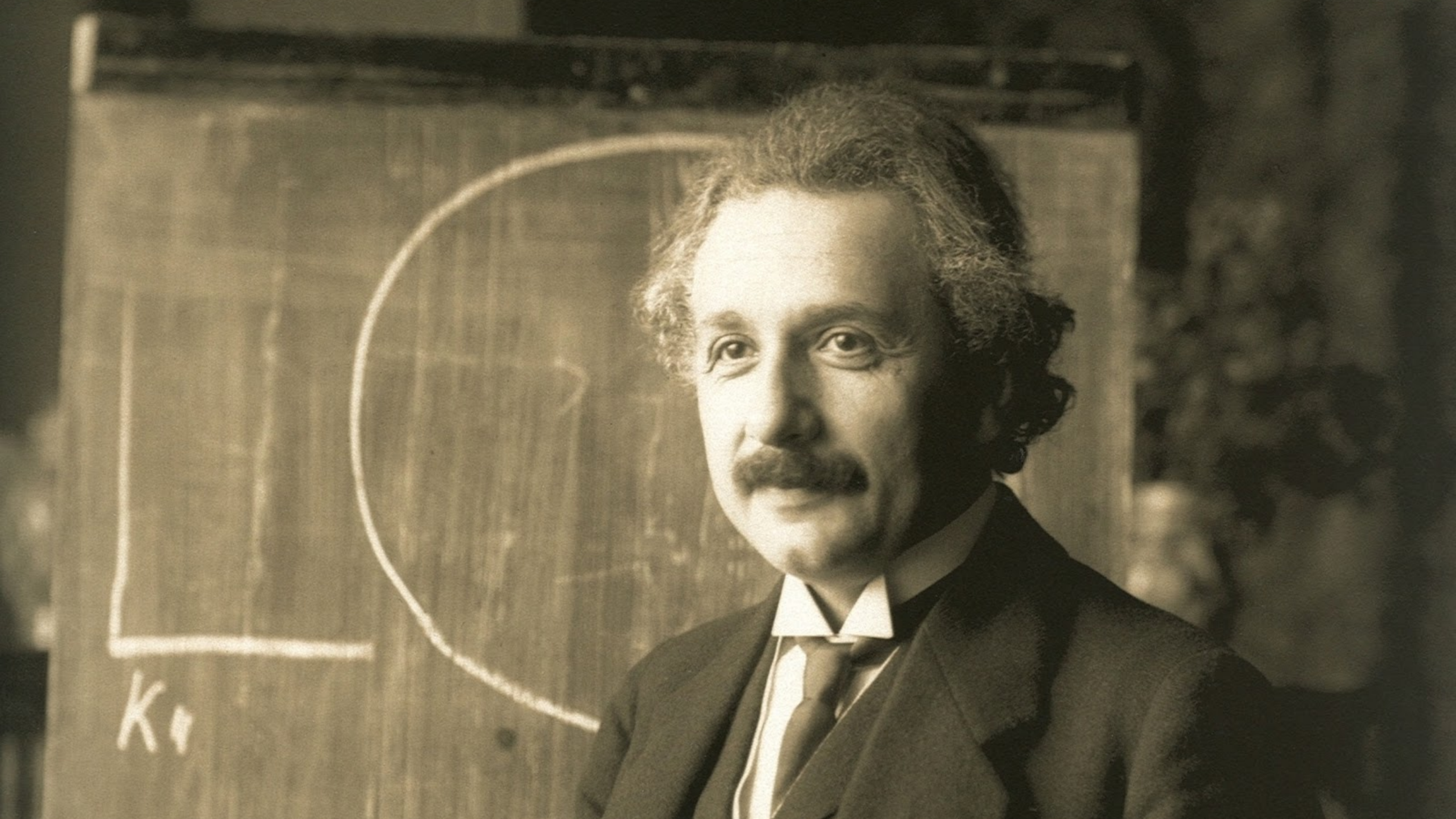


KANBAN GLOBAL SUMMIT | AUG. 24, 2022 | MATTHEW PHILIP

# NO (LAB) JACKET REQUIRED

Designing Experiments for Organizational Learning







# TODAY'S AGENDA

Time	Activity
8:45am	Introductions
	Experiment-Thinking Activities
	Improvement Kata
	Identifying Experiments
	Experiment Canvases
	Connecting Experiments to Strategy
12pm	Lunch

\* 10-minute break approximately every hour

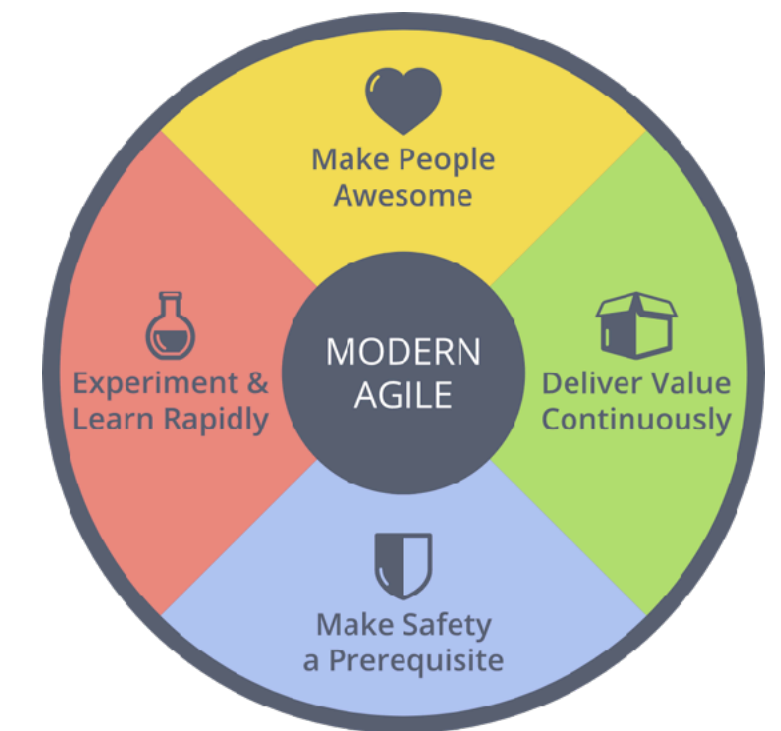
# WHO'S TALKING ABOUT EXPERIMENTS?

**IMPROVE COLLABORATIVELY, EVOLVE *EXPERIMENTALLY*.**

Kanban Method

***EXPERIMENT AND LEARN RAPIDLY.***

Modern Agile



Lean Startup

**PIVOTING ... A STRUCTURED COURSE CORRECTION DESIGNED TO TEST ... *HYPOTHESIS* ABOUT THE PRODUCT, STRATEGY, AND ENGINE OF GROWTH.**

**EACH FEATURE INCLUDES A BENEFIT *HYPOTHESIS*.**

SAFe

**IN COMPLEX ENVIRONMENTS, YOU CAN'T FOLLOW RECIPES OR CONDUCT DETAILED ANALYSIS TO UNDERSTAND THE SITUATION. RATHER, YOU MUST *EXPERIMENT* (PROBE).**

Cynefin

DevOps

**...A CULTURE THAT FOSTERS ... *CONTINUAL EXPERIMENTATION*, TAKING RISKS AND LEARNING FROM FAILURE...**

**PLAN, DO, CHECK (STUDY), ACT**

Deming

**SCALE EXPERIMENTING-LEARNING-ADAPTING-EVOLVING GUIDED BY COMPLEXITY, LEAN AND AGILE.**

Generative  
Scaling



**BUT IN SPITE OF THE LIP SERVICE THAT IS PAID TO ...  
'LEARNING FROM FAILURE,' TODAY'S ORGANIZATIONS,  
PROCESSES, AND MANAGEMENT OF INNOVATION  
OFTEN IMPEDE EXPERIMENTATION.**

**— STEFAN THOMKE, EXPERIMENTATION MATTERS: UNLOCKING THE POTENTIAL OF NEW TECHNOLOGIES**



**YOU KEEP USING THAT WORD**



**I DO NOT THINK IT MEANS WHAT YOU THINK IT MEANS**



**WHAT IS AN EXPERIMENT MINDSET?  
WHAT IS SCIENTIFIC METHOD?**



# WHAT IS AN EXPERIMENT MINDSET? SCIENTIFIC THINKING?

Scientific thinking is a skill – a habit – that empowers us to better navigate complexity:

1. *Acknowledging* that our comprehension is always incomplete and possibly wrong.
2. *Assuming* that answers will be found by test rather than just deliberation. (You make predictions and test them with experiments.)
3. *Appreciating* that differences between a prediction and what actually happens can be a useful source of learning and adjustment.



