The PM Role in Problem vs Solution Space

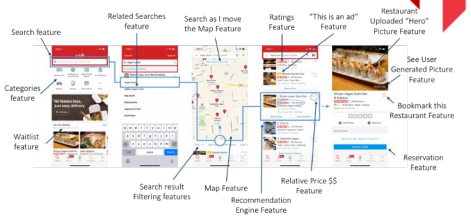
Mini 4 / Spring 2024

THE INTELLIGENT FUTURE

Carnegie Mellon University
Tepper School of Business

TODAY'S LEARNING OBJECTIVES

- Basic Definitions of Product Management Concepts
  - Product and Product Features
  - Customer and Customer Needs
- "Where are PMs in the company and who do they work with?"
  - The PM in the Product Organization
- Example: "Full Workflow: How a PM helps launch a new product feature"
  - "Problem Space": Customer Discovery and Needs, Opportunity Sizing and Prioritization
  - "Solution Space": "How a PM works with engineering and design to launch a new feature"
  - Post-Launch: Experimentation and Testing
- More definitions
  - Product-Market fit
  - Total Addressable Market (TAM)



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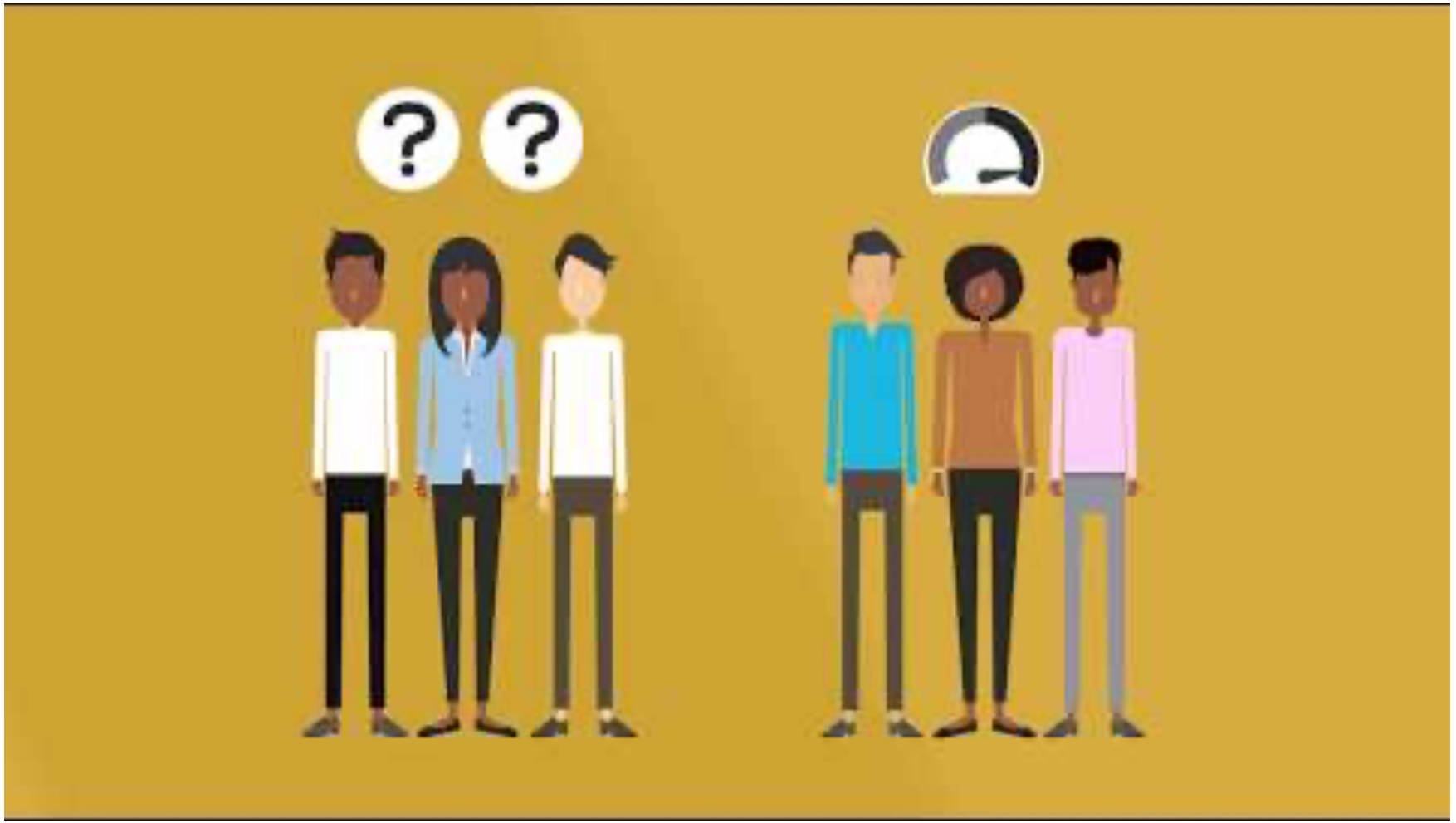
RESY

tock

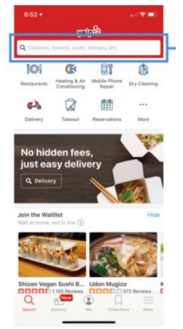


https://www.youtube.com/watch?v=88ZfjnDOmp4

BASIC DEFINITIONS OF PRODUCT MANAGEMENT CONCEPTS

- Customer - A customer is a bundle of “customer needs” and how important those needs are to the customer.
- Customer Need - A customer need is a problem or desire the customer has that we (can) solve using a product feature(s).
  - Sidenote: Customer Needs go by many names…”Jobs to Be Done (JTBD),” “Customer Benefits” (Amazon), “User Problem”, “Pain Point”
- Product - product is a bundle of “Product Features” and how well those features satisfy corresponding customer needs.
- Product Feature - product feature is a sub-component of a product designed for satisfying a customer need(s).
  - Sidenote: A product feature is how a customer would describe what is satisfying their need

Customer

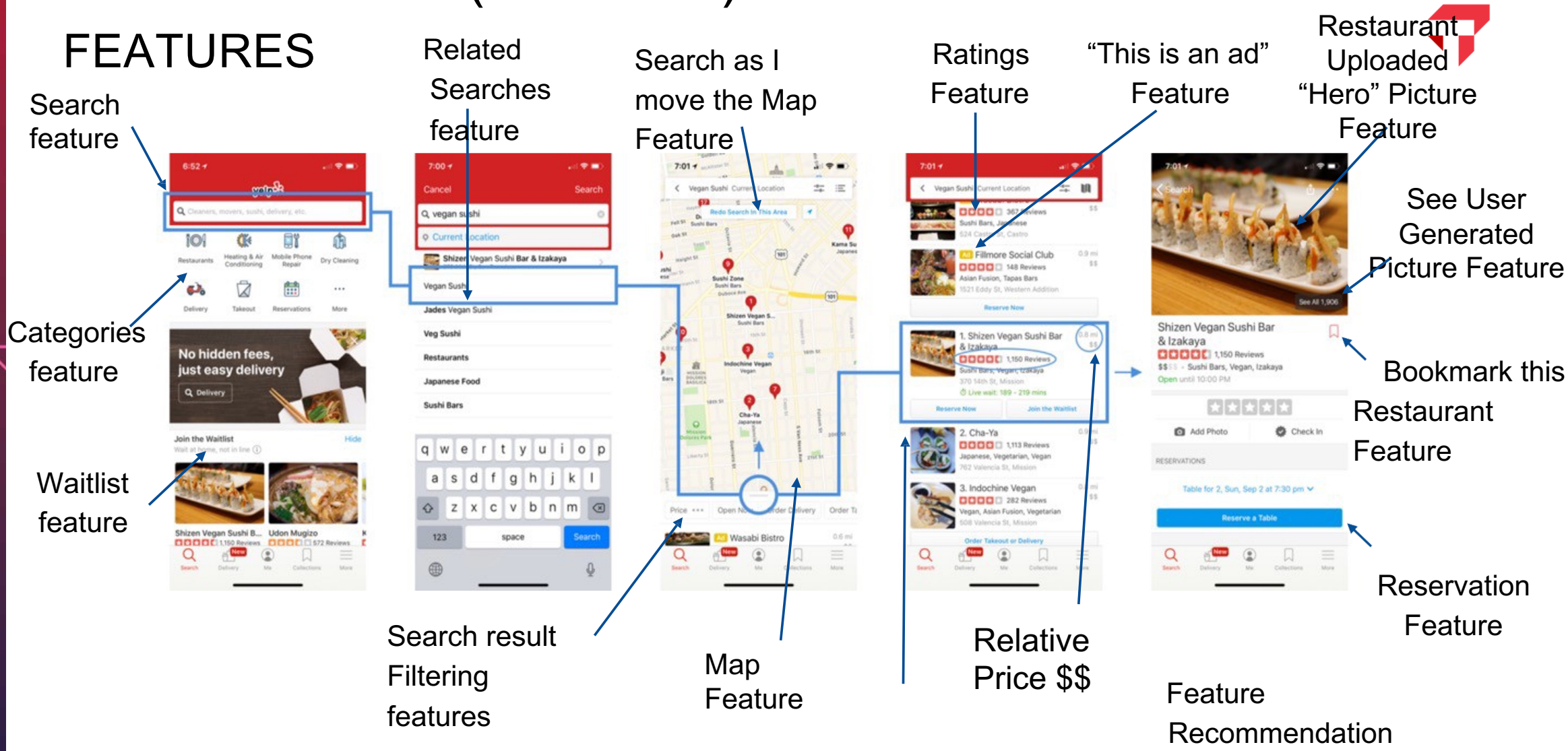


Yelp

Ford Mustang

Product

EXAMPLE: YELP (PRODUCT) AND ITS PRODUCT FEATURES



Yelp "Customer Journey" for reserving a table at a restaurant

EXAMPLE: CAR (PRODUCT) AND ITS PRODUCT FEATURES

Customer Needs

Customer

- Aggressive aesthetics
- Good Fuel Economy
- Can Carry Dog

Product

Product Features

- Sharp Slanted Headlights
- 5.0L Powerful Engine
- Separated Trunk Space

Definition (again): products are bundles of "product features" and how well each feature satisfies needs to the customer

Product 1

Product Features

- Happy Round Headlights
- 1.2L Fuel Saving Engine
- Combined Interior + Trunk

Product 2

Product Features

- Sharp Slanted Headlights
- 5.0L Powerful Engine
- Separated Trunk Space

Why are we in a world with many products that differ in how well they satisfy customer needs…?

Definition (again): customers are bundles of "customer needs" and how "important" each need is to the customer

Customer 1

Customer Needs	Need Importance
Aggressive aesthetics	++
Good Fuel Economy	+
Can Carry Dog	−

Customer 2

Customer Needs	Need Importance
Aggressive aesthetics	−
Good Fuel Economy	++
Can Carry Dog	++

Because we live in a world of diverse people with diverse needs and how important they are to <u>each</u> individual customer.

QUESTION: WHICH PRODUCT HAS FEATURES THAT BETTER SATISFY OUR EXAMPLE CUSTOMER'S NEEDS?

