Northwestern

Entrepreneurship KIEI 458, MEM - 490, IMC - 490, Farley - 490
Product Management for Technology Companies:
An Entrepreneurial Perspective
Fall Quarter 2020
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Overview of Product Management

Two defining characteristics of the technology industry are its dynamic nature and the inter-connected nature of technology products and services. This results in a continuous need for new products—and for managing all of the aspects of discovering, designing, developing, supporting and making money from these products. In technology[1] companies, the Product Management organization is responsible for the "inbound" product development activities as well as "outbound" product marketing activities: discovering customer needs, defining product requirements, orchestrating the development of products and solutions to address these needs, taking new products to market and managing products over their life cycle. In a technology startup, a Product Manager is often a co-founder of the firm. Larger technology firms have specialized Product Management organizations consisting of various types of product manager roles, including Product Managers, Product Marketing Managers, Product Planners and Program Managers.

This course equips students with the frameworks, tools and direct experience to become effective product managers. The course focuses equally on product management in technology startup firms and product management in large technology firms. Students will gain hands-on experience via an internship-oriented project and targeted cases—including several cases developed specifically for this course[1].

What is Product Management?

Product Managers (PMs) can have a big impact on a technology company's performance. PMs define a product's functional requirements and then lead a team responsible for its development, launch, and

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[1] In this course, we will focus primarily on Communication Technology firms, because the Communication Tech industry has unique characteristics, such as the importance of platforms and ecosystems, which are not as relevant in other technology domains like bio-tech and clean-tech.

ongoing improvement. Practices in Product Management aims to understand the PM role and develop skills required to perform the role by addressing the following issues:

- What is a PM? Why are they necessary in Companies, Start-ups? Are they a mini-CEO?
- What does a PM do and with whom do they work at different stages of the product life cycle?
- What techniques do PMs use to understand customer needs and validate demand for a product?
- What does a PM need to know about user experience design?
- Why do some tech companies require PMs to write detailed product specifications?
- How do I organize and execute my product build?
- What does a PM need to know about technology, e.g., model-view-controller architecture?
- How do I become the CEO of a problem and sell my product vision?

Bio – Birju Shah

Birju has built over 20 products used by 2 billion people worldwide with an attributed total market cap value over $3B. He started and sold his own companies, worked at large tech companies at early and mature stages, and turned around tech companies via private equity buyouts.   You can use most of his products today. Example products include:

- Agriculture: Climate Corporations Fieldview Drive used by 60% of all farmers in the US
- Healthcare: Google [x] healthcare devices (smart contact lens, cancer cuff, baseline study)
- Maps: Google Maps Navigation ETA, Google Maps Engine Cloud
- Agriculture: Climate Fieldview Yield Analysis, the #1 farming application on the ipad
  Ridesharing: Uber's pickup & dropoff experience.   The blue dot you see in all map apps.
- Healthcare: A diabetes management platform and first cloud based medical record system
- Enterprise: Arrowstream's OnDemand Restaurant Procurement Platform
- CPG: Flavia Coffee Machine & My M&M custom products

Currently, Birju is the product lead for Uber Health and the previous product lead for Uber AI

Overview of Class:

Product Management is designed as a 101 course for students who lack prior product management experience and wish to work in that role after graduation. The class goals are simple:: 1) Learn how to launch a product 2) Learn how to obtain a top notch product management job in tech.

Students evaluate user needs, specify functional requirements, and create a vision of how a user would experience their product. Students attend weekly sessions featuring skill-building exercises with deliverables due every week on what would be a typical product process at a tech company.

Students enrolled in start-up classes, like NUvention, will find this course teaches you the tools, process, and will power to build a scalable product.   However, this does not replace NUvention which will teach you everything you need to know to launch a business (different than product!).

Although this class teaches content that is heavily focused on web and mobile applications, this should not discourage other individuals interested in building other products/services.

1. Learning objectives

The overall goal of the course is to prepare students to become effective product managers and product marketers in a startup firm or in a larger technology company by developing:

- A comprehensive understanding of the **role of Product Management** in a technology company and the **responsibilities** of Product Managers in various contexts, considering product characteristics, industry, firm size and market maturity.
- A firm grasp of the **strategic frameworks** and **tactical tools (deliverables)** that form the foundational skills for product management.
- The ability to apply these product management skills to their own start-up idea in a team based format

Specific learning objectives

1) Source and evaluate market opportunities for new technology products. Develop a product strategy and product vision for viable opportunities, based on corporate objectives, capabilities and resources, market trends, technology feasibility, etc.

2) Manage the iterative *product discovery process* to discover, define and prototype a *Minimum Viable Product* that will capitalize on the opportunity. Articulate market requirements associated with the Minimum Viable Product for Engineering and the broader cross-functional Product Team.

3) Assess and design a business model for a product that will optimize revenues and profitability of the product over its life cycle

4) Manage and lead a cross-functional product team, typically without direct authority

5) Develop and execute a product launch plan to take new products to market and drive customer adoption of new products

6) Deliver a "whole offer" that solves a complete customer problem and delivers a compelling customer experience. Design and build an effective partner ecosystem to deliver the desired customer experience.

7) Build a product portfolio to balance risk and return and manage product lines to optimize revenues and profits

8) Manage products as a business on an on-going basis. Drive growth through sales expansion, customer base extensions and product extensions. Manage sun-setting of products at the end of their life cycle

9) Manage the growth and evolution of products and product management from the seed stage to the exit stage in a startup firm.

10) Understand the role of products in professional services firm. Manage the productization of services by leveraging automation and analytics. Shift to consumption-based and value-based monetization models for services.

2. Design Principles:

This course has been designed with the following principles in view:

- The **entrepreneurial perspective**, whereby product managers battle against high odds and deal with high-risk situations

- The **general manager perspective**, whereby product managers think of their products as a business and combine product knowledge with business expertise to drive success.

- Grounded in **actionable frameworks and tools** that product managers can use on their jobs

- **Learning by doing**, through cutting-edge case studies and a company-sponsored project

- **Analytical rigor** and data-driven decision making

- **Continuous improvement**. This course will continue to evolve and improve over time.

3. Pedagogical Style

The pedagogical style will be a hybrid of lectures, cases and guest speakers. The cases and examples chosen for the course will focus on product management topics within informational technology firms.