# WARMUP: WORDLE

R	A	N	T	S
W	A	F	E	R
D	A	R	E	D
E	A	R	T	H
L	A	R	G	E
B	A	R	G	E

You Won! 🏆

Q	W	E	R	T	Y	U	I	O	P
A	S	D	F	G	H	J	K	L	
⌫	Z	X	C	V	B	N	M	Enter	



# WHAT DID WE LEARN?

**WHAT HAPPENED IN THAT GAME?**  
**HOW DID YOU APPROACH SOLVING IT?**  
**ANYTHING UNEXPECTED HAPPEN?**

# **ELEUSIS EXPEDITIOUS: A GAME ABOUT HYPOTHESES**



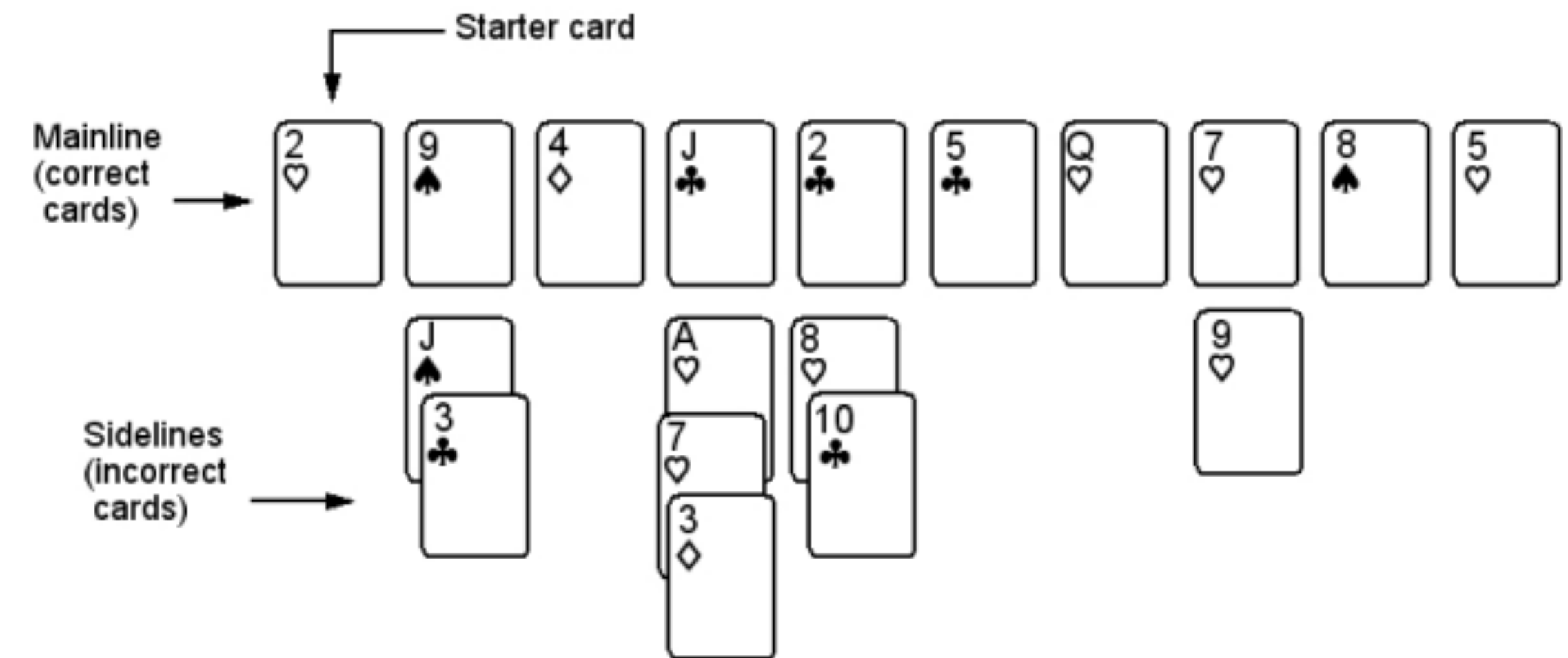
# OBJECT

- Each round, one player is chosen as the oracle, who has a secret rule for which the cards must be played. (The oracle does not play any cards.)
  - For example: *Each card has to be a different color from the card before it.*
- Other players lay down cards to discover the pattern. If a player lays down a card correctly, he or she can try to guess the rule.



# GAMEPLAY

- The oracle places the pile of cards face down, turns over the top card, and puts it on the table.
- The player to the left of the oracle goes first, then the play continues clockwise.
- A player turns the top card from the deck and lays it on the table. He or she asserts whether it follows the rule or not, and the oracle accepts or rejects:
  - If the card follows the rule, the card is placed horizontally to the right of the last card on the mainline.
  - If the card does *not* follow the rule, the card is placed below the last correct card (it either starts a new sideline or it adds to a sideline).
- Whenever a player makes a correct assertion, he or she can guess aloud the rule.
- All cards are played to a central layout that grows as the round progresses.
- The round ends when a player guesses the rule.
- Ace is 1 (odd), jack is 11 (odd), queen is 12 (even), and king is 13 (odd)





# WHAT DID WE LEARN?

**HOW DID IT FEEL TO BE WRONG? RIGHT?**

**WHAT IF WE MAPPED THE RESULTS OF OUR LEARNING?**

# SCIENTIFIC METHOD AND ELEUSIS EXPEDITIONS

Define a question	“What is the rule?”
Gather information and resources (observe)	“This card apparently follows the rule, this other one doesn’t.”
Form an explanatory hypothesis	“The rule is only number cards.”
Test hypothesis by experimenting (replicating)	“Numbers 1-10 would follow rule, face cards would not.”
Analyze the data	“2 and 6 followed the rule, but 5 did not.”
Interpret and form new hypothesis	“The rule is only even numbers.”
Share results and learnings	



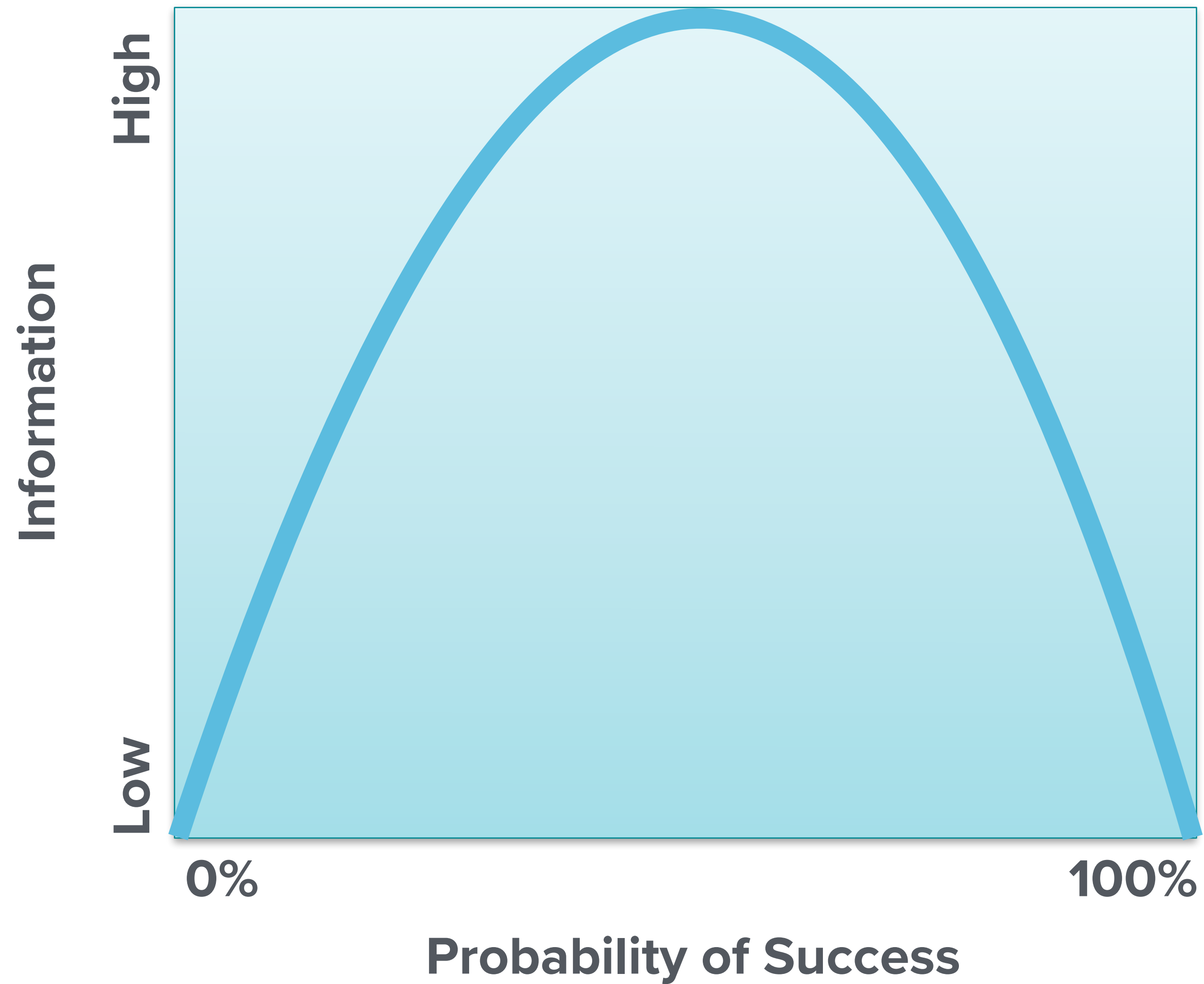
A blue-tinted photograph of the Grateful Dead band members sitting on hay bales in front of a wooden building. The text is overlaid in white.

