

# PRODUCT ENGINEERING

AN INTRODUCTION  
SECOND EDITION  
BY  
TOM HALPIN

A tale from the Pet Clinic multi-verse

*Foreword by Dr. Padma Roy*

# Table of Contents

<b>Preface .....</b>	<b>5</b>
About the Author .....	6
Foreword .....	7
Dedication .....	8
Dojos .....	9
<b>Chapter 1 - Welcome .....</b>	<b>11</b>
Overview .....	12
The Challenge .....	13
Our Cast .....	14
Conclusion .....	18
<b>Chapter 2 - Introduction to Product Engineering .....</b>	<b>19</b>
Purpose .....	20
Learning Outcomes .....	21
Opening Scroll .....	22
Product Engineering .....	24
Moving from a Project to a Product Mindset .....	26
Role of Product Engineer .....	29
Product Engineer - Skill Set .....	31
Pop Quiz 1 .....	35
Product Engineering - Stages .....	36
Product Engineering - Brainstorming Ideas .....	39
Product Engineering - Need for a Manifesto .....	41
Product Engineering Manifesto .....	44
Pop Quiz 2 .....	45

Conclusion .....	46
<b>Chapter 3 - Design Thinking .....</b>	<b>48</b>
Purpose .....	49
Learning Outcomes .....	50
Opening Scroll .....	51
Role of Design Thinking .....	54
Design Thinking in Product Engineering .....	58
Pop Quiz 1 .....	61
Design Thinking vs Traditional Thinking .....	62
Key Elements and Challenges .....	64
IDEO Design Thinking Process .....	66
Pop Quiz 2 .....	68
Getting Started With Design Thinking .....	69
Conclusion .....	72
<b>Chapter 4 - Getting Started .....</b>	<b>76</b>
Purpose .....	77
Learning Outcomes .....	78
Opening Scroll .....	79
Improving Product Engineering Practices at Scale .....	81
Build Product Squads .....	85
Product Squad Enablement .....	87
Pop Quiz 1 .....	89
Getting Started .....	90
Lifecycle .....	92
Pop Quiz 2 .....	94
Integrating With Current Practices .....	96
Conclusion .....	99

The team, now faced with the challenge of improving Product Engineering practices within the Universal Imports Group, are considering applying the techniques learnt during the workshop to help scale Product Engineering practices across the Universal Imports Group.

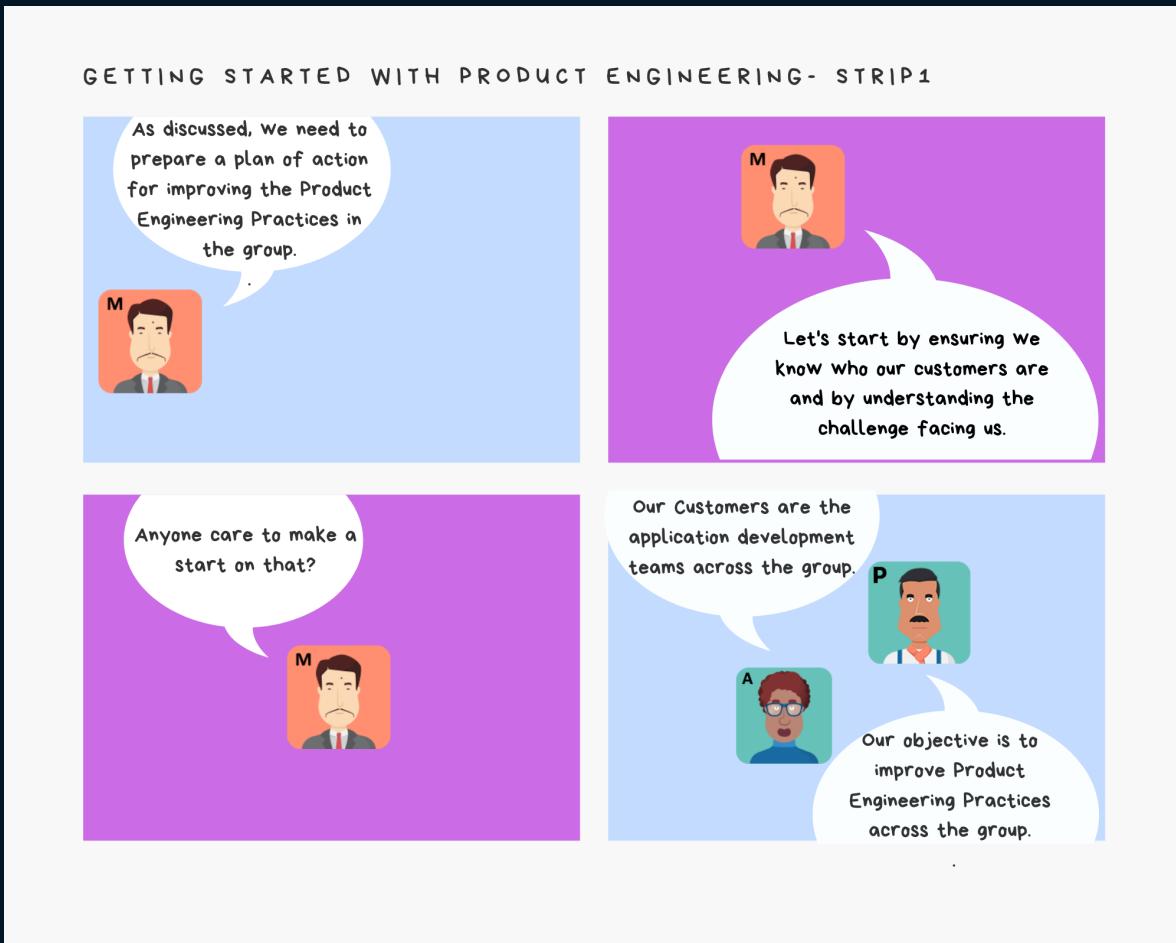
This chapter covers the ensuing discussions and the actions arising from those discussions.