4. Required Course Materials

The only required materials for the course are the case packet and the materials posted on Canvas. Class notes and assignments will be available for download from the Canvas site for the course. This class is a fully paperless class. All course readings, lecture presentations and assignment submissions will be uploaded electronically in Canvas. ***The class notes are the intellectual property of the instructor. You may not distribute or duplicate these notes without my written consent.***

5. Student Expectations

I expect every student to be *present, punctual, prepared,* and *participative* in all class sessions. Attendance is mandatory for all regularly scheduled class sessions, including the guest sessions. Absence from any class session without prior notification will severely affect your class participation grade. I find late arrivals and early departures from a class session to be very distracting and disrespectful, so please arrive on time, and stay for the duration of the class. Especially on zoom.

Students are expected to be prepared with the assigned readings and cases for each class. I will "cold call" on students to present or defend your viewpoint on the assigned readings or the case, so please be prepared.

Every student is expected to contribute to class discussions. Do not expect to do well in this course by simply coming to class, taking notes, and synthesizing, recalling, or reproducing the material we cover in class. To do well, you must learn from **active participation** in class discussions. In evaluating class participation, I emphasize the **quality** of participation a lot more than the **quantity**. I try to assess how your contributions enhance both the *content* and *process* of a discussion:

- Do your comments merely restate the facts or do they provide new insights?

- Do the comments add to our understanding of the issues or are a frivolous attempt to get "air time"? (i.e., you have only one thing to say, and want to say it no matter how irrelevant it is to the on-going discussion!).
- Are the comments timely and linked to the comments of others?
- Are the comments action-oriented, or simply descriptive statements?
- Do the comments move the discussion along by giving a new perspective?
- Are the comments clear and concise, or obscure and rambling?
- Do the comments reflect a concern for maintaining a constructive and comfortable classroom atmosphere?

Course Deliverables & Evaluation

Team Case Assignments (6% each, for a total of 30%)*:

- Tablet Teach Case
- Amazon Kindle Fire Case
- Motorola Droid Case
- vMock Case
- Kheyti Case

Team Project – Product Management in Action (65%)
This will be a product idea you will take from your current internships that you will do over the 10 weeks of the course. More details of the product follow later in this document. The product will be evaluated in phases

     1) Research Experiment Plan
     2) Market Requirements Document (MRD)
     3) Wireframes for their proposed application
     4) Product Requirements Document (PRD), with detailed specifications & a mock P&L
     5) Reflection essay on lessons learned
     6) Final Vision Presentation

There will be weekly readings (most commonly, blog format) and small assignments due in each session. Students will regularly present work-in-progress in class.

Individual Assignments, Ad Hoc readings & Peer Assessments (5-10% extra credit)

- Business Model Assessment and Critique
- Evaluating a Go-To-Market Plan

Student Participant Requirements

This is a heavy practicum class. One of the key components of this class is your drive & passion around using products. You must be interested in the problem that you are solving, and scaling the solution to

that problem.   All candidates for the class should strongly consider the workload of this class as the goal is to get you a job in product management and make sure you are enabled for success once you land that job.

A project suited for Product Management will fit one of two profiles:

1. Your idea is at an early stage of development. You've done enough customer discovery work to have some confidence that you've identified a real customer pain point, and you have some hypotheses about potential solutions. However, these hypotheses haven't yet been tested and you don't have specifications/preliminary designs in hand.

2. You've already launched your website/application, and you are poised to either design a new version or to add significant new features. You have hypotheses about the new version/features, but you haven't tested the hypotheses nor have you completed specification and design work.

3. You have some experience at a company, had an idea that never made it to market, and want to work on that user pain point in class.

Class Format: Classes will follow this typical format: Recap of last week, lecture, homework template, company examples, and team working sesion time

Prerequisites: You will need a strong idea, strong will power, and propensity/drive/passion to execute a web, mobile, or hardware oriented product. The goal is for you to understand your customers, your product, and how to launch and scale. Marketing & Business classes are good prerequisites. A follow-on class can be NUvention.

Evaluation: Grades will be based on the allocation above

Grading: Letter (ABCD/NP)

Class Modules

Module 1 - Overview of Product Management
We will kick off the course with an overview of the multi-faceted role of product management in technology companies. We discuss what product managers do, what they are expected to know, what they are accountable for and what factors determine a high-performance product manager and product management organization. We introduce the core building blocks for product management that will form the basis for the remainder of the course. In the second session for the week, we will invite a distinguished panel of senior product managers to share their experience "from the trenches". This will give students a good opportunity to experience "life as a PM" through professionals who have spent long careers as product managers or have founded companies.

Module 2 – Assessing Product Opportunities

Opportunity Assessment answers two key questions, "How do we source and identify opportunities?" and "Which opportunities should we invest time and money in?" In this module, we will analyze three dimensions of Opportunity Assessment – Product-Market fit, Product-Company fit, and Product-Business fit. We will discuss the "Jobs to Be Done" framework to define key unmet needs and hence the opportunities for a new product. We will discuss how to organize the opportunity analysis into a recommendation and present the output in an Opportunity Brief. The Opportunity Brief serves as the "business case" for the product and should explicitly provide a "Go/No-Go" recommendation to invest resources and initiate the Discovery process for a specific product (or not).

Module 3 – Discovery & Requirements Definition
After identifying the target product opportunity, the product manager leads an iterative process to *discover, define/ refine and prototype a* 'M*inimum Viable Product' (MVP)* that will capitalize on the opportunity—or identify a better opportunity (a 'pivot').   This discovery and requirements definition process is at the very core of the PM's job because these early product decisions typically define a product's ultimate business success, failure or mediocrity. The primary output from this process should be a customer-proven prototype tested for *functionality*, *usability* and *business viability*. We will discuss the iterative process in getting to the MVP and building a customer-proven prototype. We will also discuss how to describe requirements in the form of user stories and a Market Requirements Document.

Module 4 – Business Model Design
The business model is the mechanism by which the firm generates revenues and profits from a product, service or solution. Technology companies are often better at value creation than value capture. Many startups fail because they are not able to effectively monetize the value that they create for customers. PM's are best positioned to evaluate product, customer, competitive, operational and business inputs to define an effective business model. We will discuss frameworks for defining and diagnosing a business model and we will review popular revenue models for technology products and services (e.g., advertising, subscription, Freemium, etc.). We will conclude with a discussion on business model innovation and how technology startups can change the game with innovative and disruptive business models.