**“WELL I AIN'T OFTEN RIGHT,  
BUT I'VE NEVER BEEN WRONG.”**

**GRATEFUL DEAD**



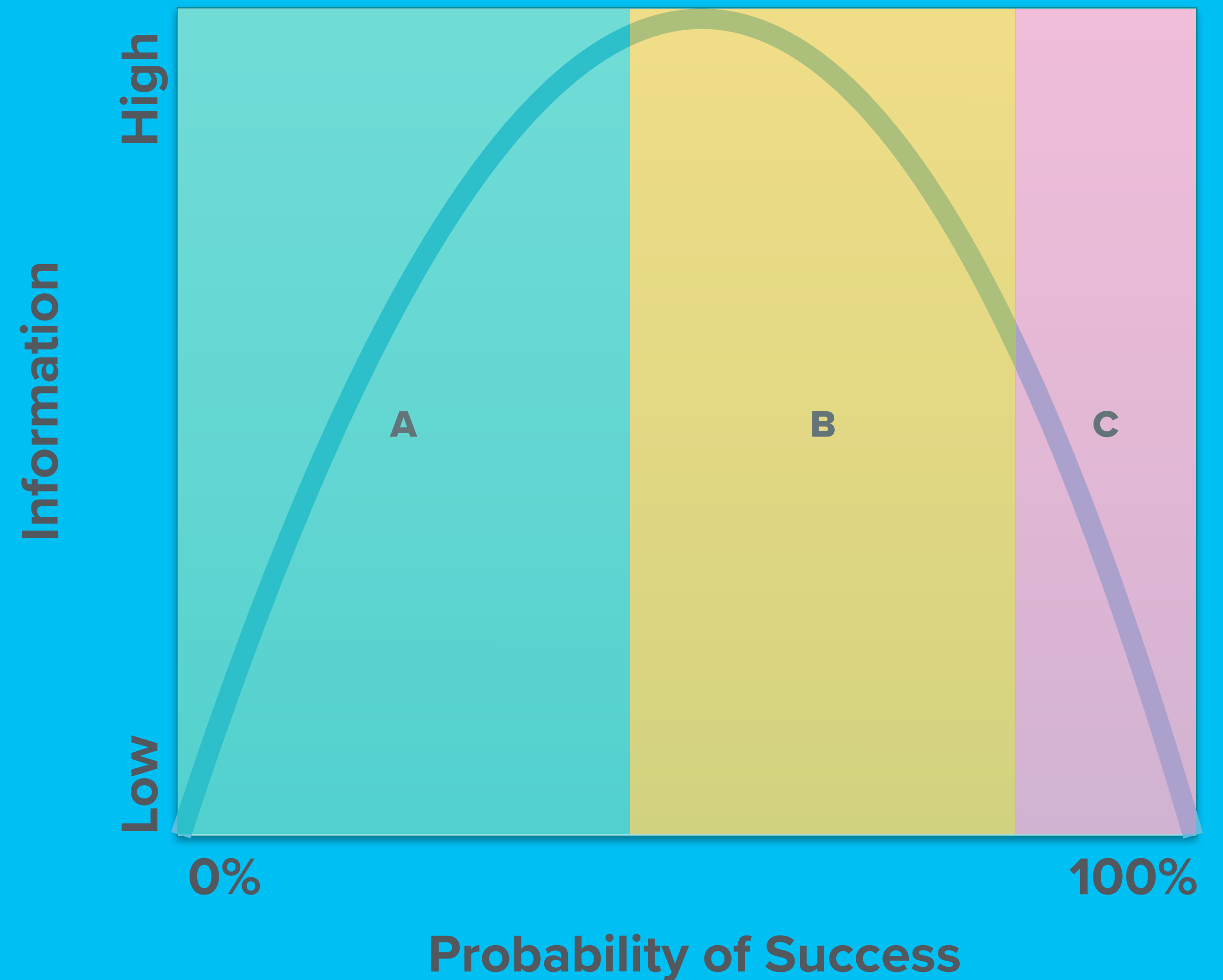
# INFORMATION THEORY





# THINKING IN BETS

- Belief -> bet -> [Set of outcomes]
- Belief -> bet ->
  - outcome A (probability of likelihood %)
  - outcome B (probability of likelihood %)
  - outcome C (probability of likelihood %)



**TRUNCATE UNPRODUCTIVE PATHS  
QUICKLY.**

**DON REINERTSEN**

# REINERTSEN'S FRONT-LOADED LOTTERY OPTION

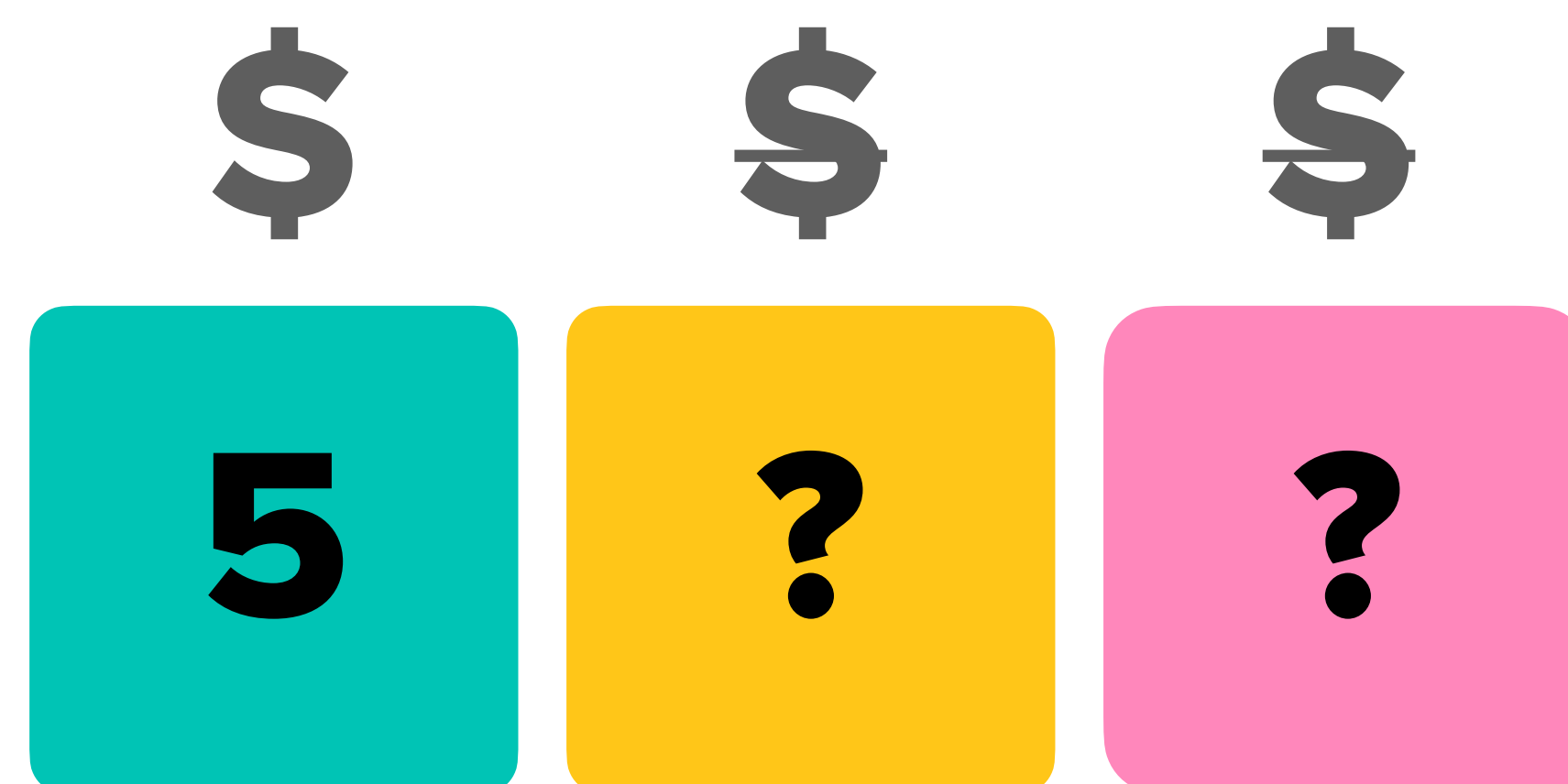
## OPTION 1

Pay \$3 to select all three digits at once



## OPTION 2

Pay \$1 for the first digit, find out if it is correct, then choose if you wish to pay \$1 for the second digit, and then choose if you wish to pay \$1 for the third digit.





