

SECOND EDITION

SHIP IT

Silicon Valley Product Managers
Reveal All

Even the best Product Managers cannot do
their work through instinct alone.
You're not psychic.
You need to gather data.
And much more.



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SHIP IT: SILICON VALLEY PRODUCT MANAGERS REVEAL ALL

Dear (Future) Product Manager,

You're up against a million deadlines. Your engineers are fretting about the functionality. Your designers are in mutiny about specifications. Your business manager is screaming about the budget, and your sales team just wants to talk pricing. What do you do?

The biggest challenge and most important responsibility of a Product Manager is to stay focused on the user. You are the advocate for the customer. You put their interest first, and ensure that the end result actually achieves what you set out to accomplish in the first place.

Even the best Product Managers cannot do this through instinct alone. You're not psychic. You need to gather data. You need to systematically understand your users. And you need to learn how to effectively communicate this understanding to your team, so they are inspired to share your vision, and stay on track.

Presenting practical advice and thought leadership from PMs at companies

like Airbnb, Reddit, and Square, 'Ship it: Silicon Valley Product Managers Reveal All' shows you how to succeed as a Product Manager by putting the user first, and getting your team on your side.

The chapters you're about to read provide specific advice on conducting user research and applying metrics that actually matter, as well as more general wisdom about the Product Manager career path, communication skills, and life lessons from PMs at the top of their game.

No matter where you are on your PM journey, you're bound to find nuggets of wisdom here that allow you to upgrade your thinking, and achieve more for your users and your career.

Enjoy the voyage!



Carlos González de Villaumbrosia,
CEO of Product School

01

How To Achieve **Product-Market Fit**



by Dan Olsen
Author



How To Achieve Product-Market Fit

Dan Olsen –

Author of The Lean Product Playbook

— What does it actually mean to have Product-Market fit?

The Product-Market Fit Pyramid

- UX
- Feature Set
- Value Proposition
- Underserved Needs
- Target Customer

As you can see, the topmost three layers are concerned with the product. The base of the pyramid is concerned with the market.

The target customer is at the bottom because it is the most important element. **If you mistake the customer that you're going after, the entire pyramid can collapse** and you might have to start all over again. You only want to target customers with underserved needs – otherwise, they will have no use for your product.

Everything else builds from here: The value proposition is a statement of how you meet the target customers unmet needs, the features deliver that value, and the UX is how the customer experiences receiving that value. If everything is aligned, then you have Product-Market Fit.

The Lean Product Process

To achieve Product-Market Fit via the Lean Product Process, you begin at the bottom of the pyramid and work your way up.

- Determine your target customer.
- Identify underserved customer needs.
- Define your value proposition.
- Specify your MVP feature set.
- Create your MVP prototype.
- Test your MVP with customers.

In this chapter, we're going to explore steps one through three, which is the foundation of Dan Olsen's pyramid.

One: Determine Your Target Customer

Often companies have an idea of their target customer which sounds good at first but, upon digging deeper, is actually very vague. “Millennials” sounds good at first glance, but when you stop and think about it you realize this is a hugely diverse group with diverse needs and problems. You need to go deeper. For example: “Millennials who aspire to cook at home.”

Customers can share high-level needs but have different detailed needs. For example, a soccer mom and a young speed demon may share the high-level need of: “Transportation within 100 miles of my home”, but their detailed needs are going to be very different!

The soccer mom probably needs space to transport her kids, their friends, and their athletic gear. She probably values safety, and maybe fuel economy.

The speed demon probably values speed, style, image. This is why there are so many different types of cars on the road!

Identify Underserved Customer Needs

When talking about needs, we can drill down into Problem Space versus Solution Space.

- **Problem Space:** A customer problem, need or benefit that the product should address. This is a product requirement.
- **Solution Space:** A specific implementation or design that is intended to address that requirement.

Too often, PMs barrel right into solution space without taking the time to think about the problem space. This is why a NASA contractor spent \$1 million back in the 60s on R&D to invent a “Space Pen” that could write in zero gravity, while the Soviet Union merely gave their astronauts \$0.50 pencils! Both solve the problem, but with significantly different levels of cost!

The NASA “Space Pen” exists purely in the solution space. Dan Olsen calls this “solution pollution” – NASA’s goal was to “create a pen that writes in space.” If the goal was focused on the problem – “the need to write in space” the idea of a pen would not have polluted their focus, and they would have saved \$1 million!

Given that the problem space is likely to contain many needs, **it's important to prioritize based on customer value.** But how do we do these? Dan Olsen proposes a formula:

Importance vs. Satisfaction

- **Importance:** Take a customer's stated needs – for example, to save time, save money, and ask them “How important is this to you on a scale of 1 to 10.” This is an easy way to determine the importance of a particular need.
- **Satisfaction:** Ask the customer how satisfied they are with the current solutions available to them.

A competitive market is a need with a high importance that is currently being well met by other companies. Try to look for a need that is of high importance, but is currently being poorly met. This is where opportunities are found.

Defining Your Value Proposition

Which benefits are you going to deliver, and how are you going to be better? Here, Dan Olsen recommends applying the Kano Model:

- How fully does the product meet the customer need?

- How satisfied is the user while using this product?

Plotting these two metrics on a simple graph, we come up with three important types of features/benefits.

Must-have – A met need does not always lead directly to satisfaction, but it can help users avoid the unhappiness of having that need unmet. For example, seat belts are a must-have for a car, but using them doesn't confer satisfaction to the customer! Once each seat has a belt, there is no room for this need to be further met. That's the end of the road. Must-have features can be the core service your product delivers, but what differentiates it from the competition.

Performance – More is better, less is worse. A microchip that is 10% faster than a competitors' is 10% better. Not having it causes problems, having it provides value.

Delighter – Not having it doesn't cause problems, having it causes happiness and satisfaction. Needs and features migrate over time. GPS navigation was a delighter. Now it's expected, so it has moved to the *performance* or even *must-have* category. Yesterday's *delighters*

becomes today's performance features and tomorrow's must-haves.

How do we use these three categories to come up with our value proposition?

Your Value Proposition in a Nutshell:

- Which user benefits are you providing?
- How are you better than the competition?

To answer these questions, Dan suggests creating a grid where at least one benefit is listed in each of the *must-have*, *performance*, and *delighter* categories. Next, add a column for each of your competitors, and one for your product. Score yourself and your competitors on each of these benefits. You won't be high on all of them, but this exercise will show you where you have the edge – your unique differentiators: where are you going to outperform, where are you going to out-delight?

Example: Uber's Value Proposition

Uber's Value Prop

Customer Benefit	Taxis	Car Services	Uber
Must-Haves			
Take me where I want to go	Y	Y	Y
Performance benefits			
Let me quickly get a ride (faster)	Med	Low	High
Save me money (cheaper)	High	Low	Med
Make me feel safe (safer)	Low-Med	High	High
Delighters			
I can book without having to call	N	N	Y
I can see where the car is	N	N	Y

Summary:

- Peel the onion to:
 - Determine your target customer.
 - Identify their customer needs.
 - Define the problem space.
- Identify underserved needs by using importance and satisfaction.
- Define your value proposition using the Kano model.

If you want to see Dan Olsen's ProductCon SF full talk, [watch it here](#).

User Research to Inspire & Empower

by Ketan Nayak



User Research to Inspire and Empower

Ketan Neyak—
Fmr Product Manager, Dropbox

— A PM who doesn't speak to users is missing out on one of their key responsibilities, and so understanding the importance of such research is foundational to building a great product.

Ketan's philosophy can be summed up as:

“Empower People by Inspiring Empathy and Uncovering Truths.”

Let's break this down.

Empowering People

Empowering people to overcome needs requires an understanding of what your users' needs really are.

Doing great user research can empower two groups of people:

- **Your team** – It helps your designers and salespeople do more targeted work.
- **Your users** – It empowers them to better use your product to fill their needs.

Just asking people what they want isn't enough. People don't always know what they want. Instead, ask a slightly different question: What jobs are your customers “hiring” your product to do? Customers don't want products – they want something that does some of their day to day “jobs” for them.

How To Get Your Product “Hired” – Find Out:

- What are the jobs that occur in your customers' lives?
- Under what circumstances do these jobs occur?
- How can your product be “hired” to do these jobs for your customer?

You can look at “jobs to be done” (jtbd) as a particular kind of nuanced User Story. Here’s a tasty example:

Milkshake Metaphor: Two types of people buy milkshakes. Adults who buy them for their long commute to work, and adults who buy them after school for their kids. The two users need the milkshake to do different “jobs.” The first group wants a large milkshake with a small straw that takes longer to drink and “entertains” them during the commute. The second group needs a small milkshake with a big straw that will quickly satisfy their kids without making them sick.

Inspiring Empathy

Inspiring empathy requires systematically communicating user problems in a way that can be easily understood. It shows your users that you understand them, and builds a connection.

Think about the delight that users experience when they use your product. **You want your customers to be delighted**, but the only way to do this is by learning something which gives you a deep, empathetic understanding of how your users feel.

For example, a user may have a great experience BUT if they’re unable to explain that experience to their bosses, your product won’t succeed. You need to constantly ask the fundamental questions about the why. You are striving for a sense of the story that your customer experiences as they use your product.

Uncovering Truths

Uncovering truths mean having a methodology of validating the many assumptions that go into designing great products.

Facts and data that can allow you to make better, smarter decisions. Quantitative analysis can be powerful. Facebook found that when you have seven or more friends, you are likely to stick around. With Twitter, the threshold seems to be 30 followers.

Users can tell you a lot but often that themselves don’t accurately understand how they are using a product. **If you don’t gather data, you can build a product based on assumptions.** For example, when Facebook first released the newsfeed feature in 2006, there was a huge backlash.

Users said they didn't like it. Numbers showed otherwise. The newsfeed has been an undeniable success. In this case, data succeeded where users' own self-knowledge had failed. If you want to see Ketan Nayak's ProductCon SF full talk, [watch it here](#).



The Only **Metric** That Matters

by Josh Elman



The Only Metric that Matters

Josh Elman –
VP of Product at Robinhood

— The best way to build products that solve real problems and have an impact on users is to understand if and how people are really using them. If you really want to understand your consumers, you must first define the metrics you'll use to measure their overall satisfaction.

One of the most important ideas that **product people should be thinking about is metrics**. The best way to make sure your product performs to its full potential is by measuring your progress at every step.

“Success is measured according to how many times your users perform a key behavior within an expected time cycle.”

Some of the key concepts regarding this overall topic of measuring success include understanding key users, churn, virality, and your user lifetime. These concepts come together to form the vital framework that allows you to discern what impact your product truly has on the world.

Analyzing the Product Launch

One of the most important aspects of developing a product is the launch. All products, companies, and even new features start with zero users. As with any venture, you should have already designed something that attracts users and delivers value, if not, what are you doing?

The first set of data you must retrieve is asking your early adopters, even the ones who stopped using the product, about their journey. These experiences can be positive, negative, confused, or any feeling that gives you an idea of who is using your product and how. Once you have a collection of stories, you can translate that into a data set and look for statistical correlations. You can then turn this data back into encompassing stories that help you take action within each of the different user journeys, depending on their needs.

Key Questions to ask During the Launch Phase

- Is my product creating a story that actually matters?
- How well are we satisfying user needs?
- What feeling/emotion do users experience when they use your product? Are they happy? Relaxed? Connected?
- Are they receiving what they want from your product?

Once you have an idea of how your product satisfies, you can figure out how often it satisfies, or, how often consumers are really using your product. However, **no two companies can use the same metrics.**

Examples of How Metrics Vary in Different Companies

- **LinkedIn:** Their users can be thought of as two groups. Recruiters, using LinkedIn more than three times a week to find people, and, career-focused people who just want to be found, using it about three times a month. In this case, LinkedIn's success shouldn't be measured by habitual use, rather, by its onboarding.

This metric of real usage allows LinkedIn to see that their consumers value the ability to be available on the platform, keeping them from wasting efforts on improving daily usage and allowing them to focus on their onboarding.

- **Yelp:** This a product that is not an everyday need; you use it to find local business and services around you and you maybe use it once or twice a week. If you aren't using it this often, you're most likely fulfilling the need through another provider, such as Google.

So, a weekly metric can be suitable for understanding how well you are performing. When it comes to reviewers, what is the cycle of usage like compared to the users looking to find businesses? Do they post all the reviews at once? This is the type of data you have to understand when defining and analyzing your metrics.