Customer 1

Customer Needs	Need Importance
Aggressive aesthetics	++
Good Fuel Economy	+
Can Carry Dog	−

Product 1

Product Features

- Happy Round Headlights
- 1.2L Fuel Saving Engine
- Combined Interior + Trunk

Product 2

Product Features

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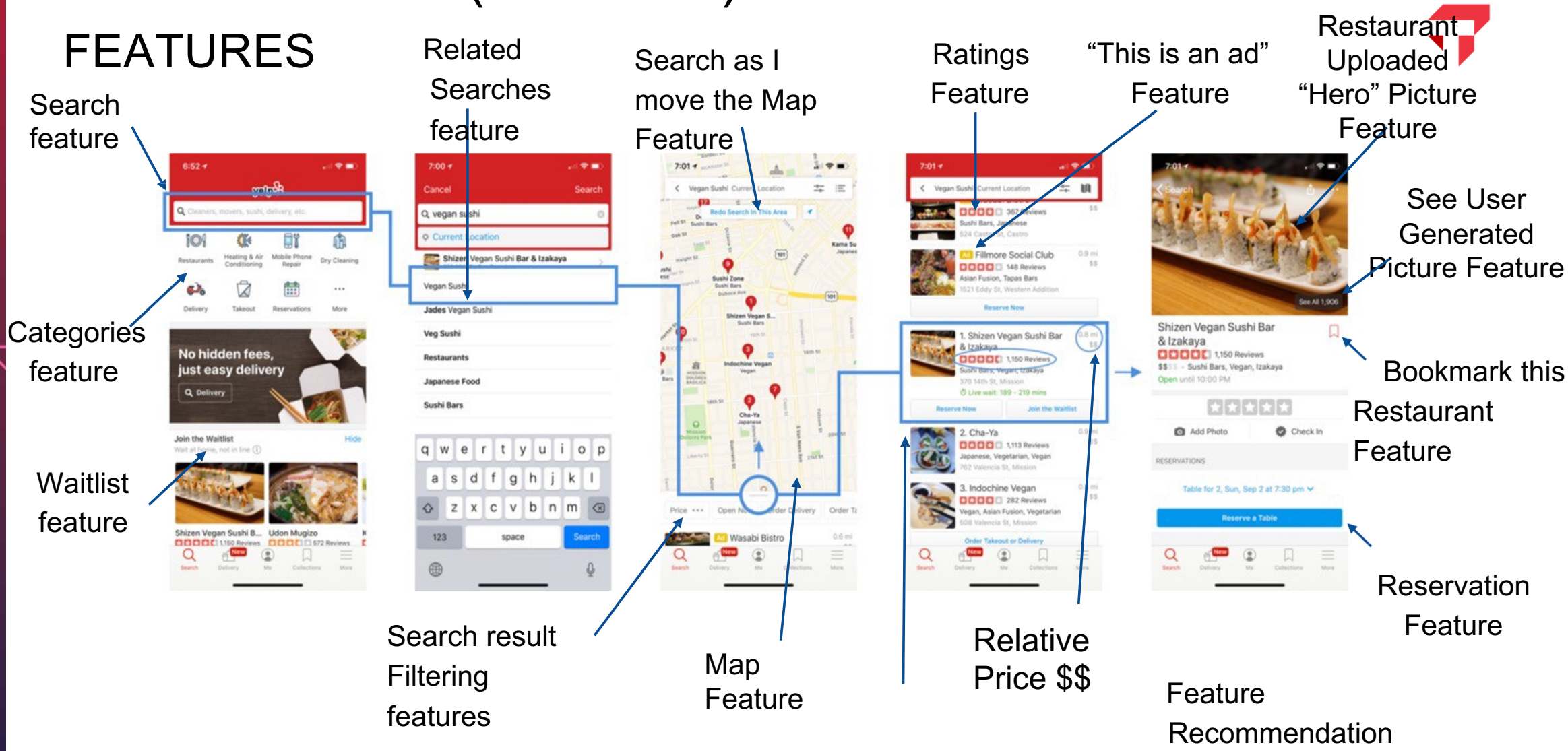
EXAMPLE: YELP (PRODUCT) AND ITS PRODUCT FEATURES



Yelp "Customer Journey" for reserving a table at a restaurant

Takeaway throughout class:
Why customer needs?
Because customer needs drive new product features

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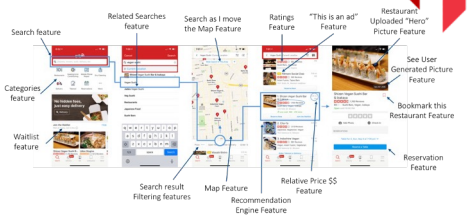

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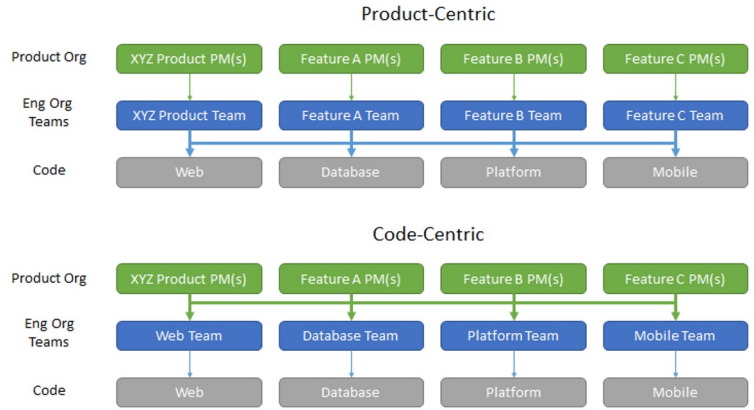
THE PRODUCT ORGANIZATION (WITHIN THE FIRM)

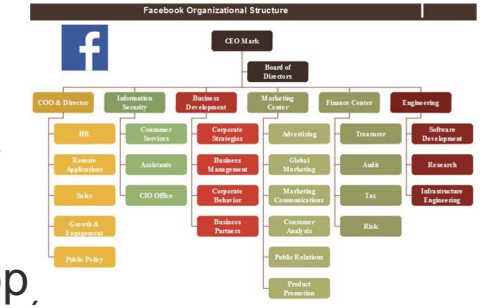
Question: “How is the product org structured?”

Split on Product Features? Split on Platform (iOS, web)?

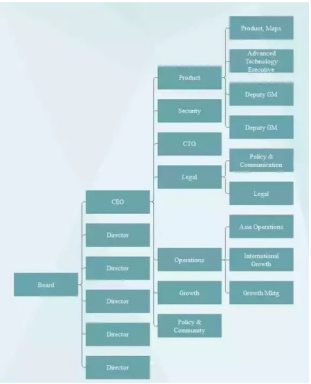
- Cross-Functional
  - Engineers and Engineering Managers (EM)
  - Designers and Design Managers
  - Other Product Managers (PM)
- This varies due to many factors such as:
  - Company culture and organization
  - Firm stage (e.g., startup vs Fortune 500 firm)
  - Business-to-Business (B2B) vs Business-to-Customer (B2C)
  - Business model (e.g., e-commerce vs social media app)
  - PM role technical requirements (e.g., internal API product vs consumer-facing product)



Product Organization Structure Split on Product Features vs Function



Facebook / Meta



Uber

THE PRODUCT TEAM

- Question: “Who do PMs work with?”
- Main stakeholders interfacing with PMs
  - Engineers and Engineering Managers (EM)
  - Designers and Design Managers
  - Marketing and Product Marketing Managers (PMM)
  - Other Product Managers (PM)
  - Other roles: Product Ops, Data Scientists, Business Analysis
- (Again) this varies due to many factors such as:
  - Company culture and organization
  - Firm stage (e.g., startup vs Fortune 500 firm)
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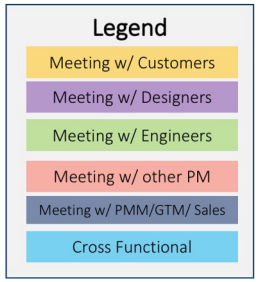
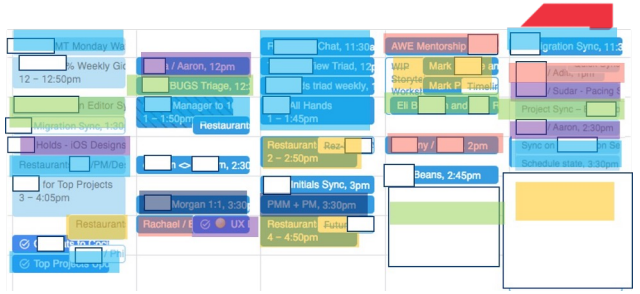
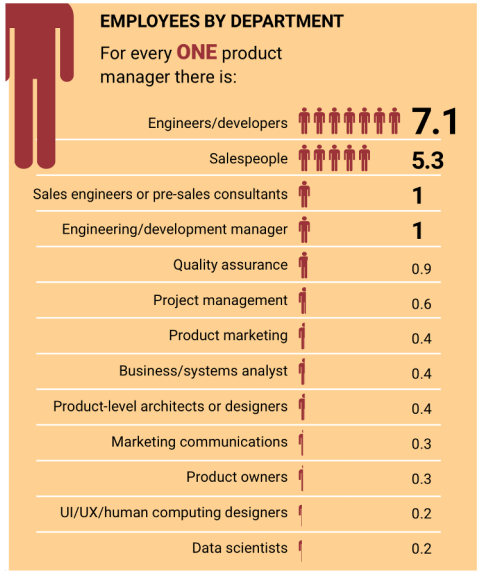


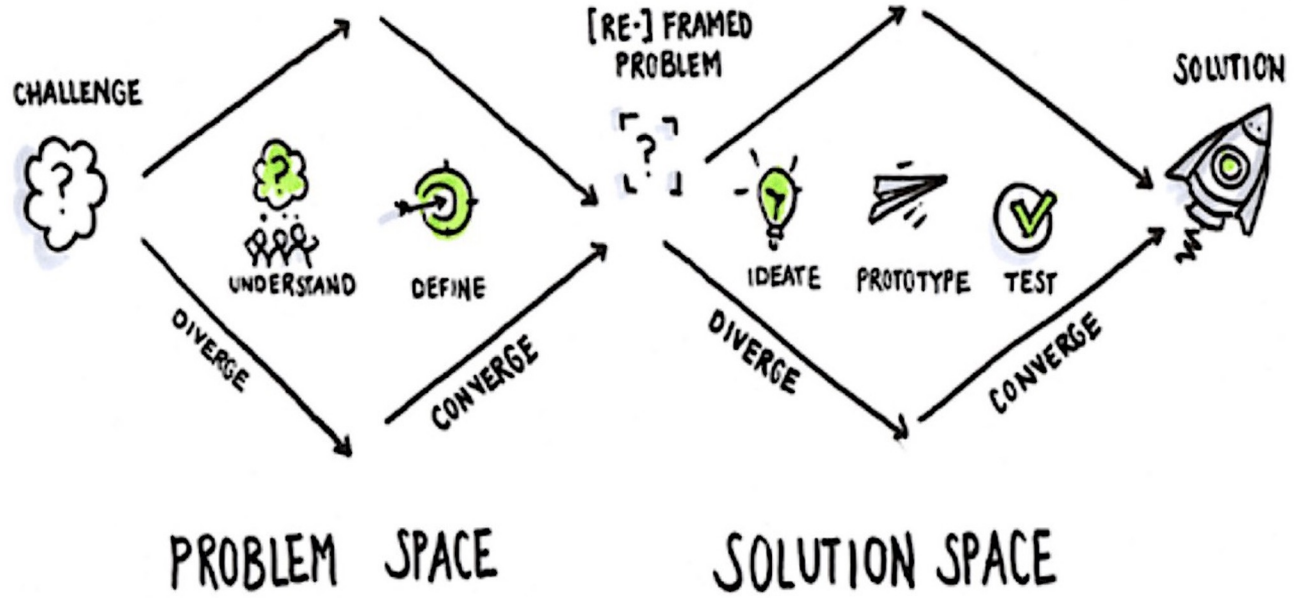


Example work week
mid-cap marketplace tech firm



Source: Pragmatic Institute Survey, N= 2474, from North America, Europe, Asia, Oceania