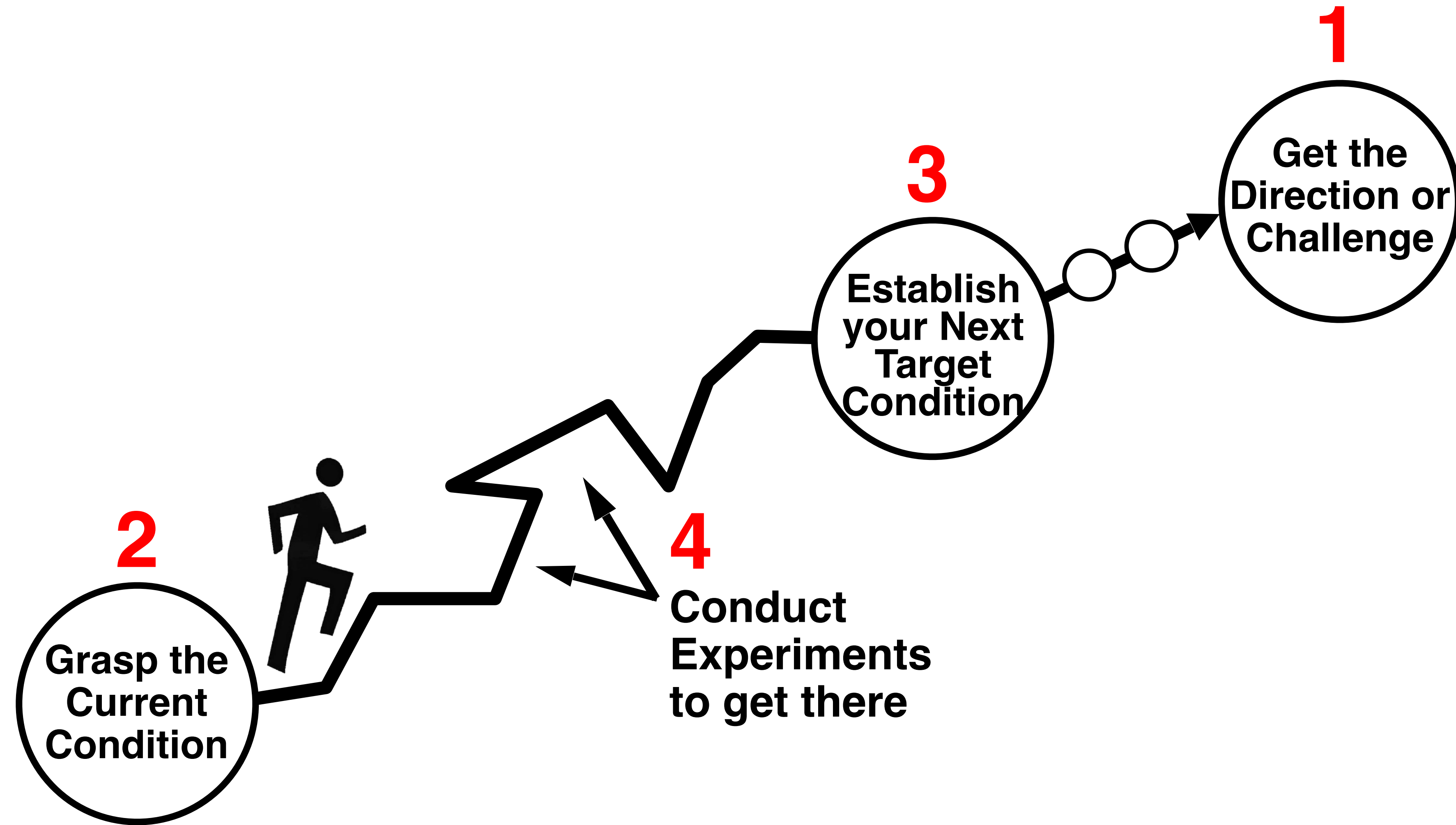
# IMPROVEMENT KATA

# LET'S PRACTICE SCIENTIFIC THINKING WITH A KATA!

- A Kata is a routine you practice at the start, to help you develop new skills!



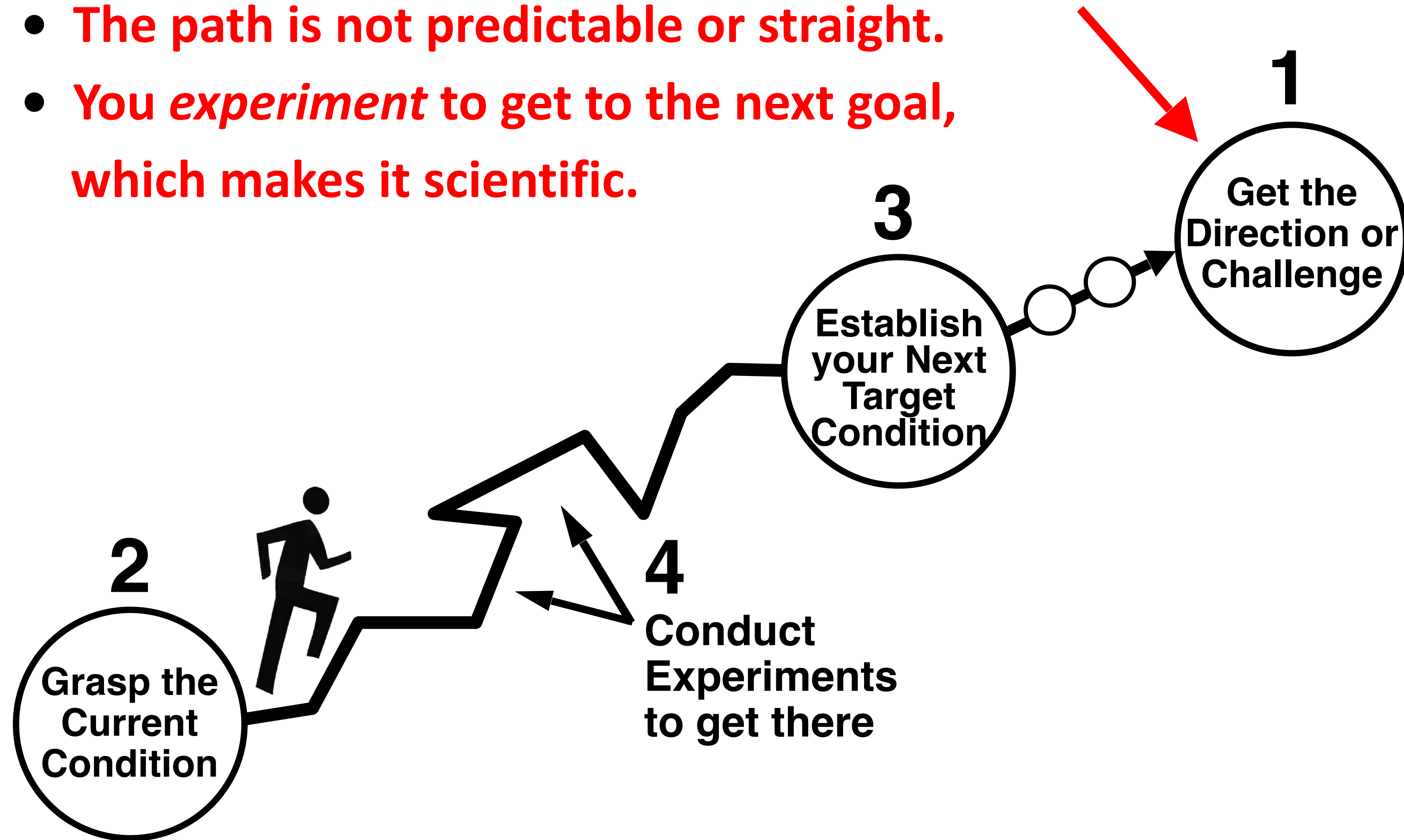
# THE FOUR STEPS OF THE IMPROVEMENT KATA APPROACH





# A FEW KEY POINTS

- You don't have to reach the overall challenge right away.
- The path is not predictable or straight.
- You *experiment* to get to the next goal, which makes it scientific.





For this exercise we'll build this 15-piece puzzle  
several times, and experiment with ways  
to do it faster



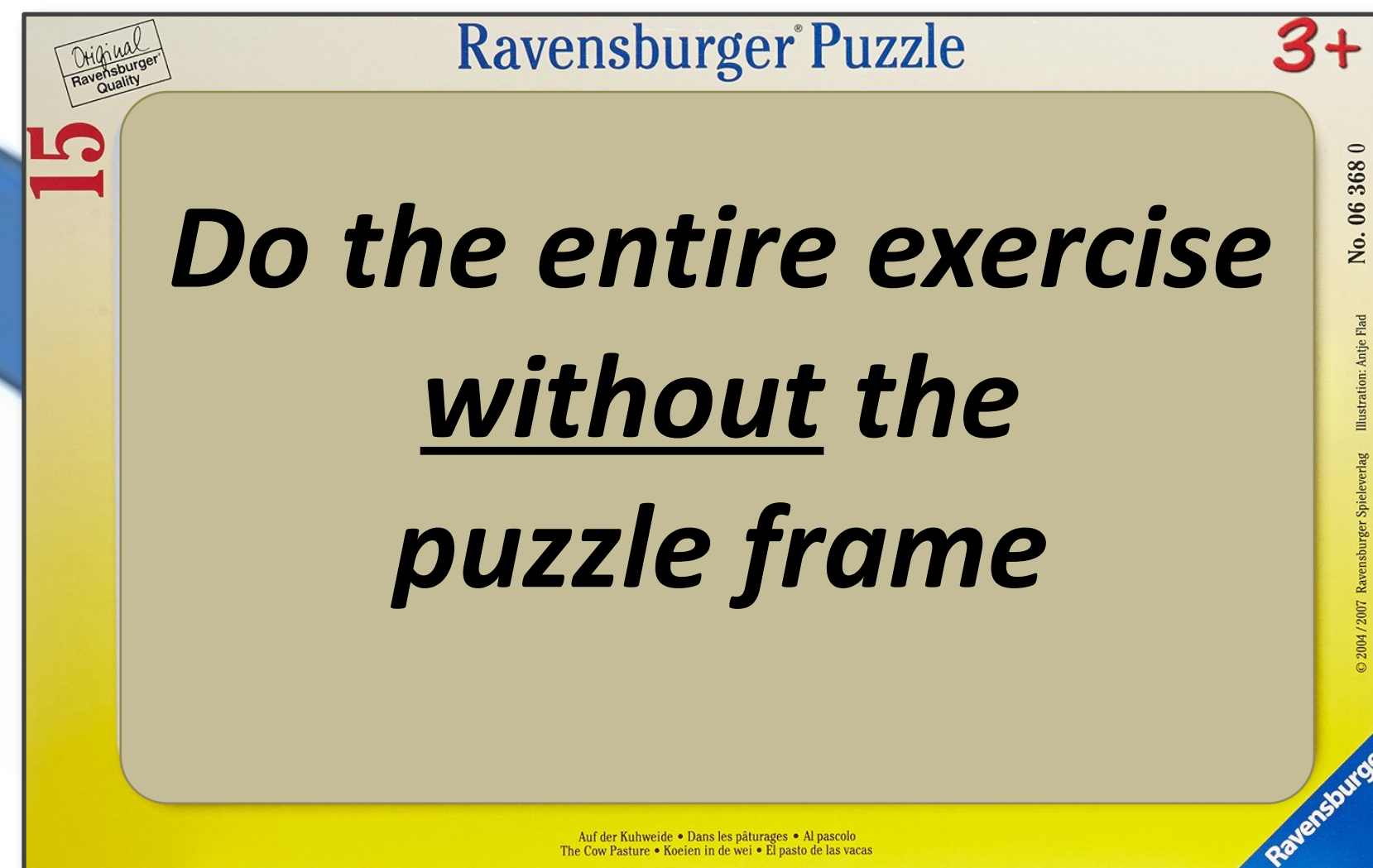




# Go ahead and build the puzzle one time!

- Take the puzzle out and study the picture.
- Remove the puzzle pieces from the frame.
- Put the frame away.
- Build the puzzle once, without timing it.