The team involved in the discussions are

 M	<b>Miyagi</b> Product Engineering Coach and Mentor, tasked with increasing the use of Product Engineering within the Universal Imports Group.
 P	<b>Pennyworth</b> Project Manager from The Daily Mentioner National Newspaper tasked with chairing the effort.
 A	<b>Adriana</b> Architect from the InGen Space Exploration Company lending her expertise to the Product Engineering effort.
 P	<b>Paulo</b> Product Owner for the Pet Clinic Application.
 B	<b>Brenda</b> Business representative from the Pet Clinic, who was the main Business champion of the DevOps transformation.

# Improving Product Engineering Practices at Scale

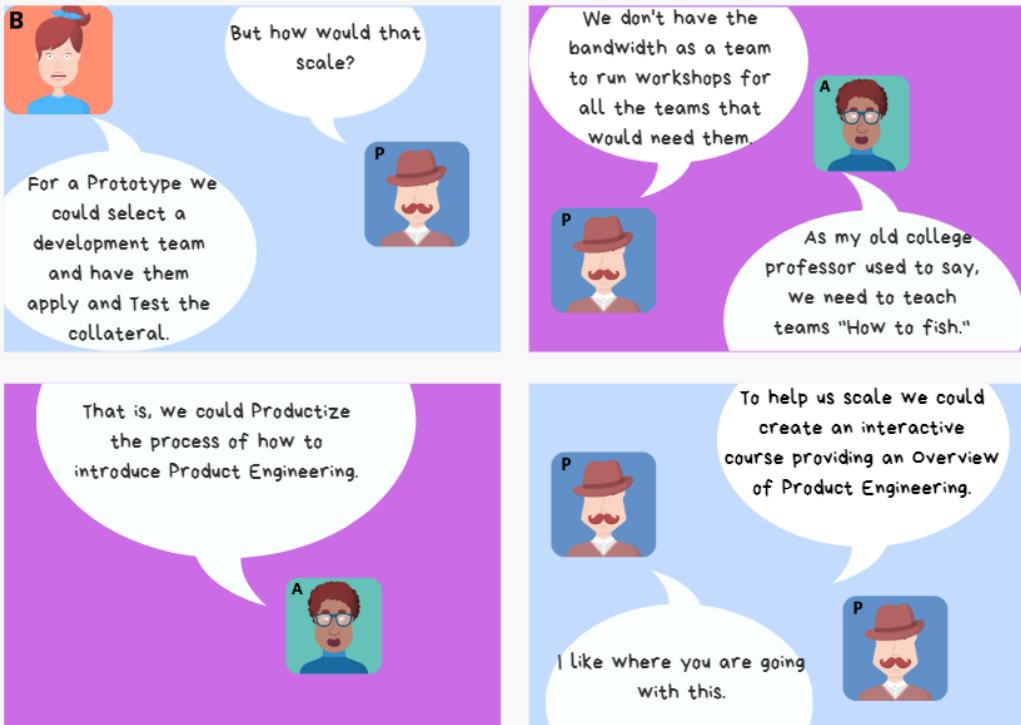
The team discusses how to scale the improvement of Product Engineering practices in the Universal Imports Group.



