

AI PRODUCT MANAGEMENT: A SKILL REVOLUTION

Elevate or Evaporate



PRAGMATIC AI FOR FOUNDERS & INDUSTRY LEADERS

YOUR JOURNEY TO PRAGMATIC AI

In the rapidly evolving Artificial Intelligence (AI) driven landscape, Generative AI vows to revolutionize businesses like never before. Despite presenting unparalleled opportunities, it also puts forth intricate challenges to transform this disruptive technology into victorious business endeavors. The aim is not to merely navigate these challenges but also to elevate your organization's AI practices to attain the pinnacle of "Pragmatic AI."

We define **Pragmatic AI** as the AI that outlines a clear path for translating AI efforts into tangible business successes leading to increased revenues and market dominance, rather than just being obsessed with (superficial) model metrics.

This writeup serves a dual purpose: *bring-out why product management for AI first products requires product teams to seriously upgrade their core skills;* and second, *to help set you on the path towards operationalizing Pragmatic AI.*

TABLE OF CONTENTS

• Summary	P.04
• Stochastic vs Deterministic	P.06
• Designing for loops (control loop, feedback loop, human-in-the-loop)	P.08
• Data Collection	P.09
• Introducing Users to AI	P.09
• Economics of AI	P.10
• The Evolving AI Development Process	P.10
• Explainability & Ethics (Bias & Fairness)	P.11
• Embracing the future of product management	P. 13
• References	P.13





Note from

CEO'S DESK

Dear Reader, Greetings!

Thank you sincerely for your enduring love and support for our previous article in this series. We've received an overwhelming response. As discussed earlier, we stand at the precipice of unlocking potentially the greatest technological advancements in human history.

As we advance in AI, it's evident that organizations will undergo substantial transformations. Mark Cuban put it brilliantly - "there will be 2 types of companies in the future: 'Those who are great at A.I. and everybody else'".

Every groundbreaking technology comes a set of challenges, so does AI. Understanding the intricacies of AI is crucial to unlocking its full potential. At Gradient Advisors, we have always supported demystifying AI, cutting through noise and lofty claims, to enable its optimal utilization, create maximum impact.

Despite abundant resources on AI tailored for developers, a significant gap remains for founders, executives, and investors seeking guidance in navigating the complex AI landscape. Leveraging our two decades of AI expertise, we've initiated the "Pragmatic AI" series to support the AI community. Our second article delves into highlighting the urgent necessity for a substantial enhancement in product management skills essential for crafting AI-first products. We elucidate why conventional software product management skills are inadequate in AI product development, emphasizing the significance of comprehending this disparity.

We eagerly anticipate your valuable feedback and active engagement in this endeavor.

Best Regards,

Anuj Gupta
Founder & CEO
Gradient Advisors

Product Management for AI First Products: A Paradigm Shift

Summary

1

Demand for AI product managers surging as organizations race to realize AI's transformative potential.

3

Traditional playbooks, methodologies & skills in software product management inadequately address AI product challenges.