***Put the Frame Aside***





# THREE THINGS TO DO NEXT:



**Choose a Team Name**



**Select a Data Recorder**

→ Write your team name on the forms in the kit



**Select a Timekeeper**

→ Each gets a stopwatch



# TODAY'S GROUND RULES

## **(1) "START Position" =**

- Puzzle pieces shuffled in random order**
- Pieces face down in one stack**
- Hands flat on the table**
- No talking, you're ready to go**

## **(2) All Teams Start Together**

- a. Instructor calls "START"**
- b. Build the puzzle (talking allowed)**
- c. Note the elapsed time on your form**

## **(3) Don't Write on the Puzzle**

# LET'S ESTABLISH A **BASELINE TIME** FOR YOUR TEAM

Record your  
times here

Team Name: \_\_\_\_\_  
Date: \_\_\_\_\_

**BASELINE ROUNDS**

**Round A**  
seconds

50
45
40
35
30
25
20
15
10
5

**Round B**  
seconds

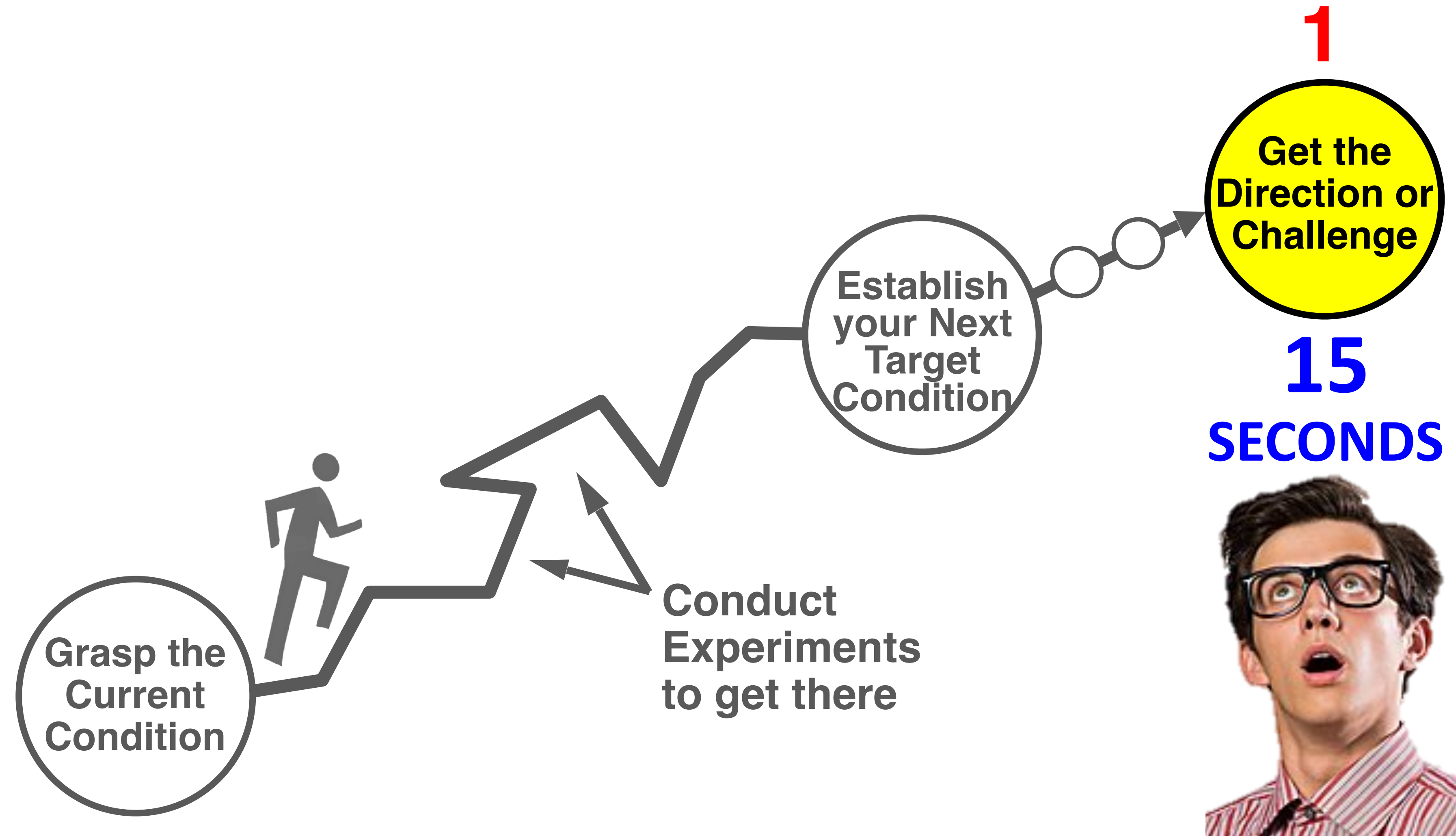
50
45
40
35
30
25
20
15
10
5

Use this  
form

**Now let's do  
the **four steps** of  
the Improvement Kata**



# Step 1: UNDERSTAND THE CHALLENGE



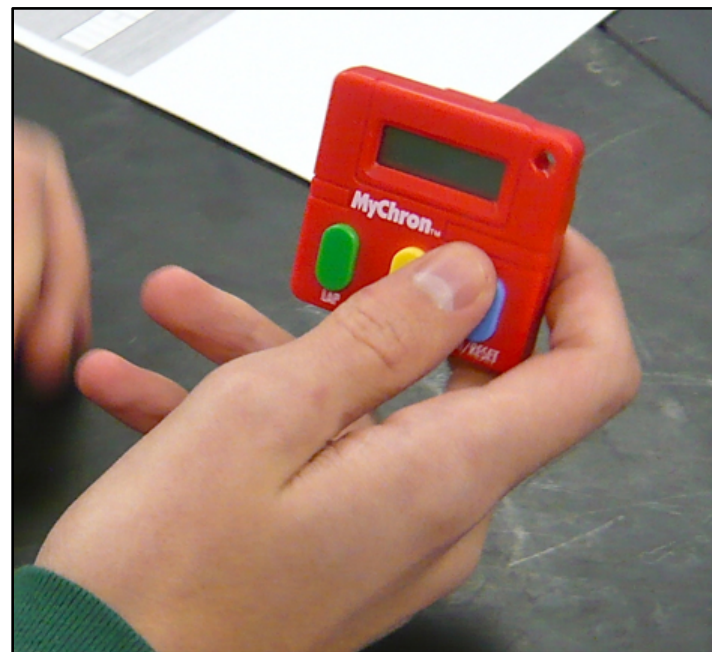
# **Key Points About:**

## ***UNDERSTANDING THE CHALLENGE***

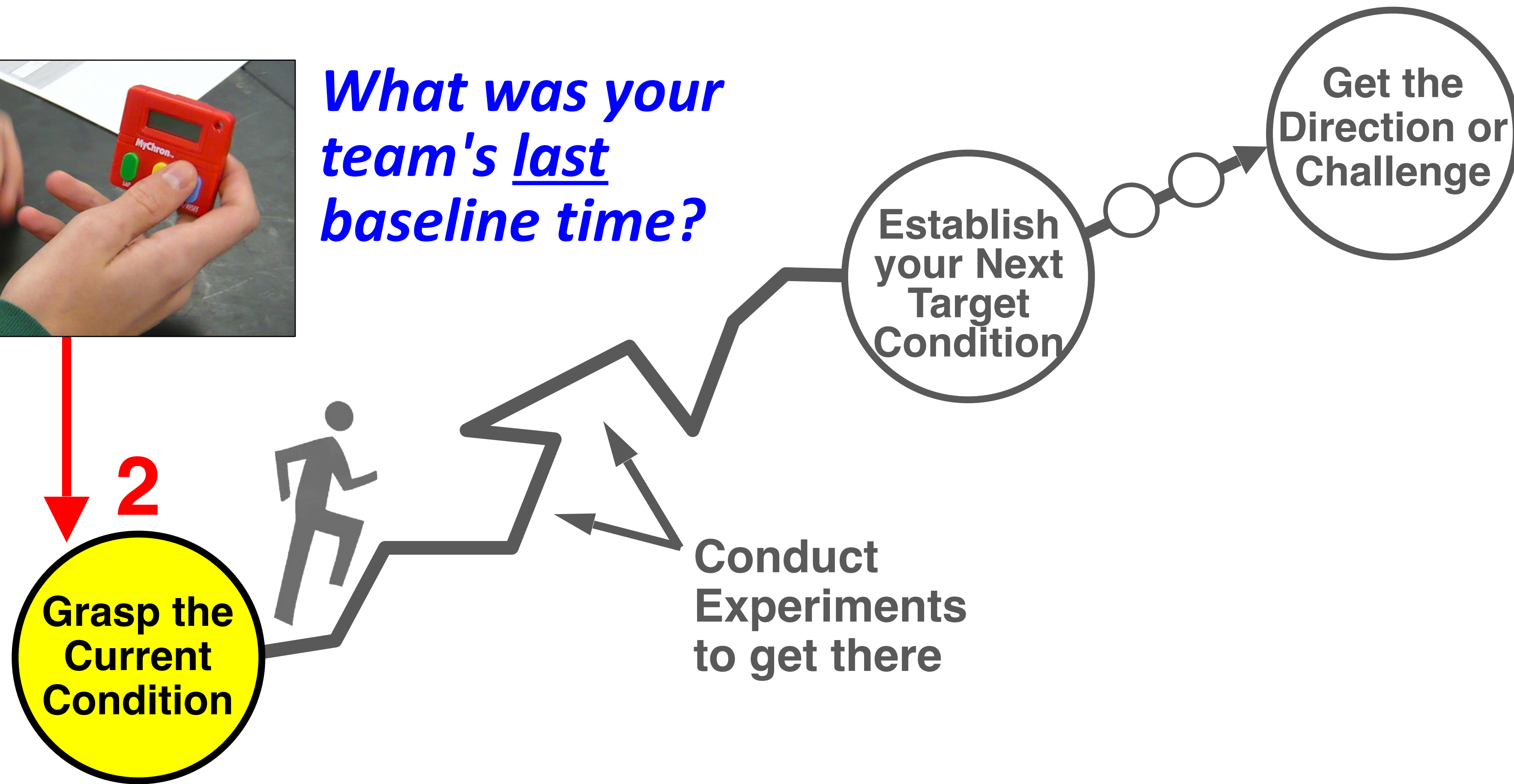


- **We often face challenges in life. No need to worry, because you don't need to get all the way there right away!**
- **A challenge often even gives us a useful sense of direction.**

