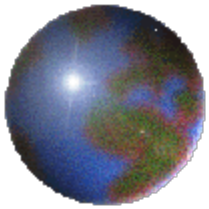
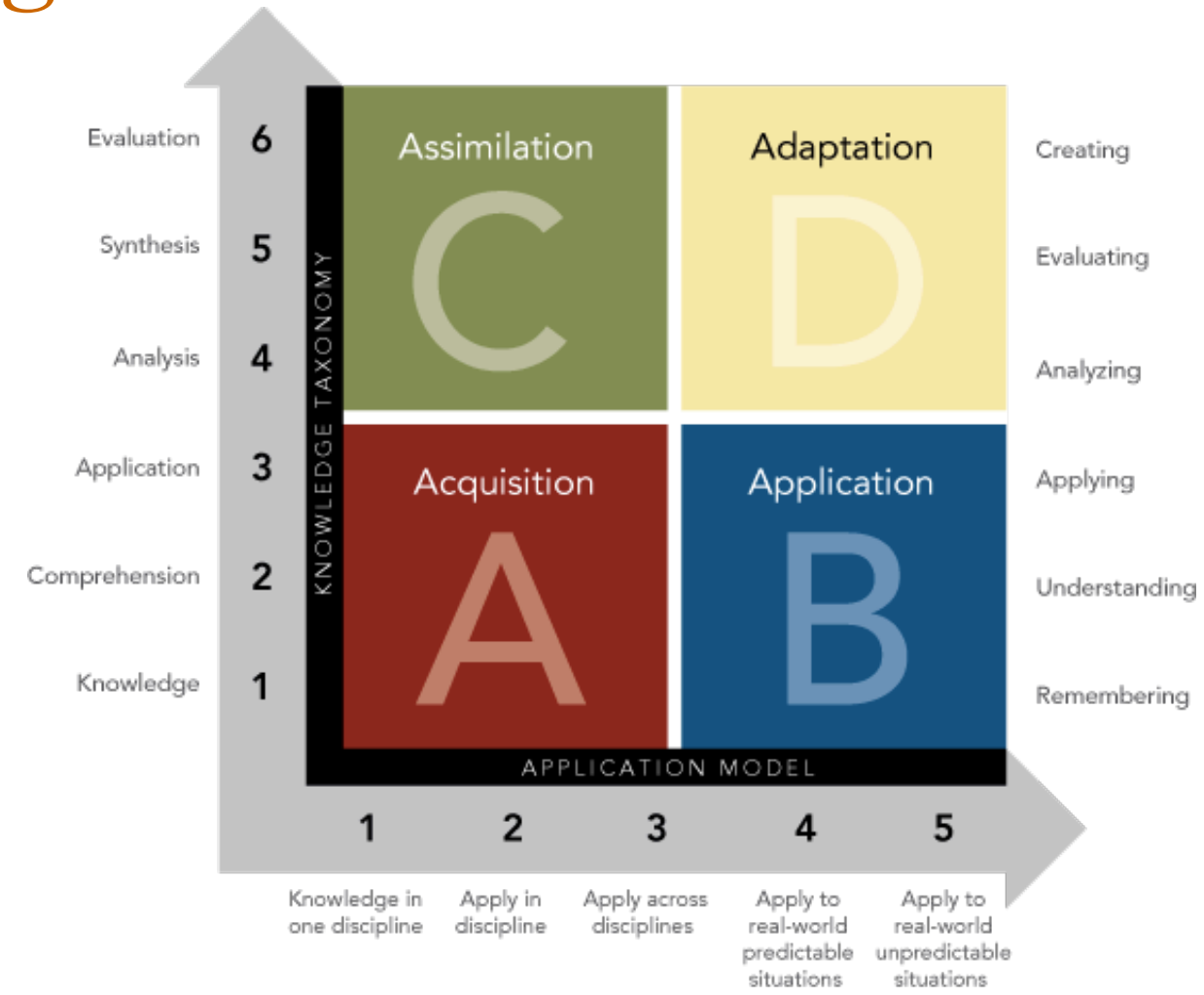


Design Thinking

How AMP Modules are designed for Rigor and Relevance

Doug Edwards and Storm Robinson
Georgia Institute of Technology

Rigor and Relevance Scale



Can you finish this saying

- **Tell me, I forget**
- **_____ me, I _____**
- **_____ me, and I _____**

AMP Packaging Challenge Math Module

- **Just Like Home** is a company that packages hanging kits for lockers and staterooms.
- Your team has been asked to help the company find an efficient and consistent way to package their locker and stateroom kits.