- **Facebook:** Hands down, Facebook is the definition of a daily use, even hourly use, a product for staying connected to what you care about. However, they have somewhat skewed the bar for other businesses who believe they need to have metrics similar to Facebook's to reach success.

As you've seen in the other examples, this is not the case. Depending on the product or service, daily usage doesn't always accurately measure performance and is not needed to be a highly successful business.

- **Discord:** This communication platform for PC gamers can also be divided into two groups, daily gamers, and weekend gamers. When analyzing the usage, Discord has to understand that if consumers aren't gaming, they won't be using the product, so, weekend gamers should not negatively affect the usage metric during the weekdays and vice versa.

Breaking down the consumers like this allows Discord to have the goal of “whenever they are gaming, they are on Discord” and not waste efforts elsewhere.

- **Airbnb:** This service can barely be called monthly usage, more like trimonthly. So instead of putting a time frame on usage, their goal is that whenever you're taking a trip and need to find a place to stay, you should be using Airbnb. How do you convince your user to use your service 3-5 times a year? You have to make sure you have a strong brand presence, so when they do think travel, they think Airbnb.

This is a difficult task to accomplish. That cycle of a host and renter having a good experience is much different to measure compared to simply logging onto Facebook once an hour.

The Three Types of User

There are typically three types of user: **core, casual and cold.**

Cold users rarely use the product while the casual users are habitual, but they aren't in love with the product. The core is where we need to focus; these are the **users who went through a journey and really love and support your product.**

The core user is the most important because they have specific experiences that have led them to loyalty. These core users, the ones really using your product, can provide invaluable insights. If you can discover and measure the users journey and the emotions they associate with it, it will be much easier to “build more things that will cause more people to become my core user.”

Once you have a group of core users, consider ways that these users can “clone” themselves. This is how you

achieve virality; by making core users into recruiters.

To Succeed, Understand Your Users

How are your users actually using your product? Consider metrics that realistically show how frequently users are interacting with your product, within the context of the needs that your product serves. **Not all products require daily use in order to succeed.**

What matters is that when your users encounter the need that your product serves, your product is their first, natural and habitual choice. Discover and measure the user journey and the associated emotions to reward loyalty, and create a group of “core users” who will be the foundation of your success.

If you want to see Elman’s ProductCon SF full talk, [watch it here](#).

Lead Through **Influence**

by Tyler Odean



reddit



Leading Through Influence

Tyler Odean –
Director of Product at Reddit

— Some leadership advice is very explicit: it emphasizes what you must do. For instance, to take up a particular approach towards teams, or employ different tools in your planning.

But effective leadership pathways are not about doing, but about **changing your whole outlook**. Obviously, trying and experimenting with new formulas matters a good deal. It's just even more effective if you launch these solutions from an entirely new framework.

This is exactly what Tyler Odean, Director of Product at Reddit, has found most productive. In the past, he led teams at Google for almost a decade. His current PM team is constantly improving the experiences of thousands of Reddit contributors across the world. Ranking, relevance, search, discovery... These are really important for the site to work.

This being such a dynamic and diverse community, the product team cannot simply apply the changes they deem fit. And the PM can't take the

team's confidence for granted. They both need to be on board for the roadmap to success.

As a result, as Odean argues, influence is fundamental. Influence is not understood in the popular, superficial sense, as having a lot of traction on social media or within a certain group. Influence means that you can generate trust and **persuade others that your product vision is the correct one**.

Now, does this mean that your preferred option always needs to be the chosen one?

Let's find out.

Two Systems to Generate Consensus

Product Management, like any other discipline, helps us deal with complexity from basic assumptions. Here, Odean stresses, we must refer back to how human beings form and communicate beliefs, according to psychology. The baseline assumption is that **we aim to make our preferred**

messages sound more truthful. Obviously, if we want to lead anybody towards a particular direction, we want that direction to look like the right one!

There are two general “Systems” where humans deal with persuasion. System one is natural, intuitive and subconscious. System two is deliberate, cognitive and literal.

System 1 is the most productive. Regardless if we are at the emitting or receiving end of a particular opinion, under System 1 we make choices quickly and effortlessly. It’s the kind of decision-making that takes place below your consciousness.

System 2, on the other hand, requires more focus. It resembles the image most of us have of our thinking process – that voice in our conscience. It’s more literal and descriptive. However, it doesn’t translate as well as System 1. Why? Well, according to Odean, the problem is it requires thoroughness on the side of the speaker; and attention on the side of the listener. Here’s where we rationalize opinions, we try to justify them with a combination of data and arguments. However, this is also where most mistrust and disagreement takes place.

Let’s take this example from Odean:

The team has a proposal. The presentation is flawless. The plan looks feasible, and the potential gains are really solid and logical. Yet, you’re still doubtful. This is because they really appealed to you through System 2. But they failed to engage with you on a basic, instinctive level: System 1. Here, things are binary: yes or no. Interestingly enough, you will express your disagreements with System 2: rationally, in a coherent way. And your team will face you with similar, contrary arguments.

And this could go on forever, with no consensus in sight.

Avoid the Bias Trap

To set yourself free from this kind of pitfalls, you need to address System 1.

As we said at the start, **changing your leadership implies changing your whole approach in addition to applying new methods and tools.** Odean is very adamant in acknowledging the biases that shape our perspectives.

As seen above, even if you rationally know something to be true, this is not enough to believe it. It’s basically impossible to trick your brain.

At the same time, you can prepare yourself for some of these preconceptions. Let's check them out:

1. Availability

Picture this situation. You're at your favorite lunch joint. There are two queues: one for sandwiches, another one for salad. Your doctor recently told you that you have to cut down on sandwiches. At the same time, there are way more people queueing for a salad. In fact, you only have a few minutes for lunch today.

What do you pick? Even though you rationally know that you should go for a salad today, the fact that the sandwich is much easier to reach will influence your decision. It will take a lot of willpower to patiently queue for the salad.

Believing an idea might work is based on its availability. Can you communicate it easily? Do you have the tools to start tomorrow? Is its impact easy to measure?

Both your team and your users will get behind your features and products if they feel like they're simple and direct. A good marketing campaign will appeal to System 2 thinking, but a great roadmap will take into account

the need to tickle System 1 as well. As Odean says "If it feels effortless, it feels true".

"If it feels effortless, it feels true."

2. Anchoring

Here's another example for you. And it can be a very personal one. When they make you a salary offer during an interview, that first number can determine your whole outlook on the job. Even if you know amounts are open for negotiation, and you feel in a strong position, that first exchange will likely determine your attitude during the selection process.

In other words, **"the first thing considered always carries more weight than it should."**

As Odean argues, most "deals" operate on System 1, where we don't have much time to think or make complicated operations. Initial values will work as a benchmark for future ones. So be very careful in your initial projections, even if you manage to justify costs with System 2 arguments and a thousand spreadsheets!

“The first thing considered always carries more weight than it should.”

3. Representation

This final word of advice is all about human efficiency. As seen above, math is an abstract, complicated language. System 1 thought is basically immune to this approach.

As a result, we transform operations into pictures. Picture this. You're offered two boxes. One has three new iPhones. The second one has four, but one of them is broken. If you let yourself be guided by your first thoughts, you'll go for the first box.

We tend to average everything. A product plan is like baking. If there's an ingredient in our recipe that doesn't fit that well, this will ruin the whole cake. Pick your best shots and don't waste time with elements that don't add to your story.

“Focus on your highlight reel.”

Leveraging Cognitive Biases: 7 Steps

Odean has a set of essential tips he uses to avoid these biases. Check them out:

1. Keep it Simple – The easier your message is to remember, the easier it is to believe. The shorter it is, the less likely you are to use System 2 to evaluate it.
2. Never Surprise Anyone – People will be skeptical of surprises. They do not like being persuaded so quick because it feels as if they are being manipulated.
3. Make it Really Easy to Agree – Allow the people who will agree to agree easily, while the action is put on the people who disagree. ~~Should we ship 50 units?~~ Unless anyone objects, we are shipping 50 units.
4. Control the Comparison – Audiences are always comparing, so provide the most beneficial comparisons and delete the most destructive ones.
5. Argue as Little as Possible – Every time you disagree with your audience, you are portraying

yourself as dumb and allowing them to dismiss you as uninfluential.

6. Argue Forwards, Not Backwards – It's much easier to argue that new information will change things than arguing that past assessments of things were wrong.
7. Play the Long Game – The people you are trying to persuade will most likely matter much more than the decision you are trying to persuade them of. Be prepared to be persuaded if your audience is more experienced, this will show cooperation and help establish a relation for future interactions.

Summing Up: Don't Ditch your Tools, Change your Thinking!

One of the most common problems with leadership in product management guides is their tendency to overshoot. They often list several approaches and tools you can use to improve now.

This is all good, but it doesn't address the main problem: influence. If you aren't able to convince others, make them embrace your solutions or even follow you in tough times; then your product plans are on shaky grounds.

At the other extreme, if you learn how the human brain works and the connections between System 1 and 2, you'll be on the highway to product success. The point of Odean's explanation is that you need to appeal to people's cognitive biases before you start selling them an idea.

Things like averaging values, or championing simplicity, are permanent characteristics of the human thought. Facing your internal and external stakeholders with this in mind will greatly facilitate your product plans.

For more examples of cognitive biases and tips for how understanding them can improve your persuasiveness, check out Tyler Odean's recommended reading *Thinking Fast and Slow*.

If you want to watch Tyler Odean's ProductCon SF full talk, [watch it here](#).

05

Why FinTech **Matters**

by Amrit Pal

 Square



Why FinTech Matters

How FinTech is Breaking Barriers and Changing Finance

— Four billion people now own smartphones with affordable data. The majority of the world is now connected to the digital ecosystem. **Barriers to financial technology no longer exist for much of the world.** The marginal cost of distribution has gone down to zero. Startups no longer need to begin with massive investments in data storage – everything is already in the cloud, at their fingertips.

In the United States, much has changed since the late 1990s. In economic terms, banks are a financial intermediary. The core function of a bank is managing risk of capital, with a lot of regulatory oversight. Banks depend on physical coverage – your local branch, your personal banker who knows you.

Because of this structure, people from different financial classes were excluded from the system – only people wealthy

enough to be valued by the bank received a good service. The top 20%

were served well, the bottom 80% were left out.

Now, banks are not physically distributed. **The barriers are now about digital experience.** The costs have plummeted, so access can be expanded.

Banks provide many services which are broken into departments and treated separately – loans, mortgages, transfers, savings. There was nothing that addressed an individual's financial life as a whole. With technology coming in at scale, banking is becoming unbundled. Individual apps can each deliver an excellent user experience for one specific part of this service. AliPay, PayTM and many others provide the transfer service once exclusive to banks.

Getting access to credit used to be a major challenge for most people. The Catch-22 was that only people who already have credit were permitted to access more. Others were left out. **Now, technology allows lenders to lend responsibly to people who don't have a credit history.** People have a digital footprint, which provides the credibility once only apparent through credit rating.

Investment has also become more accessible. It used to be available only via expensive brokers. Now, with apps

like Robinhood, anyone can invest with little or no fees. As banks are getting unbundled, individual apps that once

Amrit Pal –

Product Manager at Square

served only one function are now bundling more functions in, and becoming their own financial ecosystem.

How to Build FinTech Products

1. Develop Cultural Empathy

How people treat money is highly personal and a deep part of their psyche. So how do you understand what money means to someone?

- The best way to do this is to actually spend time with customers. Talk to them and understand the specifics of their lives and the immediate situations they are dealing with. **Data cannot tell you everything.**
- Understand the emotion behind money. Are they aggressive, or conservative?

2. Provide Utility with Trust

Trust is going to be a huge factor no matter what you do. People need to

trust you with their money, that it is regularly available and can be tracked with certainty. Understand how people will use their money at the level of why

- what will their earnings be applied to
- school fees, medical bills, travel?

3. Serve Adjacencies

Serve adjacent needs around the problem of money. FinTech is an infrastructure itself. You can't handle money without financial infrastructure. Once you have created this infrastructure and have served a core market, you can apply your existing resources to also serve adjacent needs.

Where Are We Going From Here?