# Step 2: GRASP THE CURRENT CONDITION



*What was your  
team's last  
baseline time?*



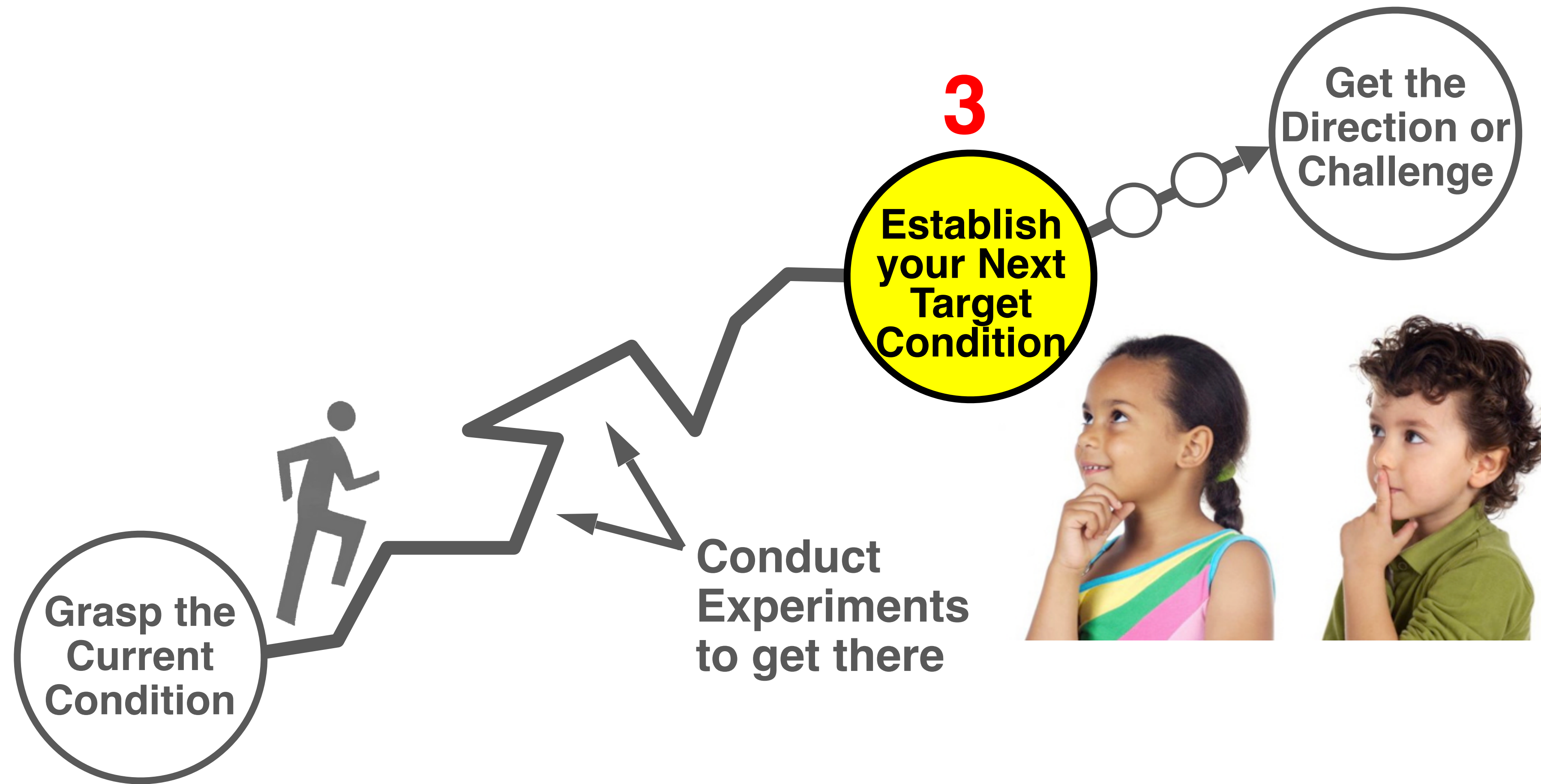
# Key Points About: ***GRASPING THE CURRENT CONDITION***



- It's important to understand where you currently are, before you set your next goal.
- Don't pull goals randomly out of the air. A team should feel like its goals are meaningful.



# Step 3: ESTABLISH YOUR NEXT TARGET CONDITION



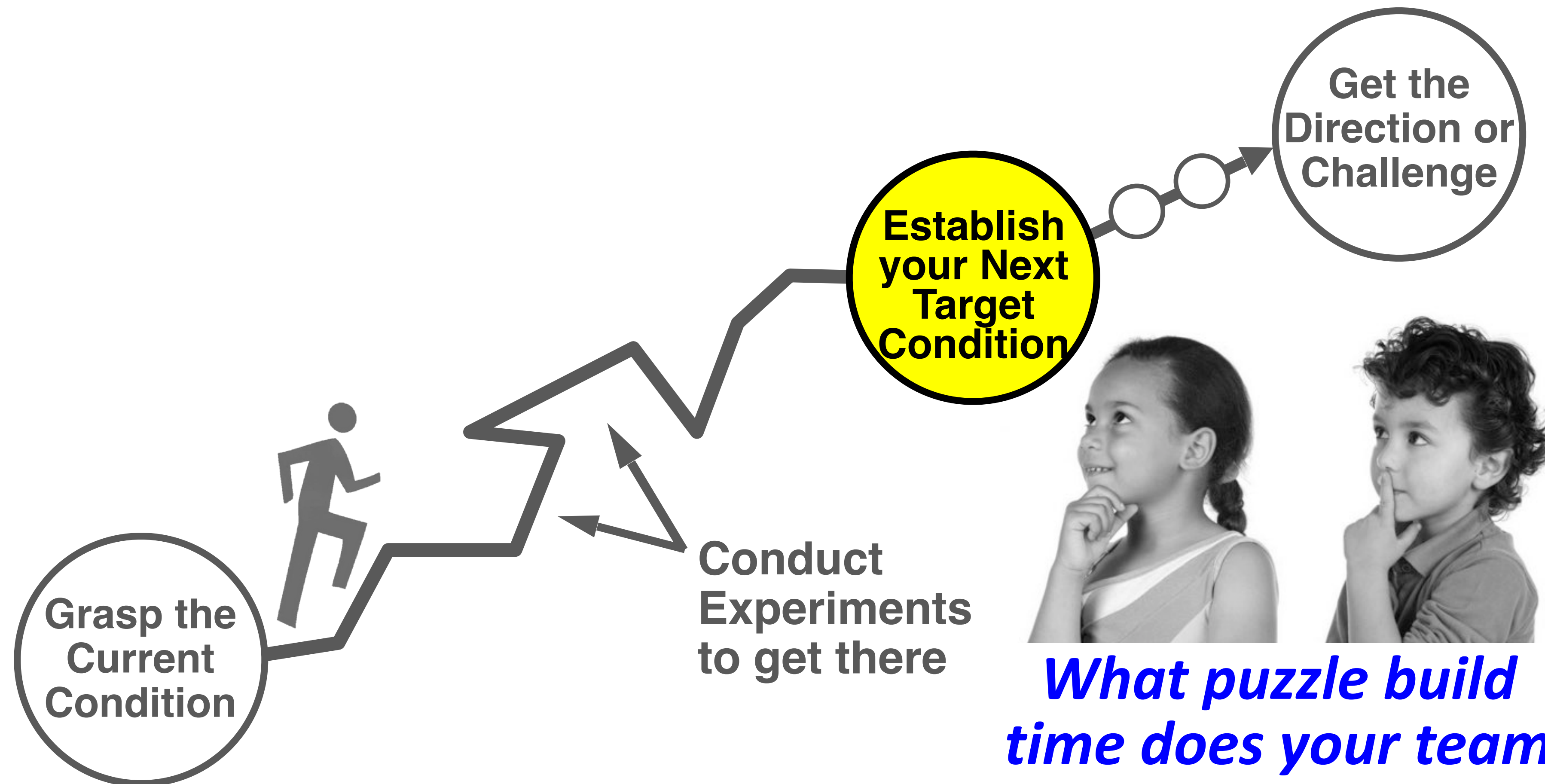
# **Key Points About: *ESTABLISHING YOUR NEXT TARGET CONDITION***



- Break a big challenge down into smaller goals.
- Set an easier and closer goal that's on the way to your challenge. When you get there you can set the next goal.

