

Comp 7082: Software Engineering

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General introduction

Who am I?

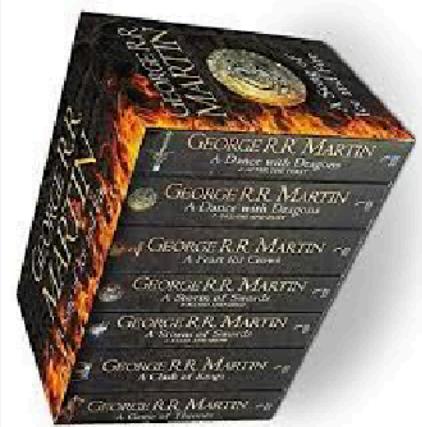
- 24 years student!
- Software Engineer/ Data Scientist/ Team Lead
- But new to the teaching!

Fun fact about me?

- A hardcore fan of song of ice and fire series
- An active member of the ASOIAF subreddit until 2019 contributed to hundreds of conspiracy theories



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My vision for the course?

- A way to prepare you for what is out there.
- I want to make you confident to enter job market.
- Setting you up for success and not break you!

What am I to you?

- Instructor
- Product manager
- Customer
- Team lead
- Friendly but not a friend, at least not this semester.

Course outline and office hour

- Engineering Software Products: An Introduction to Modern Software Engineering, 1st edition
- Outline
- Office hour via video conference
 - Please book your appointment in advance.
 - I will announce the designated day and time when I will be online and available.
- Although I am online frequently, I may not be able to answer questions outside of the scheduled office hours.

Course grade components

Criteria	%	Comments
In Class Exercises and Labworks	30	Each in class exercise is between 3 to 5 marks and may involve written answers and/or lab work
Quizzes	10	two Quizzes
Project	30	
Final Exam	30	
Total	100	

GenAI chatbot

- Use it to revise/review your document
- Use it where you have a coding question
- Do not copy and paste from any GenAI chatbot to your project or assignments
 - Understand the solution and use your own code.



When I
realize ChatGPT
can do my job

What are we covering in the lecture/labs?

- Lectures: Project proposal/the actual lectures/quizzes/final project demo
- Labs: general or coding exercises, case studies, team discussions, sprint demos.
- Quizzes and exams: Closed books.
- Assignments and lab works, most of them are in form of teams, some of them individual.