We are leveling the playing field. The tools that were available to only the very privileged 20 years ago will shortly be available to everyone. Today's new players will become tomorrow's incumbents, and new, established ecosystems will emerge. **Highly tailored experiences will be available for everyone**, so an individual can arrange their financial life the way they want to. Today, financial data rests within a financial institution. In the future, this will hopefully be within an individual's control.

Want more examples or tips? Then [check out the full talk here.](#)

Building a Culture of **Experimentation**

by Byron Jones



Building a Culture of Experimentation

Byron Jones —
Director of PM at Optimizely

— Byron Jones is a former NASA Engineer who has brought his knowledge and skills into the Product Management realm. His NASA background and five years as a PM at Optimizely makes him well equipped to provide advice on Building a Culture of Experimentation.

Jones posits that fostering experimentation can lead to major growth if you have an experimentation mindset and form strong habits early on.

Why Experimentation Matters

How do you know that a product, or a product change, is successful or not? Different people, different places, different experiences, it's impossible to control for all of the externalities that make it difficult to explain the story your data is trying to tell you. **Experimentation is the only way to systematically determine the effect that your product is going to have.**

Netflix set out to build a product that optimizes for customer lifetime value (CLV), but they realized that they can't wait for 29 months to see whether someone takes more or less time to churn as a result of an experiment. Ultimately, they turned to data science to predict user CLV based on short-term changes in behavior.

The Six Habits of Experimentation

Building these “Six Habits of Experimentation” will help your company gain usable data to make better decisions and improve behavior quickly.

1. The first habit Jones speaks on is the necessity of leaders asking about experiment results. Jones says, "culture starts from the top," so **PMs must be available and attentive to their team members.** This shows that ideas are valued, giving them the confidence to work harder knowing they will be heard.

2. Second, Jones says that **teams can "protect" their ideas by framing them as experiments.** This changes the conversation from risk and investment to testing and data, allowing teams to

have more opportunities to capitalize on promising ideas.

3. The third habit is that **leaders should always celebrate wins and losses**; while wins increase profit or have other positive effects, losses allow for teams to re-evaluate, re-test, and find a solution. Jones refers to this as the Experimentation Singularity, where experimentation becomes self-reinforcing.

4. For the fourth habit, Jones says that **teams must hire for an experimentation mindset**. He says this can be achieved by requiring interviewees to present a data set, and then, look for the applicant who can best use context to tell a story about the truth of the data.

5. The fifth habit relates to **choosing the right metrics for your experiments**. Experimentation allows teams to remove guesswork and objectively make decisions, so, you have to make sure your metrics are suitable for your optimization goals.

6. The sixth habit is about building experiment velocity; **the more experiments that are conducted, the more ideas that can see the light of day**. A few ways to achieve a higher experiment velocity is through investing in education and training, holding experiment review meetings,

simplifying experiment launches and their requirements, and automating experiment tracking. With these actions, you will see an increase in experiments and an increase in successful decisions.

By implementing these six habits, you will be able to build your own culture of experimentation at your venture, allowing for major growth and innovation from your teams.

If you want to listen to Byron Jones' full ProductCon SF talk, [watch it here](#).



How To Crack **the PM Interview**

by Gayle McDowell
Author



How to Crack the PM Interview

Gayle McDowell –
Founder/CEO at CareerCup

— Everybody knows Product Management is one of the most attractive positions in tech. This is why there is heavy competition from people coming from diverse disciplines: engineering, design, marketing, even sales!

One of the positives of heavy competition is that, with a little effort, you can rise above it.

Gayle McDowell, author of several books, including *Cracking the PM Interview*, is the Founder and CEO of CareerCup, a website/forum, publishing company, and consulting firm oriented around landing tech jobs.

She has a lot of experience with interview processes. Let's start with the basics.

Searching for the Perfect PM

McDowell started off by highlighting the fact that “the perfect PM is a myth.” She said that **it is impossible to be highly skilled in every discipline a PM requires**, so, you should understand your strengths and weaknesses and be able to portray them in a complementary way.

Once you know where you lack experience, you can prepare your pitch with stories that demonstrate how you will be successful in tackling the problems you haven't yet experienced.

In order to formulate your pitch, you must understand the requirements of the position and how you fit in. If you're coming from an engineering background, McDowell said you may be stereotyped as great with numbers but lacking the ability to make business decisions.

Knowing that the position will require a strong business mindset, along with other skills, allows you to prepare examples that show how you will be effective in these disciplines.

Reinforce your Resume Without Repeating it

When developing your pitch, McDowell said the most important thing to remember is that the interviewer will be looking for **how your stories actually represent the work you will do**. This is why it is vital to provide stories that show how you were adaptable and successful. Remember, the interviewer only has your resume, so you have to present yourself in a way that enforces your resume without repeating it.

Hobbies can be a great way to contrast your “stereotype.” She takes this even further by saying that a hobby can be used as your motivation or a driver, showing the interviewer that you are passionate and want to learn about something that may not be your career. An example of this is a data analyst who loves to paint; this portrays that, even though they are a numbers person, they still have a creative design side.

Typical Interview Questions

The Product Design Question: The interviewer will ask you to design a product and it is difficult to do so without asking as many questions as possible. You need to know about your

users’ behavior, their age and where they will use the product. A bookshelf for all the books in a classroom is much different than one for just a few in your house. Get creative and reinforce your message.

The Favorite Product Question: You should never come to a PM interview without having a favorite mobile app, FMCG, company product, etc. For all of your favorite products, you should prepare answers to questions such as:

- What needs does it solve?
- Why do people love it?
- Why do you like it over alternatives?
- How would you improve it?

Most importantly, you need to show insight. You need to think of the product as a PM and be able to demonstrate that to your interviewer. **Bring competitors, users, and improvements into your answer to show that you understand how the product is successful and that you have insights on how to improve it.**

A quick tip for preparing answers: Find a list of strengths and weaknesses and pick five from each side that you believe you have. For each of these ten characteristics, write out a story that represents how you were successful or

improved. Make sure your stories have a strong message by structuring them with the situation, action, and result.

Want more examples or tips from Gayle? Then [check out the full talk here](#).

The Evolution of **the PM Career**

by Helen Sims



The Evolution of the PM Career

Helen Sims –
Product Manager at Airbnb

— Helen Sims, PM at Airbnb, has over six years of experience in the product industry and is eager to reveal her journey. Understanding Sims evolution of the PM career will provide a more complete idea of what becoming a PM entails and how to become proficient at the role.

Your 50-Year Career Trajectory

Before jumping into the PM career evolution, Sims first asks you to picture your career in terms of a 50-year trajectory. This allows you to hold yourself accountable by solidifying how you would like to invest your time and what results you would like to see. Without these goals, you may become lost in your career and not know what you want or how to achieve it.

With this broader framework in mind, let's explore each "rung" on the PM ladder, and dive into the type of work and thinking what will be required from you at each level.

Rung One: Entry Level

As with any new position, you will most likely begin at the entry level. Sims stated that the entry level PM position is all about "doing work with help" in order to gain an understanding of your organization and your function within it.

Entry level PM work entails making iterations to existing products by learning how the other disciplines function and beginning to interpret and present the results. Remember, **experiment results are never what you expect and human emotions are complex**, so, be flexible and adapt your communications accordingly.

Lastly, a quick tip for that first presentation: Never leave your messenger apps running while presenting!

Rung Two: Doing Work (Without Help!)

The next step in the PM evolution is "Doing work ~~with help~~." You're no longer in the entry position, you're now a full blown Product Manager. Congrats! Sims said that now, it isn't

about receiving help, rather, doing work.

At this point, **you will be building products from end to end and interpreting massive amounts of data**, requiring you to proactively communicate with your team. Lastly, Sims stated the importance of instilling a vision in your team and making sure you deflect praise and absorb blame.

Rung Three: PM Manager

Now you're a PM Manager... This involves "helping others do work." Sims states that **you'll be focused on attracting and retaining quality talent, improving your team's overall effectiveness**. Also, you will have to develop frameworks that simplify processes such as solving problems and giving advice or feedback.

Sims says that "people don't leave bad jobs, they leave bad managers," so, make sure you are attentive to your team members issues and desires.

Rung Three: PM Manager Manager

The final step of the PM career evolution is becoming a Manager of Managers. Besides the main goal of solving problems (lots of them!), Sims

said that you must increase your team's performance through effective leadership.

Effective leadership means you need to make sure you set the direction of an entire company initiative using your own product philosophy. If your team doesn't hold a unified philosophy, you may run into many inconsistencies between disciplines. Sims provided us with an example using her own product philosophy:

"Customers first, business second, ego last."

If you want to listen to Sims' ProductCon SF full talk, [watch it here](#).

9 Lessons from Managing Products **at Facebook**

by David Breger
facebook.



Lessons from Managing Products at Facebook

David Breger –
Product Manager at Facebook

— David Breger explained the nine valuable lessons he's learned from his time at Facebook as a Product Manager in hopes that new PMs can better handle common issues.

Lesson One: Prepare for Success.

PMs tend to have a data/engineering background, meaning they are often analytical and skeptical. They are trained to prepare for failure, and are therefore often unready for success when it eventually comes. **Design products** that will work if they succeed – if your product quickly acquired as many users as you hope for, will it cope? Apply the same attitude to your career – are you ready for the next move?

Lesson Two: Have Strong Opinions, Loosely Held

Hold to your beliefs and believe them with passion, while still having a flexible perspective that is essential when managing an innovative and diverse team. **Product Managers need to lead through conviction**, but also be willing to change course when presented with irrefutable data. It's a delicate – but an essential – balancing act.

Lesson Three: Be Adjustable

As a PM, you come into a team with engineers, designers and others. You can come in with your pre-prepared style. Or you can take the temperature of the room, and adjust to the existing style without imposing your way. **It can be easier to adapt yourself**, rather than expecting others to adapt to you.

Lesson Four: Skate Where the Product is Going

Companies who prepared for success on mobile platforms before they were paramount increased their market share and lead. Anticipate what is going to be big, and get there before everyone else. This is a key way to differentiate yourself in the competitive PM field – **become one of the first**

experts in something new, before it becomes obvious.

Lesson Five: If You Want to Understand Your Users, Have a Diverse Team

Breger stated that having a diverse team is crucial to understanding your users and developing the products they want. By surrounding yourself with team members who have a diverse background, **you can create an environment where employees can complement each other**. This introduces new perspectives, so you can benefit from insights that you wouldn't be able to come up with on your own.

Lesson Six: Surround Yourself with People Who Compliment You

Surround yourself with people whose strengths compliment your weaknesses, and vice-versa. This requires you to be honest about your own limitations, and **seek out people who have the talents and abilities that you lack**.

Lesson Seven: Put Smart People on Hard Projects, Don't Worry About Background.

Don't worry about team members backgrounds when assigning tasks, rather, put smart people on hard

projects because they will look at it from a fresh angle. The Product world is changing so quickly that **backgrounds are less relevant than talent and intelligence**.

Lesson Eight: Scale Your Product Team Thoughtfully, But Make Sure They're Ready for Success

Understand the stage of the product and feature set that you have. Assign the right people to the right areas based on a clear strategy and roadmap. A fundamental aspect to forming a scalable team is making sure they're set up for success; **it is easy for great ideas to be lost when teams aren't given the resources** or attention they need to succeed.

Lesson Nine: Know What You're Looking for In Your Career, and Do Everything to Make it Happen

PMs must have career goals and the motivation to achieve them. Without this growth mindset, you will become stagnant and so will your team. **Always have career goals and be on the lookout for opportunities to achieve them**; your personal motivation will be contagious to your employees, facilitating a more productive and prosperous team. If you want to watch Breger's ProductCon SF full talk, [watch it here](#).

Unleash Your **Inner Leader**

by Kenneth Berger



How to Unleash Your Inner Leader

Kenneth Berger –
Fmr Product Manager, Slack

— Everyone thinks leadership is something they are missing. People try and fill this perceived “hole” with conferences, books, and articles on Medium. But Kenneth Berger explains that leadership does not come from a book. It is not a missing skill. What prevents most people from embracing their leadership style are the limiting beliefs that they don’t even know they have.

What Beliefs Are Limiting Your Potential as a Leader?

This is something that many people aren’t comfortable thinking about, but this is what is really holding us back.

From working at a number of leading Silicon Valley companies and having both positive and negative experiences, Kenneth learned a number of key lessons about leadership that we will explore below.