Module 5 – Structure, People and Process in Product Management
Having considered the product and business model definition, we will focus on the "softer side" of product management – the organizational and people issues in effective product management. We will begin by addressing the *structure* of Product Management organizations and the most common organizational design models for product management. We will then address the *process* of Product Development and Management by understanding the difference between traditional Waterfall development and Agile development methodologies. We will discuss how to manage development projects using agile methodologies like Scrum. Finally, we will address the *people management* aspect of the PM's role – how to influence teams without direct authority and how to run meetings effectively. Through a role-playing case study, we will place students in a real-life situation where a Product Manager has to orchestrate a cross-functional team through a crisis.

Module 6 – Taking Products to Market
Product Launch and Product Marketing can make or break a product in the market. In this session, we will focus on the Go to Market (GTM) strategy for a new product. This includes the planning and execution of the Product Launch plan, developing the Positioning and Messaging Framework, developing all marketing collateral and supporting the sales team on strategic client meetings and sales efforts. It also involves choosing the routes to market for the product and execution of the launch activities in

collaboration with the sales, channel and partner organization. We will discuss the end-to-end process of designing and executing an integrated marketing communications plan and leveraging digital and social media to create awareness and drive adoption of new products.

Module 7 – Managing Whole Offers and Partner Ecosystems
A stand-alone technology product rarely solves a complete customer problem. Mainstream customers expect technology companies to create "Whole Offers", which include the core product as well as all the complementary products, services and information needed to create a satisfactory Total Customer Experience (TCE). To create this "whole offer", technology companies need to assemble an ecosystem of partnerships and alliances that complement and enhance their core product. In this module, we will begin by defining the Whole Offer and the Total Customer Experience. We will look at how the Whole Offer evolves over time as the product becomes more widely adopted in the marketplace and as customer needs evolve. Next, we will discuss how to assemble the capabilities needed to deliver on the Whole Offer by considering "make, buy or ally" approaches. We will discuss how to create and manage a robust ecosystem of partnerships.

Module 8 – Product Planning: Roadmap Design & Portfolio Management
Technology products tend to evolve quickly over time and single products tend to proliferate into diverse product lines. Therefore, product managers need to proactively plan the roadmap for the evolution of products *over time* as well as the relationship among products *across the portfolio.* In this module we will focus on decisions related to the Product Roadmap, steps in roadmap planning, and alternative approaches to product roadmapping. We will also look at Product Portfolio Management decisions, which include managing multiple products within a product line and across product lines so they map logically to customer segments, vertical markets, price points, strategic objectives and other factors. We will consider portfolio management decisions such portfolio expansion, portfolio pruning, portfolio balance and mitigating sales cannibalization across the product portfolio.

Module 9 - Product Management in Startup Firms
In this module, we will focus on the evolution of products and product management in a startup firm, all the way from its founding to the exit stage. We will discuss the product management issues that arise at each of the five stage in the life of a startup – founding stage, seed stage, persevere stage, scaling stage and the exit stage. We will organize the issues into 5 areas – Customer evolution, product evolution, business model evolution, channel evolution, marketing evolution and organizational evolution. We will focus on the challenges in scaling a startup firm beyond its initial success and growth.

Module 10 – On-Going Product Management
Product managers need to do more than bring new products to market. They need to manage the products as an ongoing business over time. In this module, we examine this process of on-going management of products over their life cycle. We will discuss three dimensions of ongoing product management – managing sales growth, managing product evolution and managing ecosystem evolution. To drive sales growth, we will consider three pathways to growth – increasing share of wallet, increasing share of market an expanding the size of the market. In managing product evolution we will consider business activities like customer support, bug tracking/ fixing, next version planning, product enhancement and end-of-life (EOL) management. In managing ecosystem evolution, we will consider both vertical and horizontal dimensions of the ecosystem. We will conclude with a discussion of metrics and methods for diagnosing and monitoring product performance.

Course Syllabus

Useful Class Pre-Reads & Example Documents

Readings
- · <u>Readings</u> on product management -- blog posts, articles and books -- organized by topic
- · <u>ProductHunt</u>
- · <u>Sign-up & read 100PMs</u>

Class Templates
- ■ <u>Research Plan Template</u>
- ■ <u>MRD Template</u>
- ■ <u>PRD Template</u>
- ■ <u>Go-To-Market Plan Template</u>
- ■ <u>Master Team Project Upload List</u>

Example Deliverables
- ■ <u>What</u> type of PM are you?
- ■ <u>Vision</u> Statement
- ■ <u>Sample</u> Persona
- ■ <u>MRD Example 1</u>, <u>MRD Example 2</u>
- ■ <u>PRD Example 1</u>, <u>PRD Example 2</u>
- ■ <u>Product Vision Example</u>

For each class: read the Required Readings and preferably the Recommended Readings.

Before the first class:
- ● Think of an idea you want to execute. Prepare a 90 second pitch to present on Class 1.
- ● Ideally teams have to be formed via slack before the first class.

Class Session:
MEM, Farley, & IMC: Wednesdays 6 to 8PM CST
First class: Wednesday, Sept 16, 2020

Kellogg: Tuesdays 830AM to 1130AM CST
First class: Tuesday, Sept 22, 2020
Location: VIRTUAL
Office Hours: By appointment only, 48 hrs in advance, and one class will be an individual team "Jam Session"

