AI for Software Teams

Accentient™

2024.11

Accentient Education Series

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AI for Software Teams

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Software version:	**n/a**

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AI for Software Teams

Course Introduction

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Module Backlog

What are we forecasting for this module?

- Course overview
- Team formation
- Trainer & student introductions
- Environment setup
- Working agreement

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- A leader in DevOps and Scrum knowledge
- Helped thousands of teams and individuals understand and implement DevOps and Scrum successfully
- Has a close working relationship with Microsoft
- Course creator and steward for Scrum.org
- Has trainers that are Microsoft MVPs, Professional Scrum Developers, Professional Scrum Trainers, and authors

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Course Creator: Richard Hundhausen

- President of Accentient
- Author of software development books
- First Microsoft DevOps MVP
- Professional Scrum Developer
- Professional Scrum Trainer
- Nexus scaled Scrum framework co-creator

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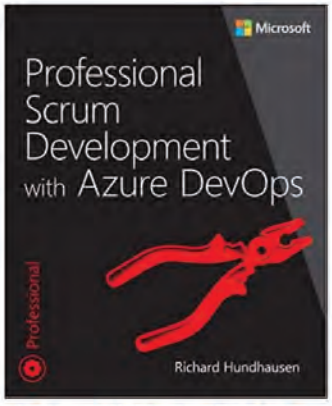

http://bit.ly/PSDAzDo

PSD PST

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Course Overview

- This course presents practical applications of AI to enhance collaboration and boost productivity of a cross-functional development team
- Modules
  - What is AI
  - AI for Product Owners / Product Managers
  - AI for Scrum Masters / Coaches
  - AI for Developers (members of a development team)

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Prerequisites

- Ideally, you ...
  - Work on a team
  - Develop and deliver a software product
  - Follow an agile approach (e.g. Scrum, Kanban)
  - Are familiar with Generative AI
  - Have used ChatGPT, Copilot, Gemini, or similar tools

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Form Into Teams | 5 MIN

If necessary, your instructor will facilitate the creation of equally sized (5 team members or less), cross-functional teams.

- Identify yourself by experience/skillset …
  - Software development
  - Product management/Product Owner
  - Scrum Master/coach
  - AI/prompt engineering
  - Agile/Scrum/Kanban
- Form into cross-functional teams (of 5 members or less)
- Collocate
- Introduce yourself (if necessary)
- Decided on a team name (i.e. “Avengers”, “Minions”, “Ctrl Z”, etc.)
- Write your name and team name where it is visible to others in the class

What is the name of your team? _____

Who are your team members? _____

_____

_____

_____

_____


Introductions
• Name
• Title/role
• Development experience
• Agile/Scrum/Kanban experience
• AI Experience
• Expectations
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Install Courseware Files

or | 5 MIN

In this activity, working on your own or as a pair, you will install the files required by this class.

Dependencies

- Signed in with *local administrator* permissions

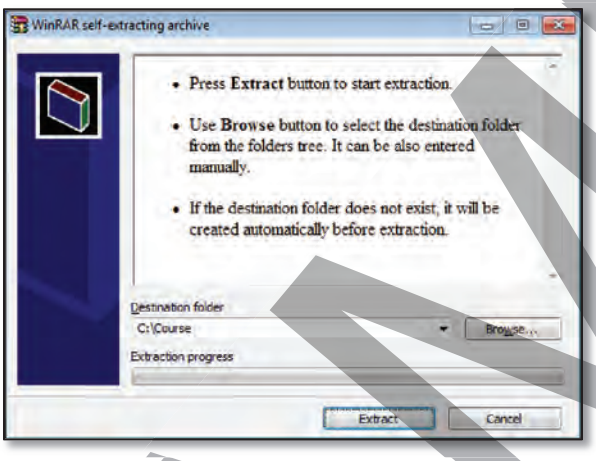
1. Verify that the **C:\Course** folder does not exist.

   Note: If this folder already exists, then this computer may have been used for a prior training class. Please check with your instructor if you suspect that this is the case.

2. If necessary, copy the courseware (self-extracting) file to your desktop.

   This file may already be on the desktop. If not, you may have to ask your instructor for help locating and/or copying this file. If you cannot locate this file, please email support@accentient.com to obtain a copy.

3. Extract the courseware files, specifying **C:\Course** as the **Destination folder**.



   The folder *C:\Course* will be created during the process as well as one or more subfolders. Take a moment and explore the files that were installed.

Identify Your Team's AI Tools | 5 MIN

In this activity you will identify the AI tools your team will use during class.