Lesson Learned at Adobe: Listen to Your Gut

Kenneth spent over 8 years at Adobe. Starting as an enthusiastic newcomer determined to shake things up, he soon found himself as part of the “old guard.” He was comfortable with the hours and the paycheck. So he stayed, despite the gut feeling that he wasn’t in the right place. Then, after 8 years, Kenneth was laid off.

The key lesson here is to listen to your gut and be curious about what those inner feelings have to say. It can be a little scary, because your gut is probably telling you to break out of your comfort zone. But the payoff is huge – it means you can work in a way that is consistent with your values. It means you’re fulfilled.

Lesson Learned at YesGraph: It’s Not Your Job to be Right

YesGraph is a startup co-founded by Kenneth. His co-founder had an engineering background, Kenneth had a design background. The founders quickly fell into heated arguments. It seemed critically

important to be right. The thing is, the job of a founder isn't to be right. It's to make a company successful. When the founders put being right above being effective, the startup suffered.

Your job is not about winning the argument in the meeting. It's about the bigger stuff. When you let go of the good feeling that comes from fighting to be right and focus instead on the bigger mission, that's when you step into the role of being a leader.

Lesson Learned at Slack: Name the Elephant in the Room

When Kenneth left YesGraph, he was determined to avoid drama and focus instead on putting his head down and working. He believed in Slack from the start. They were making an impact. But Kenneth didn't fully understand his job at the company. He thought it was conventional PM work: talking to customers, determining features, etc.

What Kenneth hadn't realized was that Slack was the CEO's "baby." Kenneth wasn't hired to write specs. He was hired to take care of this "baby." And that's a very different job description. Kenneth was almost fired from Slack after about one

month. He asked what he could do to make it right. He was reinstated, but at a cost.

Suddenly, the work was imbued with fear. It was clear that something had not been right. After three months, Kenneth's position was eliminated and he was moved to another role. Kenneth fought for his old role, and again held onto the position. But the underlying issues were never resolved, and after another 9 months Kenneth left Slack permanently.

The lesson here is to always discuss the underlying causes of tension and negativity. If they are not discussed, they only get bigger. Once you name the "elephant," it's not an elephant anymore. It's just a regular business problem. Good leaders name the hard truths.

Lesson Learned Coaching: You Choose Your Own Story

After leaving Slack after only a year, Kenneth felt like a failure. But he didn't stay in this negative frame of mind. He chose instead to tell his own story. He started writing and speaking. Slack wasn't a failure, it was an amazing achievement that came with many lessons. Kenneth

chose to define his own perspective, and embrace new possibilities.

Kenneth learned that the value he gained from his Product work often came down to offering people support through one on one conversations. When he realized the impact a simple hour-long conversation could have on someone's life and career, he knew that was the path for him. So he became a coach. This was the perspective that felt right for him.

Never accept it when someone says "that's just the way it is." You can challenge this. Choose a perspective where more is possible.

Leadership Comes from Within

Leadership isn't something that you do. It's something that you are. It's about being:

When you listen to your gut, you're being introspective and curious.

When you let go of being right, you're being humble.

When you name the elephant in the room, you're being vulnerable and courageous.

When you choose a perspective where more is possible, you're being a visionary.

If you want to listen to Kenneth's ProductCon SF full talk, [watch it here](#).

Delight Customers in Margin-Enhancing Ways



by Gibson Biddle

NETFLIX

Delight Customers in Margin-Enhancing Ways

Gibson Biddle –
Fmr VP of Product, Netflix

— Customers are always beautifully, wonderfully dissatisfied, even when they report being happy and business is good. Great things happen if you chase their discomfort and address it.

Gibson's main mission as VP of Product was to delight customers and experiment madly to invent a better future. In Gibson's own words, early Netflix sucked but all early startups suck in some way.

What they had to come up with was a balancing act between delight and margin. They also factored in 'hard-to-copy.' What could they do that was unique? 20 years later, Netflix has a hard-to-copy device ecosystem where thousands of tv-based devices "automagically" stream Netflix. They also have their original content, massive amounts of data to aid personalization, and brand trust.

But it took a long time to get there.

Netflix's Big Problem

In 2005 Netflix had a problem. Everyone wanted the new release DVDs as soon as possible. But when 50,000 people demand a DVD, and the company could only afford to buy 25,000, lots of people had to wait. Across the board this was the main area for improvement reported by consumers and focus groups.

So they created the Perfect New Release Test, where 10,000 customers would add a new release DVD to the top of their queue and the very next day it would arrive in the mail.

Netflix then asked 'are these 10,000 people delighted?' and their metric for delight was retention. On average 4.5% of customers would cancel every month in 2005. In the 'Perfect New Release Experience' that number dropped to 4.45%.

Doing the math, if they rolled the experience out to all of their customers, they would "save" 5,000 customers, which was worth about \$1 Million. The lifetime value was \$100, which they doubled for word-of-mouth value — each customer would presumably tell a friend about Netflix.

However, the cost of rolling out the feature would cost \$5 Million.

Gibson and his team were surprised.

They gave their customers the one thing everyone said they wanted, and they didn't value it as much as they hoped. If the team increased the word of mouth factor to 8x instead of 2x, the math would work out (something which, Gibson reports, Amazon does all the time) but unfortunately they just didn't have the money. They didn't roll out the feature, but this case illustrates the balancing act between delight and margin.

Stay Unique - Make Your Products Hard-to-Copy

Hard-to-Copy is very important for customer retention, as it creates an environment where you don't have to worry about competition as much, and instead focus on delighting your customers.

A thought experiment: If you were given \$500 million to create a startup to compete with Netflix, what would be hard-to-copy about what Netflix does?

- The first is their original content, which is difficult to copy given

Netflix's huge economy of scale — this year they will spend \$19 billion on content as they can spread this cost against 150 million members.

- Next is Netflix's unique personalization technology. Netflix knows the member tastes of 150 million members around the world, giving them lots of data to predict which TV shows and movies they should invest in.
- They have a huge device ecosystem network effect - every TV-connected device on the planet is pre-wired to enable you to stream Netflix.
- The last hard-to-copy advantage: the Netflix brand. Millions of people around the globe trust Netflix with their credit card each and every month.

“What's Your Social Strategy?”

Finding the intersection of delighting customers in hard-to-copy, margin-enhancing ways is hard.

In Silicon Valley in 2008, as Facebook and social networks became more and more hyped, “What's your social strategy?” was the main question on every Venture Capitalist's lips.

So Netflix came up with “Friends”, their answer to social networking for movie lovers and their best guess about how to improve customer retention.

The idea was that you wouldn’t leave Netflix because you didn’t want to leave your friends, creating a hard-to-copy Network effect. You could get recommendations from your friends and see what they were watching.

What Netflix didn’t anticipate is that our friends’ tastes in movies were terrible, and no one wanted their friends to know their watching habits.

Social strategy worked for many companies, but it didn’t work for Netflix.

The Path to Personalization

Netflix created a personalized experience by encouraging members to rate billions of movies and then marrying that data with the information they had about the content through matching algorithms. Netflix’s personalization technology created a huge hard-to-copy advantage.

Netflix’s personalization delights members by making it easier to find great movies and TV shows, and personalization technology makes it easier for the company to “right size” their investment in original content.

Netflix knew that 100 million members would enjoy “Stranger Things” — making the company comfortable investing huge sums — while correctly predicting that niche content like “Bojack Horseman” would find a smaller audience, necessitating a smaller investment.

Lots of projects also helped Netflix along the way to a more personalized experience. For instance, Netflix switched from using a five-star rating system, to using thumbs up and down based on A/B test results. “Thumbs” got them twice as much taste data from members as their star ratings system.

The road to personalization was full of surprises. The Product team tested whether demographics like age and gender improved their predictions. To their surprise, it was not. It was far more helpful to know the ratings of three movies or TV shows than to know a member’s demographics.

When streaming really took off and the company went worldwide, they tested whether knowing someone’s nationality

and location would help. Again, it did not. This was yet another surprise along the road to creating a more personalized experience for each Netflix member.

Debate. Decide. Do

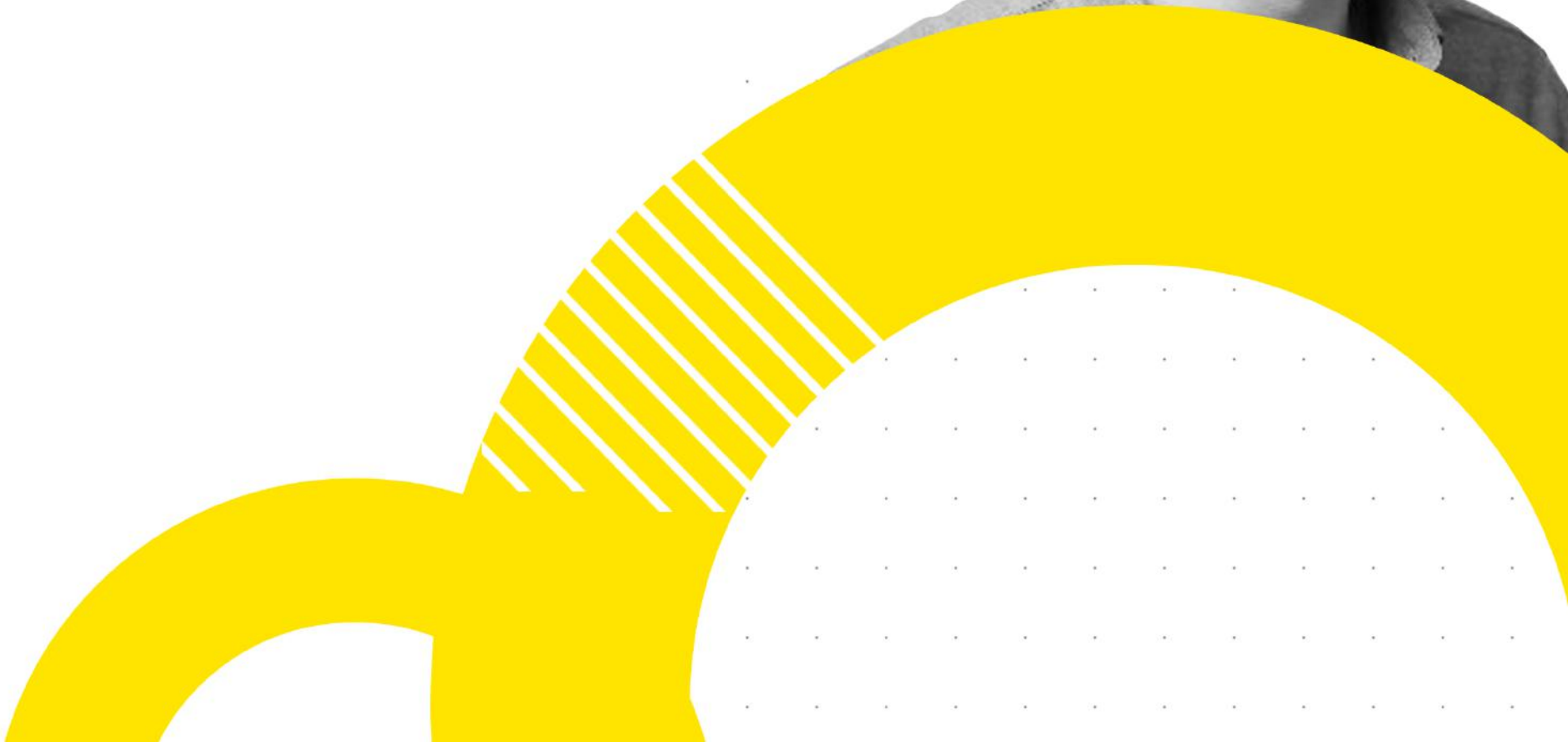
Finally, we finish with Gibson's main secrets for success:

1. **Courage.** It took Netflix 2 hours to decide to invest \$100M in House of Cards, and only 30 minutes to cancel it when the star, Kevin Spacey, was accused of sexual harassment. Both of those decisions took courage, and both paid off. Sometimes you just have to take the leap.
2. **Patience.** Netflix is one of the biggest entertainment streaming sites around, but it took 20 years and lots of hurdles to get there.
3. **Humility.** Aside from Friends, Netflix experienced another blip in 2011 called Qwikster, now hailed as the biggest flop in the company's history. The key to product success is admitting to your mistakes and moving on — it takes time and humility to invent the future.