# LET'S DEFINE YOUR TEAM'S NEXT TARGET CONDITION

*We can do five (5) rounds of experimenting today*



***What puzzle build  
time does your team  
want to reach by the  
end of today's class?***

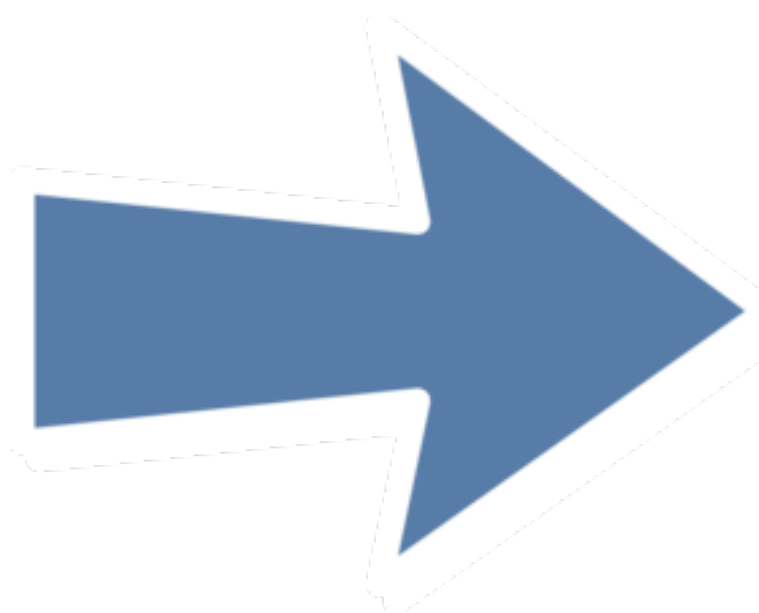


# TIME'S 1:30 UP

## LET'S ASK EACH TEAM

What's Your Goal  
for Today?

# DRAW YOUR **TARGET CONDITION LINE** ON THE 'EXPERIMENTING' FORM



Team Name:

Date:

EXPERIMENTING

Experiment 1	Experiment 2	Experiment 3	Experiment 4	Experiment 5	Experiment 6
What will you do?	What will you do?	What will you do?	What will you do?	What will you do?	What will you do?
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>

Change

50

45

40

35

30

25

20

15

10

5

Change

50

45

40

35

30

25

20

15

10

5

Change

50

45

40

35

30

25

20

15

10

5

Change

50

45

40

35

30

25

20

15

10

5

Change

50

45

40

35

30

25

20

15

10

5

Change

50

45

40

35

30

25

20

15

10

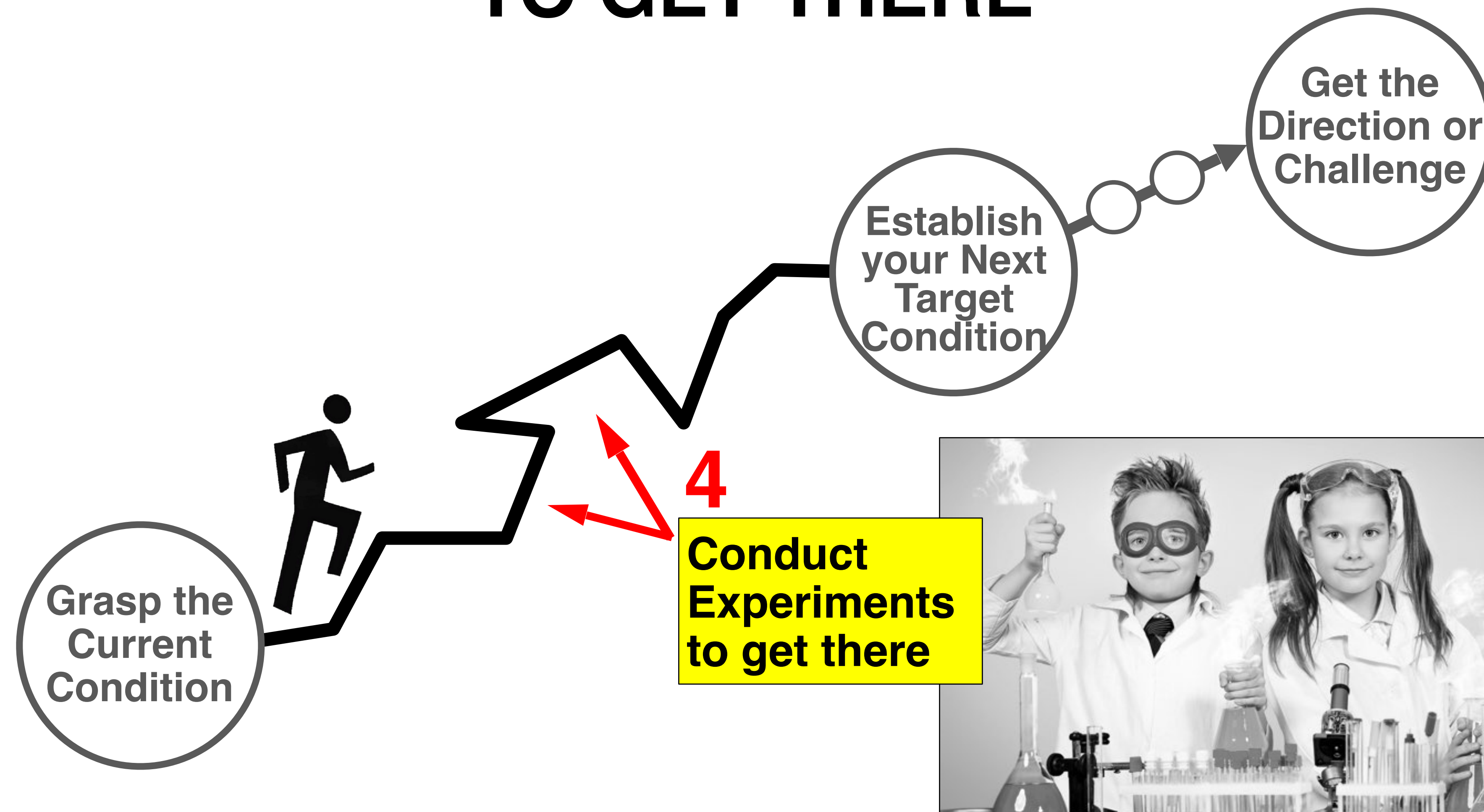
5

TC

Kata in the Classroom / katatogrow.com



# Step 4: CONDUCT EXPERIMENTS TO GET THERE



# Key Points About: ***EXPERIMENTING TO GET THERE***



- You never know in advance exactly how you will achieve a goal.
- We need to test the ideas we have. A good way to reach a goal is to experiment rapidly. Try something, see what happens, and then adjust based on what you learn.
- To learn from an experiment you should **write down** what you *expect* and what *actually happens*, so you can compare those two things.

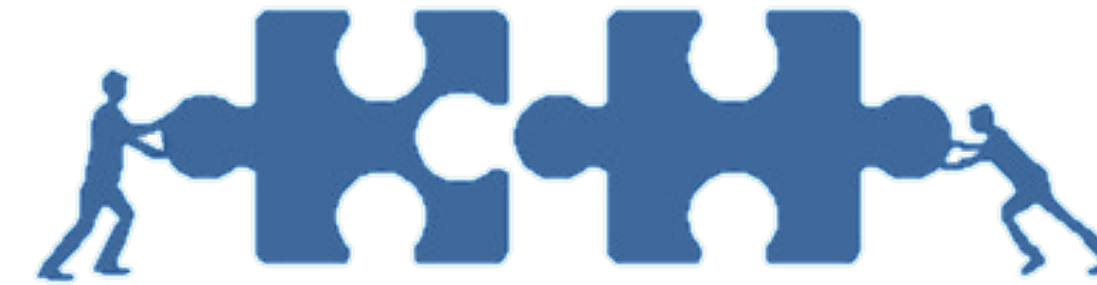
# HOW WE'LL EXPERIMENT

**Three Steps, and 3 Minutes per Experimenting Round**

**1) Instructor calls "START"**

- Build the puzzle

- Note the elapsed time on your form



**2) Based on what happened, discuss what you plan to do next. Write the ideas you want to test onto the form.**



**3) Then we'll ask one team the reflection questions on the card.**

REFLECTION	<b>Ask these questions after each experiment</b>
	1) What is your Target Condition?
	2) Where are you now?
	3) What did you plan to try in your last step?
	4) What was the result?
	5) What did you learn?
	6) What is your next experiment? (read)
<small>Kata in the Classroom / katatogrow.com</small>	



# THE EXPERIMENTING FORM

What to record in each round

*(Before)*  
Write down the  
next ideas you  
want to test

*(After)*  
Write in how  
much the time  
changed  
compared to  
the last round

*(After)*  
Mark the  
elapsed  
time

Team Name:  
Date:

EXPERIMENTING

Experiment 1	Experiment 2	Experiment 3	Experiment 4	Experiment 5	Experiment 6
What will you do?	What will you do?	What will you do?	What will you do?	What will you do?	What will you do?
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>

Change	Change	Change	Change	Change	Change
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
50	50	50	50	50	50
45	45	45	45	45	45
40	40	40	40	40	40
35	35	35	35	35	35
30	30	30	30	30	30
25	25	25	25	25	25

# PLEASE PLAN YOUR FIRST EXPERIMENT

Write the ideas you want to test **next**  
on your 'Experimenting' form



Write down  
the ideas you  
want to test

Team Name:

Date:

EXPERIMENTING

Experiment 1	Experiment 2	Experiment 3	Experiment 4	Experiment 5	Experiment 6
What will you do?	What will you do?	What will you do?	What will you do?	What will you do?	What will you do?
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>

Change	Change	Change	Change	Change	Change
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div>50</div>	<div>50</div>	<div>50</div>	<div>50</div>	<div>50</div>	<div>50</div>
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div>45</div>	<div>45</div>	<div>45</div>	<div>45</div>	<div>45</div>	<div>45</div>
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div>40</div>	<div>40</div>	<div>40</div>	<div>40</div>	<div>40</div>	<div>40</div>
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>

