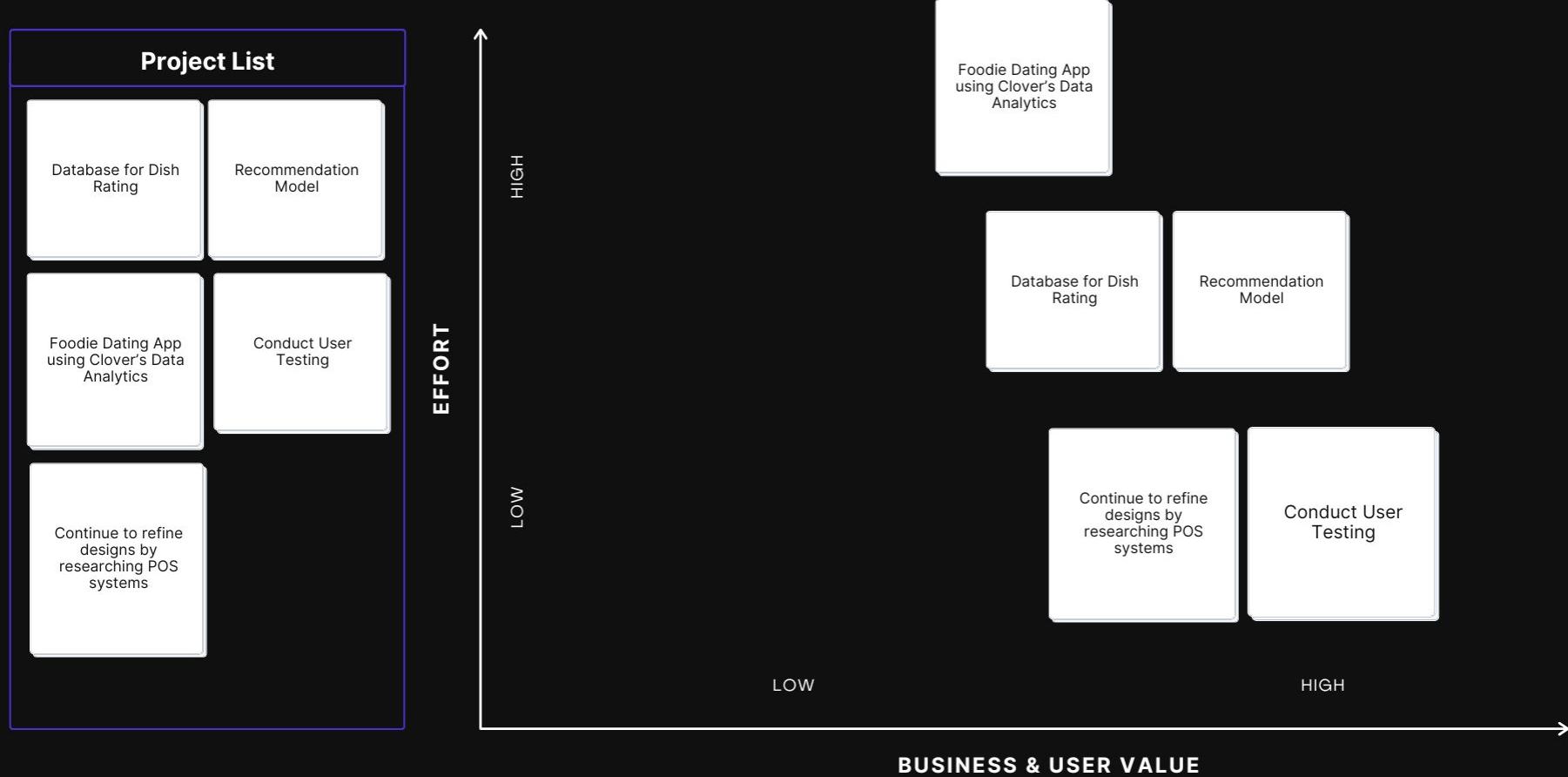
Matthew, Data Scientist

More than just "Checking Out"💡

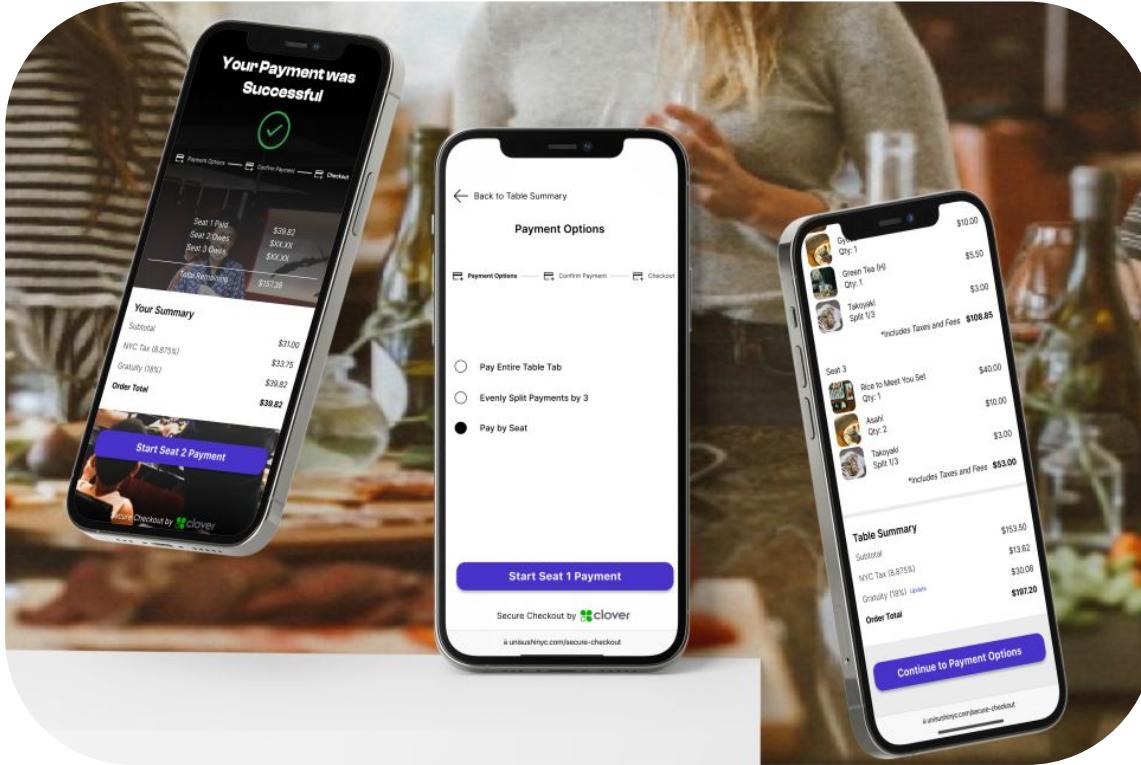
"We encountered a lot of pain points during the dining experience that we would like to take account for in the future. Such as catering to parties larger than 4 and how our system will handle those transactions on one device."

Team 3

Our Future - Chec's Prioritization Matrix



Thank You



Want to connect with the team? [Chec](#) us out on LinkedIn 😊

Resources

 [Figma High Fidelity Prototype](#)

 [Components](#)

 [User Stories](#)

 [Yelp x Kaggle Dataset](#)

 [Research Plan](#)

 [Fiserv x Zelle](#)

 [Fiserv x Clover](#)

 [WCAG Guidelines](#)