Class Schedule

Session	Day and Date	Lecture/ Type	Lecture Topic/ Case Title/ Speaker	Assignment Due Before Class
0	Wed, Sept 9 (6-7PM)	Info Session	Info Session Material	
1	Wed, Sept 16	Course Introduction	Overview of Product Management L	**Individual:** Idea Pitch **Individual:** List of attributes pro's & con's of one software product & Sketch of improvement ideas
2	Wed Sept 23	The MRD & Customer Discovery	Assessing Product Opportunities	**Discussion:** MRD Thoughts **Team:** MVP Tests for Beauty on Demand **Team:** PR Release
3	Wed Sept 30	Customer Research & Customer Interviewing	Discovery and Requirements Definition	**Team:** 1 Persona Due with top 3 questions for this persona **Case: *Tablet Teach Case: Opportunity Analysis for a New Educational Technology Product (6%)***
4	Wed, Oct 7	Design	Business Model Design	**Team:** Early Product Presentation **Team:** Research Experiment Plan **Team: MRD Due** **Case: *Amazon's Kindle Fire Case (6%)***
5	Wed, Oct 14	Usability	Structure, People and Process in Product Management	***Case: Motorola DROID 2: The Product Manager's Dilemma Case (6%)*** *SaaS Business Model Assessment and Critique Assignment Due (5%)* **Team:** 1-2 user stories Wireframes Content Model Mood Board
6	Wed, Oct 21	The PRD	Taking Products to Market Example PRD Walk Through Company PRD Walk Through	***Case: Saama: Go-to-Market Strategy for Clinical Analytics*** **Team:** MVC 1-Pager MRD Final Draft & Wireframe final draft
7	Wed, Oct 28	PRD & Execution & Careers in Product	Managing Whole Offers and Partner Ecosystems	**Case: Kheyti: Product and Business Development for an AgTech Startup (6%)** *Individual: Go to market plan assignment (5%)*
8	Wed, Nov 4	NO LECTURE PRD Reviews	Team reviews	Team: PRD Due
9	Wed, Nov 11	Product Evolution	Product Management in Startup Firms & Ongoing Product Management	***Case: Vmock*** Team: Final PRD Due
10	Wed, Nov 18	Final Presentations	Class FInal Presentations	Final Presentations & Reflections Due

Deliverable Examples & Expectations

Deliverable	Example
What type of PM are you?	PM Primer
Vision Statement	Beauty on Demand
Build your Persona & Mocks Exercise	Sample Personas
MRD	Dating App TeamUp
PRD	WesTrek TicketSwap
Product Vision Presentation Example	Elevate

Course Website:

https://www.mccormick.northwestern.edu/engineering-management/curriculum/descriptions/490a.html

If you made it to the end, read:

http://www.mckinsey.com/industries/high-tech/our-insights/product-managers-for-the-digital-world

Detailed Class by Class Syllabus:

Module 1 - Overview of Product Management
We will kick off the course with an overview of the multi-faceted role of product management in technology companies. We discuss what product managers do, what they are expected to know, what they are accountable for and what factors determine a high-performance product manager and product management organization. We introduce the core building blocks for product management that will form the basis for the remainder of the course. Students should also come prepared with an idea they want to execute as it relates to building a product for their internship company.. Feel free to post your idea in Slack to recruit.

Required Reading
1. **What do Product Managers Do? (Product Arts, www.product-arts.com)**
2. Good Product Manager, Bad Product Manager
3. Module 1 - Sample Responses

Recommended Reading
1. A Product Manager's Job - Josh Elman
2. Product Manager, You Are… A Janitor, Essentially - Mat Balez
3. Terrific books that provide an overview of the product manager role:
   - Inspired by Marty Cagan
   - Shipping Greatness by Chris Vander Mey
   - Cracking the PM Interview by Gayle McDowell & Jackie Bavaro

Pre Class 1 - Assignment - Due prior to class
1. Required Reading Paragraph Responses:
   - READING: What Do Product Managers Do?
     i. In 100 words, describe the differences between the skills Product Managers need for Product Launch versus Ongoing Product Sustaining activities.
   - READING: Good Product Manager, Bad Product Manager
     i. According to the authors, why are good product managers loved by the salesforce?
2. Individual:
   - Fill out Student Profile Sheet
   - Idea Pitch:
     i. Please pitch your product idea in slack & in class of a product you have ideated and would like to build for your internship company (or your own start-up) that you will use as your product deliverables throughout class as your product management in practice case.
     ii. Pitch Prompt to use & submit in canvas & slack: *For ___[target audience], it's a constant challenge to ___[general problem]. Every ___[time period], these people ___[perform a key activity] in order to ___[achieve a primary goal]. This is especially true if you're a [niche].*

Module 1 - Lecture Content
1. Overview of Product Management
2. Overview of Product Management Deck 2

Assignment - Due Next Class
3. Review our outline for an MRD. What do see as the pros and cons of preparing an MRD?
4. Read the MRD that Devon Barrett, Britt Zaffir and Arielle Pensler wrote in HBS PM101 for a new dating application. Does the MRD provide the information you'd need to determine whether to proceed with development? What questions would you pose to interviewees if you were researching this concept?
5. Read this vision statement and hypotheses about unmet customer needs developed in PM101 in 2014 for Beauty on Demand by Dina Burkitbayeva and Riya Khilnani.
6. **Upload an MVP test that the Beauty on Demand team could use to gauge demand for solutions that address the unmet needs BEFORE they build any software. Upload your sample test description & mocks in Canvas**

Required Reading for Module 2 - Due Next Class
1. Screening Opportunities

        a. *What is the difference between the use of Criteria versus Multi-Voting in screening product opportunities?*

2.
        a. *According to the authors, if a customer hires a car to be an "office on wheels", what features might they be willing to pay for?*

3.

Module 2 - Assessing Product Opportunities

Opportunity Assessment answers two key questions, "How do we source and identify opportunities?" and "Which opportunities should we invest time and money in?" In this module, we will analyze three dimensions of Opportunity Assessment – Product-Market fit, Product-Company fit, and Product-Business fit. We will discuss the "Jobs to Be Done" framework to define key unmet needs and hence the opportunities for a new product. We will discuss how to organize the opportunity analysis into a recommendation and present the output in an Opportunity Brief. The Opportunity Brief serves as the "business case" for the product and should explicitly provide a "Go/No-Go"

recommendation to invest resources and initiate the Discovery process for a specific product (or not).