2

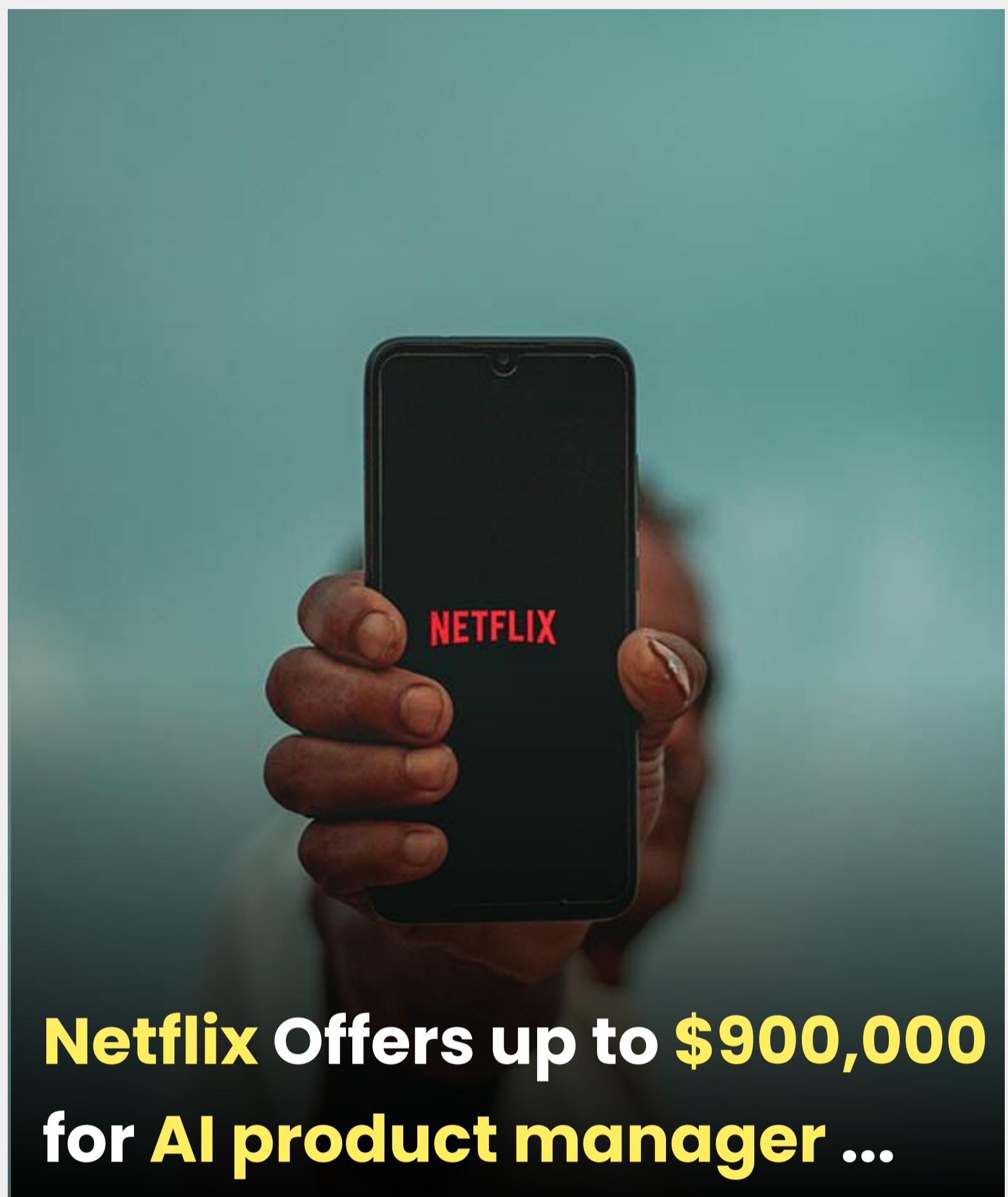
AI products disrupt traditional product management, demanding a significant upskilling in core skills.

4

Traditional playbooks, methodologies & skills in software product management inadequately address AI product challenges.

Netflix's recent job posting for an AI Product Manager (PM) position, offering an eye-popping annual compensation of up to \$900,000, has sparked widespread astonishment. In an industry where product managers often take a backseat to engineering and business roles, such an exorbitant salary for a PM position is unprecedented.

AI is expected to generate between \$3.5–\$5.8 trillion in annual value across industries, marking the profound impact it will have on products, services, and business models [1]



And this is not just a one-off occurrence – tech giants across the board are eagerly seeking out skilled AI product managers. But why the high demand? scarcity of proficient AI product managers. This raises a compelling question: What sets AI product management apart, making it so invaluable that it commands a seven-figure paycheck?