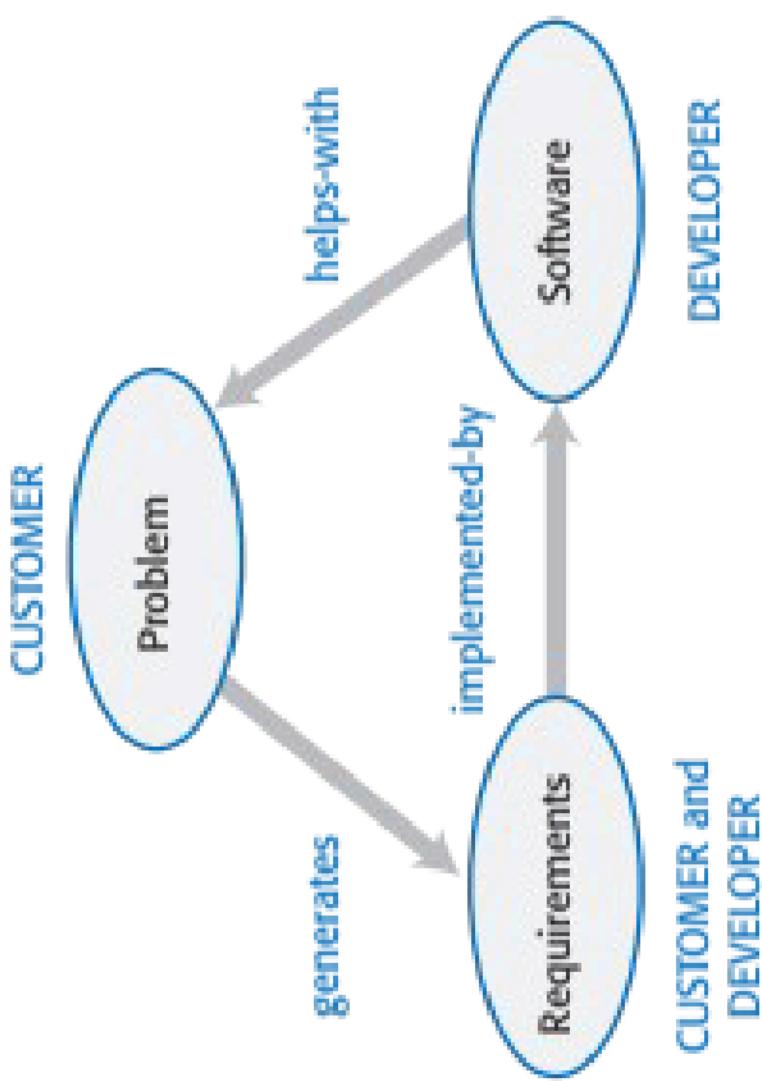
Class rules

- Attendance in labs and classes are tracked.
- If you are a team, make sure everybody in team is participating, I review your planning meetings outcome and make sure everybody is assigned tasks. Each student in team will be assessed individually.

Software Products

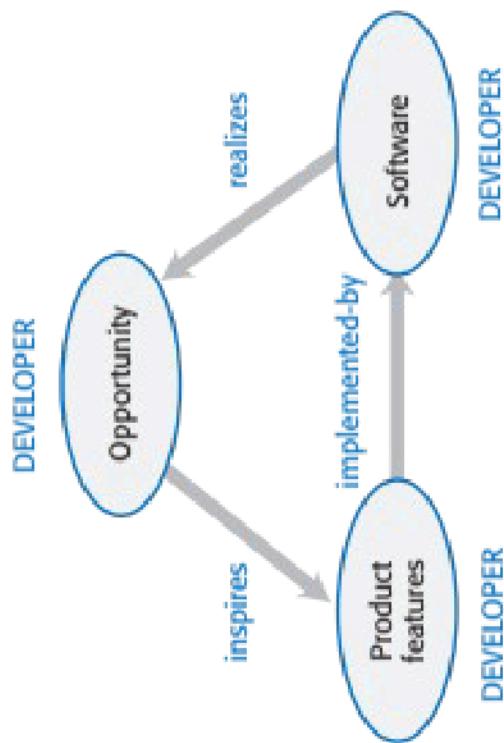
- Generic Software systems
 - Large scale business systems : excel
 - Personal products: Evernote
 - Mobile apps or games
- Different types of software engineering:
 - Project based software engineering
 - Product based software engineering