PROBLEM SPACE VS SOLUTION SPACE: A KEY CONCEPT

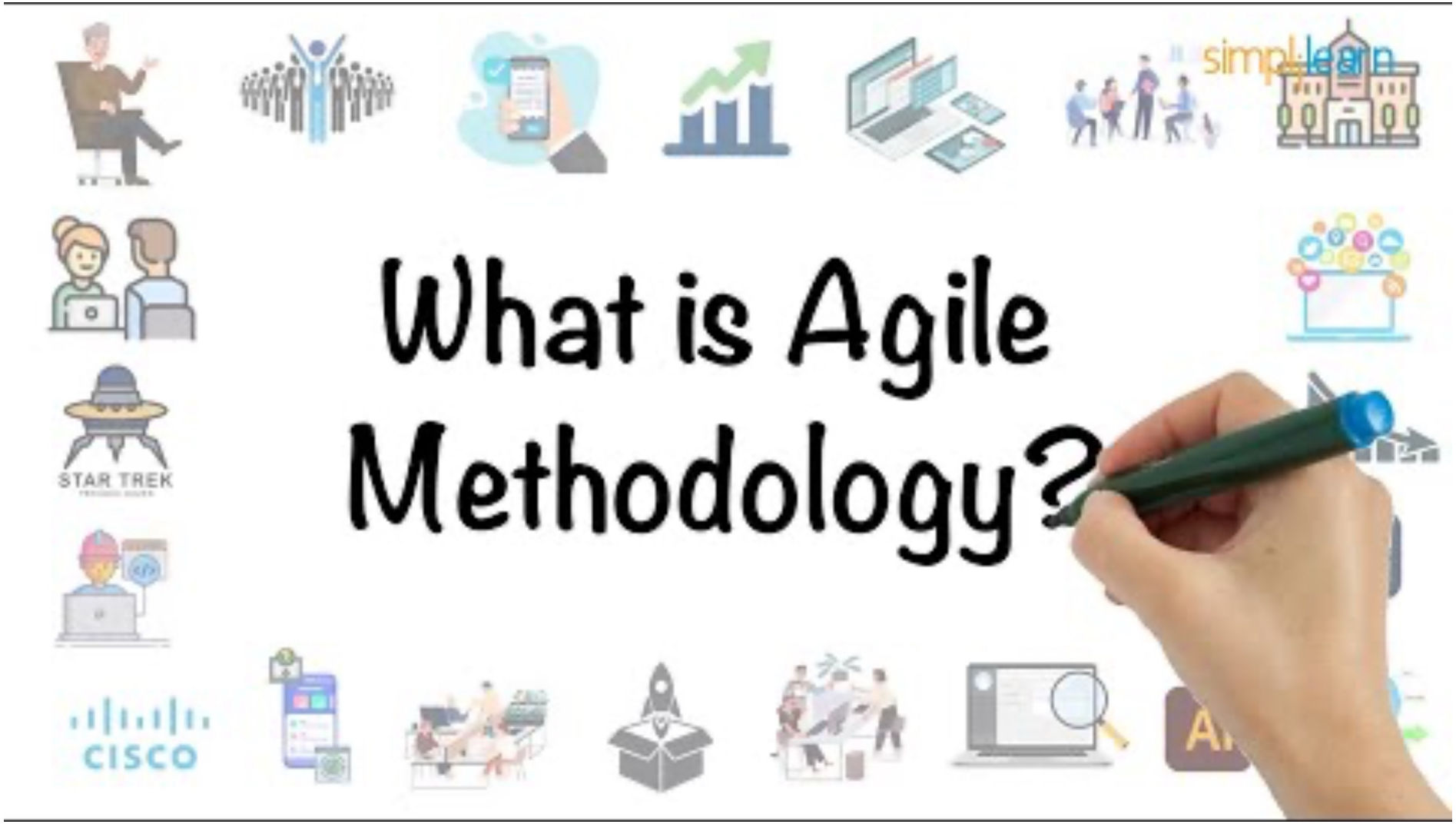


- PM: What are customers actual needs? How "painful" are these needs?
- PM: What is the "reach" of these needs in TAM? What customer needs segments and how large?
- PM: How can we validate this is "real" problem? What metrics measure this or act as proxies?

- PM: What is required to solve the problem? What is the definition of a successful product feature?
- Des: How do we integrate this feature into our UI/UX to give an uncluttered, pleasant experience to the user?
- Eng: How do we integrate this feature into our existing features?

PMs "own" the problem space and support the solution space.

PROCESSES: “WATERFALL” AND “AGILE”



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https://youtu.be/8eVXTyIZ1Hs?si=TWa0Yv1p2OU2hoAH

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PROCESSES: "WATERFALL" AND "AGILE"

- 2 major "archetypes" of product development
  - Waterfall is "older" and agile is "newer"
  - But, most companies are some combination of the two
- Waterfall
  - Tends to be more linear.
  - Pros: can allow more time and verification (e.g, validating customer needs)
  - Cons: Slower iterations, easy to silo functions, risk of unvalidated needs pushed to end.

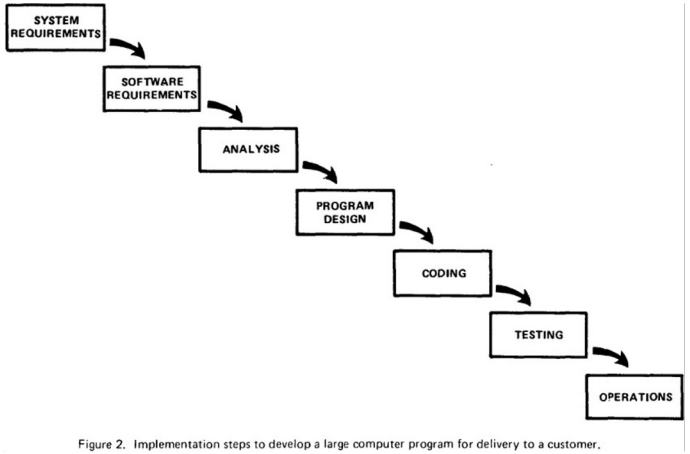
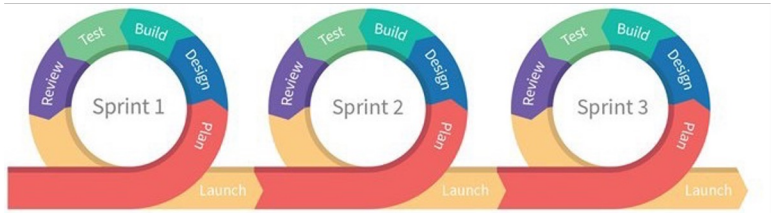


Figure 2. Implementation steps to develop a large computer program for delivery to a customer.

Managing the Development of Large Software Systems (1970)

- Agile
  - Tends to be faster paced with smaller plans
  - Pros: faster iterations, less silos, more adaptive if customer needs not validated.
  - Cons: can be focused on shipping features rather than justifying customer needs



Other Resources
- More detailed breakdown of two archetypes
- Agile Manifesto; Waterfall was never not iterative

Product Feature Development Process in this class

Pre-Launch of Product Feature: “Problem Space”

- Customer Needs Identification
- Customer Needs Downselection to Primary Needs
- Measuring “Importance” of Primary Needs (Conjoint analysis)
- Needs prioritization and segmentation
- Competitive analysis, total addressable market (TAM) estimation, opportunity sizing, and Targeting

POST-Launch of Product Feature

- Product Metric Tracking
- Hypotheses Definition and Experiment Setup
- A/B Testing
- Go-to-Market (GTM) Rollout

Example workflow: How a PM works with engineers and designers to develop and launch a product feature

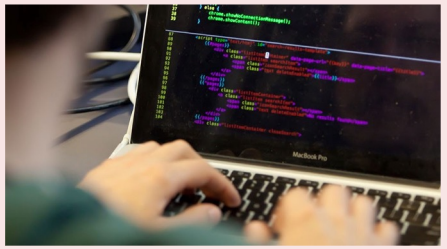
Problem Space (Product Manager)

- Problem Definition
  - Voice of Customer / Customer Discovery
  - Customer Needs Prioritization
  - Customer Needs to Product Features
  - Feature Prioritization + Roadmapping
- "Solution" Definition
  - Requirements Definition
  - Product Requirement Document (PRD)
  - User Stories
  - Launch + Testing Plan

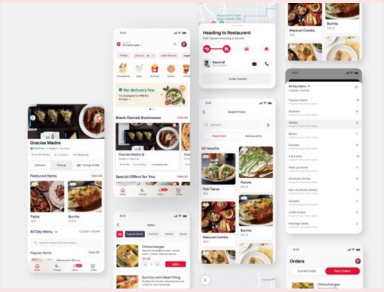
PRD with "User Stories"

Iteration

Solution Space (PM + Eng + Design)



Engineers



Designers

Iteration

Key Point: Product development is highly iterative between problem and solution space, as the feature concept is iteratively refined. PMs own "problem space" and support "solution space."

EXAMPLE WORKFLOW CONTEXT: RESTAURANT RESERVATION PRODUCTS

"FOOD AND DRINK PICKUP" PRODUCT FEATURE IN RESPONSE TO COVID-19 PANDEMIC

- Example Context: COVID-19 Restaurant Reservations
  - Restaurant reservation products implemented "food pickup" shortly after COVID-19 shutdowns
  - Resy converted reservations feature to pickup order reservation. Select a meal, choose pickup time, and pay all on platform.
  - Tock To Go launched for existing and new Tock customers, allowing customers to reserve and purchase restaurant meals for pickup or delivery and charges the restaurant a fee of 3 percent per order
  - Yelp Waitlist converted to a pickup order waitlist that was very popular in big cities like NYC.
- Example Firm: OpenTable (we will be OpenTable)
- Example New Product Feature: "Food and Drink Pickup"
  - Product Category: Restaurant Reservation Products
  - Customer Need: "Want to eat out but can't dine in"
  - Product Feature: "Food and Drink Pickup"

OpenTable®

yelp reservations

RESY

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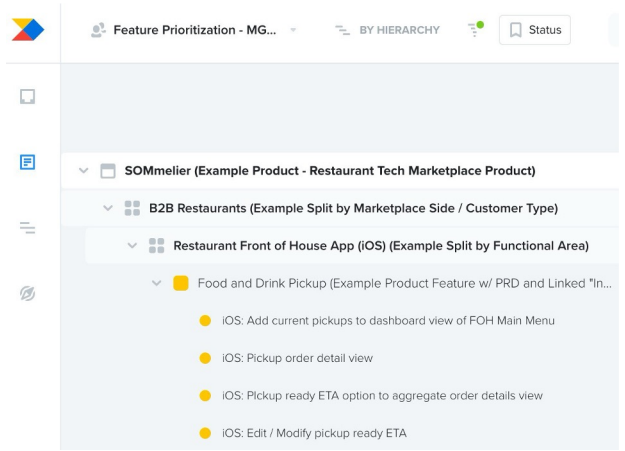
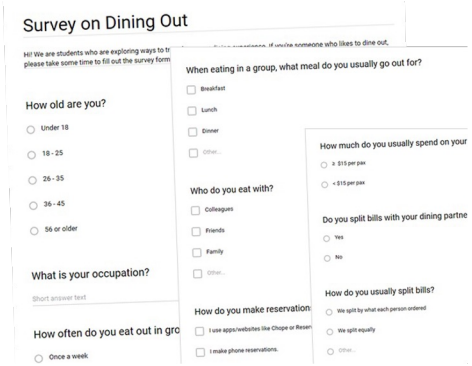


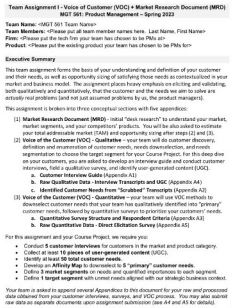
Problem space: customer needs identification + downselection

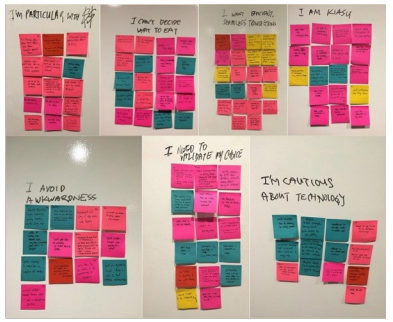


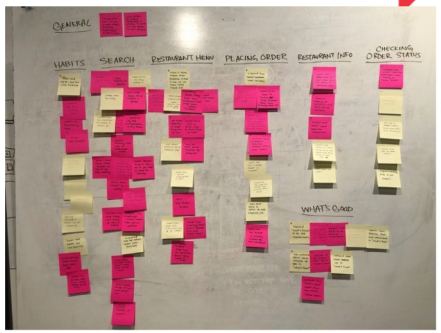
Customer Interviews & Qualitative Surveys

<u>Corresponding Team Assignments</u>

- Market Research Document (MRD) + Voice of the Customer (VOC)
  - Interview Guide
  - 5 Customer Interviews
  - Affinity Map







Customer Needs Downselection and Affinity Map

"Primary" Customer Needs

Control the rate of new pickup orders if kitchen is overwhelmed Control the expectation of tipping food delivery drivers
Easily cancel and refund takeout orders
Seamless communication and experience for customer food orders at our restaurant

Ensure food orderers feel safe and protected against COVID-19 Personalized communication with food orderers

Ensure restaurant employees are and feel safe and protected against COVID-19 Minimize "no shows" for restaurant pickup orders and reservations
Demand forecasting of restaurant menu items

Know who and when repeat food diners/orderers sit or order fro m us

Credit: Damian Hong2

PROBLEM SPACE: NEEDS PRIORITIZATION AND SEGMENTATION

Need Prioritization

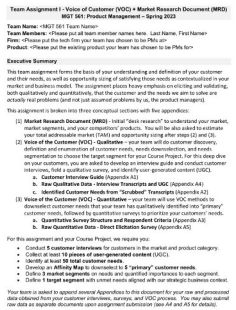
- Input: 0 “Primary” Customer Needs
- Quantified importance of the 10 primary needs
- Direct Elicitation Survey

Segmentation on Primary Needs

- Segment customer needs, not demographics or other variables that don’t correlate with the problem we are solving.