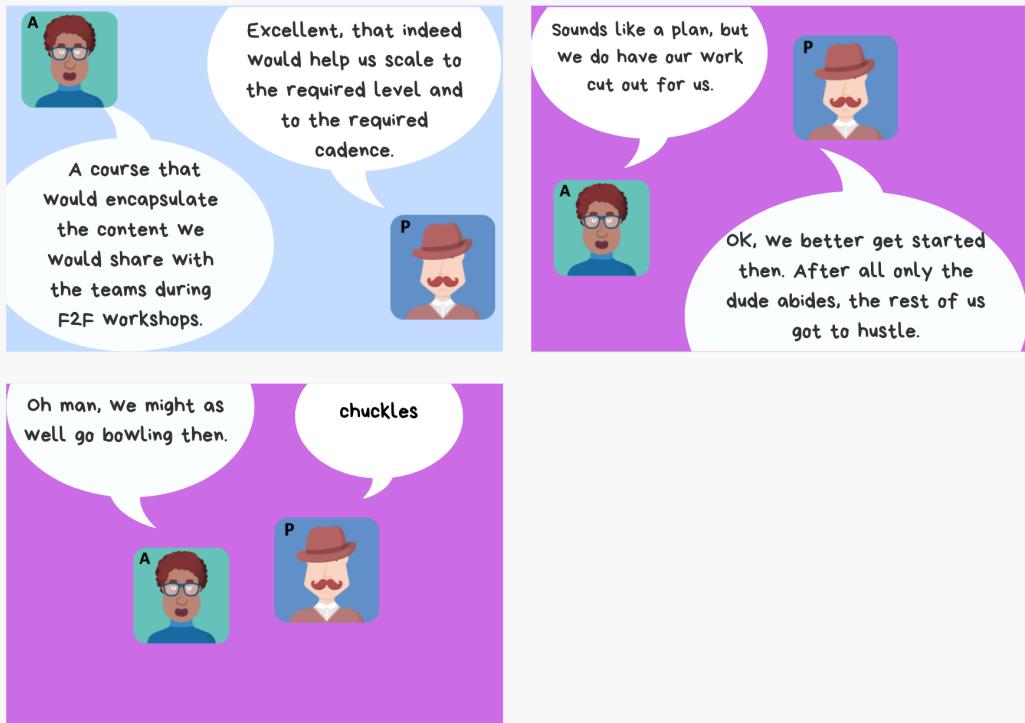
## GETTING STARTED WITH PRODUCT ENGINEERING- STRIP 1



## GETTING STARTED WITH PRODUCT ENGINEERING- STRIP1



## GETTING STARTED WITH PRODUCT ENGINEERING- STRIP1



# Build Product Squads



We in the Universal Imports Group want to build the best possible products.

To do that I suggest we should first invest time, energy and budget in to building the best engineering teams that we can. Then we need to make additional investments to support those teams ensuring we foster accountability, creativity and also encourage experimentation.

Simply put stronger engineering teams will build better products.

Miyagi any suggestions as to how we might go about doing this?



The structure and culture I recommend for Product Engineering teams is known as the "Product Squad" a concept popularized by Spotify.

Product squads are cross-functional teams comprised of a small number of developers and a product owner. Product squads own a complete product or a specific functional area of a product line, they are also responsible for developing domain expertise in support of an organizations product portfolio.



I am sure you are thinking that sounds remarkably similar to Agile scrum teams.

# Afterword

**Product Engineering: An Introduction** is intended to enhance the understanding and application of product engineering practices through the use of storytelling and real-world scenarios involving a fictional team. The hope being to make learning process engaging and practical.

In closing, this collection of chapter summaries and key takeaways revisits the core insights and lessons presented throughout the book.

# **Chapter Summaries and Key Takeaways**

## **Chapter 1: Welcome**

Synopsis:

The welcome chapter sets the stage for the eBook by introducing its purpose, structure, and the fictional team that will be used throughout to illustrate key concepts. It outlines the main objectives of the book.

Key Takeaways:

- Understanding the structure and purpose of the eBook.
- Introduction to the scenario and our cast of characters used in the book.
- Overview of the learning objectives and what readers can expect to gain.

## **Chapter 2: Introduction to Product Engineering**

Synopsis:

This chapter introduces the fundamental concepts of product engineering, emphasizing its importance in modern software development. It covers the lifecycle of product engineering from ideation to deployment and maintenance.

Key Takeaways:

- Understanding the holistic nature of product engineering.
- The role of product engineering in delivering high-quality software.
- An overview of the product engineering lifecycle.

## **Chapter 3: Design Thinking**

Synopsis:

Focusing on design thinking, this chapter explains how to adopt a user-centric approach to product development. It details the phases of empathize, define, ideate, prototype, and test.

Key Takeaways:

- The importance of empathizing with users to identify their needs.
- Techniques for generating and evaluating innovative ideas.
- Iterative prototyping and testing to refine products.

## **Chapter 4: Getting Started with Product Engineering**

Synopsis:

This chapter provides practical steps to initiate product engineering in an organization. It includes guidance on setting up teams, defining roles, and establishing processes.

Key Takeaways:

- Strategies for assembling a cross-functional product engineering team.
- Key roles and responsibilities within a product engineering team.
- Steps to implement product engineering practices effectively.

# Conclusion

You have now finished the **Product Engineering: An Introduction** book. Thank you for making the time to read it.

If this book has been your introduction to Product Engineering we hope that it is just the start of your foray into Product Engineering.

We trust you have enjoyed the book and as promised in the Welcome chapter the next time you have need for that bigger  you are better positioned to Product Engineer it accordingly.

We further hope that you will apply your learnings from this book in the teams you work with and on the products you work on.

This is the way!

However before you turn off the electronic device you used to read this book.

There now follows an assessment; which you can take to validate your learnings from the time you invested in reading **Production Engineering: An Introduction** if you are so inclined.

Product Engineering - A Tale from the Pet Clinic multi-verse

The novelization of the Product Engineering Dojo