Required Reading - Due Prior to class
1. Screening Opportunities
   a. *What is the difference between the use of Criteria versus Multi-Voting in screening product opportunities?*
2. Finding the Right Job for Your Product
   a. *According to the authors, if a customer hires a car to be an "office on wheels", what features might they be willing to pay for?*
3. Module 2 - Sample Responses

Recommended Readings

1. Notes on Early Customer Research and refresher on MVP Testing
2. Seven Lessons I Learned from Dinnr's Failure by Michal Bohanes (focus only on Lesson #1; you can skim/skip the rest)
3. How to Find Early Adopters by Brant Cooper
4. The Power of Observation: How More Companies Can Have 'Aha' Moments by Ellen Isaacs
5. Case Study: Customer Survey Questions by LIFFFT
6. An MVP is Not a Cheaper Product, It's About Smart Learning by Steve Blank
8. Terrific books on how to conduct early customer research:
   - *The Mom Test* by Rob Fitzpatrick. A short book on how to conduct early customer interviews.
   - *Lean Customer Development* by Cindy Alvarez.
9. Assessing Product Opportunities by Marty Cagan
10. Using Surveys to Validate Key Startup Decisions by Brent Chudoba
11. How to Structure Customer Development Interviews by Jason Evanish
12. Doing Market Research with Google's Keyword Tool by Andrew Chen

Module 2 Lecture Content

1. **Assessing Product Opportunities**
2. **MRD Lecture**

Assignments - Due Next Class
1. Individual:
   - Your PR Release
   - **One primary persona for your application.** We know that most of you haven't finished the customer research needed to develop personas; consider this a draft and do your best, even if you have completed little customer research.
   - **The top three questions, with the EXACT wording that you'd use**, that you'd pose to an interviewee who matches your persona type.
2. Individual:
   - Read Case: *Tablet Teach Case: Opportunity Analysis for a New Educational Technology Product*
     i. *Assignment: Which product concept do you recommend that Tablet Teach pursue? Provide the decision criteria you used and Jobs-To-Be-Done analysis in support of your answer.*

Required Reading for Module 3 - Due Next Class
   a. READING: Minimum Viable Product and the Importance of Experimentation in Technology Startups
      i. *What are the two key assumptions that the founders of a startup need to validate in developing the Minimum Viable Product?*
   b. READING: How to Write a Good PRD

Module 3 - Discovery and Requirements Definition

Tablet Teach Case: Opportunity Analysis for a New Educational Technology Product

After identifying the target product opportunity, the product manager leads an iterative process to *discover, define/ refine and prototype a* '*Minimum Viable Product' (MVP)* that will capitalize on the opportunity—or identify a better opportunity (a 'pivot'). This discovery and requirements definition process is at the very core of the PM's job because these early product decisions typically define a product's ultimate business success, failure or mediocrity. The primary output from this process should be a customer-proven prototype tested for *functionality*, *usability* and *business viability*. We will discuss the iterative process in getting to the MVP and building a customer-proven prototype. We will also discuss how to describe requirements in the form of user stories and a Market Requirements Document.

Required Reading - Due Prior to Class
1. READING: Minimum Viable Product and the Importance of Experimentation in Technology Startups
   a. *What are the two key assumptions that the founders of a startup need to validate in developing the Minimum Viable Product?*
2. READING: How to Write a Good PRD
   a. *What are the three forms of testing that Marty Cagan recommends at the Product Prototype stage?*
3. Module 3 - Sample Responses

Recommended Reading
1. Jakob Nielsen, Usability 101
2. Nielsen Norman Group, Turn User Goals into Task Scenarios for Usability Testing
3. Christine Perfetti, Usability Tests in a Nutshell, Part 3: Creating Tasks
4. Steve Krug, Usability Test Script
5. Kara Pernice, Talking with Participants During a Usability Test
6. Jared Spool, Three Questions You Shouldn't Ask During User Research
7. Tania Lang, Eight Lessons in Mobile Usability Testing
8. Jakob Nielsen, Ten Usability Heuristics for Usability Design
9. Steve Krug, Rocket Surgery Made Easy, is a short, funny, practical book on usability testing by the author of the UI design basics book, Don't Make Me Think!
10. UsabilityNet.org, Performance Testing
11. Cole Derochie, Unbounce, Measure Twice, Cut Once: Introducing User Testing into Our Design Process
12. Janice Redish, Six Steps to Ensure a Successful Usability Test
13. Interview with Rolf Molich, Usability Testing Best Practices
14. Will Schroeder, Observing What Didn't Happen
15. What You Will/Won't Learn from Usability Testing - Cindy Alvarez

Module 3 Lecture Content
1. Discovery & Requirements Definition
2. MVP Lecture
3. Tablet Teach Case Debrief

Assignments - Due Next Class

Individual:
- ■ MRD Due
  - i. If you'd like to see past PM101 MRDs, WesTrek Organizer (Claire Belmont, Nonso Maduka) and InstaGogo (Richard Chua, Claudia Kolonas, Carol Rego, Ananya Kejriwal) are good examples. Note that these MRDs do not include all headers in our template because we have updated the current template format.
- ■ Read Case: ***Amazon's Kindle Fire Case***
  - i. *Assignment: Assuming that Amazon sold 1.6 million Kindle Fire devices in Year 1 through Year 3, calculate the contribution for the Kindle Fire for Years 1, 2 and 3. Based on this analysis, what is the key bet that Amazon is making in pricing the Kindle Fire at $199?*

Required Reading for Module 4 - Due Next class

1. ***READING: How to Create your Lean Canvas***
   a. *What are the three questions that a Unique Value Proposition (UVP) must answer?*
2. **READING: 7 Examples of Freemium Products Done Right**
   a. *According to the author, what are the two reasons that Mailchimp's Freemium model works well?*

Module 4 - Business Model Design

Amazon's Kindle Fire Case

The business model is the mechanism by which the firm generates revenues and profits from a product, service or solution. Technology companies are often better at value creation than value capture. Many startups fail because they are not able to effectively monetize the value that they create for customers. PM's are best positioned to evaluate product, customer, competitive, operational and business inputs to define an effective business model. We will discuss frameworks for defining and diagnosing a business model and we will review popular revenue models for technology products and services (e.g., advertising, subscription, Freemium, etc.). We will conclude with a discussion on business model innovation and how technology startups can change the game with innovative and disruptive business models.   We will also go over primers on customer research, UX research, and good design.