12 NEW

Google's Approach: How to Grow to **100 Million Users**

by Joris Van Mens
Google



Google's Approach: How to Grow to 100 Million Users

Joris Van Mens –
Product Manager, Google

— Joris and his team at Google focus primarily on India, as it's the second largest market for smartphone users worldwide, with 375M and a YoY growth of +75M. The US comes in at a close third, with 252M users, but with only +25M YoY growth, it's a mature market.

Joris leads a group of products built for emerging markets users, including the Files by Google app. It has three main aims, to help users clean their phones, browse local files, and share files offline easily.

In India these features are particularly useful. Statistics found that one in three users ran out of space on their phones every day. Not only does this mean that cleaning comes in useful, but that they have a lot of files to sort through and organize. The ability to share files offline means that information can be shared without using data, as the availability of WiFi is lower compared to the US.

The app launched and quickly became the highest rated Google app on Play Store. At the time of writing the app is quickly reaching the 100M user mark, with a rating of 4.6/5 from over 1M ratings.

In this chapter, we'll walk through the three main stages of product; ideation, iteration, and growth.

Stage 1. Ideation: The Road to Launch

Ideation can be summed up as 'lots of talking, lots of trying.'

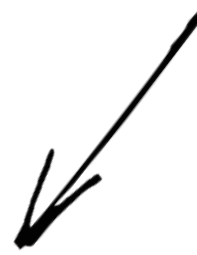
A Product Manager's key inputs at this stage starts with research. Talking to users and trying to understand them is the very first step of any product. What it involves is interviewing and observing your target demographic, reading research papers, and digging into market analysis.

A. Research

One of the things Joris' team found at the research stage, was that people's phones were filled with 'Good Morning' images. Most people they spoke to were in large WhatsApp groups, and would receive dozens of

these images daily, taking up a large portion of their storage. The team could never have guessed that this was a recurring problem for their target market – it's only thanks to user interviews that they had this information.

'Good Morning' Images on WhatsApp from India



If you're part of a larger corporation, taking a close look at the company's strategy to make sure your product is in line with the overall company goals is key. The tech boundary will also be something for a Product Manager to consider, as well as prototype feedback.

At Google, OKRs are set every year and made very clear to every team, which helps to keep everyone aligned. Exploring how you can help the company reach its goals will also help you out when the finance teams are inspecting your performance!

While conducting interviews in India, Joris also found that privacy was a major concern for users.

Device sharing between family members is fairly common, which can cause problems if any of the users have sensitive information. As soon as Google knew this was an issue, they worked on a solution to empower their users. Now, they are able to maintain a certain level of privacy on their smartphones.

B. The Tech Boundary

Another part of the ideation phase is understanding the tech boundary, and knowing what is just possible. For Google this meant running complex machinery models on low-end devices. At the time Machine Learning had been around for a while, but mostly in the cloud and

very computationally expensive, requiring immediate connectivity which couldn't be guaranteed in the Indian market.

Running great models on-device is becoming more and more possible, opening up new solutions to problems. As the tech is so new, it's a rich opportunity for a company like Google, as no one else has been able to provide these solutions before.

Success at the tech boundary requires working with a great Tech Lead, particularly if you're not a very technical Product Manager. They'll help you to identify these new opportunities.

C. Bugs and Prototypes

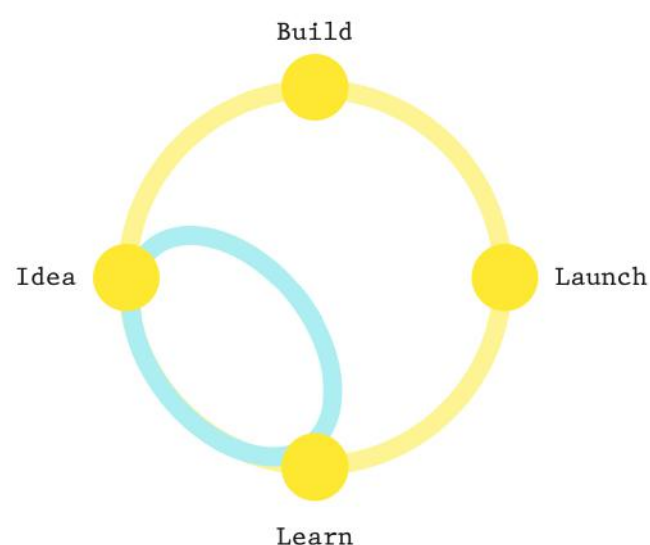
At this stage you have to ideate with your team, taking all of the inputs you've collected and brainstorming new ideas. Of the best ideas (and there's plenty of ways of figuring those out) you draw concepts or build prototypes, depending on your resources.

This gives you something to test with users. It can be very enlightening to see a user's reaction, either positive or negative.

Prototypes should be scrappy as the whole point is to save yourself a lot of time by not actually building the product.

Without prototypes you could spend all the time and money building and launching a product, only to have it not do so well with users in the end. A prototype should just get the idea across, and give you a tool to test with users.

A common tool for getting prototypes made and concepts drawn, is a design sprint.



A design sprint serves a shortcut, where instead of building a full prototype, you test the idea with users, gather feedback, and then go away and iterate on the idea.

In Joris' team, they always build prototypes to test with users, with a two to three-week turnaround. At

Google X, he's heard, they try to test up to twenty ideas in a week, so it depends on your circumstances and how easy your prototypes are to build. Anything is fine!

Once you have built and verified a series of prototypes, you end up starting to build something that looks like a real product, which you can then call your Alpha or Beta. It will have a lot of bugs, and a lot of features will be missing, but it's something that you can get into the hands of users and get feedback on, which is important for building the right products.

After a while when your Alpha starts to really solve users problems, you can finalize it, call it your MVP, and launch it into the market.

Stage 2. Iteration: The 'Easy' Part

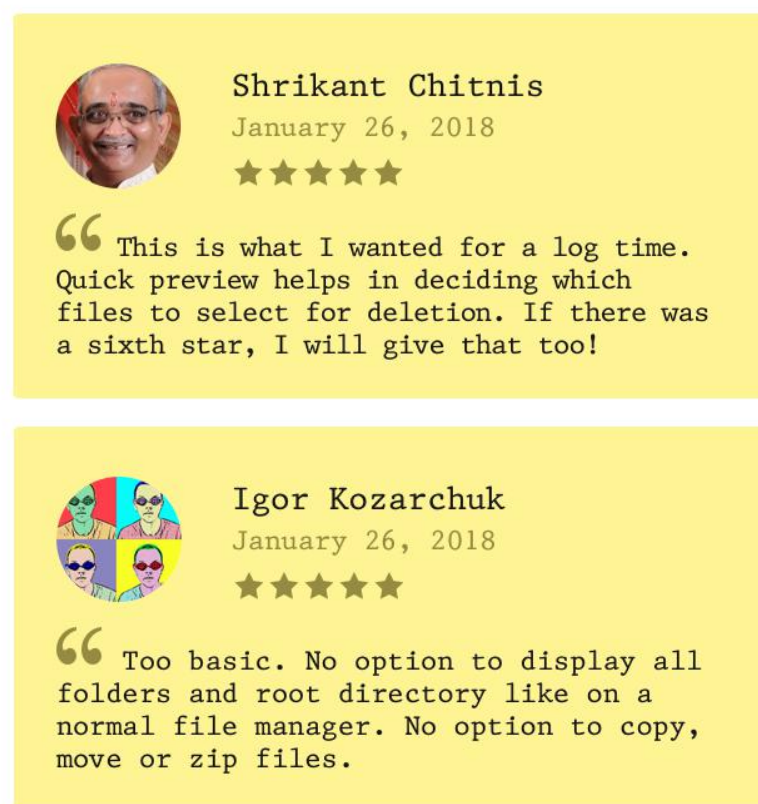
The story of Files Go takes a different turn here, as it was leaked. A few months away from being ready, with a few features missing and a couple of bugs, it got out onto the market. Google owned up to it, and got a lot of users and feedback very quickly.

The key inputs after a launch (or in this case a leak) are user feedback and usage data. The main forms of user

feedback are reviews in the app store as well as in-app feedback. Companies like Google can also expect their product to be talked about in forums such as Reddit, and in the media through press coverage. There's no shortage of opinions on the internet once a product has been launched!

A. Feedback People

Here you can see two examples of app reviews:



One positive and one negative. What's interesting to note is that although the team initially planned the product to be primarily a file cleaning app, some users were thinking of it as a file manager, and

then criticizing it for not being a full local file manager.

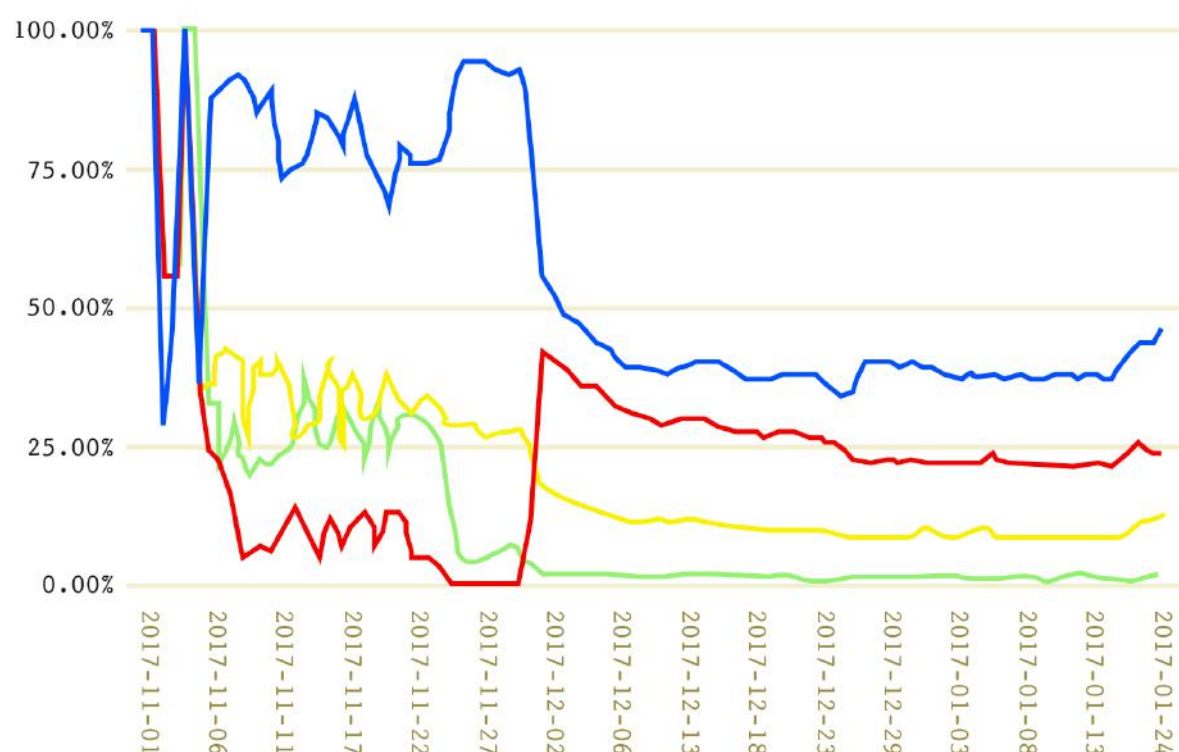
Feedback can be biased, to what can be called ‘feedback people.’ These are the kinds of users who enjoy going online and telling people what they think about software. This is a specific demographic of people, who are tech-savvy early adopters, and tend to be predominantly men. So although a lot of user feedback via reviews is useful, it’s good to keep in mind that it doesn’t all come from your average user.

B. Usage Data

From usage data you can understand feature usage and retention drivers, gather error reports, and learn some surprising stats.

- ✓ The **blue line** represents users who used the app to clean up their phones.
- ✓ The **red line** represents how many people used the app as a file manager, which surprised them as it wasn’t the team’s intention.
- ✓ The **green line** represents offline sharing, which they hoped would be used more, but because that feature requires both parties to have access to the tool, they didn’t see as much pickup in the early stages.

Surprisingly, 60% of users didn’t free up space with the app! Following this, the team were able to go through the feedback and the data, taking away action points for the future.



Percent Feature Usage by Date

Stage 3. Growth: Analyze, Estimate, and Test!