Project Based Software engineering



From: Ian Sommerville 2018

Product based software engineering

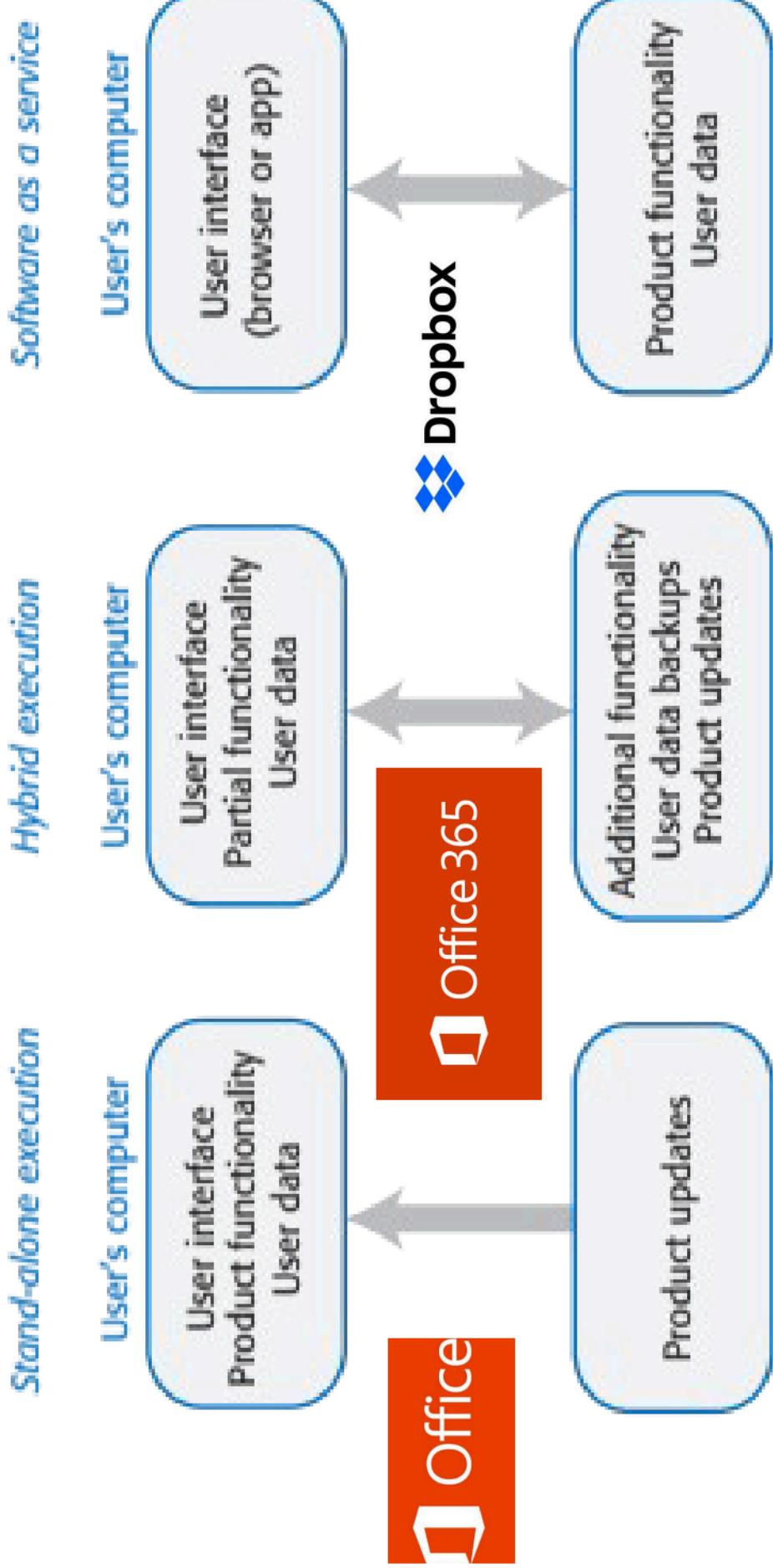


From: Ian Sommerville 2018

Product Line and Platform

- Product line: a group of related products offered by a company that share features and characteristics.
 - Offer variety within a category
 - Apple iPhone product line: iPhone SE, iPhone 14, iPhone 14 pro
- Platform: A foundational environment to enable development
 - Often support multiple products and services
 - Microsoft Windows or Azure

Software Execution Models



Other type of software Development

- Student Projects
- Research Software
- Internal tool development

Product Vision

- The starting point for software product development is a ‘product vision’.
- The product vision should answer three fundamental questions:
 - What is the product to be developed?
 - Who are the target customers and users?
 - Why should customers buy this product?