Required Reading - Due Prior to Class

1. ***READING: How to Create your Lean Canvas***
   a. *What are the three questions that a Unique Value Proposition (UVP) must answer?*
2. **READING: 7 Examples of Freemium Products Done Right**
   a. *According to the author, what are the two reasons that Mailchimp's Freemium model works well?*

Recommended Reading
1. Notes on UX Design
2. (diagram) The Elements of User Experience by Jesse James Garrett
3. (article) User Experience Design by Peter Morville
4. (article) A Bias for Making by Jared Spool
5. (article) The Fundamentals of Experience Design by Stephen P. Anderson
6. (poster) Designing The User Experience by UPA
7. (article) Example UX Docs and Deliverables by UX for the masses
8. (website) What is a storyboard by MIT
9. Terrific books that cover core principles of user experience design:
   ■ The Design of Everyday Things by Donald Norman
   ■ Hooked by Nir Eyal
10. Wireframing Your Web Application by Nathan Barry
11. Designing the Conversational UI http://alistapart.com/article/designing-the-conversational-ui

Module 4 Lecture Content
1. Business Model Design
2. Kindle Case Debrief
3. **Customer Research & Design**

Assignments - Due Next Class

Individual:
   ■ SaaS Pricing
      i. Compare the SaaS pricing plans for DocuSign (https://www.docusign.com/products-and-pricing (Links to an external site.)Links to an external site.) with that for Dropbox for Business (https://www.dropbox.com/business/pricing (Links to an external site.)Links to an external site.). Which plan is better designed? Why?
   ■ Read Case: ***Motorola DROID 2: The Product Manager's Dilemma Case***
      i. *Assignment: What is your functional area's recommendation on the Camera Button decision? Support your recommendation with quantitative facts from your private supplements as well as your strategic reasoning.*

Required Reading for Module 5 -Due Next Class

1. *READING: The Scrum Primer*
   a. *What is the difference between the Release Burndown Chart and the Sprint Burndown chart?*
2. READING: Teamwork & Working in Teams
   a. *In 100 words, compare the Tuckman Model with the Cog Model of team evolution*

Module 5 - Structure, People and Process in Product Management

Motorola DROID 2: The Product Manager's Dilemma Case

Having considered the product and business model definition, we will focus on the "softer side" of product management – the organizational and people issues in effective product management. We will begin by addressing the *structure* of Product Management organizations and the most common organizational design models for product management. We will then address the *process* of Product Development and Management by understanding the difference between traditional Waterfall development and Agile development methodologies. We will discuss how to manage development projects using agile methodologies like Scrum. Finally, we will address the *people management* aspect of the PM's role – how to influence teams without direct authority and how to run meetings effectively.

Required Reading for Module 5 - Due Prior to Class

1. *READING: The Scrum Primer*
   a. *What is the difference between the Release Burndown Chart and the Sprint Burndown chart?*
2. READING: Teamwork & Working in Teams
   a. *In 100 words, compare the Tuckman Model with the Cog Model of team evolution*

Recommended Reading
1. This 7-minute video on Scrum 7 -minute video (Links to an external site.)
2. Readings to expand on the question raised in the last two slides of the required reading on agile development, "When should you use agile vs. waterfall?": Waterfall vs. Agile (Links to an external site.)- Mary Lotz; Pros and Cons of Waterfall and Agile (Links to an external site.)
3. A Quora thread on the transition to agile: How Do You Integrate Agile Into a Waterfall Culture? (Links to an external site.)
4. How user experience design is integrated into agile product development processes: Getting Real About Agile Design (Links to an external site.)- Cennydd Bowles
5. The following books provide an overview of agile software development methods:
   ■ Extreme Programming Explained (Links to an external site.), Kent Beck -- reviews the principles and practices of XP, an agile variant
   ■ Agile Product Management with Scrum, (Links to an external site.) Roman Pichler -- another overview of agile principles and practices, this one written from the product owner's perspective and centered around the Scrum method
   ■ User Stories Applied, (Links to an external site.) Mike Cohn -- the what, why and how of drafting user stories for agile software development projects
   ■ User Story Mapping (Links to an external site.), Jeff Patton -- integrates agile development into a product development process that includes customer discovery and MVP testing. The book's core ideas are captured in this presentation (Links to an external site.)
   ■ Why user stories are old school, so you should use Job Stories & Jobs-to-be-done

Module 5 Lecture Content
1. Structure, Process, People in PM
2. Motorola Case Debrief
3. **Scrum Lecture 2**

Assignments - Due Next Class
   ■ Start Work on your PRDs
      i. Here are some examples of past PM101 PRDs you may wish to reference as you draft yours: WesTrek, TicketSwap, and PrepMarks.
   ■ Read Case: *Saama: Go-to-Market Strategy for Clinical Analytics*
      i. *Assignment: 1 page write-up answering the below questions:*
         Saama's leadership team had distilled their growth opportunities and challenges into three key questions:
            1. *What was the best growth pathway for Saama to fulfil its vision of becoming the market leader in the life sciences and clinical analytics space?*
            2. *Which growth pathway best fit with Saama's capabilities?*
            3. *What were the risks and implementation challenges for each growth pathway and how could they be mitigated?*

Required Reading for Module 6 - Due Next Class

1. *READING: 17 steps to take before launching your product or service*
   a. *In your opinion, which 2 steps of the 17 steps in this article are most commonly not followed well?*
2. READING: Put an End to Flying Blind: A Ten-Step Process for Creating a Go-to-Market Tactical Plan

Module 6 - Taking Products to Market

No Case Debrief - Class Debate on Saama

Product Launch and Product Marketing can make or break a product in in the market. In this session, we will focus on the Go to Market (GTM) strategy for a new product. This includes the planning and execution of the Product Launch plan, developing the Positioning and Messaging Framework, developing all marketing collateral and supporting the sales team on strategic client meetings and sales efforts. It also involves choosing the routes to market for the product and execution of the launch activities in collaboration with the sales, channel and partner organization. We will discuss the end-to-end process of designing and executing an integrated marketing communications plan and leveraging digital and social media to create awareness and drive adoption of new products.

Required Reading for Module 6 - Due Prior to class

1. *READING: 17 steps to take before launching your product or service*
   a. *In your opinion, which 2 steps of the 17 steps in this article are most commonly not followed well?*
2. READING: Put an End to Flying Blind: A Ten-Step Process for Creating a Go-to-Market Tactical Plan
   a. *What are the metrics for initial success of a product in a GTM plan and how are they different from the metrics for longer-term success?*

Recommended Reading
1. PRD Template
2. Example PRD
3. Here are some examples of past PM101 PRDs you may wish to reference as you draft yours: WesTrek, TicketSwap, and PrepMarks.