1. What **Generative AI** tools (e.g. ChatGPT, Copilot, Gemini, etc.) will your team be using in class?

   Notes _____

2. Are these free tools? Do you need/have a subscription?

   Notes _____

3. What **AI Code Assistants** (e.g. GitHub Copilot, Cursor AI, Tabnine, etc.) will your team be using in class?

   Notes _____

4. Are these free tools? Do you need/have a subscription?

   Notes _____

5. Will you save the responses? If so, how and where?

   Notes _____

Important: Let your instructor know if nobody on your team has the necessary tools. The instructor may reform teams accordingly, or help you find tools that will work for this class.

Working Agreement

What should be our guidelines for these?

- Cameras on
- Off-track discussions
- Distractions
- Lunch and break times
- End of day timing

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Module Review

What have we accomplished and learned?

- Teams formed
- Introductions made
- Tools identified
- Agenda and logistics clarified

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AI for Software Teams

What is AI?

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Module Backlog

What are we forecasting for this module?

- AI is just software
- Types and examples of AI
- Popular AI tools
- How can AI help a software team
- Prompt engineering

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AI is Just Software

- AI is a just a tool
  - AI operates based on code written by humans – it's not magical or autonomous
- Pattern recognition, not intelligence
  - AI models analyze data patterns but don't "think" like humans
- Dependence on data
  - AI relies on large datasets to function and improve; good data = good results
- Automating tasks, not decision-making
  - AI can help with repetitive or data-driven tasks, but humans still need to make the final decisions
- Requires maintenance
  - Just like any software, AI systems need updates, monitoring, and fine-tuning

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The Agile Manifesto Authors "Predicted" AI

"We are uncovering better ways of developing software by doing it and helping others do it."

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AI's Views on the Agile Manifesto | 5 MIN

In this activity your team will prompt AI with some questions. Review and discuss the responses.

Example prompts:

1. Are you familiar with the Agile Manifesto?

Notes _____

2. How does AI fit with the Agile Manifesto?

Notes _____

3. Does AI replace any of the Agile Manifesto?

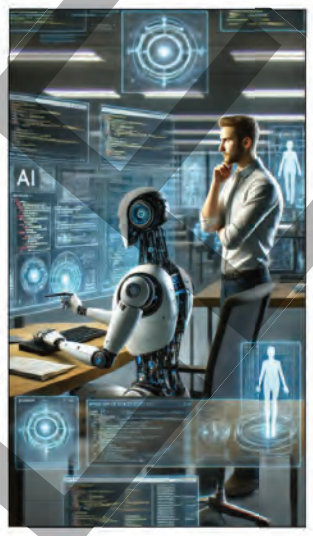
Notes _____

4. Rewrite the preamble, making it more AI focused

Notes _____

AI Won't Replace You

But another professional who knows how to leverage AI might



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The Many Types of AI

- Generative – Used to create new content, such as text, images, or other forms of data
- Predictive – Used to forecast future events or trends based on historical data
- Descriptive – Focuses on analyzing data to describe what has happened
- Prescriptive – Predicts but also suggests actions to benefit from the predictions
- Narrow (weak) – Designed to perform narrow tasks, such as facial recognition
- General (strong) – Hypothetical ability to understand, learn, and apply AI to any problem
- Self-Aware – AI where machines have their own consciousness/self-awareness (speculative)
- Collaborative – Work alongside humans, augment their capabilities, help make decisions
- Explainable – Focuses on making AI decisions understandable to humans
- Adaptive – Adapts behavior based on new information or changes in the environment
- Strategic – Supports and enhances strategic decision-making

We will primarily be using *Generative* and *Predictive* AI in this class

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Generative AI (GenAI)

- A type of AI that focuses on creating new content, such as text or images, by learning from existing data and using models to generate outputs that resemble human-created content
  - It can create new, unique content based on patterns in training data
  - Powers tools like chatbots, art generators, and content creation systems
- Examples
  - Draft Product Backlog items based on input from customer feedback and business goals
  - Analyze team communication during events and generate summaries, along with improvement suggestions