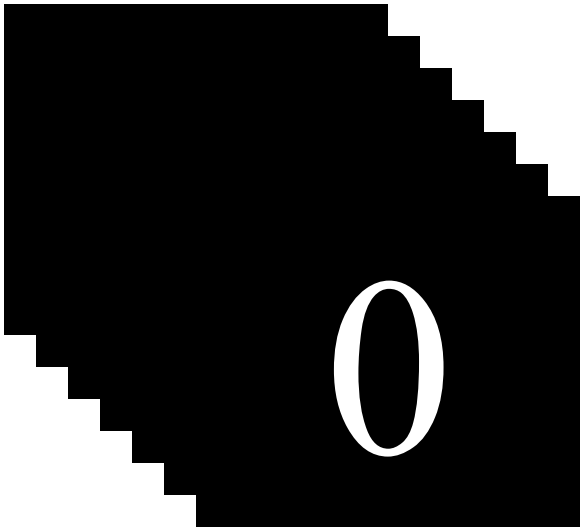
AMP Packaging Challenge Math Module

Their standard hanging kit includes

- 2 nut and bolt sets
- 4 plastic anchors
- 4 picture hangers
- Just Like Home logo

How many kits can your team package in 90 seconds (Trial 1)

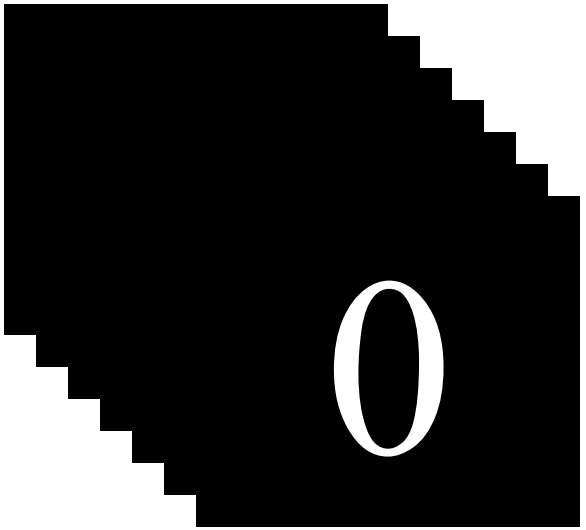
- First, discuss as a team then write down your procedure for packaging
- Second, do not start packaging until the countdown timer begins.
- Third, stop packaging when the timer ends.
- Record the completed number of packages only on your data sheet



Counting Down

How many kits can your team package in 90 seconds (Trial 2)

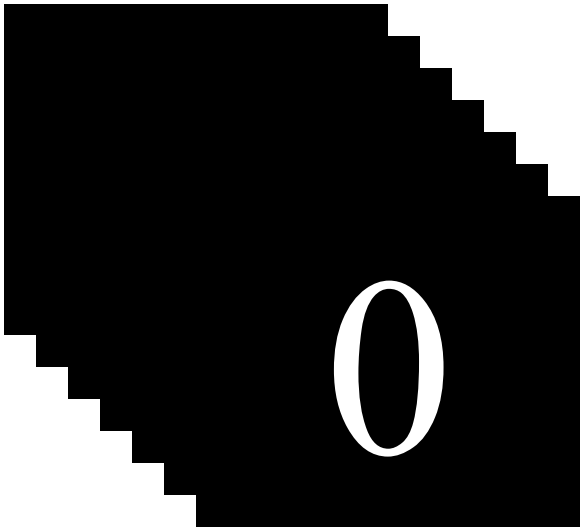
- First, discuss as a team then write down your procedure for packaging
- Second, do not start packaging until the countdown timer begins.
- Third, stop packaging when the timer ends.
- Record the completed number of packages only on your data sheet