Moore's Vision Template

- FOR (target customer)
- WHO (statement of the need or opportunity)
- The (PRODUCT NAME) is a (product category)
- THAT (key benefit, compelling reason to buy)
- UNLIKE (primary competitive alternative)
- OUR PRODUCT (statement of primary differentiation)

Example

Tesla Model S

- For
- Who
- The
- Is a
- That
- Unlike
- Our product

Example

Tesla Model S

- **For** environmentally conscious drivers who demand high performance
- **Who** want a luxurious, eco-friendly vehicle
- **The** Tesla Model S
- **Is** a premium electric sedan
- **That** delivers both long-range capability and exhilarating acceleration
- **Unlike** traditional gasoline-powered luxury cars
- **Our product** offers zero emissions, cutting-edge technology, and the ability to upgrade software over-the-air, providing a futuristic driving experience.

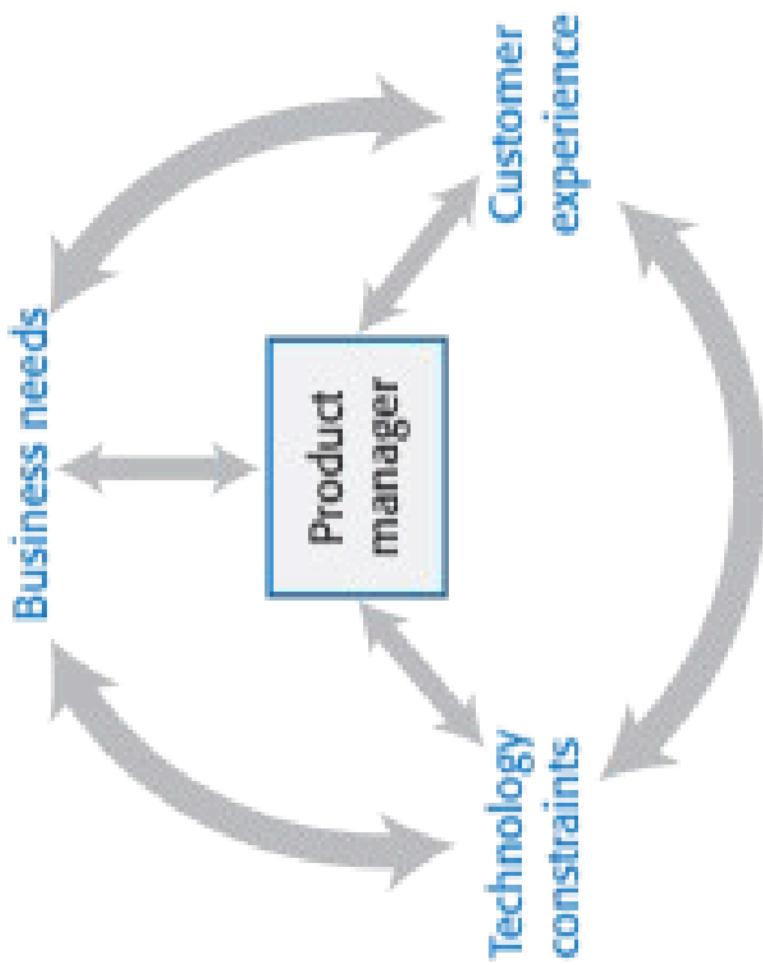
Sources for Product Vision

- Domain Experience
- Product Experience
- Customer Experience
- Prototyping and Experimentation