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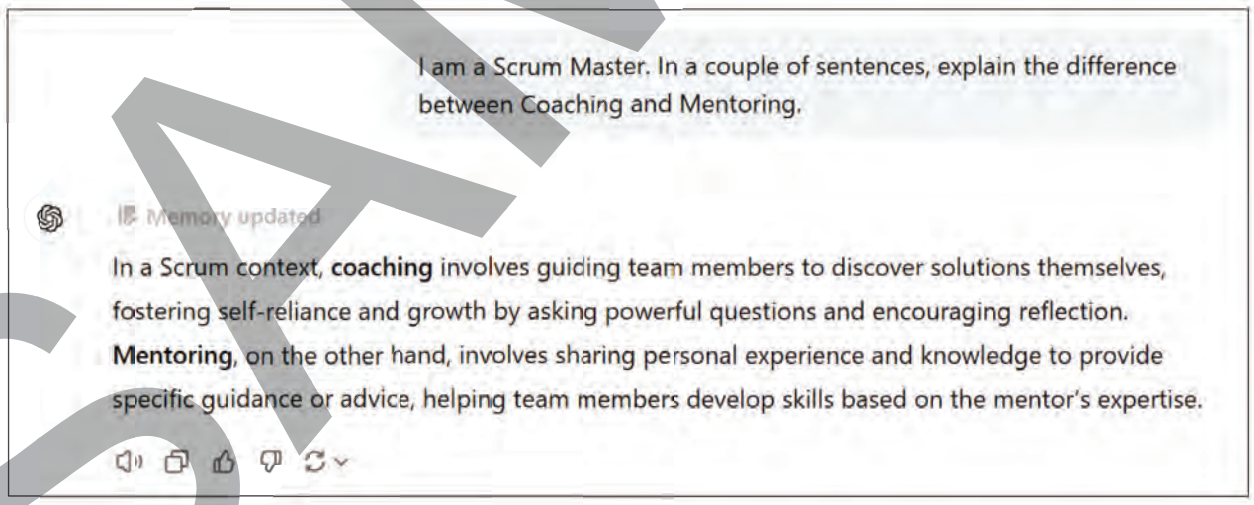
Generative AI: Example



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Predictive AI

- A type of AI that focuses on analyzing historical data to forecast future outcomes or trends
  - It uses machine learning models to identify patterns and make predictions
  - Used for demand forecasting, risk assessment, and behavior prediction
- Examples
  - Forecast which Product Backlog items will likely provide the most value based on historical data of customer engagement and market trends
  - Analyze historical bug data and predict areas of the codebase that are most likely to introduce bugs in future releases

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Predictive AI: Example

Kanban Data

	ID	Title	Analysis Active	Analysis Done
1	100001	Sample Item 1	10/27/2024	10/27/2024
2	100002	Sample Item 2	10/26/2024	10/26/2024
3	100003	Sample Item 3	10/28/2024	10/28/2024
4	100004	Sample Item 4	10/22/2024	10/22/2024
5	100005	Sample Item 5	10/21/2024	10/26/2024
6	100006	Sample Item 6	10/21/2024	10/21/2024

Review our historical Kanban data and help me predict when our next 25 items will be done.

I'll analyze the historical cycle times based on the completion dates in the "Done" column to estimate when the next 25 items might be finished.

Based on the historical Kanban data, the average cycle time per item is approximately **8.37** days. The next 25 items are projected to be completed by **January 10, 2025**, based on the average cycle time. Let me know if you need further breakdowns or adjustments.

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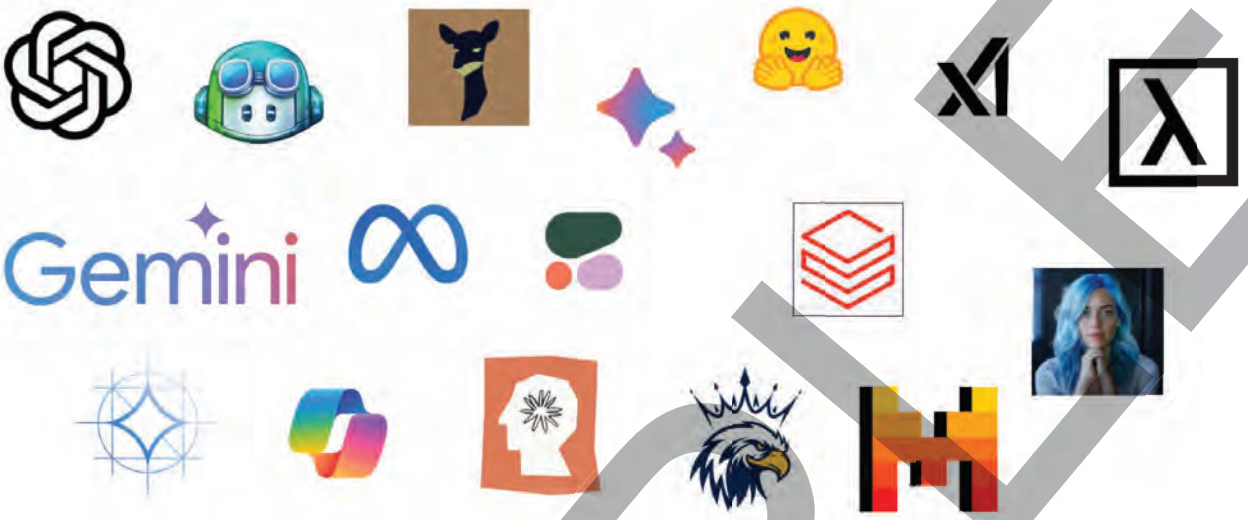
Popular AI Tools