Module 6 Lecture Content
1. Taking Products to Market
2. PRD Lecture
3. **Working time on PRD**
   a. Here are some examples of past PM101 PRDs you may wish to reference as you draft yours: WesTrek, TicketSwap, and PrepMarks.

Assignments - Due Next Class

- Start your PRD due in 2 weeks!
  i. PRD Template
- Assignment: Go to Market Sentient
  i. Assignment: Evaluate the Go to Market plan for the book The Sentient Enterprise. If you were the Product Marketing Manager, how would you improve this plan? Be specific with your recommendations.
  ii. Sample response
- Read Case: **Kheyti: Product and Business Development for an AgTech Startup**
  i. *Assignment: Evaluate the two options for Product Development for Kheyti for reducing the product cost - 1) Redesigning the product; and 2) Partnering with International Manufacturers. Based on financial as well as strategic considerations, which option do you recommend to Saumya?*
  ii. *Sample Response*

Required Reading for Module 7 -Due Next Class

1. **READING: *The Platform Stack***

a. *What is the definition of the Platform Stack? What insights does this framework provide for competitive strategy?*
2. **READING: *Developing Indirect Channels***
a. *According to the article, why are indirect channels accounting for a larger percentage of sales for technology companies?*

Module 7 - Managing Whole Offers and Partner Ecosystems

Kheyti: Product and Business Development for an AgTech Startup

A stand-alone technology product rarely solves a complete customer problem. Mainstream customers expect technology companies to create "Whole Offers", which include the core product as well as all the complementary products, services and information needed to create a satisfactory Total Customer Experience (TCE). To create this "whole offer", technology companies need to assemble an ecosystem of partnerships and alliances that complement and enhance their core product. In this module, we will begin by defining the Whole Offer and the Total Customer Experience. We will look at how the Whole Offer evolves over time as the product becomes more widely adopted in the marketplace and as customer needs evolve. Next, we will discuss how to assemble the capabilities needed to deliver on the Whole Offer by considering "make, buy or ally" approaches. We will discuss how to create and manage a robust ecosystem of partnerships.

Required Reading for Module 7 - Due Prior to Class

1. **READING: *The Platform Stack***
a. *What is the definition of the Platform Stack? What insights does this framework provide for competitive strategy?*
2. **READING: *Developing Indirect Channels***
a. *According to the article, why are indirect channels accounting for a larger percentage of sales for technology companies?*

Module 7 Lecture Content
1. Designing the Whole Offer & Ecosystem Lecture
2. Khetyi Case Debrief
3. The Final Presentation & Perfection
a. Uber Customer Journey Case Study

Assignments - Due Next Class

- ■ PRD Due in 1 Week!
    - i. PRD Template
    - ii. Start your final presentation using our template!

Required Reading for Module 8 - Due Next class

1. **READING: *Guiding your Product's Future: A Discussion of Roadmap Planning***
a. *According to you, what is the biggest challenge in roadmap planning among those the author identifies? Why?*

Module 8 - Product Planning and Strategy

Technology products tend to evolve quickly over time and single products tend to proliferate into diverse product lines. Therefore, product managers need to proactively plan the roadmap for the evolution of products *over time* as well as the relationship among products *across the portfolio.* In this module we will focus on decisions related to the Product Roadmap, steps in roadmap planning, and alternative approaches to product roadmapping. We will also look at Product Portfolio Management decisions, which include managing multiple products within a product line and across product lines so they map logically to customer segments, vertical markets, price points, strategic objectives and other factors. We will consider portfolio

management decisions such portfolio expansion, portfolio pruning, portfolio balance and mitigating sales cannibalization across the product portfolio

Required Reading for Module 8 - Due Prior to Class

2. ***READING: [Guiding your Product's Future: A Discussion of Roadmap Planning](#)***
     a. *According to you, what is the biggest challenge in roadmap planning among those the author identifies? Why?*

Module 8 Lecture Content
1. [Roadmapping Lecture](#)
2. [Sample Uber Planning Lecture](#)

Assignments - Due Next Class

- ■ PRD Due!
    - i. [PRD Template](#)
    - ii. Start your final presentation using our template!
- ■ Read Case: **[vMock Inc.: Pivoting to Succeed and Scale in a Technology Startup Firm](#)**
    - i. *Assignment: Would you recommend the B2B2C strategy or the B2C strategy for vMock? Support your answer with quantitative as well as strategic considerations.*

Required Reading for Module 9 - Next class

1. **READING: [The Paradox of Scaling](#)**
     a. Why should B2B startup companies shift from being Opportunistic to being Strategic in their choice of customers?

Module 9 & 10 - Product Management in Startup Firms

vMock Inc.: Pivoting to Succeed and Scale in a Technology Startup Firm

In this module, we will focus on the evolution of products and product management in a startup firm, all the way from its founding to the exit stage. We will discuss the product management issues that arise at each of the five stage in the life of a startup – founding stage, seed stage, persevere stage, scaling stage and the exit stage. We will organize the issues into 5 areas – Customer evolution, product evolution, business model evolution, channel evolution, marketing evolution and organizational evolution. We will focus on the challenges in scaling a startup firm beyond its initial success and growth.

Product managers need to do more than bring new products to market. They need to manage the products as an ongoing business over time. In this module, we examine this process of on-going management of products over their life cycle. We will discuss three dimensions of ongoing product management – managing sales growth, managing product evolution and managing ecosystem evolution. To drive sales growth, we will consider three pathways to growth – increasing share of wallet, increasing share of market an expanding the size of the market. In managing product evolution we will consider business activities like customer support, bug tracking/ fixing, next version planning, product enhancement and end-of-life (EOL) management. In managing ecosystem evolution, we will consider both vertical and horizontal dimensions of the ecosystem. We will conclude with a discussion of metrics and methods for diagnosing and monitoring product performance.

Required Reading for Module 9 -

1. **READING: [The Paradox of Scaling](#)**
     a. Why should B2B startup companies shift from being Opportunistic to being Strategic in their choice of customers?