Growth is all about analyzing, estimating, and testing. It's a very quantitative endeavour, and the key to the success of Joris' team was a very quantitative Product Marketing Manager who he was able to work with closely. Product Marketing has to be data-focused to succeed.

At the start, they laid out all the options they had for growth, starting with a list of channels.

- **Organic:** relying on people talking about it, or the press writing about it.
- **Partnerships** with another company
- **Ads**
- **Referrals:** rewarding people for referring the app to someone else, very popular in consumer tech
- **Cross-promotions** with another product
- **Feet on the street:** people with fliers or in a kiosk helping people download the app

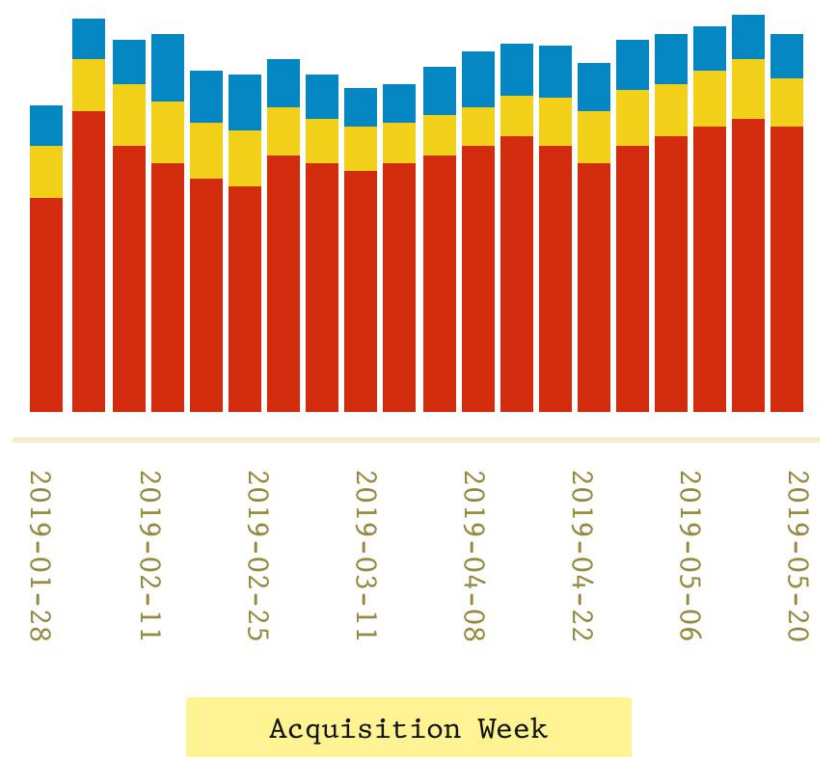
After laying out what the possibilities were, Joris looked at the potential and the cost of each channel. He then thought through how they'd actually be able to use these channels, asking "if we use ads, where would we show ads, on what type of network" etc.

Ads has almost unlimited potential, but of course that would require unlimited budget! Feet on the street causes a lot of excitement within the team, but it's difficult to do at scale and at good cost. Cross promotions didn't have the right scale as they needed. They tested paid and unpaid referrals, both of which yielded a decent ROI, but didn't have the scale they needed either.

They soon found that partnerships was the most viable option, as smartphone companies also benefited from the user's limited space problem being fixed. When users quickly ran out of space on their new devices, they were quick to leave negative reviews.

Making deals (some paid and some free) with some major smartphone manufacturers, particularly of low-end devices, gained a lot of traction and yielded excellent results for the app.

You can see from this graph of weekly new-user acquisition how partnerships (represented in red) boosted growth. Without marketing, they would have been left with only organic acquisition (represented in blue):



The 4 Pillars of Strong Analytics

1. Key Metrics

There are 4 key metrics which Joris and his team used to track their progress:

- 28 Day Active Users (pretty standard at Google)
- Week 1 Retained Users (useful for seeing if users just open the app once, or if they come back)

- Week 4 Retained Users (proxy for what long-term retention is like)
- Google Play rating (gauges how positive people feel towards the app)

These metrics can be applied in different ways. Joris' team looks at them globally, by market, by partner, by growth channel, etc. These metrics can be split up in different ways to see what works and what doesn't.

2. Dashboards

You need a lot of dashboards to dig into the data. Google have excellent Marketing Analysts who build dashboards for the teams to be able to easily read and understand their data.

3. Ad hoc analyses

Very often you'll have a specific question on your mind about growth, and somebody does an analysis on the data to help you answer that question.

4. Weekly growth meetings

These meetings can include marketing, business development, product management, engineering, design, and finance. Everybody comes together to

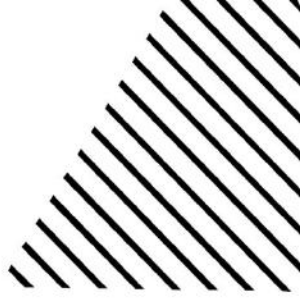
go through the metrics and decide if/ what action needs to be taken.

As an example, these are some of the topics which come up in his weekly growth meetings:

- Key metrics
- Acquisitions
- Pre-install deep-dive
- Feature usage
- Retention by country
- Onboarding by app version
- Referrals in India

From 0 to 100 Million

The key to growth is to analyze and implement. Growth should always be data-driven and highly quantitative. Make this chapter your guide to growing from 0 to your first million users, using Google's tried and tested secrets.



Prioritization for Impossible **Product Decisions**



by Mariano Capezzani



Prioritization for Impossible Product Decisions

Mariano Capezzani –
Head of Group PM, HSBC

The Best Job in the World

— One of the most important things you'll ever do as a Product Manager is to make decisions based on competing demand, and limited resources.

It's the art of making impossible choices, which is what Product Managers call...life.

As a Product Manager you hold a great level of responsibility. Often, you're the one who makes the decisions that no-one else will.

To help make these decisions, with so many outside influences and an interlocking web of things to consider, Mariano came up with his own prioritization system.

The 4-Step Excellent Prioritization Technique

1. Know the context

Before you can begin making a big decision, you need to look around you and know where you are. You need to know what your competitors are doing and what's happening in your industry. Ask yourself, will you be a sheep going with the rest of the pack, or are you on a different mission? Will you be focusing on a particular trend in the market, leading it, or responding to it?

You'll also need to look at your own business, namely what the goals and ambitions are. In the end, whatever you build will be tied back to the KPIs of the company.

And of course if you're in a regulated environment like banking, you need to be aware of any current and upcoming regulations.

2. Understand the need

As Mariano says, if you are a parent you know not to feed your children nothing but candy even if they scream for it.

When you feel the heat of customer expectation, you probably know not to commit to delivering features at any cost, despite knowing that

they're not possible. As a Product Manager, you need to make sure to deliver real value over the perception of value.

Of course, customers are not the only ones asking things of you. Your internal partners and team members will have their own demands. For example, people on your design team will always advocate for spending time and resources on the best design, most elegant UX, etc.

Your engineers will want to spend a lot of time making sure your product is resilient. People working in operations will tell you that it's time to move onto other platforms. You'll need to listen to everyone, painfully closely, and discern the best path to take based on real value over perception.

3. Consider the execution

Ultimately, there's cost and effort in building anything. The outcomes you want to deliver to your customers come down to the expenditure of resources. At this point the most important question you can ask yourself is "do I have what I need to deliver?" If you're a chef in the kitchen, you need to gather your ingredients before you can begin.

Are you aware of the intricate network of dependencies and their interlock that are needed to deliver something? Sometimes you are not the one building the pieces you need. Sometimes the teams that you depend on have other priorities, and you need to know whether or not they are inline with your priorities.

Sometimes you don't have all the answers, but that's not uncommon in Product Management. It's a risk tolerance exercise. When taking those inevitable risks, it's important to listen to your Risk Managers to understand what the blast radius is if it goes wrong. Because sometimes it will go wrong.

This becomes a complex relationship between value, satisfaction, complexity, reach, cost, and effort. Fortunately there are frameworks you can use, for example the very basic Value Over Effort matrix, RICE Scoring Method or KANO model.

4. Arrange the sequence

Here's where it all comes together. In the last step of Mariano's 4-step technique, he goes back to recommending that you follow the story. The narrative you created to articulate your product vision will

now help to articulate what sequence of events should be happening.

Customers (and your business) will always want more from your products, so plan for continuous increments of value. If you have a cadence of improvements on the jobs customers need to do or improvements on the existing jobs, you're probably already winning.

At some point, you may need to pause and think about the bigger pieces. You need to replatform and enable your business to grow by spending cycles and calories on building new tools.

The choice is between continuing an initiative or stopping to pivot to something else entirely. It's a tough decision often faced by Product Managers, and ultimately it's a decision only they can make.

In this last step, you'll also have to ensure that all teams involved are working together harmoniously, and work efficiently towards each other.

If there's some enabler or dependency that you know won't be available, don't build elements towards it until those are at least understood. It's a complex game of interlock, but if you

play it right you'll come out with a beautiful and consistent cadence.

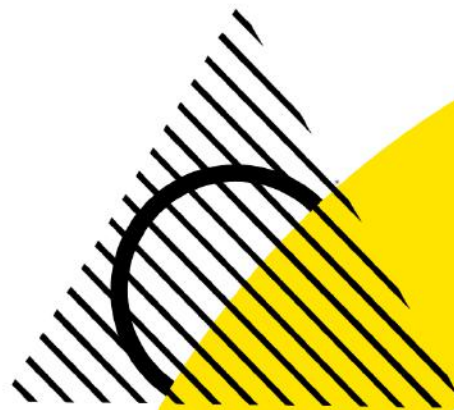
If you're in a hurry (as most of us are) you can apply a quick acid test. Ask yourself a series of questions before beginning on a new feature:

- Is this feature required for my product to operate?
- Does it contribute to the company's strategy, goals, and vision?
- Does it benefit a significant, addressable market?
- Does this maximize value over cost?
- Once built, can it be released, measured, and supported?
- If it doesn't work, can I handle the consequences?

Finally, Mariano compares Product Management to juggling live chainsaws. If you make the wrong choice, it can be painful. So use models, get ready, and get prepared.

A Product-Centric Overview of **Machine Learning**

by Rubén Lozano
Google



A Product-Centric Overview of Machine Learning

Rubén Lozano –
Product Manager at Google

Machine Learning (ML) and Artificial Intelligence (AI) are often lumped together as the same thing. Rubén Lozano knows otherwise, by explaining the key differences between them and how ML is related to statistics.

What is Machine Learning Anyway?

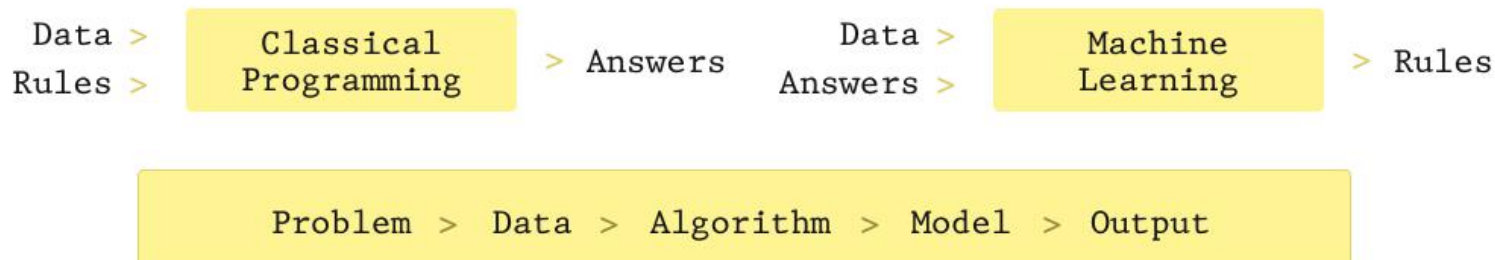
Machine Learning is a subset of Artificial Intelligence – when a machine is trying to mimic what a human is doing – and uses a lot of algorithms and statistics to do so. Deep Learning is a concept that often comes along with ML, and can be thought of as multiple layers of Machine Learning.

According to Arthur Samuel, a pioneer of AI research; Machine Learning is:

“The field of study that gives computers the ability to learn without being explicitly programmed.”

There are many problems that can be, and still are, solved with classic programming. You take your data and rules, and use classic programming to get your answers.

