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Engineering Design

Reviewed 2025

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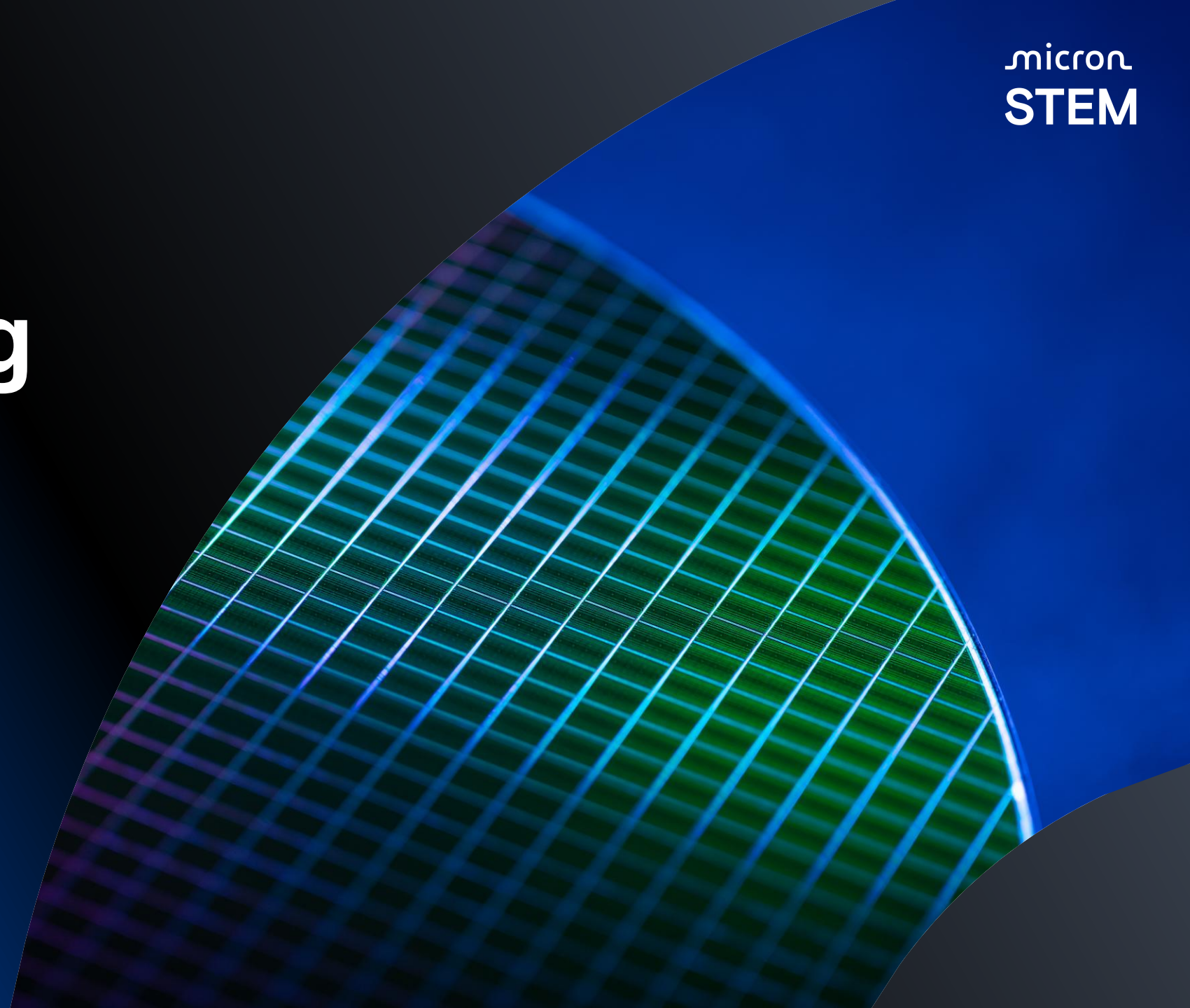
Engineering Design

K-12 Semiconductor Topics Overview



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Scientific Method vs Engineering Design