Counting Down

How many kits can your team package in 90 seconds (Trial 3)

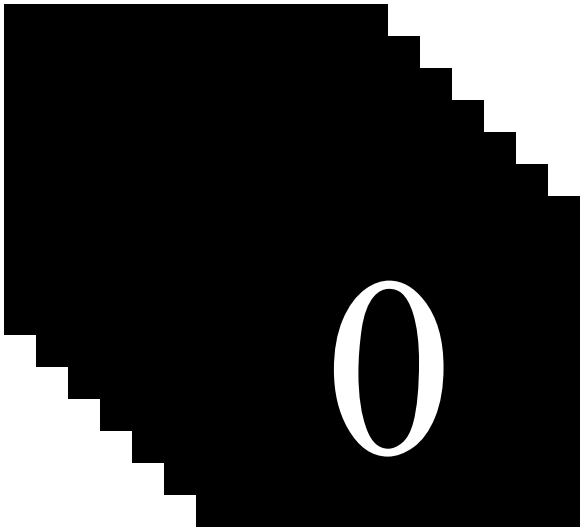
- First, discuss as a team then write down your procedure for packaging
- Second, do not start packaging until the countdown timer begins.
- Third, stop packaging when the timer ends.
- Record the completed number of packages only on your data sheet



Counting Down

How many kits can your team package in 90 seconds (Trial 4)

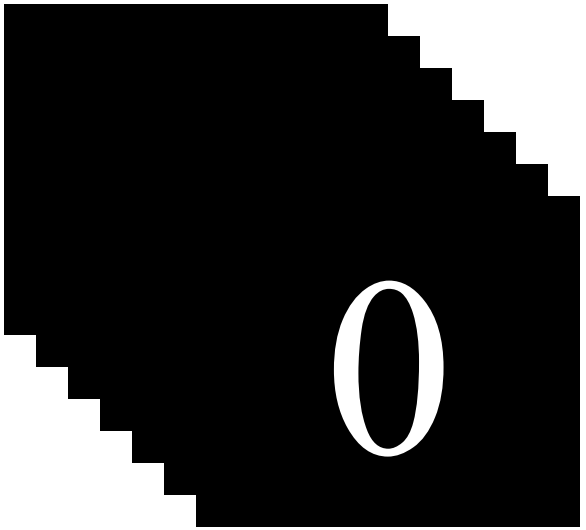
- First, discuss as a team then write down your procedure for packaging
- Second, do not start packaging until the countdown timer begins.
- Third, stop packaging when the timer ends.
- Record the completed number of packages only on your data sheet



Counting Down

How many kits can your team package in 90 seconds (Trial 5)