Visit https://tinyurl.com/mwtjhkwn for an up-to-date list

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How Can AI Help a Software Team?

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How can AI help a software team? | 5 MIN

In this activity your team will prompt AI with some questions. Review and discuss the responses.

Example prompts:

1. How can AI help a Product Owner or Product Manager?

Notes _____

2. How can AI help a Scrum Master or coach?

Notes _____

3. How can AI help a member of a software development team?

Notes _____

4. What about a UI/UX designer specifically?

Notes _____

5. Give me a few generative and predictive examples.

Notes _____

Prompt Engineering

- Prompt Engineering is the art of crafting effective inputs to optimize responses from language models
- It involves using structured language, context, and specific keywords to guide the AI's output

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Why Prompt Engineering Matters

- It improves accuracy and relevance of AI responses
- It allows more control over the tone, detail, and format of output
- It optimizes performance for specific tasks like summarization, brainstorming, or detailed explanations

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Basic Syntax of Prompt Engineering

- Explicit instructions
  - Begin with clear instructions like "Explain," "Summarize," or "List"
  - Example: *"List five key aspects of Agile development"*
- Detailed context
  - Provide context to narrow down the AI's response
  - Example: *"Explain Agile principles in a way a new project manager would understand"*
- Output format Hints
  - Specify the desired output structure
  - Example: *"Provide a bullet-point summary of these principles"*
- Role-based prompts
  - Direct the model as if it were a particular expert or persona
  - Example: *"As a Scrum Master, explain how to implement Scrum in a remote team"*

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Prompt Engineering Examples

Prompt	Type of AI Response
"Explain Agile principles"	General overview, broad explanation
"Explain Agile principles for a medical device team focused on compliance"	Targeted explanation with compliance considerations
"List 3 benefits of Agile for software development in healthcare"	Specific, numbered benefits in healthcare context
"Summarize Agile principles in 3 bullet points"	Concise, structured list of principles

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Proven Practices for Effective Prompts

- Multi-step prompts
  - Chain prompts to create complex outputs
  - Example: "First, outline the Agile principles. Then, explain how each principle helps a team adapt to changes"
- Constraint prompts
  - Set boundaries on the response length or tone
  - Example: "In two sentences, explain Agile for beginners"
- Comparative prompts
  - Use for comparing concepts
  - Example: "Compare Agile to Waterfall development for a healthcare project"

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Advanced Techniques in Prompt Engineering

- Be specific and concise
- Use context-rich language
- Experiment with prompt structure
- Avoid ambiguity; be as direct as possible
- Review and refine based on AI responses.

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Practice prompt engineering | 10 MIN

In this activity your team will prompt AI with some questions. Review and discuss the responses.

Example prompts:

1. **Write a Python function that takes a list of numbers and returns the sum of all the numbers in the list.**

   Notes _____

2. **Explain the purpose and functionality of a "for loop" in Python with a simple example.**

   Notes _____

3. **Write a Python function that finds the greatest common divisor (GCD) of two numbers, using the Euclidean algorithm and explain how the function works step by step.**

   Notes _____

4. **Run this code.**

   Notes _____

5. **Create a function in JavaScript that calculates the factorial of a number, using recursion. Include error handling for cases where the input is not a positive integer.**