The Scientist asks

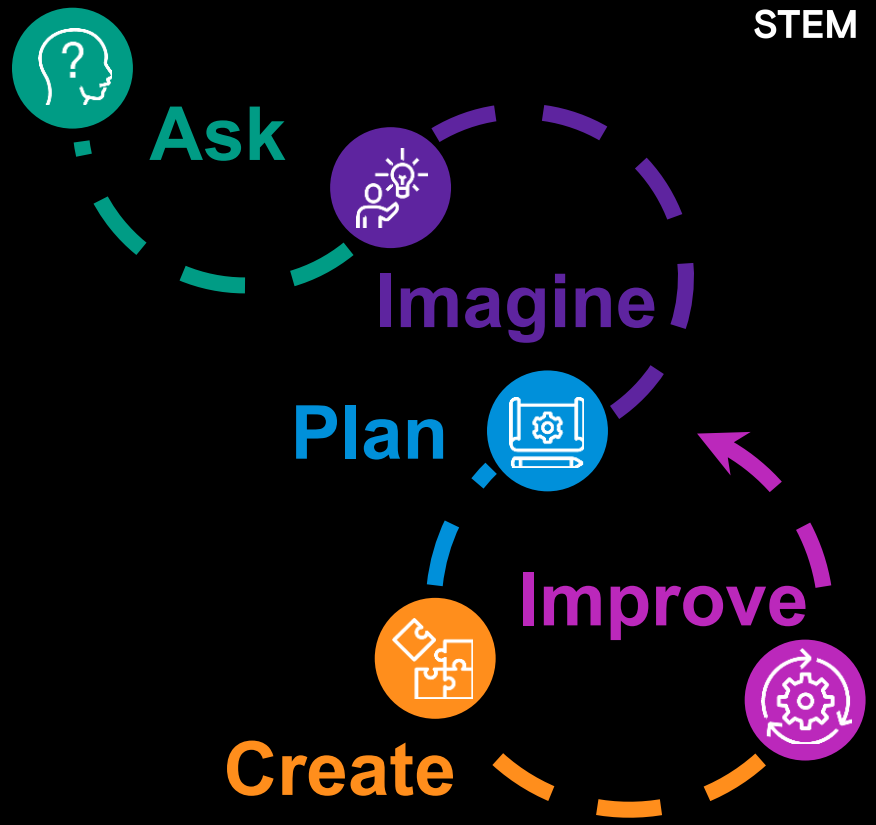
Why?

Seeking to understand

The Engineer asks

What or How?