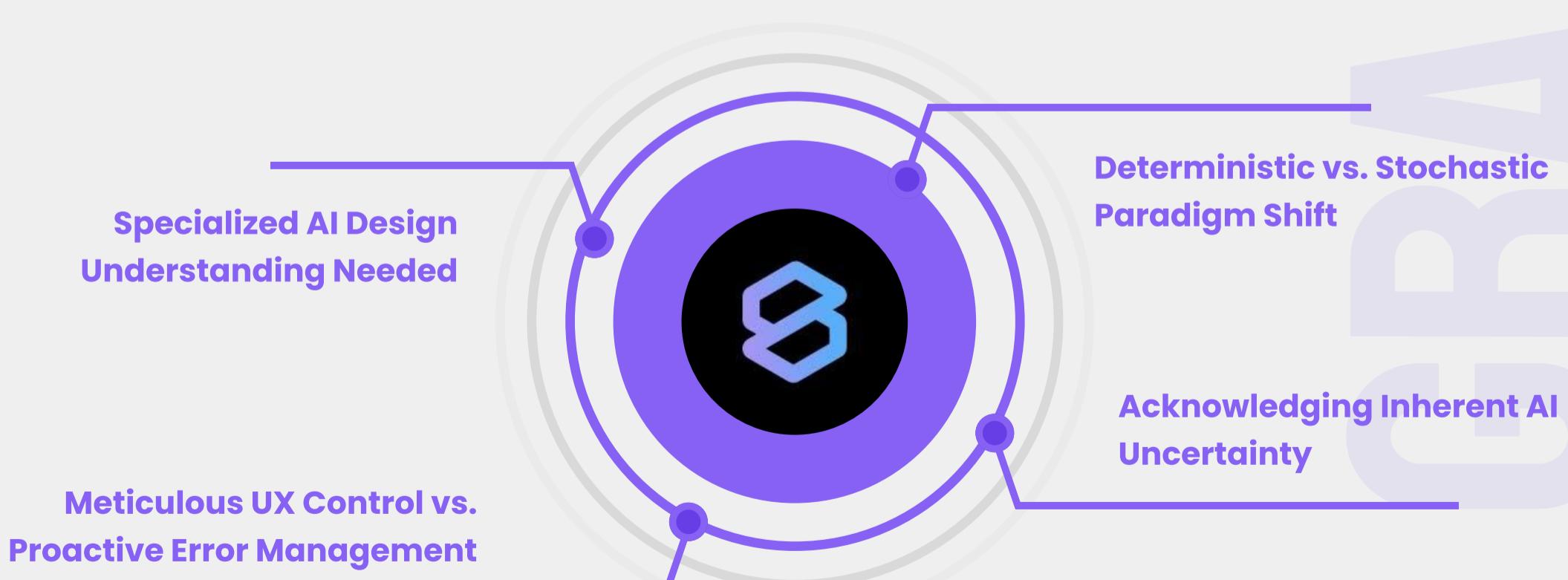
The answer lies in the seismic shift that AI is bringing to the world of product development and management. As AI systems become ubiquitous, integrating QI seamlessly into products and services across industries, the traditional skills and methodologies of product management are being disrupted, necessitating a radical transformation in roles, responsibilities, and expertise.

Before moving further, it is important to call out that this is not about using AI tools in Product management, how to be more productive/efficient. What we are talking about is - building “AI first products” requires significant upgrades in Product management paradigms. The playbooks and paradigms developed for building & managing “software products” do not translate to the world of building “ai first products”.

Before diving into the intricacies of enhancing product management skills and navigating the AI product landscape, it's imperative to first understand why traditional methodologies fall short in this new era. Let's unpack the fundamental shifts from traditional software to AI-driven software that underscore the need for an evolution in product management skill

1. The Stochastic nature of AI vs Deterministic nature of traditional Software

Unlike traditional software (A.K.A as Software 1.0), which operates in a deterministic manner, AI software (A.K.A as Software 2.0) is inherently stochastic. Deterministic systems, refers to the system's property to consistently produce the same output for a given system and input. In contrast, AI software is stochastic, meaning it can yield varying outputs for the same system and input, due to randomness in AI algorithms.