Corresponding Team Assignments

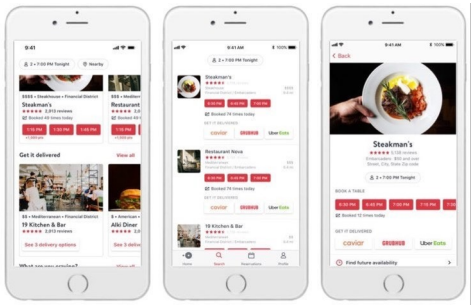
- Market Research Document (MRD) + Voice of the Customer (VOC)
  - Voice of the Customer – Quantitative
  - “Direct Elicitation” Survey



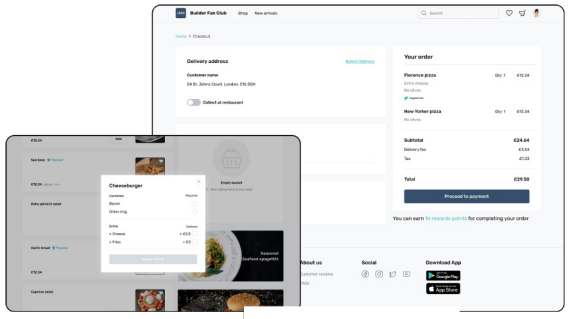
Primary Customer Need	Need Importance
Control the rate of new pickup orders if kitchen is overwhelmed	2.498
Control the expectation of tipping food delivery drivers	2.192166667
Easily cancel and refund takeout orders	2.129833333
Seamless communication and experience for customer food orders at our restaurant Ensure food orderers feel safe and protected against COVID-19	2.118166667
Personalized communication with food orderers	1.984166667
Ensure restaurant employees are and feel safe and protected against COVID-19	1.762
Minimize "no shows" for restaurant pickup orders and reservations	1.7395
Demand forecasting of restaurant menu items Know who and when repeat food diners/orderers sit or order from us	1.622833333
	1.617833333
	1.611166667

PROBLEM SPACE: COMPETITIVE ANALYSIS

- Competitive Analysis
  - Who are our competitors?
  - What are they doing to address the primary need(s) we have identified?
  - What product features satisfy the need?
  - (Screenshots and Customer Journey)



yelp reservations



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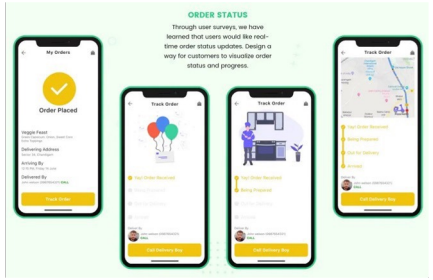
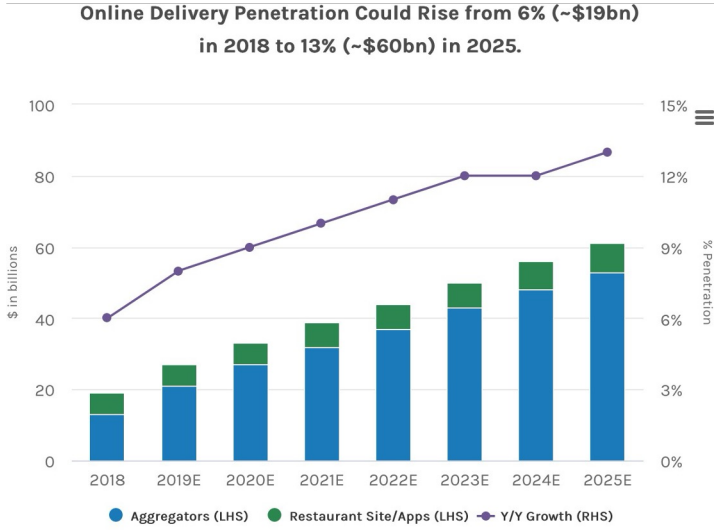
<u>Include these analyses in your final project!</u>



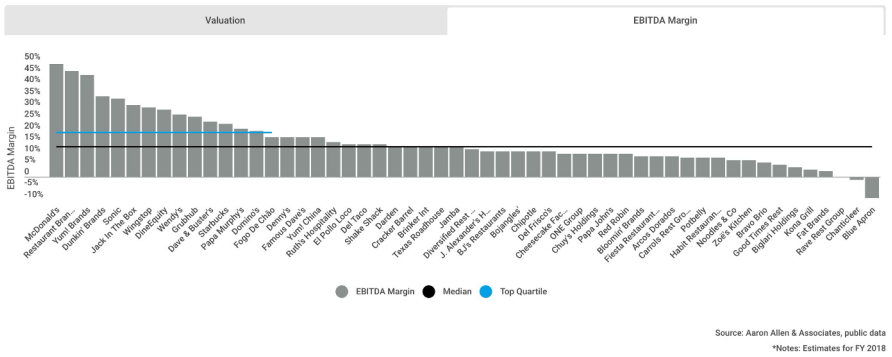
RESY

Problem space: total addressable market (TAM) estimation, opportunity sizing, and market segment targeting

- Total Addressable Market (TAM) Estimation
  - What is the total size of the potential opportunity if we address this need(s).
- Opportunity Sizing
  - What is the opportunity size if we address this unmet primary need(s)?
  - What are our competitors doing, and how well are they satisfying the unmet primary need?



Source: Morgan Stanley Research



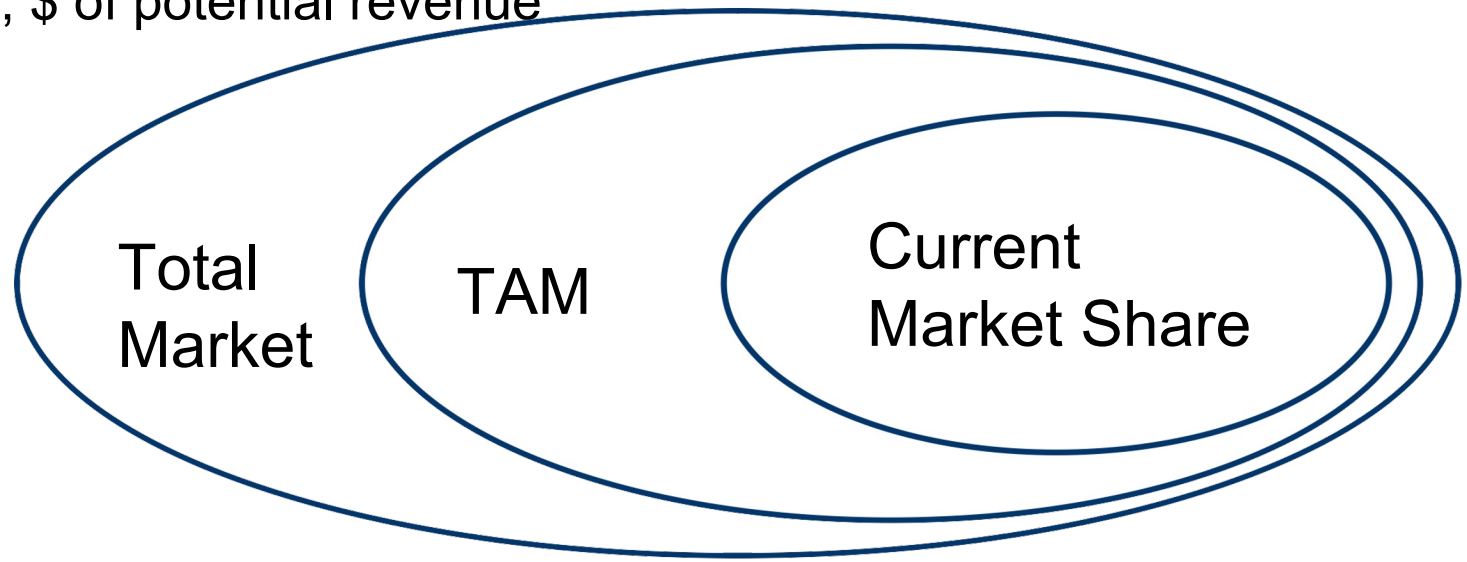
Source: Aaron Allen & Associates, public data

Problem space: total addressable market (TAM) estimation, opportunity sizing, and market segment targeting

- Total Addressable Market (TAM) Estimation

- The estimated size of the addressable market

- # of potential consumers, $ of potential revenue



Common problem with TAM: Unrealistic scoping

- Common problem with TAM estimation (1/2): estimating TAM boundary beyond the “validated” segment of customer needs
  Solution: scope down the TAM boundary to the customer needs segment we have validated using Voice of the Customer (next few classes)

- Common problem with TAM estimation (2/2): estimating TAM based on the size of platform or product category
  Solution: estimate TAM based on the attainable customer need(s) segment

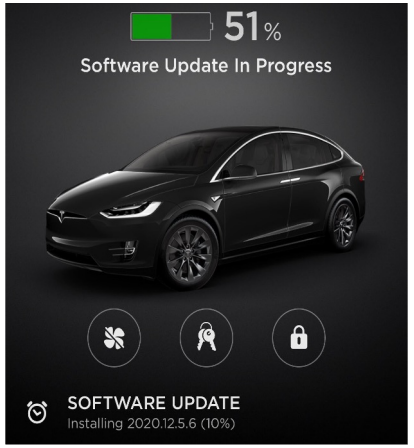
caviar

GRUBHUB

UBER eats

More Realistic TAM Scoping

- For a given target market segment and (validated) customers and their needs
- For a given timescale
  (Long-term forecasts often very wrong due to product- market co-evolution)
- For a given product and its supply/demand constraints
  (e.g., are we entering a supply-constrained marketplace? You will do this today in class.)