For example, simple customization can be done by using classic programming to show one set of search results to Person A, and another set to Person B. ML comes into play when you simply have too many rules and the answers you want are more complicated. The key to ML is having the data and the answers, but wanting to figure out the rules.



How Should Product Managers Think About ML?

ML is clearly complex. So to make it easier and add focus, Rubén breaks down what aspects of the process a PM should concern themselves with.

First, as a PM you should ask yourself; “what is the problem I need to solve?” Then make sure that there’s enough data, without which ML may not be a viable option. After that, you can start to think about the right algorithm to use to predict the answer they want. At this point the Data Scientists will join the conversation, working on the model and eventually the output.

When it comes to understanding the vocabulary, you can use statistics. Many of the concepts directly translate, and if you have a basic understanding of statistics, you’re already on your way to mastering ML. It’s important for a PM considering ML as a possible tool to get comfortable with the language surrounding it.











Statistics	Simply Put	ML
Dependent/Response Output Variable	The thing you’re trying to predict	Label or Target
Independent/Explanatory Input Variable	The data that help you make predictions	Feature
Data Transformation	Reshaping data to get more value out of it	Feature Engineering
Variable/Subset Selection	Using the most valuable data	Feature Selection

The main difference between Supervised and Unsupervised learning, is whether you have labelled data or not. With Unsupervised, you are using ML to try to find the similarities between data clusters which you don't fully understand.

When Should We Use ML?

ML is a cycle which should start with data. If you have no data, you need to find a different solution. Not only should you have enough data, it should also adhere to a set of certain conditions:

Can be Used	Should be Used	Is high Quality
 Available	 Respects Privacy	 Relevant
 Accessible	 Secure	 Fresh
		 Representative
		 Unbiased

Whether or not you can use ML is also based on what kind of problem you're trying to solve. ML can be implemented when your problem:

- Handles very complex logic
- Scales-up fast
- Adapts in real-time
- Requires specialized personalization
- Has existing examples of actual answers

Here are some examples of problems that can be solved with ML:

- **Ranking:** Helping users find the most relevant thing
 - ♦ Example: Ranking algorithm within Amazon search
- **Recommendation:** Giving users what they may be most interested in
 - ♦ Example: Recommendations from Netflix
- **Classification:** Figuring out what kind of thing something is
 - ♦ Example: Product classification for Amazon catalog
- **Regression:** Predicting a numerical value of a thing
 - Example: Predicting sales for specific Amazon products
- **Clustering:** Putting similar things together
 - Example: Related news from Google search
- **Anomaly:** Finding uncommon things
 - Example: Fruit freshness

When is ML Not Needed?

There's no point in using ML just for the sake of doing something cool, and a good PM knows when to step back

and admit that ML isn't necessary. It should not be implemented if **the problem**:

- Can be solved by simple rules
- Does not adapt to new data
- Requires full interpretability
- Requires 100% accuracy

It should also not be implemented if **the data**:

- Is unavailable/insufficient
- Is not readily accessible to you
- Has privacy concerns or is unsecure
- Is irrelevant, stale, biased, or otherwise low quality

So... To ML or Not To ML?

Here is a quick exercise, asking whether ML should be applied to answer the following questions:

- **What apparel items should be protected by copyright laws?** — *No, because this requires 100% accuracy.*
- **Which resumes should we prioritize to interview for our candidate pipeline?** — *Has great qualities for an ML problem, but the data is biased.*

- **What products should be exclusively sold to Hispanics in the US?** — *Tempting, as you might have all the data and customer profiles, but it's discrimination and makes a lot of assumptions about people)*
- **Which sellers have the greatest revenue potential?** — *Could be argued to be discrimination as well – but you cannot help every single seller and you need to find a way to use your limited resources to have the maximum impact. So no.*
- **Where should Amazon build HQ2?** — *No, it's not a repeatable problem, and you don't already have the answers. You could use classic programming, but ML isn't necessary.*
- **Which search queries should we scope for the Amazon Fresh store?** — *Yes, you'll need a combination of ML and classic programming.*

Let's Do ML!

Once a PM feels ready to take on ML, it's time to take a look at the ML Lifecycle, starting with what you need to do it.

People > Processes > Tools & Systems

Get the right people:

There are many different roles in different organizations, but it's important for PMs to differentiate between Science and Engineering.

The people who are working with the data and doing all the maths like choosing the right model (ML Scientist, Research Scientist, Data Scientist etc) will not be doing the Engineering.

People with titles like Data Engineer, Software Engineer or Dev Manager will be doing things like collecting, cleaning, ranking, and processing the data.

Understand the process:

- **Formulate the problem**

- ♦ What is the problem to solve?
- ♦ What is the measurable goal?
- ♦ What do you want to predict?

- **Select and preprocess data**

- Selecting
 - Available
 - Missing
 - Discarding

- Preprocessing
 - Formatting
 - Cleaning
 - Sampling

- **Feature engineering**

- Feature: individual measurable property or characteristic of the phenomenon being observed
- Goals: Use domain and data knowledge to develop relevant features from existing raw features of the data to increase the predictive power of ML

- **Test and tune models**

- **Productionize:** Integrating ML with existing software, and keeping it running successfully over time

- Deployment environment
- Data storage
- Security and privacy
- Monitoring and maintenance

Sometimes you can have everything you need, like great data and a great problem, but it's just too costly to make sense. Part of being a Product Manager is figuring out the trade-off, and for this you need a strong relationship with your data scientist.

A Product Manager's Role in ML

Once you've decided to move forward with ML, and understand the rough outline of the process, it's time to take a look at what part a Product Manager plays in it.

Firstly, a PM has to formulate the problem. Ask yourself what the problem is, what the measurable goal is, and figure out what you want to predict. Here's an example of what this might look like:

What is the problem?	Units per order from category X in the US has remained flat YoY and engagement has declined as measured by purchase-week frequency
What is the measurable goal?	Increase unit order rate for category X in the US by +X% within the next X months without affecting revenue
What do you want to predict?	Category X products that are more likely to be added to a customer cart based on items in the customer car

Once you understand the problem and your goal, the next step is to select and preprocess data. As Rubén says, at this point you have to be pretty in the weeds. If you don't have the data right, everything else will be wrong. Choosing the right data sets and knowing that they're being used for the right purposes is a critical PM task.

When it comes to formatting, a PM can expect to have a fairly low level of involvement, zooming out just to make sure that everything is working the way it's supposed to.

What a PM can do, by working together with the Data Scientist, is to get involved with cleaning the data, namely by having incomplete, noisy, biased, or inconsistent data removed.

In your PM role you should also get involved with sampling, by choosing representative data. You can choose random data (for which there are pros and cons) or you can use stratified data.

You'll need to also check your data for seasonality, leakage, or biases. There's also a danger of your data being collected based on a certain trend, which will affect your results.

Treat Your Scientists Right

You'll need a good working relationship with your Data Scientist for ML to work. Firstly, you should treat your ML project as a partnership. Make sure everyone knows why you're making your decisions the way you are. You should have a clear problem, hypothesis and success metric. Start from there and let everything else come later.

Another key part of the PM<>Tech relationship is to be willing to make tradeoffs. Rubén gives us the examples of Time vs Quality, White Box vs Black Box, False Positives vs

False Negatives, and Go vs No-Go Metrics.

Finally, be considerate of scientist time and momentum. When working with people who have different skills, it's important not to expect them to work at your pace or presume to tell them how they should organize their time.

Being transparent about what you need from them and why you need it, without crossing the boundary of telling them how to do their jobs. Bringing what you do best to the table and working in tandem with other disciplines is a recipe for success.

The Product and **Design Partnership**



by Abigail Hart Gray

Google

The Product and Design Partnership

Abigail Hart Gray –
Director of UX, Google

— Abigail Hart Gray had a background as an architect, before moving to a digital agency and then eventually becoming a self proclaimed Product Design Obsessive at Google. In this chapter, we're going to explore what Product Managers can do to help Design be successful, and therefore the product can be successful.

Going over a brief history of product design, it's clear how the early way of thinking (introducing design in the last stage) was detrimental to the product.

Not having design thinking involved early on meant the engineer would hand over to the designer and essentially say, 'pretty it up' with no room for them to ask questions and recommend changes.

Things are different at Google now, as Design has a seat at the table from beginning to end.

Who's Who in Design?

Design is experiencing a moment right now. A moment that began with the first iMac. This was the moment that the ugly grey boxes that people hated looking at but loved working on became objects of joy. This is when Apple discovered that people liked their computer more if it comes in a candy-colored shell.

To help Product Managers understand Design better, let's go through the different types of designers that make up the team.

UX Designers: Wireframes are their bread and butter. They might work under different names like Interaction Designers or Information Architects. They focus primarily on information hierarchy, flows, interactivity, and helping the product team map all of that out.

Visual Designers: The ones who make it a branded experience. A great visual design team helps make your product unique, and make it yours instead of someone else's.

Content: The people who write the words on the page. Often overlooked but incredibly important. If your users don't understand something about your product, or get confused trying to use it, the directions the content team put together will fix the problem.

Research: The people who tell you the What, Why, and How to make sure the product is successful.

When you have a really good design team, it helps the Product Managers to be more efficient. Most product people are incentivized by number of launches. Launches are great, but if the product flops when it's in the market, if people aren't engaging with it, and it isn't doing anything to increase revenue, then it's not worth much.

So if you do it right up front (with a great Design team) you'll be much more efficient in the long-run. It can feel counterintuitive, but you're going slow to go better.

What Does Great Look Like?

The [InVision Design Maturity Report](#) is a comprehensive study looking at what a design team can bring you and

how to know if you're interacting with your designers well.

According to the study, playing the long game means you are helping your designers to be business owners with you. 41% of companies sit on the bottom rung of the graph, in the zone of 'we know we need Design, we can't get away with not having it, and they do what we want with no push back.' This counts as low maturity in terms of how the company has adopted design.

When a company has design maturity, they experience a drastic increase in revenue, cost savings, time to market and valuation. This proves that design maturity is good for business. InVision's investigation looked at companies across industries and ranging in size, so the data can be applied very broadly.

Harvard Business Review also did a lengthy study over 10 years, showing that companies which were design driven - which they defined in 6 different dimensions - outperformed the stock performance by 228%.

The Perfect Triangle of Data

How can designers do more to work with product? Firstly, focusing on

analytics is a great building block for ensuring your designers can be good for your business. After all, numbers tell good stories. They tell you where to look. They tell you what your next release should be. When you begin to measure everything, you can find what's important and design towards that.

Let's move on to what analytics can give you:

- **The What:** what people are doing.
- **The Why:** qualitative reviews done by different researchers (which is why design teams can sometimes be quite big).
- **The Will:** predict the future with A/B testing, surveys, concept testing at a larger scale, etc.

These three things create the perfect triangle of data which will take you to market with the confidence that your launch will be successful.

Start Small

You need to start with something small, which as mentioned before can feel counterintuitive. Some designers will want to go after the biggest impact project, but starting out like this will be a flop. When Abigail

worked at Northwestern Mutual, she and the product team went after the customer dashboard, which at the time brought in no revenue as not many people were on digital at the time.

With the improved design, the teams created value where there was none before. The new dashboard got people to do some of the things the company cared about, like signing up for e-billing instead of paper, aggregating their accounts from outside, and people came back.

There was almost no change in functionality, all they did was make clickable things look a little more clickable. She did the same thing again at AOL, by changing the design of the mobile app, which had a direct impact on how people used it.

Discerning between designers who will help you move up the maturity ladder, and the designers who just want to make things beautiful, involves more data.

Often engineers will have much more information than the designers, and you need to share that information with them. The designers who take that and use it to make decisions are the ones who will drive your business. Look for the thing that has

potential but is not performing at all,
and you've found your place to start.

Data-driven design is exciting and
the key to success, whether you're in
a big company or a teeny-tiny
startup. The partnership of Product
and Design is what drives success.

Why Customers Come Back: **Product-Driven Growth**

by Satya Singh



Why Customers Come Back: Product-Driven Growth

Satya Singh –
Principal Product Manager, Expedia

— While all Product Managers have heard of internal selling in terms of products, Satya Singh is all about external selling, and thinks that growth marketing should be embedded in the product to begin with.