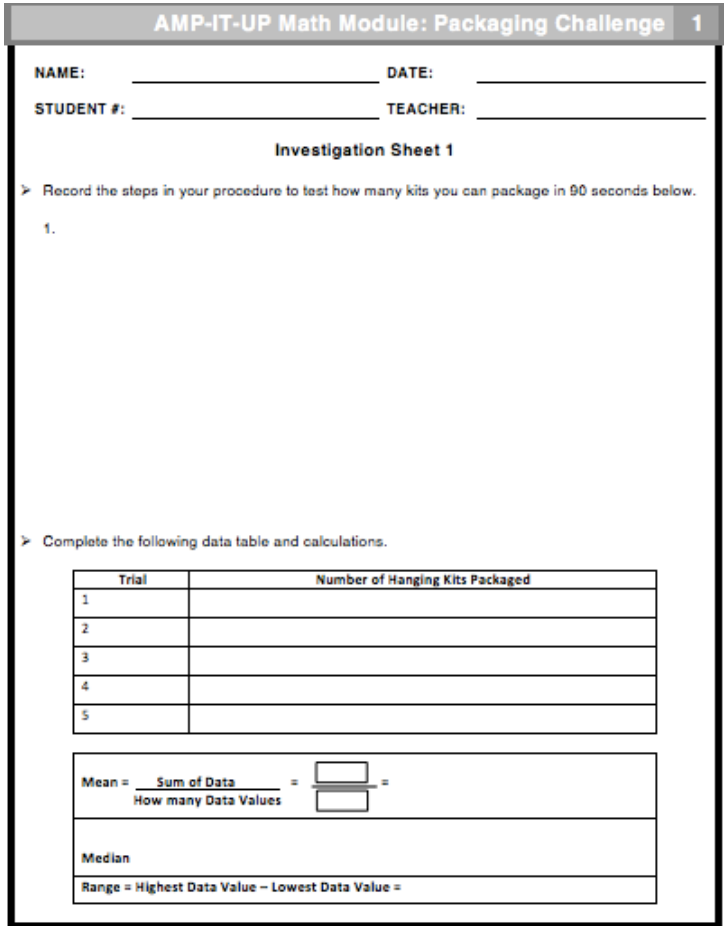
- First, discuss as a team then write down your procedure for packaging
- Second, do not start packaging until the countdown timer begins.
- Third, stop packaging when the timer ends.
- Record the completed number of packages only on your data sheet



Counting Down

Record and Analyze Your Data

- Record only the completed number of packages on your data sheet
- Calculate the mean, median, and range of your data



AMP-IT-UP Math Module: Packaging Challenge 1

NAME: _____ DATE: _____

STUDENT #: _____ TEACHER: _____

Investigation Sheet 1

➢ Record the steps in your procedure to test how many kits you can package in 90 seconds below.

1.

➢ Complete the following data table and calculations.

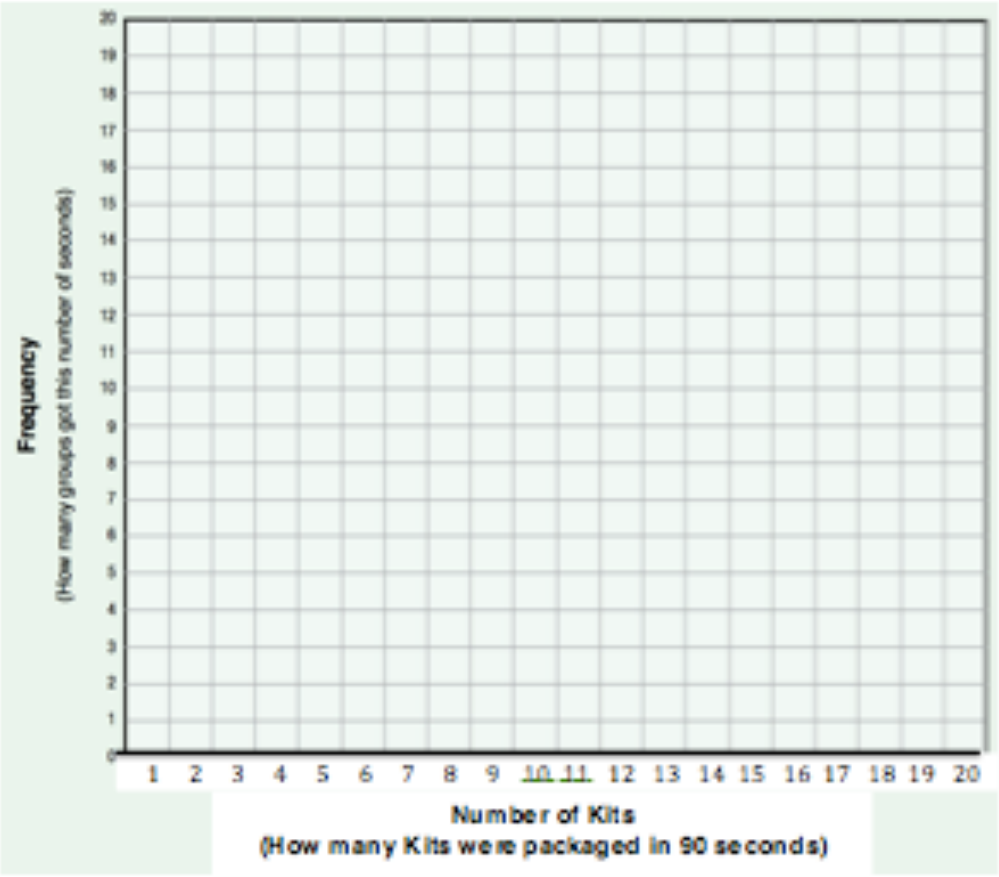
Trial	Number of Hanging Kits Packaged
1	
2	
3	
4	
5	