This unpredictability poses a significant challenge for product managers, who are traditionally tasked with ensuring a controlled and consistent user experience. This goes for a complete toss in the face of randomness. This characteristic poses several challenges for product managers:

- A. Reliability and Consistency:** Being stochastic, AI models may produce varying results for the same input data. This inconsistency makes it challenging for product managers to ensure the reliability and consistency of AI-powered features or products.
- B. Performance Evaluation:** Evaluating the performance of AI models can be challenging because their outcomes may vary across different runs or instances. Product managers need to develop robust evaluation metrics and methodologies to assess the effectiveness of AI solutions accurately.
- C. Risk Management:** The stochastic nature of AI introduces risks associated with unexpected or undesirable outcomes. Product managers must identify and mitigate these risks to ensure that AI-powered products meet quality standards and regulatory requirements.
- D. User Experience:** Inconsistent behavior or unpredictable outcomes of AI systems can lead to a poor user experience. Product managers need to design user interfaces and interactions that account for the stochastic nature of AI, providing users with clear feedback and managing their expectations effectively.
- E. Adaptability and Robustness:** AI models often struggle to generalize well to new or unseen data, particularly in dynamic or uncertain environments. Product managers need to ensure that AI solutions can adapt to changing conditions and maintain robust performance across time.
- F. Road mapping & Resource Allocation:** Developing and maintaining AI models often requires significant computational resources and expertise. Product managers must develop roadmaps & allocate resources effectively to support the development, deployment, and optimization of AI-powered products while balancing timelines and organizational priorities while keeping in mind the uncertainty of AI systems.

Despite this randomness, AI products are expected to deliver world class AI products on time with a seamless experience to end users managing errors and gracefully handling failures. This requires product teams to upskill significantly. Because of this randomness, the playbooks of “software product management” go straight out of the window in the world of “AI first world”.

Do not be mistaken to argue or assume that this randomness is a bug. It is not. The Stochastic nature is core to every AI algorithm/model/system. Also, to say that once AI systems are 100% correct, this wont be an issue is also wrong. At Least in near future, no AI product will be 100% correct. So the stochastic nature is not going anywhere anytime soon. This necessitates a specialized understanding of AI first design processes for product managers to effectively navigate this terrain.

2. Designing for Control loops, Feedback loops and Human in the loop

Given the stochastic nature of AI systems, errors are inevitable. Note these are not bugs. As product managers, you must embrace a new paradigm of design principles in light of these errors. Establishing control loops is crucial to swiftly determine whether the AI system's output is beneficial to the end-user or not. If not, end-users should be empowered to easily override the AI's decisions or stop its recommendations all together.

Similarly, the product team must institute feedback loops for each AI feature to assess its efficacy for end users. This involves gathering data across various scenarios to ascertain when the feature performs optimally and when it falters, using feedback and data insights to iteratively enhance the AI system and overall product experience. Additionally, designing for human-in-the-loop experiences becomes paramount, enabling a seamless transition of control from AI systems to human operators when necessary. Note here the human in the loop is not the end user.

01

Establish control loops in AI systems to swiftly assess the benefits of outputs for end users.

02

Implement feedback loops for each AI feature to evaluate effectiveness across various scenarios.

03

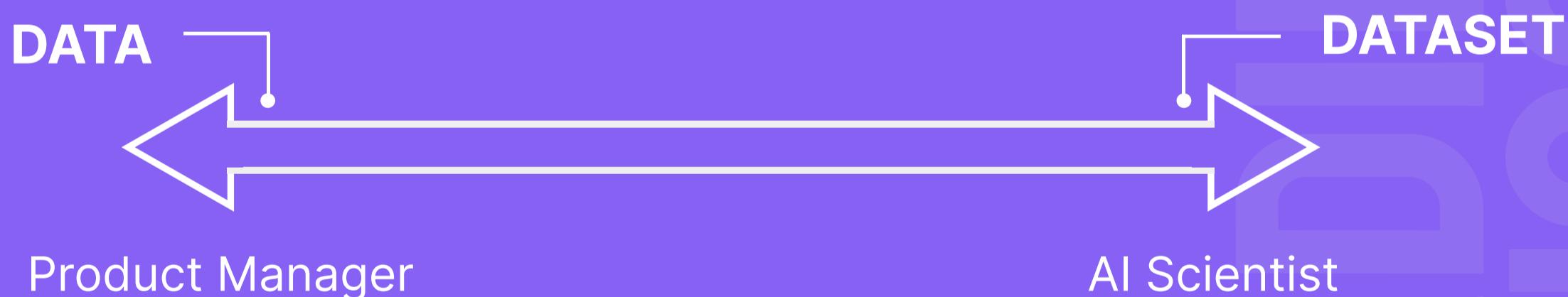
Ensure seamless transition of control from AI to human operators when necessary by designing for humans-in-the-loop.