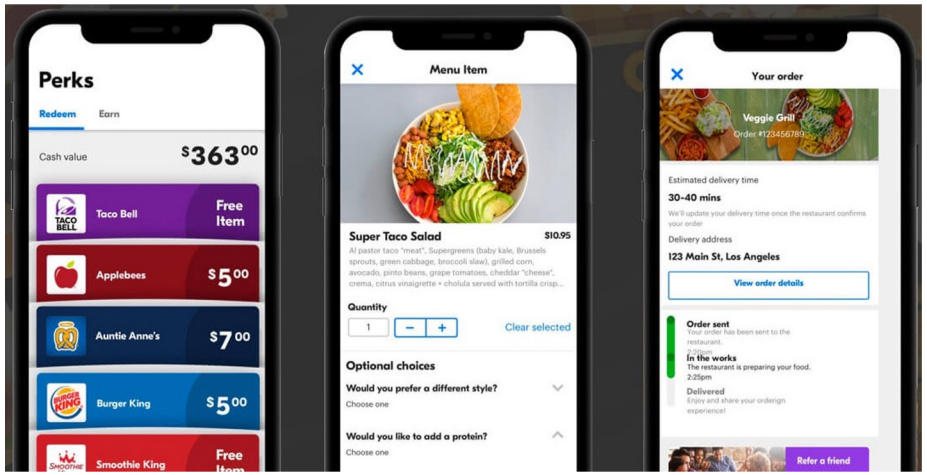
GRUBHUB caviar UBER eats

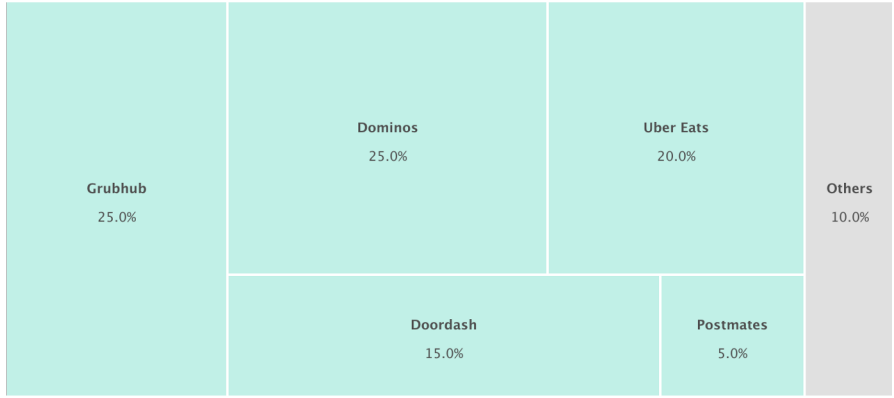
In-class exercise: food delivery apps

- Your team will choose a food delivery platform.
  - GrubHub
  - Caviar
  - Uber Eats

- Today, over 50% of U.S. has used a food
delivery app.

- But you will answer questions on TAM based on the early stages of each firm!





In-class discussion: GrubHub, Caviar, Uber Eats

Pick a (successful) food delivery product

- GrubHub
- Caviar
- Uber Eats

Context: Early-stage of each product
Who were the initial customers?

Question for team discussion
How would you estimate your initial TAM?

Note: Use the internet to search for any relevant facts and data.

GrubHub

Did not have own delivery drivers (initially) Initial customers needed existing delivery.

Caviar

Targeted most exclusive restaurants in San Francisco that did not deliver
Had own delivery bikers

Uber Eats

Late entrant to food delivery (2014)
Uber (parent firm) already in many major metros. Focused on big chains: McDonalds, Starbucks

All:

Food delivery is geographically constrained.
Need ~100 restaurants in major metro to "tip the market" for consumers

Sidenote: How things are today? GrubHub, Caviar, Uber Eats

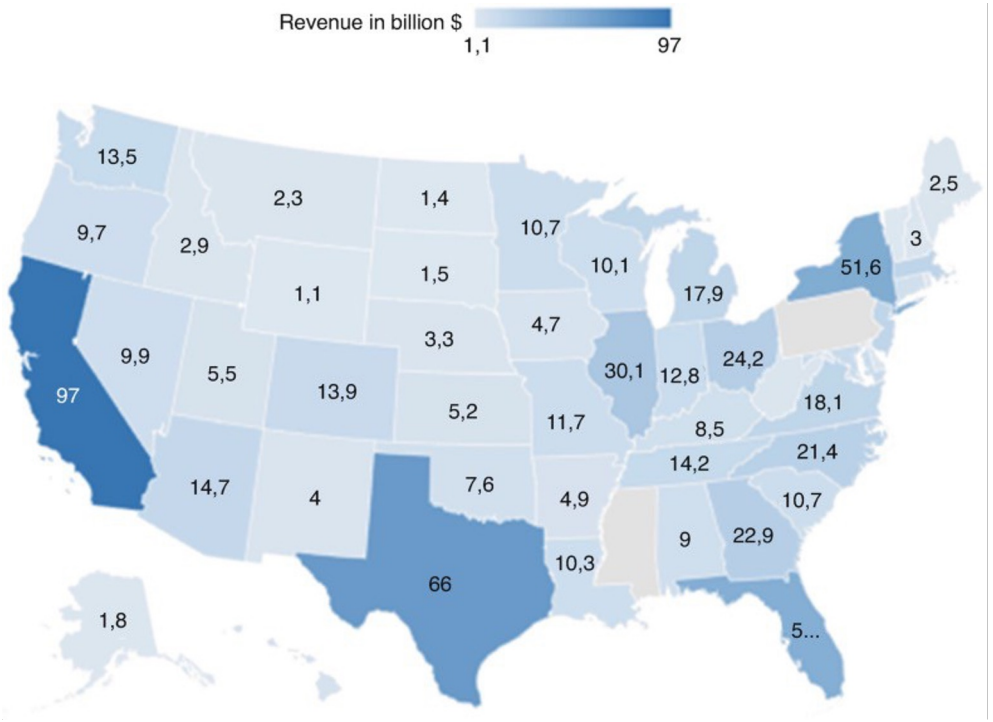
Restaurant industry in United States

- 1 million+ Restaurants in U.S.
- $863 Billion revenue in 2019
- ~4% GDP of United States
- $28 billion revenue from delivery
- GrubHub had $1.8 Billion in Revenue in 2020. But net loss of $155 Million.

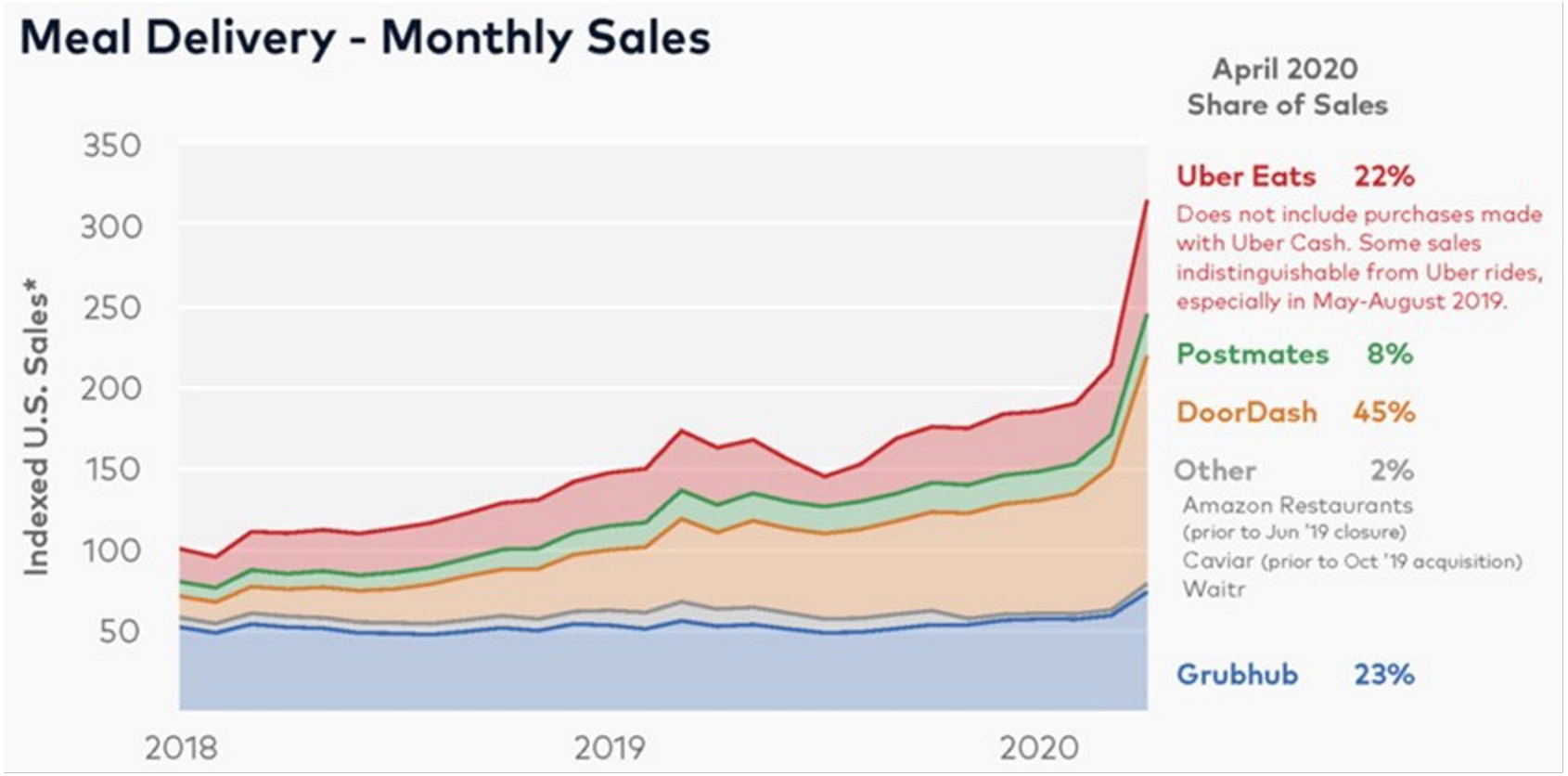
Source of Jobs

- 1 in 10 adults work in restaurant industry
- 6 in 10 adults have worked in restaurant industry at some point.

Source:
https://www.restaurant.org/Downloads/PDFs/Research/SOI/restaurant_industry_fact_sheet_2019.pdf



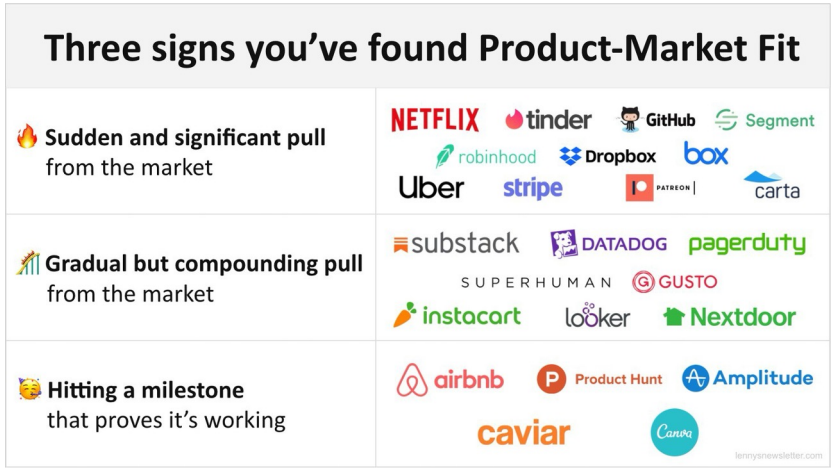
SIDENOTE: HOW THINGS ARE TODAY? GRUBHUB, CAVIAR, UBER EATS



DEFINITION: PRODUCT-MARKET FIT (PMF)

Question: What is product-market fit (PMF)?

Question: How do you know when your product has product-market fit (PMF)?



Product-Market fit (PMF) - Product is known by customers in TAM, product's features satisfy customer needs to give "value" to customers, and customers choose (or retain) our product versus competitors.

Company	Example "Value" Metric (to customer)	Frequency
Instagram	Check Feed	Day
Uber	Book Ride	Week / Month
Credit Karma	Check Credit Score	Quarter / Year
AirBnB	Book Room	Month / Quarter
Yelp	Search for Review	Week / Month

PRODUCT-MARKET FIT CAN BE MEASURED QUALITATIVELY

"How would you feel if you could no longer use this product?"