As a Product Manager, Satya has always battled with the question: why do products fail? Especially in tech where products experience massive growth, then stagnate and sometimes fall. Friendster, MySpace, Google+...all really good products when they started but when a disruptor entered the market, their growth marketing failed and they couldn't sustain the number of users they needed to survive.

So what are the secrets to growth marketing, and how can Product Managers use it to keep their products in the game even when a disruptor appears?

The Evolution of Product-Driven Marketing

It's easy to see how far product marketing has come. In the 80s, tech companies stuck to Field Sales, generating as many leads as possible in the hopes that a small percentage would convert to customers. But this was a very high bandwidth and high cost affair. It evolved into Inside Sales (which Salesforce did very well by cold-calling and creating prospects) and eventually became marketing. This evolution slides down the scale towards being low-cost and low-bandwidth, until we reach product-driven marketing. This is the future of effective marketing.

Product-Driven marketing essentially means building a product which markets itself, through word of mouth and customers creating virality. In this way, the product is growth-enabled. To be successful, you have to build this approach from the very beginning, you have to experiment, fail fast, test, and learn. As opposed to the old days of releasing a product and then saying "OK, great, now let's go and get ten million subscribers somehow."

The Attention Economy

It's no secret that people's attention is like gold dust on the internet, which gives us The Attention Economy. Not just for marketers, but everyone involved in product. If your product doesn't grab your users/target market's attention from the beginning, it's bound to fail. A survey by The Mobile Intelligence Report shows that:

- 23% of users abandon an app after one use
- 77% of users on average are lost after 3 days
- 90% of users on average are lost after 30 days

Some products lose their attention-grabbing appeal halfway through, some never had it to begin with, and some lose it further along the product lifecycle. Satya's goal is to make sure it is ingrained throughout the journey.

To make it even simpler, Satya gives us the example he gave his grandmother when he was trying to explain to her what he does.

“Just like Finance owns the flow of cash in and out of a company, Growth owns the flow of customers in and

out of a product. Growth marketing is attracting more engaged customers to your product.”

Blurring the Lines

Touching briefly on his engineering background, Satya explains that if you have a solid engineering background and can understand the chaotic nature of business, then you can be a great Product Manager.

You already understand many important aspects of Product Management, which involves much more than simply building the product. It involves marketing, pricing, and sales. Some companies still view these pillars of product in a very siloed way, but the truth is that the lines between them are blurring.

Nowadays, you have to build your product in the right way from the beginning. When your users first come to your product, they have to be hooked and understand how it solves their problem.

How Products Become Habits

Slack is a great example of how a product becomes a habit, which is ultimately the goal of Growth

Marketing. The two aspects of habit-forming products are the emotional and the social. Not going on Slack for a day leads to FOMO (fear of missing out) for many people, as they don't know what their colleagues are doing. The communities people build on Slack help to create the social aspect, further tying them to the product.

This network effect shows very clearly that Slack is a product with marketing built into it, as users invite their community members, team members, and friends to it. The investment of the team in Growth Marketing led a platform which essentially sells itself, rather than the alternative of viewing marketing as a separate channel.

On the other end of the spectrum, and further evidence of the blurring lines, we see marketing campaigns which become products. For example the Ice Bucket Challenge started as a few videos on Facebook, before generating a million videos on 4 weeks along with more than \$90 million.

They did this through reciprocity and social proof. The reciprocity effect came from users sharing their videos and encouraging others to do the same. The social proof was a side

effect of seeing that this is a real person who you probably know in real life, and knowing that they are genuinely trying to raise money for charity.

Can You Manufacture Virality?

One thing a Product Manager can do to build in Growth Marketing is to enable virality both internally and externally. In the attention-grabbing economy, you can focus on collective intelligence, and think about how to embed growth loops within the product itself.

For example, when Pinterest started they tapped into the Facebook market, where they let you log in with your Facebook account. They immediately saw the value in this and benefitted from a network effect, which led to virality and lots of users joining in.

Once they understood that the Facebook algorithm had changed and they were starting to lose numbers, they switched to Google and focused more on their content and SEO. These are the key aspects of Growth Marketing - experimentation and the product acting as its own marketing channel.

What Does a Growth Loop Look Like?

A good growth loop is what keeps your users coming back for more. This is the key to keeping users ‘hooked’ and turns your product into a habit. It can start small like a notification, conscious or unconscious.

For example, users will sometimes open WhatsApp without a notification, just in case there’s something they’re missing out on. The lottery effect of not knowing what you’re going to get, but anticipating some kind of value, keeps users hooked on products.

Social networks are the perfect example and beneficiaries of the lottery effect. The more time users spend using a social network, the more value they get out of it every time they open the app, as they’ve been slowly building their online ecosystem. It’s important to use the effect positively, as it can be used negatively.

Some companies do this through rewards and gamification, where as the user moves along the journey they receive bonuses or points. For example Snapchat has streaks which users lose if they don’t use the app for a day, therefore rewarding the users

who log in regularly. Loyalty is also rewarded by some companies through a points system, which can be used for discounts.

So You Want to Be a Unicorn Growth PM?

Even if you’re acquiring more and more customers, a high churn rate looks bad and makes your growth unsustainable. So how can you make sure your customers come back?

You have to sell more to existing customers. Product led growth is more important than inorganic acquisition and retention. You can market yourself on every channel available, but without providing value and building in organic growth, it’s hard to have your product be a sustainable marketing channel.

PMs are generalists, where they look at lots of different things and understand what’s going on at a broader level. But the secret to being a unicorn PM is to have deep knowledge of a particular area. For example, you could learn a lot about SEO or PPC on top of your general understanding of UX, UI, Analytics, etc.

AI for Fun and Profit

by Jason Nichols

Walmart 



AI for Fun and Profit

Jason Nichols –
Director of AI, Walmart

— Most AI problems can be broken down into four groups. You're either trying to classify something, count something, find out what's important about something, or group things together. It's important to think about what model you want to use, why you want to use it, and whether or not it'll answer your question, which at the end of the day is what you want AI to do.

Step 1: Ask your question

Different models answer different kinds of questions. They all have different KPIs, you'll talk about them in different ways, and their properties are different:

- Regressors answer “*How many?*”
- Classifiers answer “*What's that?*”
- Detectors answer “*What are 'these' in this?*”
- Dimensionality Reducers answer “*What makes these things different?*”
- Clustering Algorithms answer “*How can I make groups of these?*”

When you set out to build an AI system you need to know what question you're asking, and one question per model is key.

When you're training an AI model you need to use a loss function, which takes into account many different potential objectives for your data.

If you want to ask ‘*how many items are there?*’ don't add additional properties like ‘*how blue is it?*’

Step 2: Consider how AI learns

- Different models have different ways of learning:
- Some are supervised and need labelled data
- Some are unsupervised and determine their own labels
- Some take feedback from their environment and learn via reinforcement
- Models can also have online and/or offline learning modes (Siamese Networks use both: Training is offline but enrollment is online.)

Once you know which question you're asking, the next step is to ask yourself how your machine will learn:

Can humans provide feedback?

You need to know whether you'll be getting that real-time feedback or not.

Do you have downtime to train?

If your system has to be online 24/7 and can never go offline you have to figure out how you're going to handle that. A lot of Deep Learning models require intensive GPU training. While it can be done in the background separately from your production stream, it's still something to factor in.

How will you build CI/CD?

This is more of an engineering challenge, but it's definitely something for PMs to consider. What are the tests that you want the new model to pass? What are the KPIs that are absolute blockers to releasing production?

Without capturing those requirements and building them into your production pipeline, you'll find models sneaking in which do slightly better than previous versions, but which fail catastrophically in terms of business objectives.

Can you make use of a Knowledge Base?

The concept of a Knowledge Base in AI is very old. You can think of AI models as very stupid rats. They have very little neural capacity, they can't think too hard. So if you're able to give them flashcards that they can reference, they tend to do very well.

How will you know if the model is meeting the business needs?

This links back to your CI/CD. If you've documented your requirements and built them into your production pipeline whilst keeping an eye on your KPIs, you'll get results.

Step 3: Implementing your AI

Once you've got the question and model type from Step 1, and the training method(s) from Step 2, it's time to think about how you'll implement this service.

In the AI lifecycles they use at Walmart, they have a System Checklist based on Agile methodologies:

- Feature selection
- Model architecture
- Initial training & transfer learning
- Model persistence

- Evaluation and CI/CD
- Inference
- Logging & Sampling
- Annotation
- Cross validation
- Source rating
- Aggregation
- Normalization and sanitization
- Training
- Knowledge base update

Ground Truth

Jason quotes Voltaire, saying:

**“Doubt is unpleasant,
but certainty is
absurd.”**

When it comes to Ground Truth...there is none.

There is always a margin of error in every human annotation, and if you don't take that into consideration as you begin to build these models, you're going to have a bad time.

Annotators and Algorithms are just different Agents.

Humans are lazy, sloppy, and imprecise. And worse...they build algorithms!

There's a lot of work being done to understand the source of error in annotation, the biggest being fatigue, coordination, misaligned incentives, and unconscious bias.

How Can Product Drive AI?

The big things for PMs to understand to help make AI effective are that the costs and benefits associated with the confusion matrix define business value.

PMs should also communicate probabilities and confidences to stakeholders so they can make informed decisions.

You should also make sure your work is hypothesis driven and experimentally validated, and think in terms of ROI both for improving features and confidence.

Another way for PMs to boost their AI knowledge is to learn the basic terms.

Here are the most commonly misused or conflated terms:

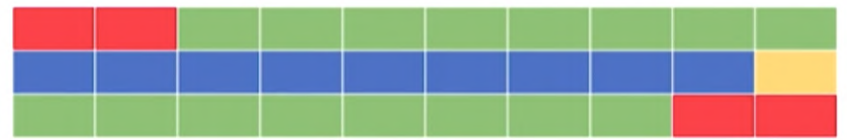
- **Accuracy:** When you ask the model for an inference, what percentage of the time is it right?
- **Precision:** When the model says ‘X’, how often is that correct?
- **Recall:** When ‘X’ occurs how often does the model catch it?
- **Incidence rate:** How often does ‘X’ occur?
- **Error rate:** How often is the model wrong? (this is the opposite of accuracy)

Incidence rate is one of the most important things to be sure of as a Product Manager.

If you don’t know what the incidence rate is, it’s very difficult for engineers to adequately design and test systems and build the training pipelines.

Before you approach AI, you should do at least some base research to approximate this incidence rate.

Error and Confusion: What PMs Need to Know



If there is only a 10% incidence rate (represented by the yellow box) and a 90% negative rate, if the model is right 80% of the time, that means that its maximum precision is 33%. It can never achieve a precision rate higher than this, because it’s going to be wrong 2/10 times.

And most likely, those two times are going to be when an incidence doesn’t occur, so it’s going to say that there were three, when there was only one.

This is a mathematical relationship that cannot change, despite some people saying “just tighten up the precision, don’t worry about accuracy!” Understanding this relationship is incredibly important.

It’s also important to visualize a confusion matrix, which essentially tells you ‘When I say X, how often do I mean Y?’ This is the key thing to understand for a PM, as there are different costs associated with different confusions.

Good Statement vs Bad Statement

To give us a more concrete understanding of how to talk about precision and accuracy, and keep your language more grounded in statistics, Jason shows us an example of a good statement versus a bad statement.

✓ *“We believe the model’s precision is between 80 and 90% with 95% confidence based on a production experiment with 500 examples.”*

- Measured in production
- Real metric
- Communicated uncertainty
- High and transparent sample size
- Replicable

✗ *“The model’s accuracy is 99%”*

- No it isn’t
- What was the sample size?
- How does it generalize?
- How did you measure that?

Why does this matter so much? When communicating complicated concepts in AI, people will always take away a simplified version of what you said, so if you give them

something simple, their understanding gets even simpler!

The first statement gives them all the information they need to know, the second is not a meaningful statement. What they’ll take away from the second statement is ‘yeah it’s good.’

Good Requirement vs Bad Requirement

✓ *“The business needs the systems to have a minimum precision of 0.95 and recall of 0.90, a maximum latency of 5s and process 10 streams per GPU.”*

- Tells me false positives are worse for the business than false negatives
- Tells me about the compute available
- A real definition of done
- Can still be refined by adding information on data and mission

✗ *“Just make it right.”*

- I can make anything right with enough data and compute
- Need to understand tradeoffs, constraints, overall mission

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