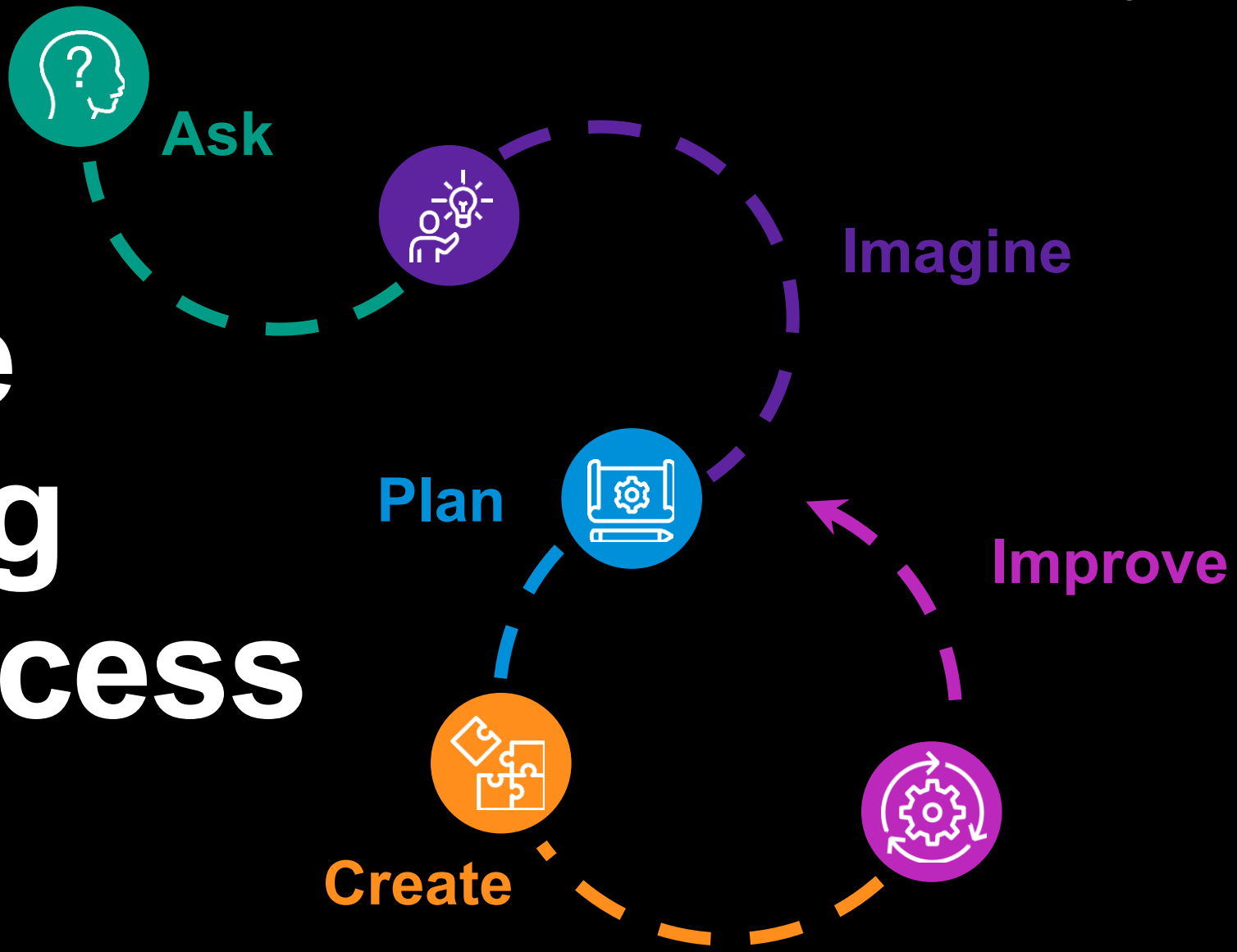
Working to Solve Problems



Engineering Design

Decision making process for product design

Explore the Engineering Design Process



Ask

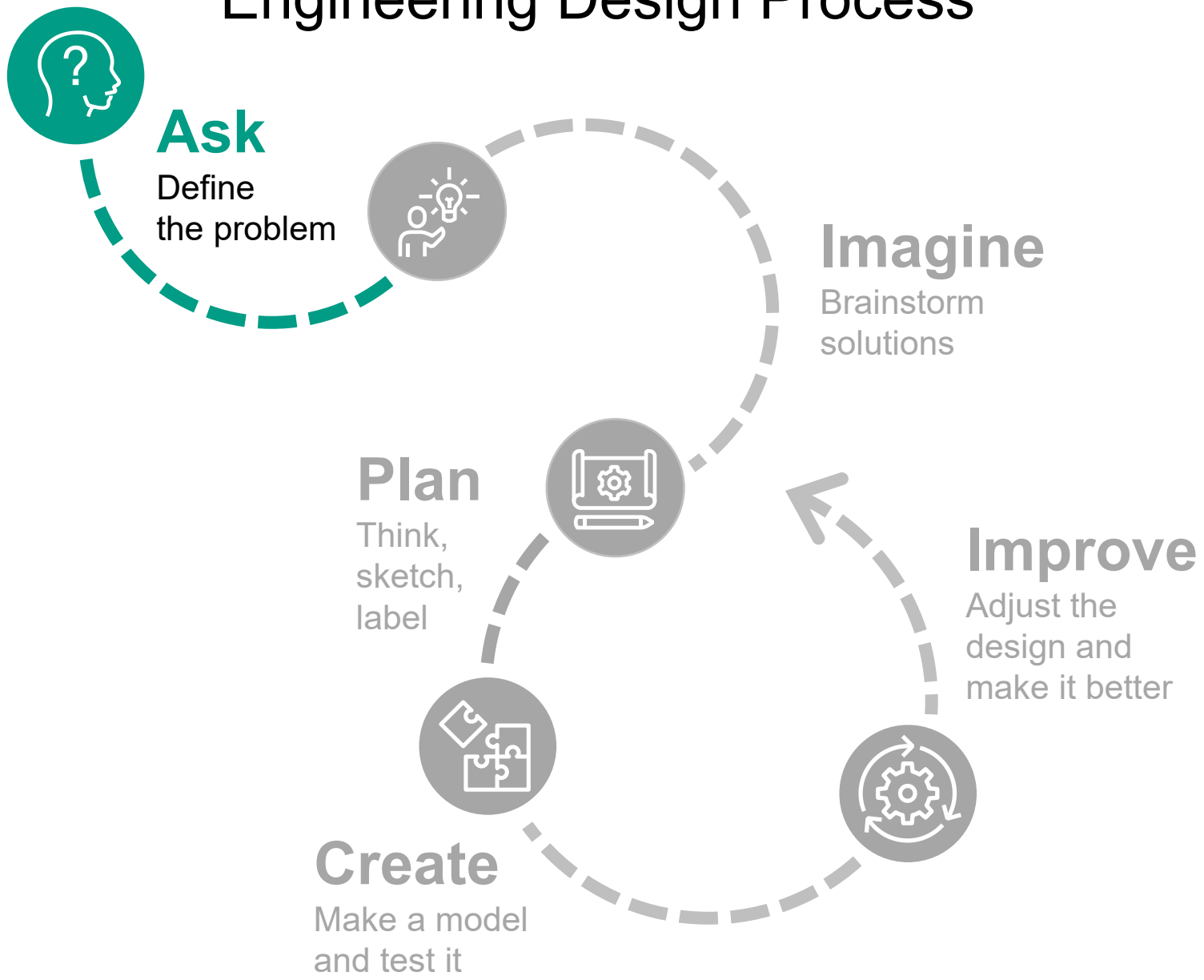
Clearly define the problem with everyone on your team