Module 9 Lecture Content
1. [PM @ a Startup](#)

2. [vMock Case Debrief](#)
3. [Ongoing PM](#)
4. [Evolutionary PM](#)

PM Resources

Links to set of resources that are useful to PMs

Quick homepage setup
- Google Sites
- Quick Overview of Product Mindset

Project Management Tools
- Excel / Google Spreadsheets
- PivotalTracker
- Asana
- BaseCamp
- Streak
- Sprint.ly
- Aha.io
- Atlassian/Jira

Code Resources
- Github
- Trending SQL on Github
- Hadoop
- Codeacademy

UX resources
- www.uxforthemasses.com/presentations/
- Balsamiq wireframing tool
- Adobe Fireworks / Illustrator

Survey Tools
- Google Forms
- Survey Monkey

Flowchart Tools
- Omni Graffle (mac)
- Microsoft Visio
- Google Drawings
- Microsoft Powerpoint

Interviewing

Interviewing for PM should be fun. Best questions are ones that require you to think as a PM, analytically and logically on large problems. The below resources should help you prepare.

Blogs to read (to keep up on Web Tech)
- GigaOm
- TechCrunch
- The Verge

Philosophical
- Long Live the Web: A Call for Continued Open Standards and Neutrality - Sir Tim Berners-Lee
- The Meaning of Open - Google's Jonathan Rosenberg
  - The Future is Open - Jonathan Rosenberg
- An Open Letter to Chris Dodd - ESR
- The Web We Lost - Anil Dash
- This Tech Bubble is Different - Business Week
- The Internet Remembers Too Much - Maciej Ceglowski

Industry Background
Internet (Overall market)
- "Internet trends" - Mary Meeker's preso at Web2.0 summit (Dec 3, 2012)
- Platform adoption rates - speed of adoption of various technologies/products (July 16, 2011)
- Wadbush securities report on "Second Internet" (Mar, 2011)
- Market segmentation landscapes on Search, Display, Social, Video, Mobile, Commerce, etc

Mobile
- Forrester report on Mobile Commerce (Oct 2011)
- Enterprise Mobility - Infographic on Market Landscape (Feb 2012)

Social
- "State of the World - Social Media Report" - Nielsen's analysis of social internet (Q3, 2011)
- "The Geosocial Universe" - constellation diagram showing size of various social media companies (May, 2011)
- "The Social Internet" - Lou Kerner's market landscape analysis on what's happened with the internet over 20+ years

Video
- Ooyala online video index (Q4,2011)

Advertising
- Ad tech segmentation map (Sep, 2010)

Daily Deals
- Market size estimate by eMarketer (Mar, 2011)
- Online Coupons Research from Forrester (Sep 2011)

Payments
- Payment market overview with selected company coverage (Nov 2011) (Citi group, Mark Mahaney)

Startups/Entrepreneurship
- Span of the tech giants - startups coming out of Goog, FB, YHOO, MSFT (Jul 26, 2011)
- Startup genome report (May, 2011)

Other Tips

Amazon Web Services
Here is the pricing: http://aws.amazon.com/ec2/pricing/

On the topic of AWS, if you need to create an account and provide your developer with collaborator access here is the painful, non-intuitive process you should probably use. It took a bit of time to figure it out so we wanted to share it with you all. Also, please let us know if we made any mistakes!

1. Read this: http://docs.aws.amazon.com/IAM/latest/UserGuide/Using_AccessingConsole.html
2. Create a new group (with appropriate permissions e.g. S3 access - determining the right access is the hardest part!): https://console.aws.amazon.com/iam/home?#groups
3. Create a new user: https://console.aws.amazon.com/iam/home?#users
4. Add user to that group (select user and click add to group button bottom right)
5. Provide user with password and username, as well as credentials: https://console.aws.amazon.com/iam/home?#users (select the user name, then the password will come up, you can make your own password or generate one)
6. Provide user with your account identifyer (remove the hypens) which is your account ID: https://console.aws.amazon.com/iam/home?#security_credential
7. The collaborator sign-in page URL is created automatically: https://your_AWS_Account_ID.signin.aws.amazon.com/console/

Using FB while Testing an App
To login to the app with FB while testing:
1. Add your developer as a friend, or send he/him your FB user ID.
2. Verify your facebook account (may need to add your phone number): https://www.facebook.com/confirmphone.php
3. Sign up as a developer: https://developers.facebook.com (Under Apps > Register as a developer)
4. Add developer request: https://developers.facebook.com/requests/

SQL
10min intro video on SQL
http://cs50.tv/2012/fall/shorts/sql/sql-720p.mp4
Wanted to share this fantastic SQL prep on Coursera. These are automated SQL exercises one can take, you can get immediate feedback. I am actually doing exercises for an upcoming interview. Class taught by the famous Jen Widom of Stanford.
https://class.coursera.org/db/quiz

Apple Dev/Edu Account
In sum, an Edu account is mostly for internal testing/internal apps.

So we do actually have to set up our own developer account for $99+tax so we can submit it to the app store. You can register here: https://developer.apple.com/register/index.action But it will take a couple days to process.

More information about the nature of an Edu account:
1. However to add the app to a tester's apple device, it must be connected to the computer where the app exists. Im not sure if we could use Testflight (a testing software) through the Edu Account.
2. Every 6 months, the agent (aka Tom) can elect to wipe existing test devices to keep the 200 devices free for the next set of testing. There is a small window to reset devices every six months.
3. To reset devices, "the agent" must call in to request the devices reset/or send an email through the member center. Member center > technical/program support > contact us > apple dev program > request details (provide team ID or email address associated with the team)
Site Security
You probably want to buy a security certificate:
http://www.rapidssl.com/buy-ssl/index.html
http://stackoverflow.com/questions/733692/sha1-vs-rsa-whats-the-difference-between-them

User Analytics

To track user actions on an app, we used the free version of:
http://www.localytics.com/pricing/

Submit an App

What you need to know to submit an app:
https://developer.apple.com/appstore/resources/submission/index.html
https://developer.apple.com/library/ios/documentation/LanguagesUtilities/Conceptual/iTunesConnect_Guide/Chapters/About.html

Getting an iOS app accepted

Customer Research
free screen and voice recorder for customer research
Testflight for apple