- "very disappointed" without your product
- "somewhat disappointed" without your product
- "not disappointed" without your product

"Predictive of Product Market Fit"

- Answering "somewhat disappointed" or "very disappointed" suggests you have PMF

Company	"Value" Metric (to customer)	Frequency
Instagram	Check Feed	Day
Uber	Book Ride	Week / Month
Credit Karma	Check Credit Score	Quarter / Year
AirBnB	Book Room	Month / Quarter
Yelp	Search for Review	Week / Month

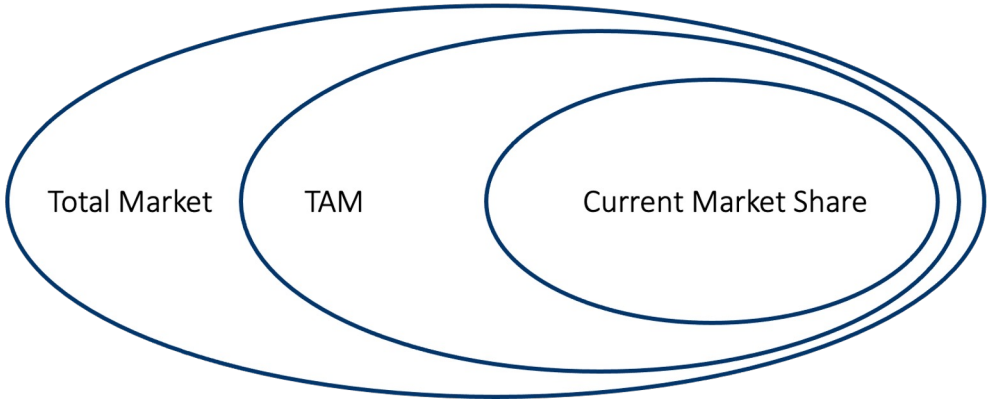
PRODUCT-MARKET FIT CAN BE MEASURED QUANTITATIVELY

- PMF can be measured quantitatively by a product's "**value**" metric to customers
- "**Value**" metric depends on your product!
- However a general quantitative metric of PMF is the customer "**retention**" curve
- Retention curve is consumers' **retention metric over time**.
- Retention Metric is **Ratio** of: "Value" Metric and Frequency
- Your product has product market fit (PMF) if "**Retention Curve**" plateaus

Company	"Value" Metric (to customer)	Frequency
Instagram	Check Feed	Day
Uber	Book Ride	Week / Month
Credit Karma	Check Credit Score	Quarter / Year
AirBnB	Book Room	Month / Quarter
Yelp	Search for Review	Week / Month

Product-Market fit is a continuous metric

"Product/market fit isn't a one-time, discrete point in time that announces itself with trumpet fanfares. Competitors arrive, markets segment and evolve, and stuff happens—all of which often make it hard to know you're headed in the right direction..." - **Ben Horowitz (a16z)**

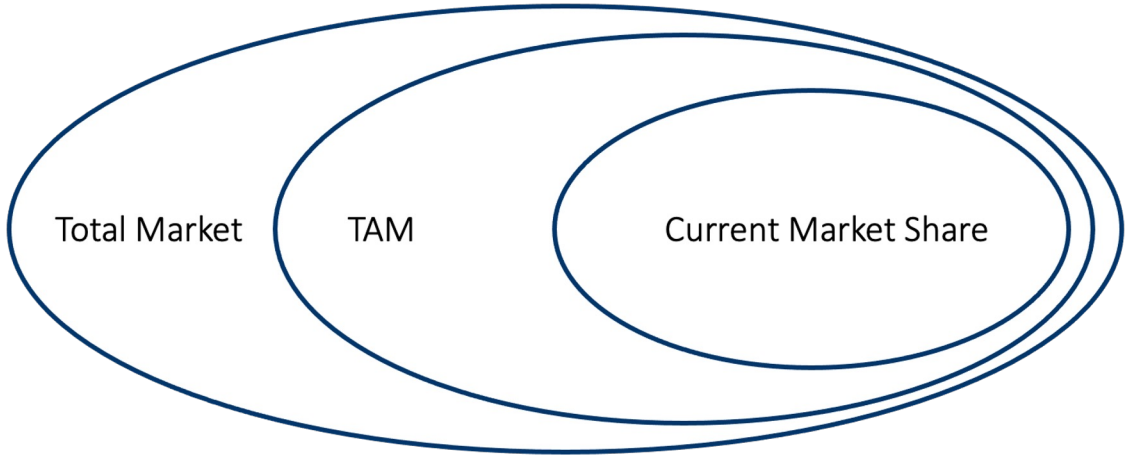


As a new PM, you will likely join a firm with existing PMF (and existing customers).

This is why we ask you to choose an existing firm in your Course Project.

Product-Market fit (PMF) - Product is known by customers in TAM, product's features satisfy customer needs to give "value" to customers, and customers choose (or retain) our product versus competitors.

Firm Stages Goals for PMF: for new products / startups - achieving initial product-market fit is the goal for a given TAM

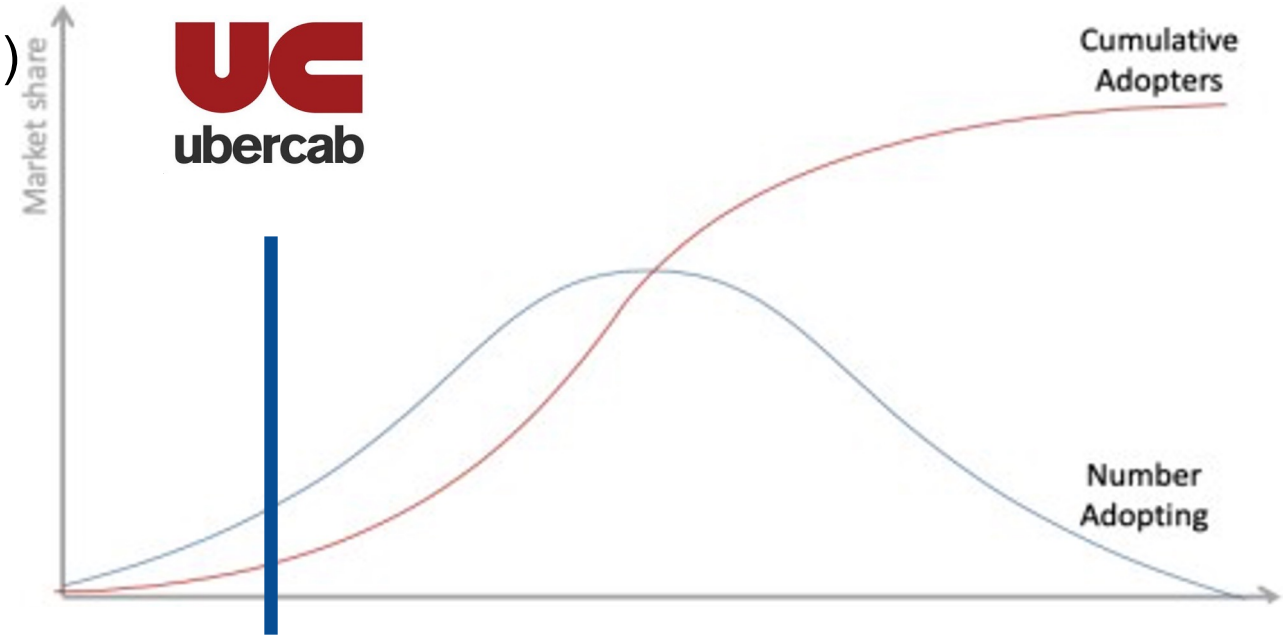


Product-market fit (PMF) - Product is known by customers in TAM, product's features satisfy customer needs to give "value" to customers, and product gives more "value" to customers in TAM than competitors so that customers choose (or retain) our product.

Firm Stages Goals for PMF: Initial Product-Market Fit

Example: Uber Cab

Total Addressable Market (TAM)



Source: Bass (1969) A new product growth model for customer durables.

Early product goal: Achieve initial PMF via minimal set of product features.

Initial PMF does not mean we have the best product.

NEXT STAGE: IMPROVING PMF VIA BETTER PRODUCT FEATURES

- Customer is a bundle of needs importances.
- Product is a bundle of features and how they satisfy needs.
- Improving “value” to customer improves product-market fit (PMF).

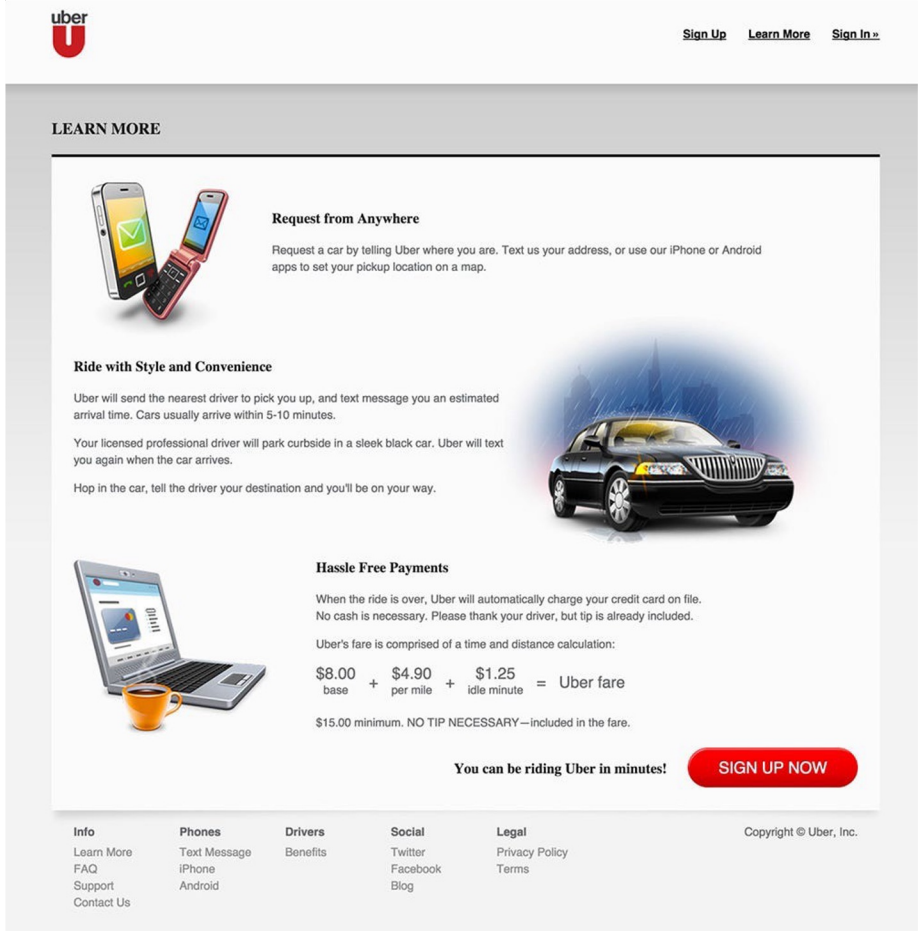
EXAMPLE: UBER (2010-PRESENT)