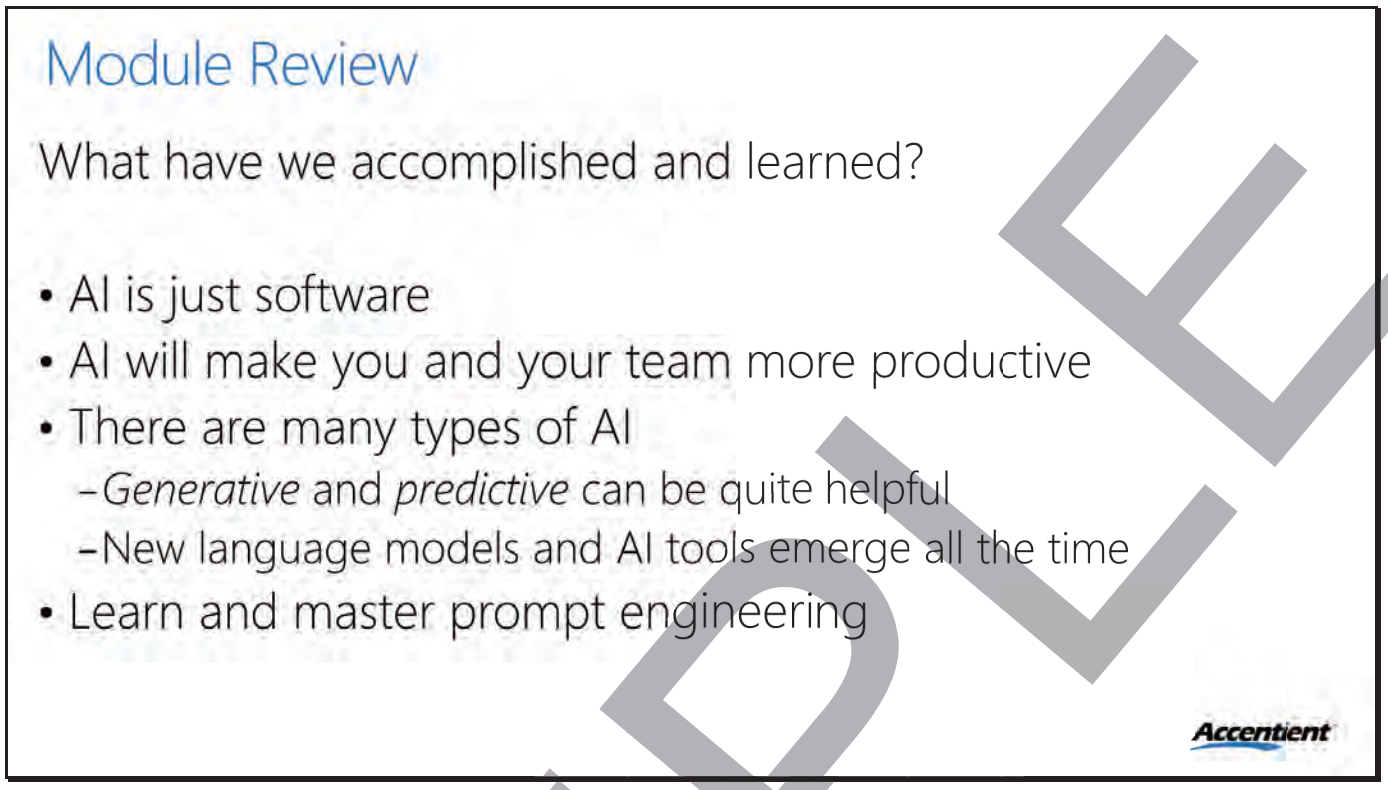
   Notes _____

6. **Generate an HTML and CSS code snippet for a responsive login form with input fields for a username and password, a "Remember Me" checkbox, and a submit button. Style the form so it centers on the page and works on both mobile and desktop screens.**

   Notes _____

7. **Create a Python Flask API endpoint that accepts a POST request containing a list of integers. The endpoint should return a JSON response with the sum, average, and product of the list. Additionally, write the JavaScript code to send a request to this endpoint and display the result on a webpage. Explain each step of the process.**

   Notes _____


Module Review
What have we accomplished and learned?
• AI is just software
• AI will make you and your team more productive
• There are many types of AI
– Generative and predictive can be quite helpful
– New language models and AI tools emerge all the time
• Learn and master prompt engineering
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AI for Software Teams

AI for Product Owners and Product Managers

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Module Backlog

What are we forecasting for this module?

- Case study introduction
- Review of Product Owner stances
- How can AI assist in product management
  - Strategic planning and vision
  - Understanding the audience
  - Planning, tracking, and execution
- Cautions

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Case Study Kickoff

- We want to start a new company and be the first to enter a new market of retro games running on retro software

- We want to leverage AI to accelerate time to market

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The Many Stances of a Product Owner

- Taking different stances, at different times, will lead to different opportunities and results
  - There is never a 'best' stance in any given situation; Product Owners must be versatile

The Visionary

The Customer Representative

The Experimenter

The Decision Maker

The Collaborator

The Influencer

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