Talk with your team about all aspects of the problem

- What are the requirements?
- What are the limitations?

Ask questions to clarify parts of the problem you don’t understand

Engineering Design Process



Imagine

Brainstorm and discuss any and all possible solutions with the team

- Has a similar problem been solved in the past?
- What are some crazy ideas to solve the problem?

Capture multiple ideas from everyone on the team

Build on ideas among members of the team to create new solutions

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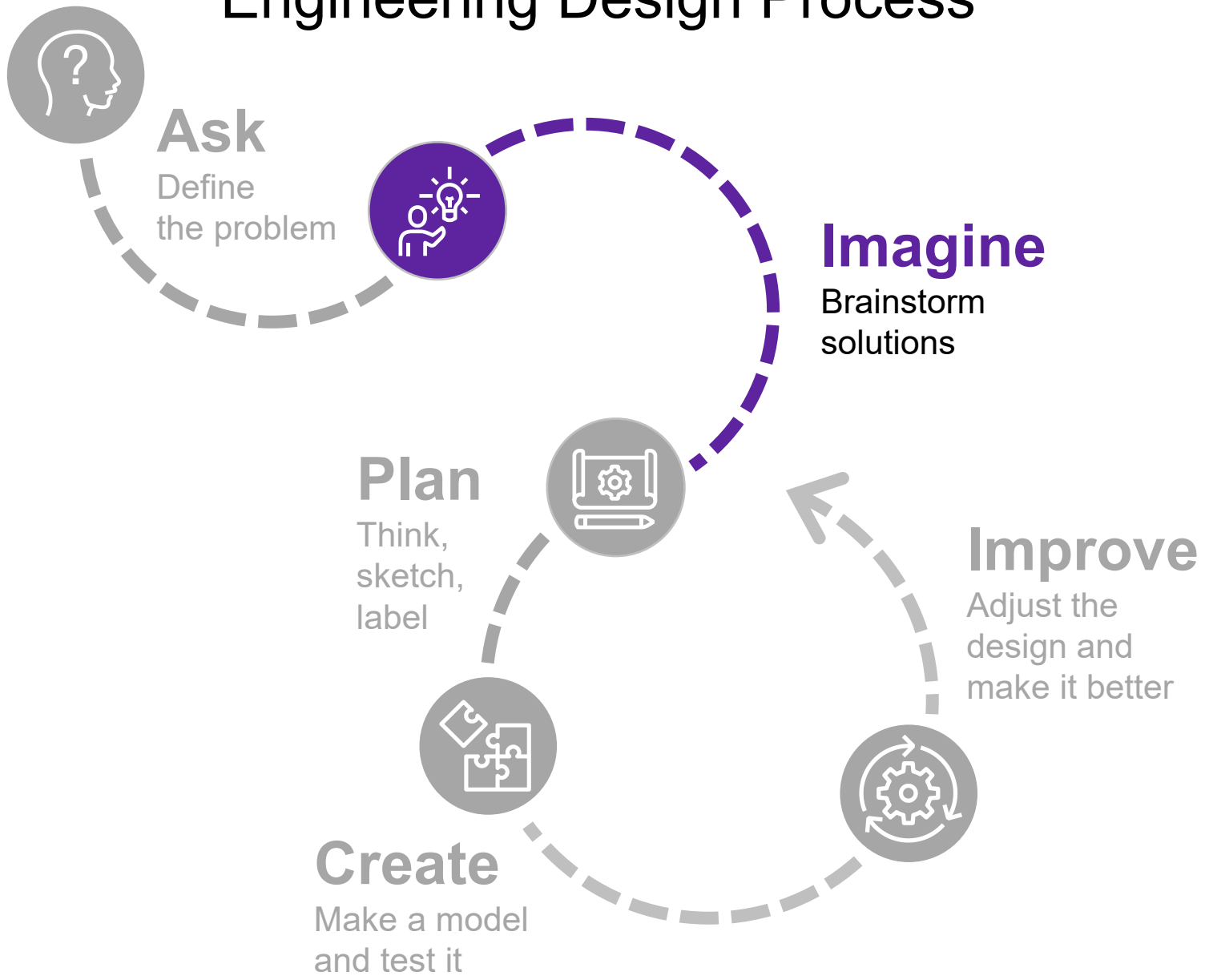