3. Data: The Lifeblood of AI

It is widely recognized that development of AI systems rely heavily on data. One might believe that the responsibility of collecting data might be the job of the AI scientists. Turns out not, and instead it lies with the product team. Why? Because the product team holds ownership of the product, making them best suited to embed the necessary instrumentation for data collection. A good way to remember this is the separation between data & dataset:

Unlike traditional software development, where data requirements are often static, AI systems thrive on continuous data influx, necessitating product managers to have a deep understanding of data systems and effective collaboration across data engineering & AI teams.

Product managers must embed the necessary instrumentation in the product for data collection, create roadmaps and sprints for data acquisition, and ensure the quality and integrity of datasets. In large AI-focused organizations, this specialized role is often referred to as a "Data Product Manager."



4. Introducing AI to Users: A Delicate Balancing Act

When integrating AI into products for the first time, product managers must carefully introduce these technologies to users, setting appropriate expectations and ensuring a sense of control and comfort. Achieving this requires the creation of highly

specialized user flows and experiences that prioritize transparency, trust, and a seamless transition between AI-driven and human-driven interactions.

5. The Economics of AI: Balancing Costs and Benefits

AI development is a resource-intensive endeavor, encompassing expenses related to data acquisition, cleaning, storage, high end computational resources, and talent acquisition. Given the high costs involved, not every potential use case justifies the investment. Product managers, given their strategic position across technology, users and business, are best suited to take this crucial call. Consequently, the responsibility of evaluating and determining the feasibility & viability of AI use cases predominantly falls on the shoulders of product managers. They must judiciously evaluate and select use cases that justify the investment, striking a balance between technological feasibility, user needs, and business objectives.

IDC expects worldwide spending on AI solutions will grow to more than \$500 billion in 2027. In turn, most organizations will experience a notable shift in the weight of technology investments toward AI implementation and adoption of AI-enhanced products/services. [2]

In this landscape, product managers act as critical bridges, translating technical complexities into business value and aligning AI initiatives with overarching organizational goals.

6. The Evolving AI Development Process

The transition from traditional software development (Software 1.0) to AI-driven systems (Software 2.0) introduces significant differences in how product managers must approach roadmaps and timelines. Here are some implications for product owners:

- Uncertainty in Improvement: Unlike traditional software where incremental improvements are often achievable by addressing specific issues or corner cases, AI-driven systems may hit performance plateaus where further improvements are challenging. This uncertainty must be factored into product roadmaps and timelines, as achieving desired performance levels may require more extensive reevaluation and experimentation.
- Extended Development Cycles: Improving AI-driven systems often involves revisiting the underlying algorithms, data pipelines, or model architectures from scratch, which can be time-consuming processes. Product owners need to allocate sufficient time in their roadmaps for research, experimentation, and validation of new approaches, potentially extending development cycles beyond what is typical for traditional software updates.
- Resource Allocation: Given the longer development cycles associated with improving AI systems, product owners may need to allocate additional resources, both in terms of engineering talent and computational resources. This may require reprioritizing other initiatives or increasing investment in AI research and development to meet performance targets within the desired timeframe.

7. Explainability & Ethics (Bias & Fairness)

A lot of AI algorithms today are black box. This means today there is no way to find 'why' an AI system gave a prediction/output it gave. As AI systems become ubiquitous, a common user expectation from AI systems will be for the system to present their line of reasoning to the users. The onus will be on PMs to design for such flows.