Mean = Sum of Data / How many Data Values = ☐ / ☐ =

Median

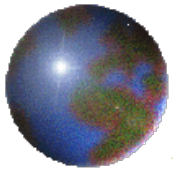
Range = Highest Data Value – Lowest Data Value =

Communicate and Graph Class Data



Data as Evidence Discussion

- What does the data show was the fastest way to package?
- What does the data show was the most consistent way to package?
- How would the class graph look if we had a fast and consistent way to package?



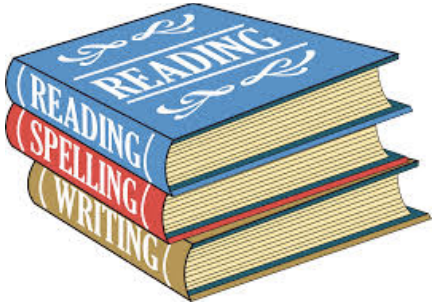
The Rest of the Module

- Watch an assembly line video to inspire ideas
- Class discussion leads to common procedure that all groups use for 6 trials
- Calculate mean, median, and range for 6 trial values
- Determine if class graph shows that the common procedure was faster and more consistent
- Each student writes a recommendation to the **Just Like Home** company on how to package their kits using the data and graphs as evidence for their write up.

How Can This Be Utilized or Referenced in the

- Science Class

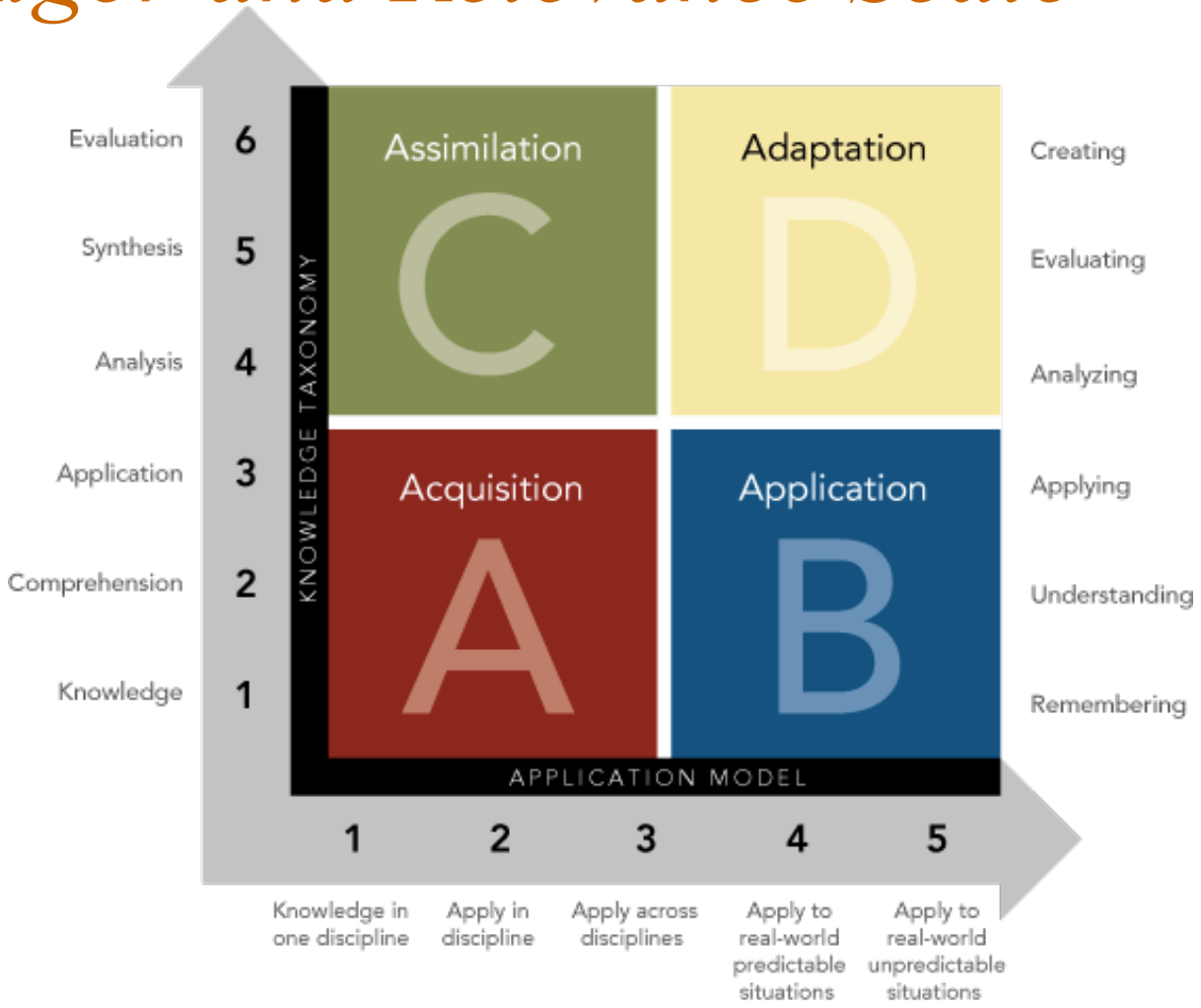
- English Class



- Social Studies Class

- Other?

Rate the Challenge on the Rigor and Relevance Scale



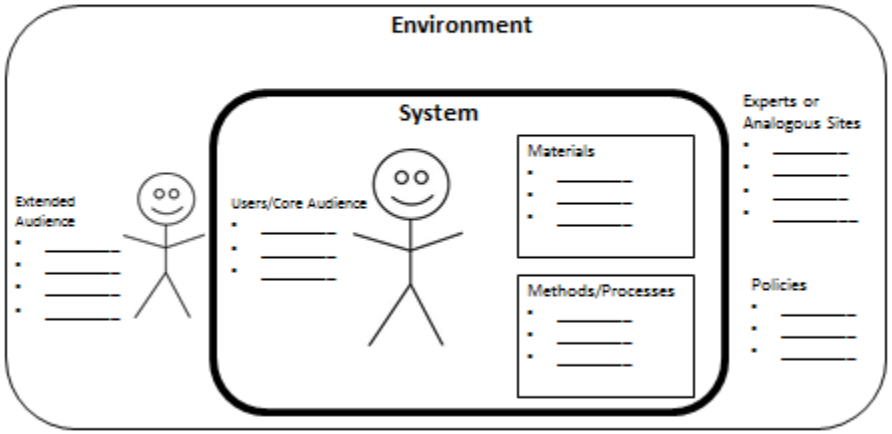
How Design Thinking is Used to Design the AMP Modules