Plan

Think about how to start

Sketch rough diagrams of the possible solutions

- Could a few ideas be merged together for the final solution?

List and label the materials needed

Decide on one solution your team will build – sketch it

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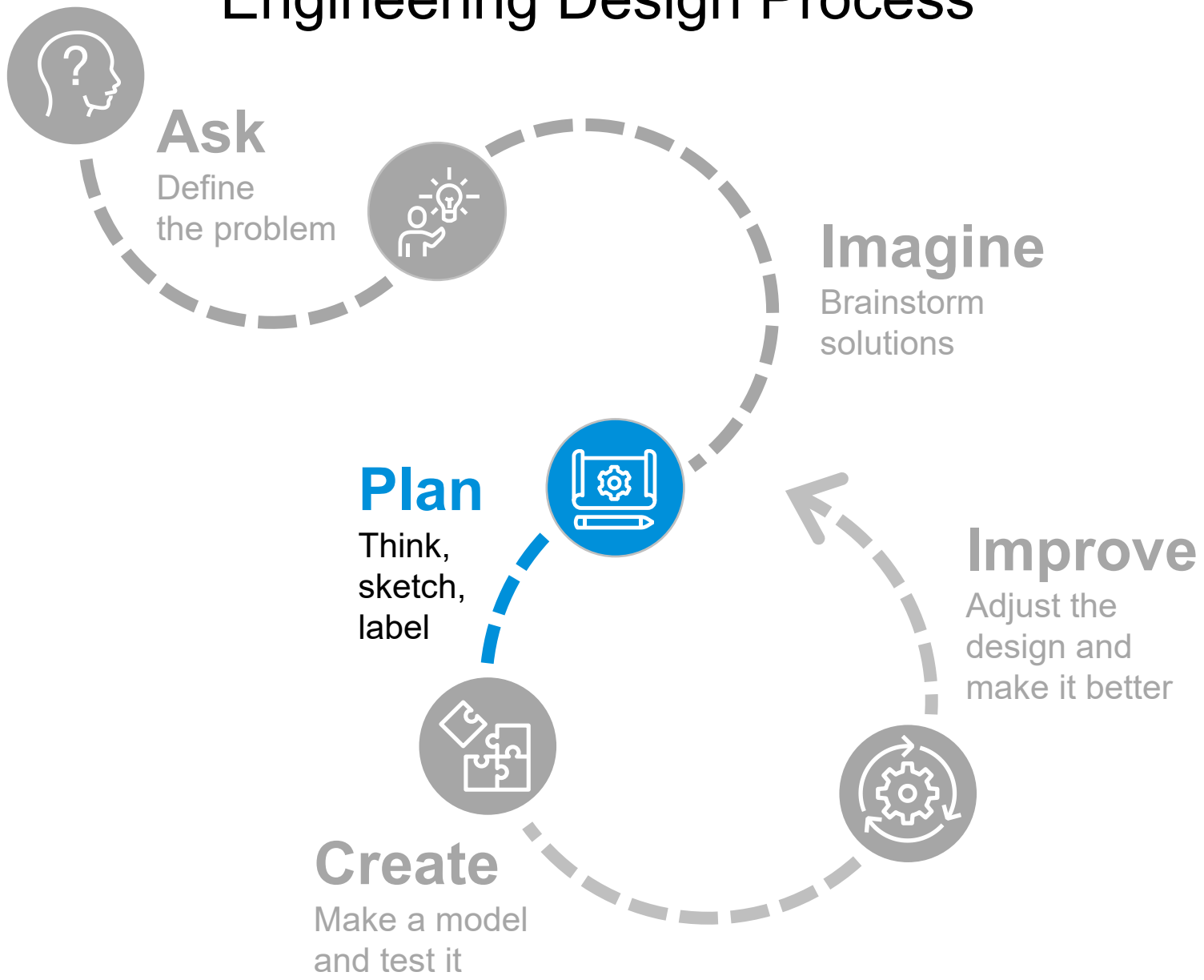