It is common for AI systems to be biased towards certain classes of inputs. This largely stems from biases in the dataset and algorithms being unable to handle it. There are several examples of deployed AI algorithms that have been shown to make decisions that were biased based on gender, race or other protected demographics – even when there was no intention for it. Fairness refers to AI systems being objective.

A classic example of biasness is a study in 2018, by Joy Buolamwini and Timnit Gebru, called “gender shades” [3]. They showed that facial recognition algorithms, which had been deployed to be used by Facebook, IBM and Microsoft, were substantially better at making predictions (in this case classifying gender) when looking at lighter skinned men than darker skinned women.

Biasness can have severe implications for your product and its image. It is thus very important for PMs to be fully aware and work towards identifying biases and rectifying them.

Embracing the Future of Product Management

As AI continues to permeate products and services across industries, product managers must evolve and adapt their skill-sets to thrive in this new era. Embracing the stochastic nature of AI, mastering the art of designing for control, feedback, and human intervention, and developing a deep understanding of data systems and AI development processes, specialized UX to handle shortcomings of AI systems is no longer optional – they are essential for driving successful AI-driven product & strategies.

By elevating their skills and mindsets, product managers can establish themselves as indispensable leaders, adeptly steering their organizations through the intricacies of AI integration. In doing so, they not only deliver exceptional user experiences but also drive significant business value.

In the AI era, product management is not merely "old wine in a new bottle" – it is a paradigm shift requiring a complete reevaluation of roles, responsibilities, and methodologies. Those who embrace this evolution will emerge as architects of the future, shaping products and services in the AI-powered world.

References

- [1] Michael Chiu et al. 2018. Notes from the AI frontier: [Applications and value of deep learning.](https://www.mckinsey.com/featured-insights/artificial-intelligence/notes-from-the-ai-frontier-applications-and-value-of-deep-learning) [https://www.mckinsey.com/featured-insights/artificial-intelligence/notes-from-the-ai-frontier-applications-and-value-of-deep-learning.](https://www.mckinsey.com/featured-insights/artificial-intelligence/notes-from-the-ai-frontier-applications-and-value-of-deep-learning)
- [2] Michael Shirer, Oct 2023. IDC FutureScape: Artificial Intelligence Will Reshape the IT Industry and the Way Businesses Operate. <https://www.idc.com/getdoc.jsp?containerId=prUS51335823>
- [3] Buolamwini, J., Gebru, T. "Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification." Proceedings of Machine Learning Research 81:1–15, 2018 Conference on Fairness, Accountability, and Transparency

ABOUT US

We are world's leading global AI consulting & advisory company, helping organizations around the globe unlock the full potential of artificial intelligence (AI) for their businesses. We are pioneers in AI, with over 2 decades of extensive experience in AI.

We provide comprehensive solutions and guidance across the entire AI function lifecycle - from vision, strategy, roadmapping, data gathering, model building, deployment, integration into product line, to GTM, sales. We also help in people aspects including incubating & growing world class AI teams.

Don't let the future of business elude you. Embrace the realm of AI with unyielding assurance, under the sagacious guidance of Gradient Advisors. With over 2 decades of experience in AI across 0-1 startups or Fortune 50, we are more than just advisors; we're your partners in innovation. We are your trusted partner in unlocking the full potential AI.

For more information, do reach out to us :

-  hello@gradient-advisors.ai
-  <https://gradient-advisors.ai>

 Gradient Advisors
904 Regency Court,
San Ramon,
California, 94582, US

 Gradient Advisors
109 Willow Road,
Enfield, EN13BP, London,
UK

 Gradient Advisors
11 Charlotte Street
ON M5V 0M6
Toronto
Canada

 Gradient Advisors
203, Wing E
Dubai Silicon Oasis
Industrial Area, Dubai
UAE

 Gradient Advisors
W5/902, Ahad Euphoria,
Sarjapur Road, Carmelaram
Bengaluru 560035, India

 Gradient Advisors
11 Els Court, Berwick
Melbourne,
Victoria 3806, Australia

Want to see more such knowledge nuggets? Follow our social media handles