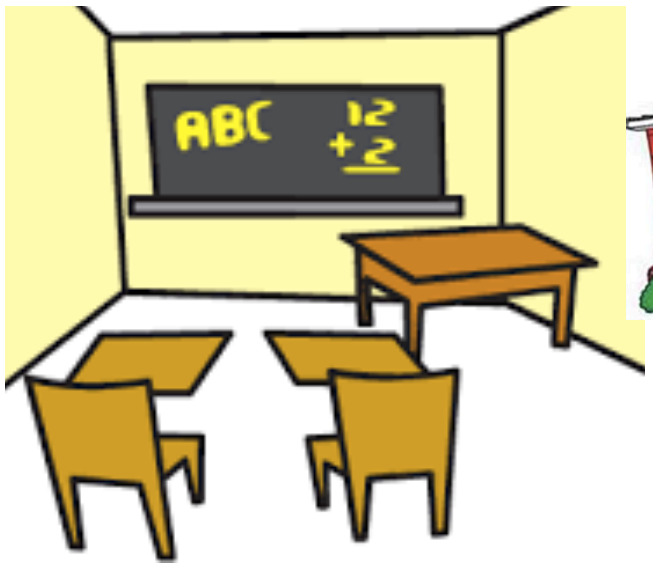
- Five Big Ideas
  - Problems and Complaints are Design Opportunities

How Might We

Design Thinking's Five Big Ideas

- Second Big Idea
  - Discover and Interpret Opportunities by understanding the System and the Environment
  - Requires you to go to environments outside of your own and **Empathize**





Design Thinking's Five Big Ideas

- Third Big Idea
  - Brainstorm and Ideate on the Design Opportunities
  - Have to have diverse subject matter experts

The Fourth Big Idea

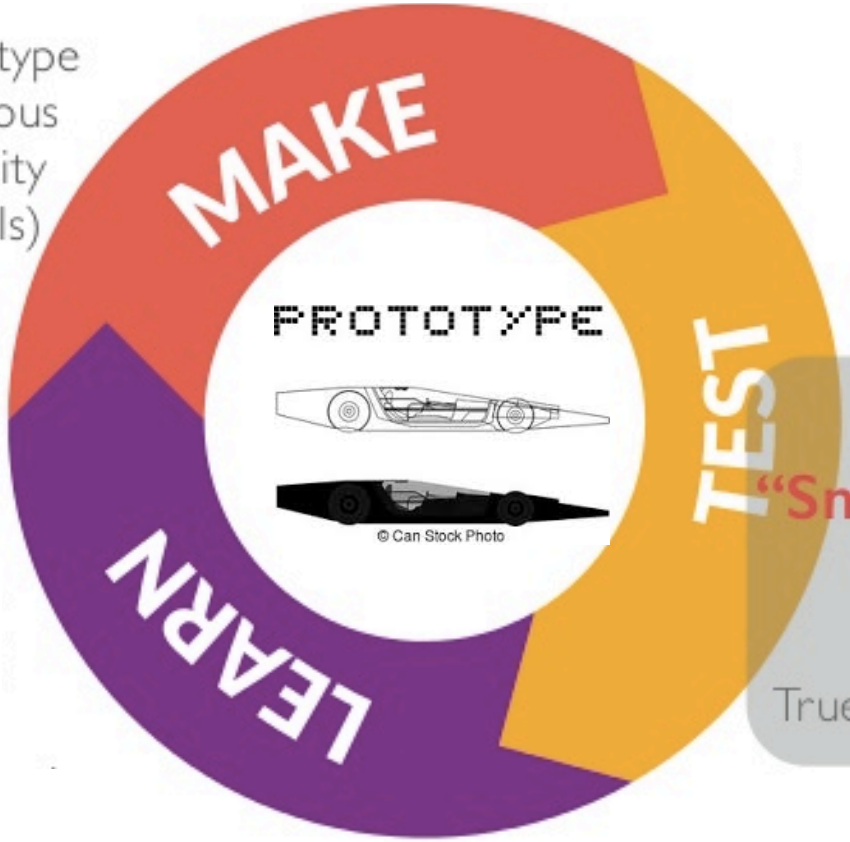
How:

Make

Test

Learn

Prototype (various fidelity levels)



Real Users

"Small Data"

Actual Customers

True Stakeholders

The Fifth Big Idea

How:
Make
Test
Learn

Prototype (various fidelity levels)

Iterate to Optimize

How Do You Become Part of AMP?