Create

Time to build a model / solution based on the team plan

Work as a team so everyone participates / contributes

Test the model / solution

Analyze the results

- Does the model / solution solve the problem?

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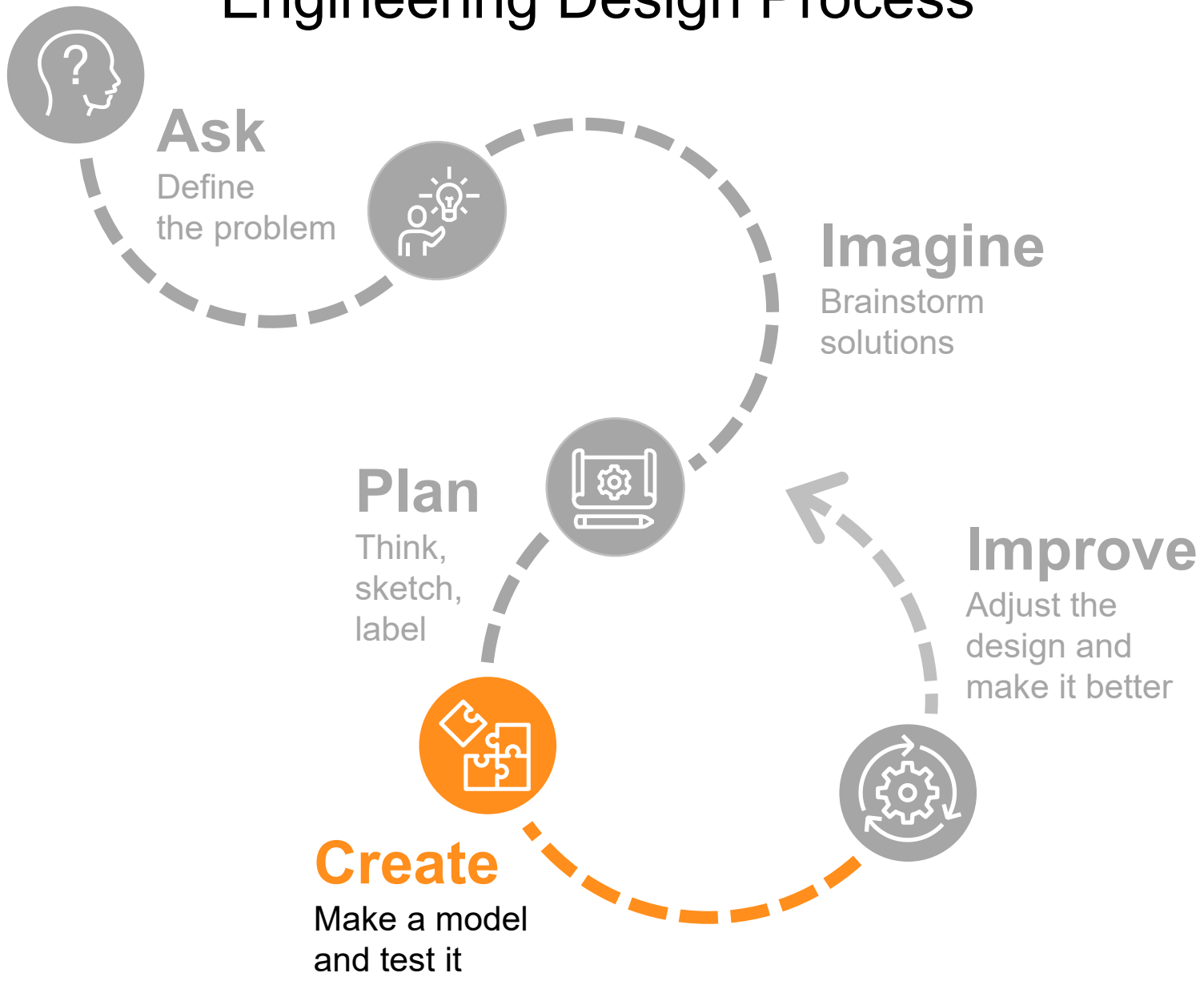

Improve

Adjust the model / solution to better solve the problem

- What changes need to be made to the original plan?
- What new information is available?