UberCab (2009) Product Features

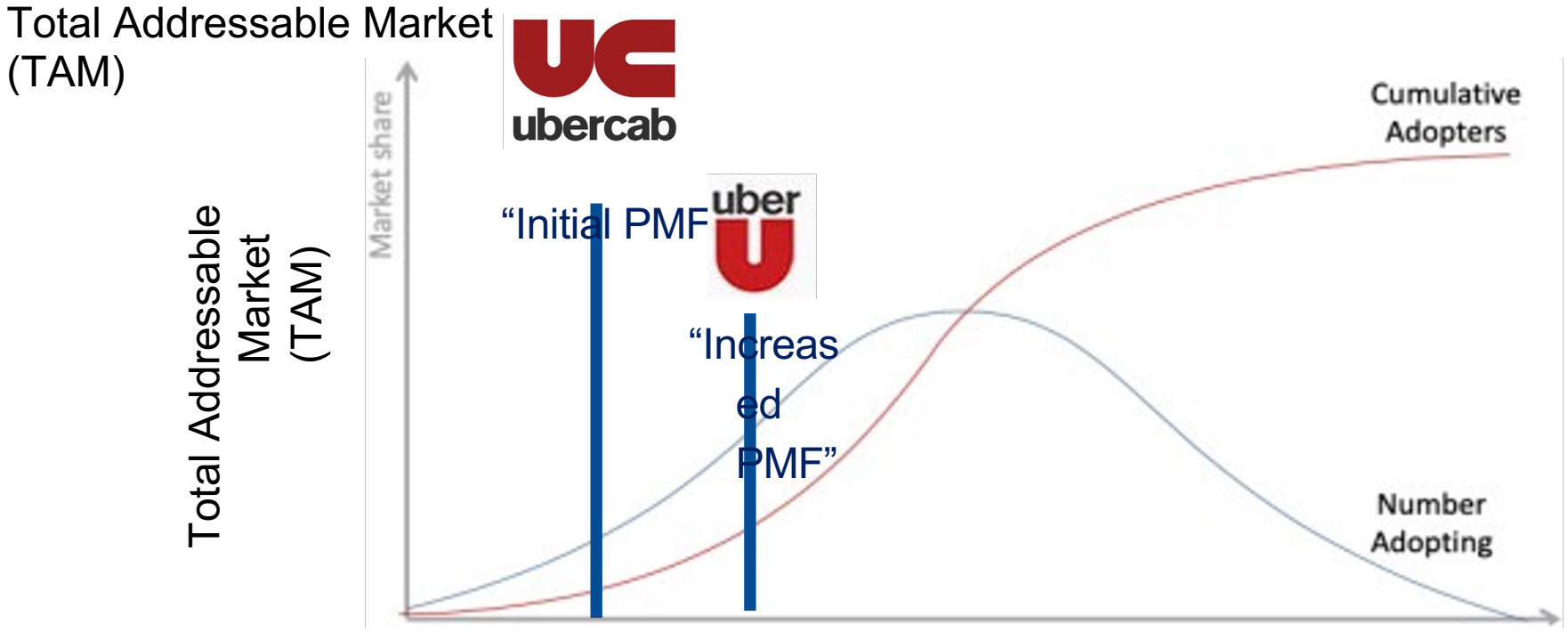
- Request a ride
- Maps
- Login/Registration
- Fare Calculator
- Automatic payment
- Driver GPS tracking
- Push Notifications and SMS

Uber (2010-Present) Product Features

- Driver profile and ratings
- Surge pricing
- Split Fare
- Scheduled Rides



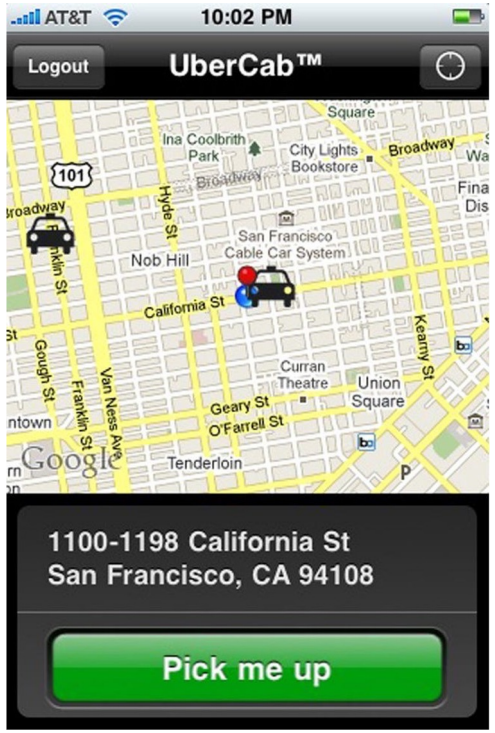
Uber achieved initial and then increased product-market fit, leading them to focus on "growth" stage of product diffusion

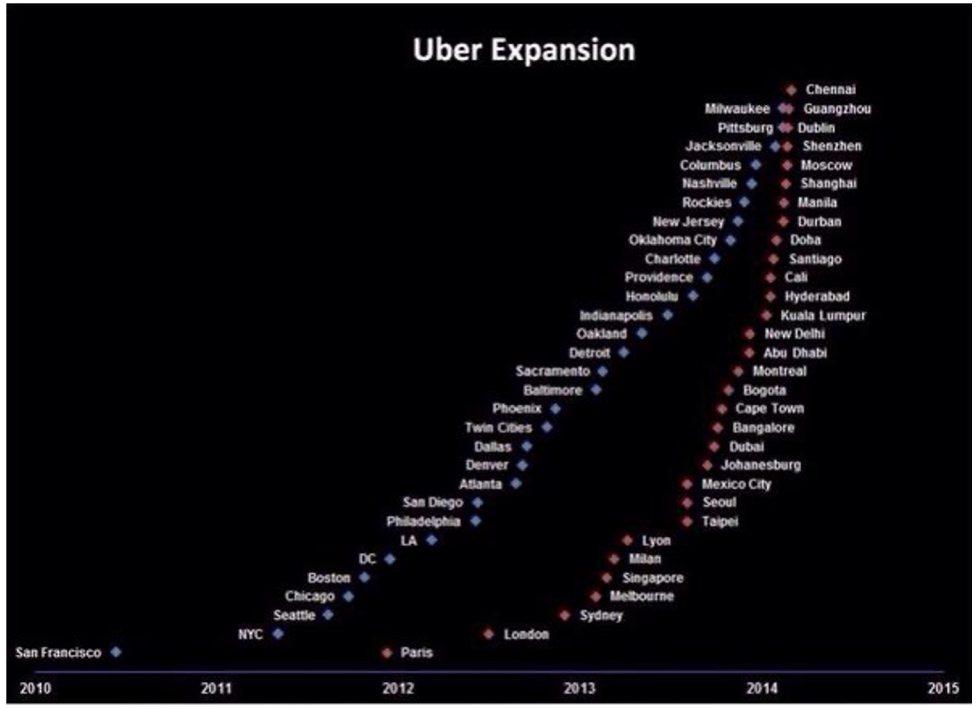


Takeaway: Your product and company can not "grow" without sufficient initial product-market fit (PMF). (Yet companies do this all the time!)

Source: Bass (1969) A new product growth model for customer durables.

EXAMPLE: UBER





Initial PMF: Which product features achieve or increase value of product to customers?

Growth: Which markets should we attack during growth? Which features will help supply-side growth to dominate the competition?

In-class discussion: GrubHub, Caviar, Uber Eats

Pick a (successful) food delivery product

- GrubHub
- Caviar
- Uber Eats

Context: Early-stage of each product
Who were the initial customers?

Question for team discussion
What is the PMF of the delivery app, at the early stage vs. now?

Note: Use the internet to search for any relevant facts and data.

Carnegie Mellon University
Tepper School of Business

GrubHub

Did not have own delivery drivers (initially) Initial customers needed existing delivery.

Caviar

Targeted most exclusive restaurants in San Francisco that did not deliver
Had own delivery bikers

Uber Eats

Late entrant to food delivery (2014)
Uber (parent firm) already in many major metros. Focused on big chains: McDonalds, Starbucks

All:

Food delivery is geographically constrained.
Need ~100 restaurants in major metro to "tip the market" for consumers

EXAMPLE WORKFLOW: PRODUCT DEVELOPMENT PROCESS (IN THIS CLASS)

- "Problem Space" - Pre-Launch of Product Feature
  - Customer Needs Identification
  - Customer Needs Downselection to Primary Needs
  - Measuring "Importance" of Primary Needs
  - Needs prioritization and segmentation
  - Competitive analysis, total addressable market (TAM) estimation, opportunity sizing, and Targeting
  - Product Requirements Document (PRD) and User Stories

Example workflow: How a PM works with engineers and designe to develop and launch a product feature

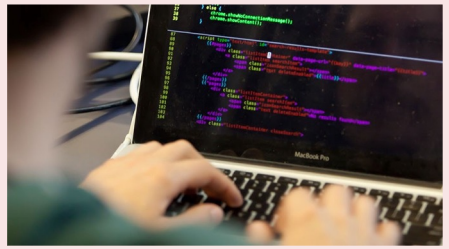
Problem Space (Product Manager)

- Problem Definition
  - Voice of Customer / Customer Discovery
  - Customer Needs Prioritization
  - Customer Needs to Product Features
  - Feature Prioritization + Roadmapping
- "Solution" Definition
  - Requirements Definition
  - Product Requirement Document (PRD)
  - User Stories
  - Launch + Testing Plan

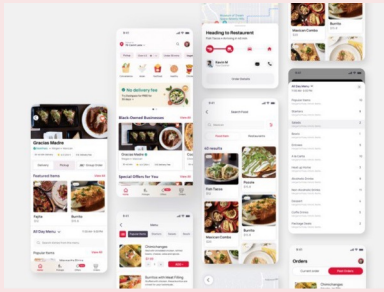
PRD with "User Stories"

Iteration

Solution Space (PM + Eng + Design)



Engineers



Designers

Iteration

Key Point: Product development is highly iterative between problem and solution space, as the feature concept is iteratively refined. PMs own "problem space" and support "solution space."

Product requirements document (PRD): to communicate problem space to engineering and design and iterate on solution defintion

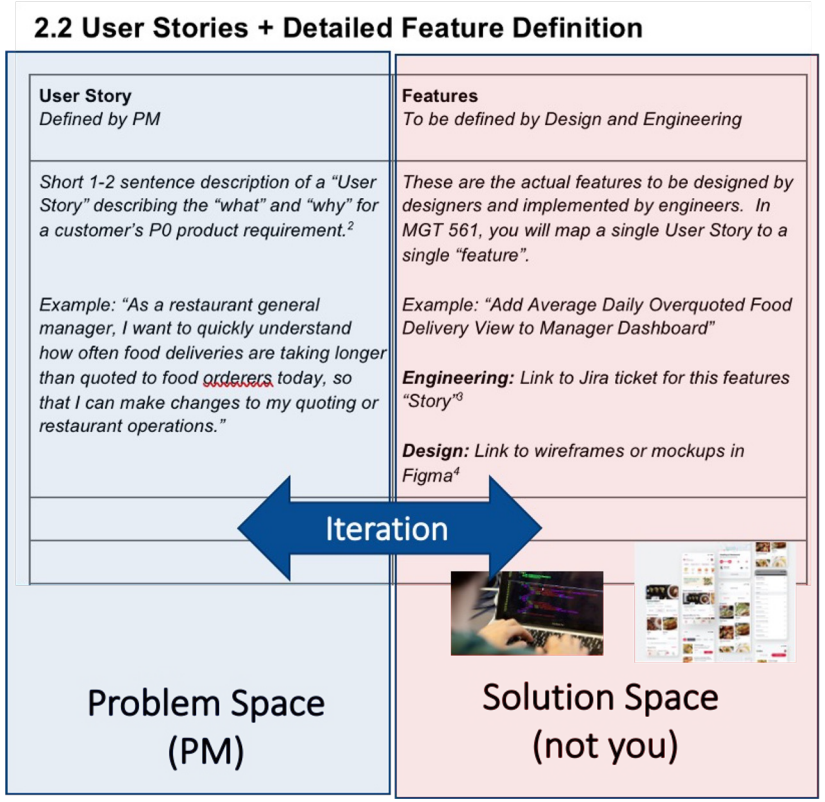
- Product Requirement Document (include this in your final project!)
  - Document for a single product feature
  - Details the problem space, solution space, testing and launch plan.
  - Details the customers we are targeting, and evidence that this actually a real customer problem/need and business opportunity.
  - Document varies significantly across companies
- Goal
  - Cross-functional alignment across product, engineering, design, marketing/PMM/Go-to-Market (GTM)
  - Tool for communication and source of truth for why
  - Iterative, living document across functions
  - "Problem Space" justification with "Solution Space" scoping, not how to implement the feature itself
- Not the Goal
  - PM "handoff" to engineering/design/marketing/PMM
  - This is how PRDs sometimes get a bad name.

"User stories" defined in the product requirement document (PRD)

Example User Story:

Customer Need (in form of "User Story")

"As a restaurant general manager, I want to quickly understand how often food pickups are taking longer than quoted to food orderers today, so that I can make changes to my quoting or restaurant operations."