Software Product Management

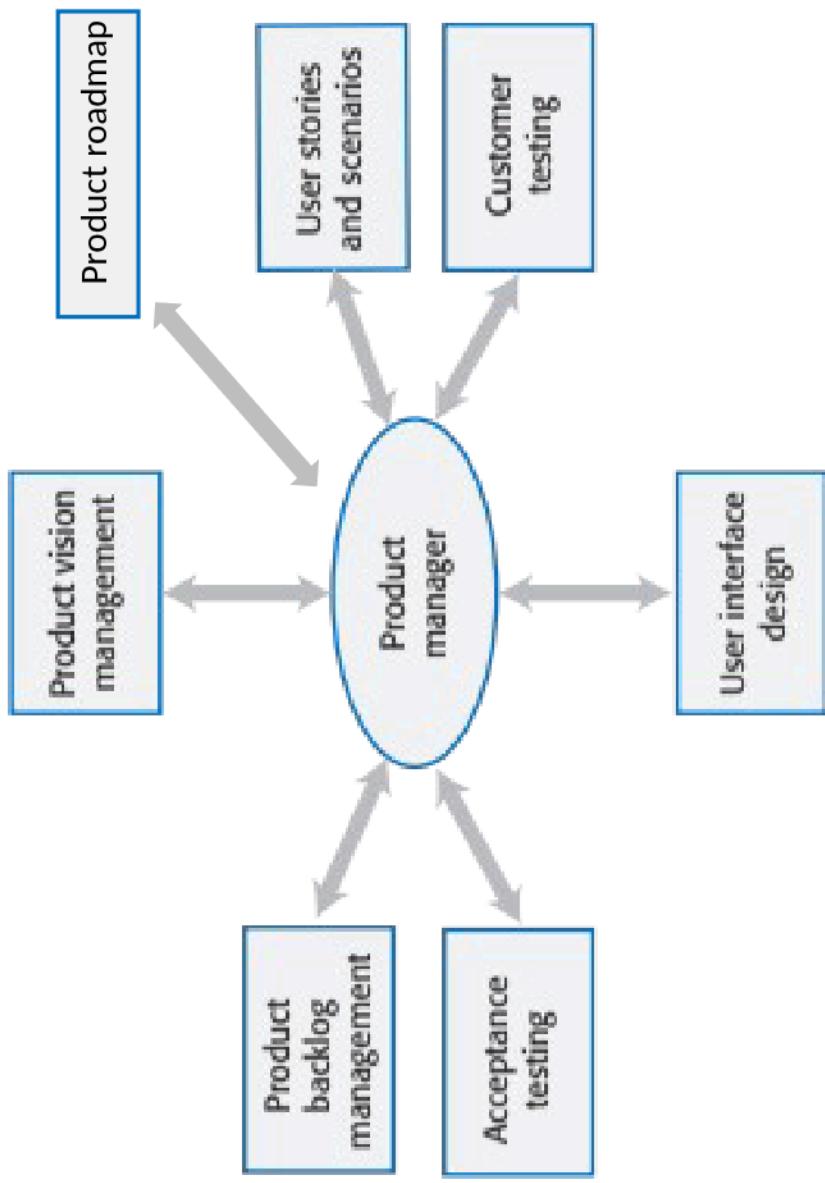
- A business activity focused on software that are sold by the business
- PMs are responsible for product and are involved in planning and development marketing it
- Interface between the organizations: customer and development teams.

Product Management Concerns



From: Ian Sommerville 2018

Technical Interactions of Product Managers



Product Prototyping

- Early version of the product
- Helps identify fundamental software components
- Can be done in 4 to 6 weeks
- Throw-away

Two stage Prototyping

- Feasibility Demonstration
- Customer Demonstration

Takeaways!

- Software products are software systems that include general functionality that is likely to be useful to a wide range of customers.
- In product software engineering, the same company is responsible for deciding on the features that should be part of the product and the implementation of these features.
- Software products may be delivered as stand-alone systems running on the customer's computers, hybrid systems or service-based systems. In hybrid systems, some features are implemented locally and others are accessed over the Internet. All product features are remotely accessed in service-based products.
- A product vision should succinctly describe what is to be developed, who are the target customers for the product and why they should buy the product that you are developing.
- Domain experience, product experience, customer experience and an experimental software prototype may all contribute to the development of the product vision.

Takeaways!

- Key responsibilities of product managers are product vision ownership, product roadmap development, creating user stories and the product backlog, customer and acceptance testing and user interface design.
- Product managers work at the interface between the business, the software development team and the product customers. They facilitate communications between these groups.
- You should always develop a product prototype to refine your own ideas and to demonstrate the planned product features to potential customers