Learn from the previous plan / create steps and improve the model / solution

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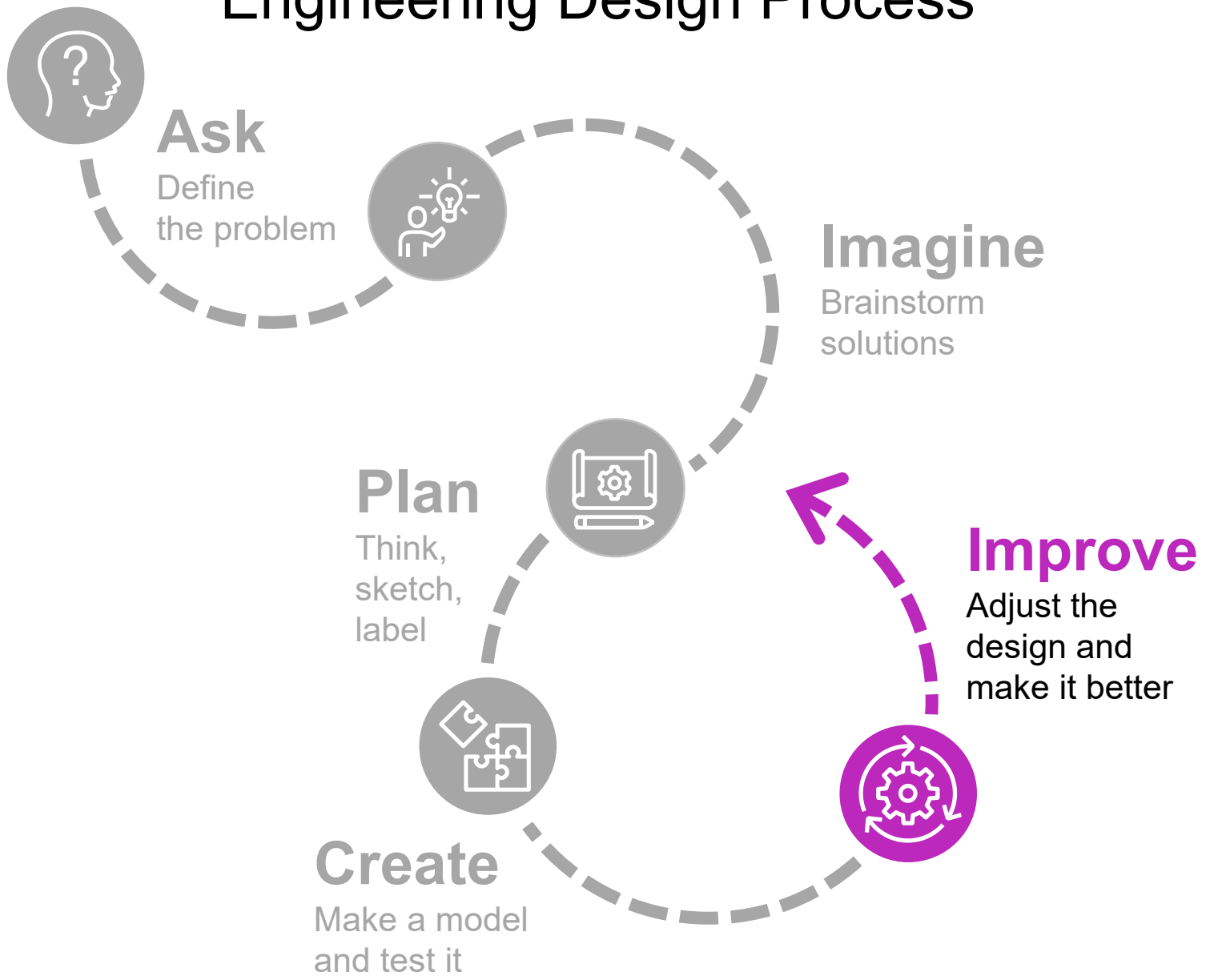

Iterate

Repeat the Plan-Create-Improve steps of the Engineering Design Process

- Is there more information needed about the problem?