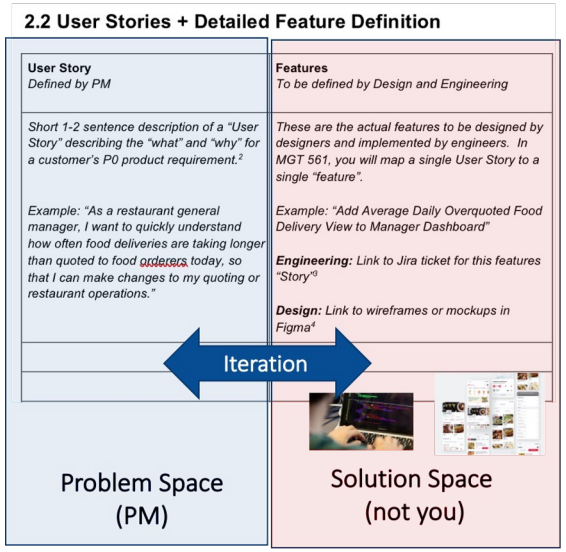


(Blue): "User Story" written by PM

(Red) : Details solution by Design and Engineering

“Solution Space”: iterative process between PM, design, and engineering

- Moved to “Solution Space”
  - We have already identified customer needs, business opportunity, firm strategy, etc.
- “Solution Space” has multiple stakeholders
  - “Solution space” designers and engineers have primary role
  - PM is only one stakeholder, and often of a ”clarification” role now.
- Engineering + Design Solutions “Syncs”
  - Participants: PM, Engineering Lead, Design Lead



Recap: Problem definition and "solution" definition

- Problem Space
  - **Primary responsibility of you as the PM**
  - What are the customer's primary needs / problems? How "painful" or "important" or "impactful" are those needs?
  - How did we validate it was a "real" customer need vs something we as the PM assumed is a real need? (e.g., Simplisafe vs BeOn)
  - What is the reach? How many customers does the need affect in the total addressable market (TAM)?
- Solution Space
  - **Responsibility of PM is to communicate "problem space" to "solution space" designers and engineers**
  - "User Stories" for communicating problem space
  - Pre-launch of product feature, the PM is often just a "clarification" role for development questions
  - Post-launch of feature, the PM is often involved in tracking metrics and experimentation to measure feature "success"

1. Problem Definition

1.1 Customer Problem

In a short paragraph, describe the problem you are trying to solve for the customer(s). Why does this matter to your customers and business? This is the first paragraph stakeholders see, and should be able to read this alone and grasp the consumer needs/value proposition/risks.

1.1.1 Customer(s) Journey

Share the current customer journey for a customer in each of your defined cohorts to paint a picture of what life looks like for customers today as it relates to the overall customer problem. Describe the use case(s) (and any workarounds).[1]

1.1.2 Problem Impact / Customer Need Importances

How badly does this problem impact each of your customers (need importance)? Do different cohorts have different use cases affected by the problem, time scales, or need importance?

***Important:** Please relate your justification of problem impact in part to the customer needs from your Voice of the Customer (VOC) analysis (detailed in **Appendix A1**), their relative importances, and how this varies across cohorts.*

[1] While the Customer Journey may include interaction with your existing product (or competitors), it should not include your solution; only the problem context (who, what, when, how often) of your customer.

2.2 User Stories + Detailed Feature Definition

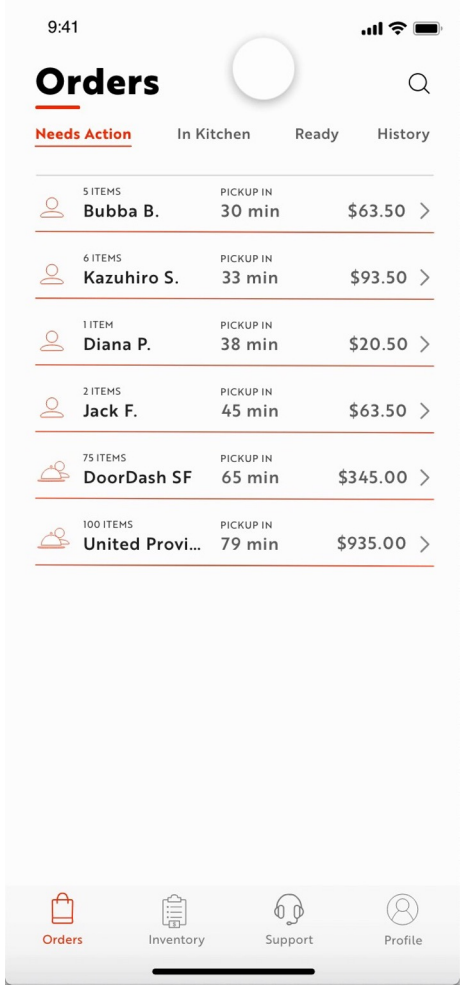
User Story *Defined by PM*	**Features** *To be defined by Design and Engineering*
Short 1-2 sentence description of a "User Story" describing the "what" and "why" for a customer's P0 product requirement.[2] *Example: "As a restaurant general manager, I want to quickly understand how often food deliveries are taking longer than quoted to food orderers today, so that I can make changes to my quoting or restaurant operations."*	*These are the actual features to be designed by designers and implemented by engineers. In MGT 561, you will map a single User Story to a single "feature".* *Example: "Add Average Daily Overquoted Food Delivery View to Manager Dashboard"* ***Engineering:** Link to Jira ticket for this features "Story"*[3] ***Design:** Link to wireframes or mockups in Figma*[4]

EXAMPLE WORKFLOW: PRODUCT DEVELOPMENT PROCESS

- POST-Launch of Product Feature
  - Product Metric Tracking
  - Hypotheses Definition and Experiment Setup
  - A/B Testing
  - Go-to-Market (GTM) Rollout

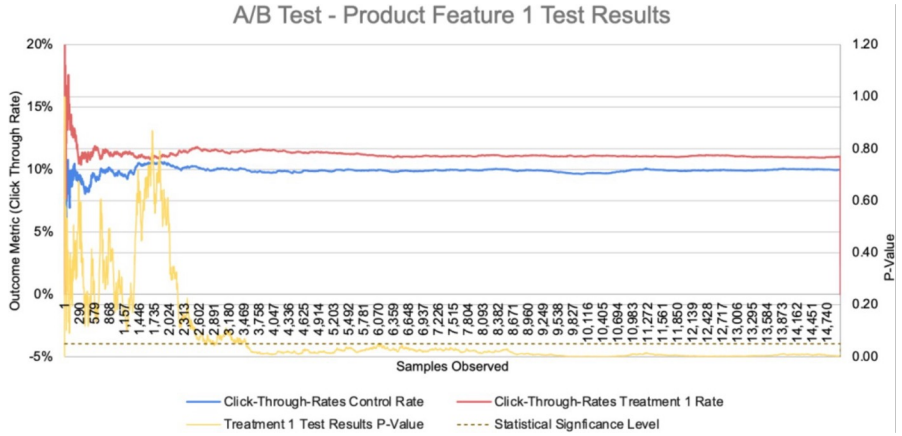
POST-LAUNCH: TRACKING PRODUCT METRICS

- What are the key metrics of “success” for the feature?
  - Primary metrics?
  - Secondary metrics?
- Example Metrics
  - Average Number of Food Pickups per Week
  - Average Delivery Time
  - Average Quoted Delivery Time
  - Avg. Number of “Order Tab Clicked On” (event) per session.

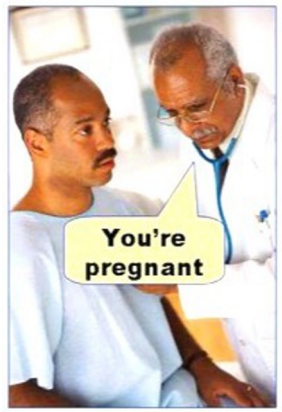


POST-LAUNCH: EXPERIMENTATION AND A/B TESTING

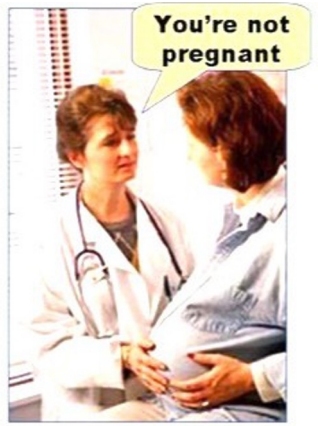
- Experimentation
  - What is the correct way to "randomize" amongst our customers?
  - Which markets are we launching in?
  - Do we need to consider "marketplace" effects? (e.g., increased food pickups decreases number of food deliveries)



- A/B Testing
  - How many samples do we need?
  - How long should we run our A/B test?
  - What is considered "success"? What is considered "statistically significant"?



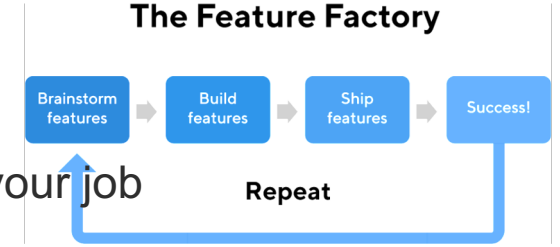
False Positive



False Negative

NOTE: COURSE PROJECT IS GRADED PRIMARILY ON "PROBLEM SPACE"

- Course Project
  - We will work primarily on the "problem space"
  - Today's class (hopefully) convinced you "solution space" not your job



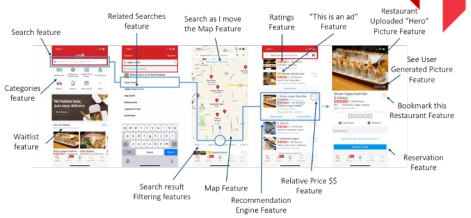
- PM "brainstorming" what is "needed" is #1 company killer.
  - Are these actual customer needs, or did we "think them up"?
  - How did we validate they were true customer needs across our TAM?
  - How "painful" or important is the need? Did we measure this?
  - Did we try testing that they were not customer needs?

- Be a GOOBer (Get Out Of the Building[1]). Ask your customer why? why? *why*?
  - It is natural for us as human beings to begin thinking with solutions in mind (see "Analogical reasoning"[2]).

- Blank, Steve (2020). *The four steps to the epiphany: successful strategies for products that win*.
- Vosniadou, Stella, and Andrew Ortony, eds. (1989) *Similarity and analogical reasoning*.

TODAY'S LEARNING OBJECTIVES

- Basic Definitions of Product Management Concepts
  - Product and Product Features
  - Customer and Customer Needs
- "Where are PMs in the company and who do they work with?"
  - The PM in the Product Organization
- Example: "Full Workflow: How a PM helps launch a new product feature"
  - "Problem Space": Customer Discovery and Needs, Opportunity Sizing and Prioritization
  - "Solution Space": "How a PM works with engineering and design to launch a new feature"
  - Post-Launch: Experimentation and Testing
- More definitions
  - Product-Market fit
  - Total Addressable Market (TAM)



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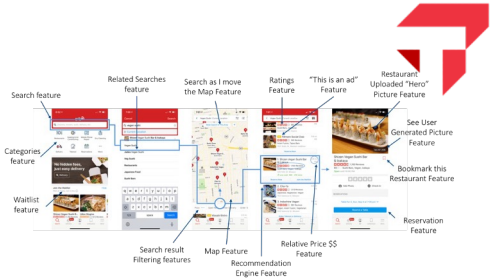
Next Week



Guest Lectures: PM Roles

- Section A: **Smitha Murthy**, CEO, Beagle Security
- Section E: **Achuth Rao**, Chief Product Owner and Vice President of Product Management, ADP Data Cloud

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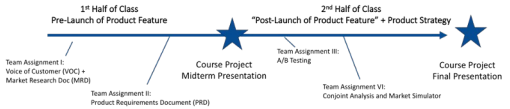
Topic: Customer Needs 1



- Case Assignment 1 due: Uber
- Pre-class reading: R2 (See Canvas or syllabus)
- Topic presentation: Team 1 (See Canvas)

  All the teams should watch the videos before coming to the class!