Create new model or improve on original model to create a better solution to the problem

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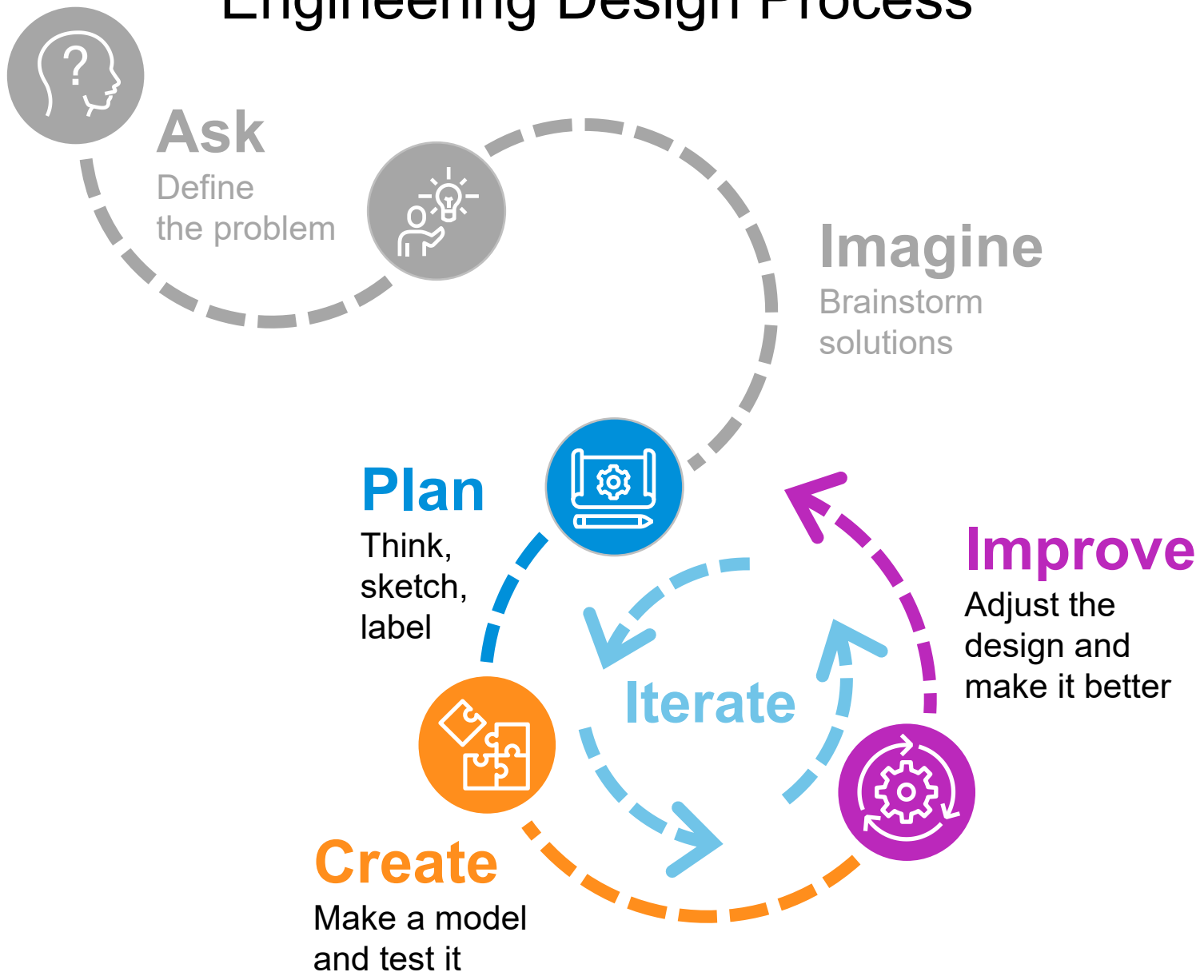

Activity

Introduce an Engineering Challenge

Students solve the challenge by applying the steps of the Engineering Design Process

OPTIONAL: Use the ‘Engineering Design Build WiggleBot’ slide deck

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