# TIME'S 1:30 UP



**-- HAVE YOUR CARD READY --**

**After each experimenting round we'll ask one team this pattern of **Reflection Questions****

**REFLECTION**

**Ask these questions  
after each experiment**

- 1) What is your Target Condition?**
- 2) Where are you now?**
- 3) What did you plan to try  
in your last step? (*read*)**
- 4) What was the result? (*change*)**
- 5) What did you learn?**
- 6) What is your next experiment?  
(*read*)**

Kata in the Classroom / katatogrow.com

# -- NEXT EXPERIMENT --

## Please get into starting position

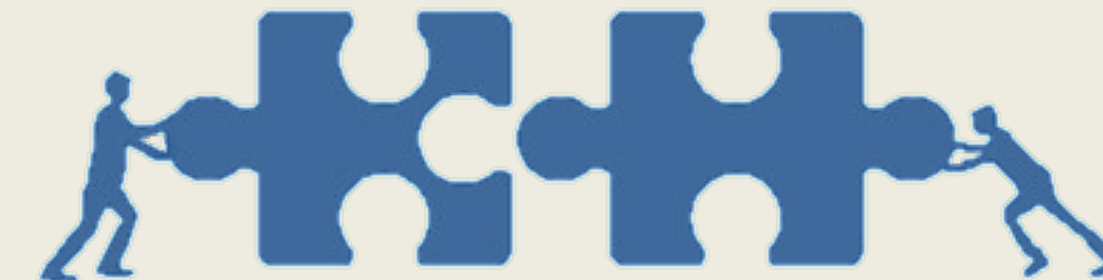
This  
cycle  
repeats



- **Instructor calls "START"**

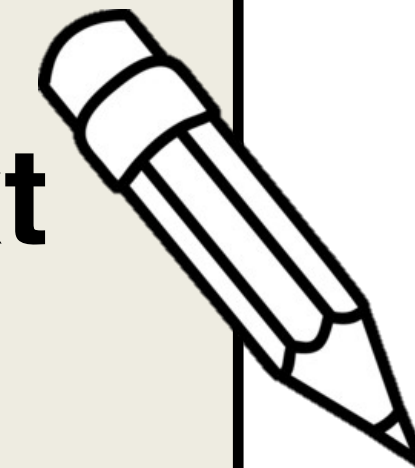
Build the puzzle

Note the elapsed time on your form



- **Teams discuss what they plan to do next**

Write ideas you want to test on the form



### Time's up... ask the Reflection Questions!

**REFLECTION**

Ask these questions after each experiment

- 1) What is your Target Condition?
- 2) Where are you now?
- 3) What did you plan to try in your last step?
- 4) What was the result?
- 5) What did you learn?
- 6) What is your next experiment?  
*(read)*

Kate to the Classroom / kateatogrow.com

(Start each round of experimenting on this slide. The 3-minute timer starts on the next slide.)

# TIME TO REFLECT

One person asks the others the **Reflection Questions**.

**REFLECTION**

**Ask these questions  
after each experiment**

- 1) What is your Target Condition?**
- 2) Where are you now?**
- 3) What did you plan to try  
in your last step? (*read*)**
- 4) What was the result? (*change*)**
- 5) What did you learn?**
- 6) What is your next experiment?  
(*read*)**

Kata in the Classroom / [katatogrow.com](http://katatogrow.com)

NOW GO BACK TO THE “NEXT EXPERIMENT” SLIDE





# DEBRIEF: WHAT DID WE LEARN?

**WHAT ARE THE FOUR STEPS OF THE IMPROVEMENT KATA?**

**HOW DID YOU APPROACH THIS CHALLENGE?**

**WHAT HAPPENED WHEN THINGS DIDN'T GO THE WAY WE THOUGHT THEY WOULD?**

**WHAT SHORTCUTS DID WE TAKE IN CONDUCTING EXPERIMENTS?**

**WHAT THINGS ARE GOOD FOR EXPERIMENTATION?**

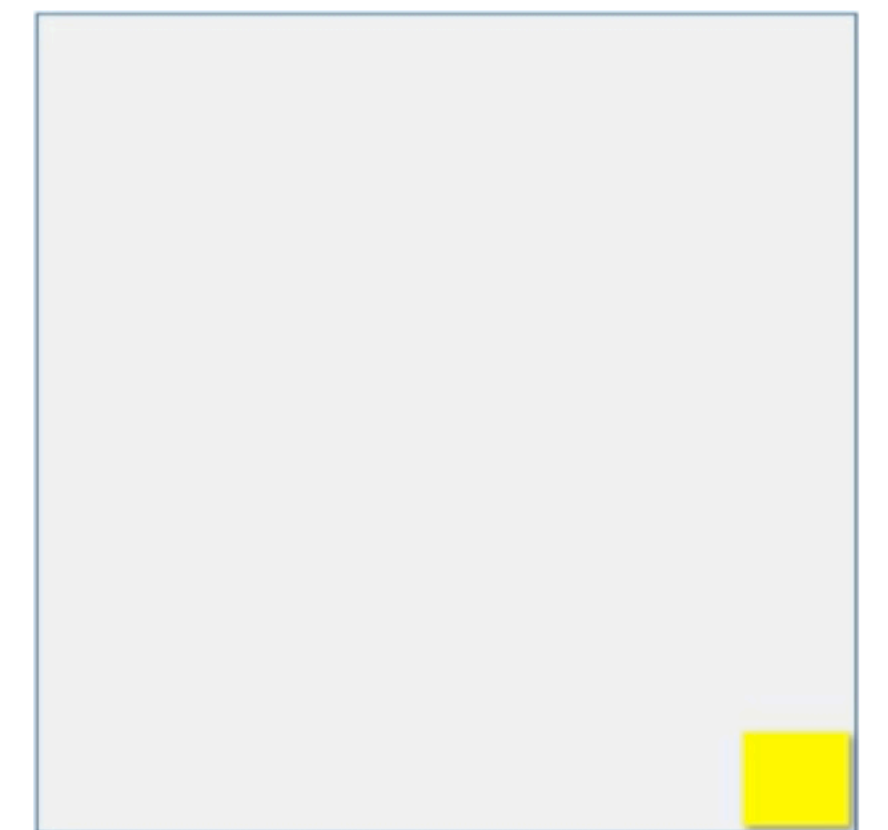
# START WITH OUTCOMES

- Quickly write a dozen or more outcomes onto sticky notes, spread out in front of you such that they all can be read easily



# BOTTOM RIGHT

- Start at the bottom right hand corner of your square.
- Carefully choose from your list the strongest single example of an outcome where there's an approach you can *all see and agree on*.
- If you're not 100% confident in the reliability of the approach or if there's not complete consensus that's ok; choose the closest example you can find.
- Now place that single best example in the bottom right corner.



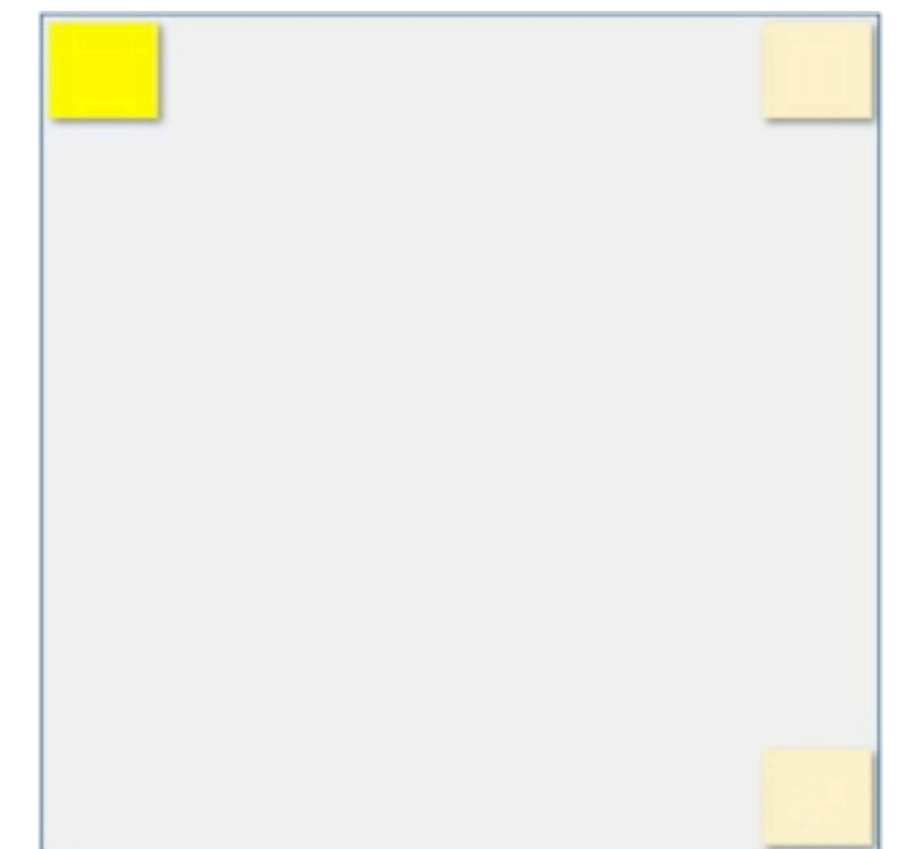
# TOP RIGHT

- Select the strongest single example of an outcome where you're confident that an *expert or some research will determine a good approach*.
- As with the first corner, “good” implies confidence that the outcome will be delivered, and it's predicated on the availability (by whatever means) of someone who has the necessary expertise.



# TOP LEFT

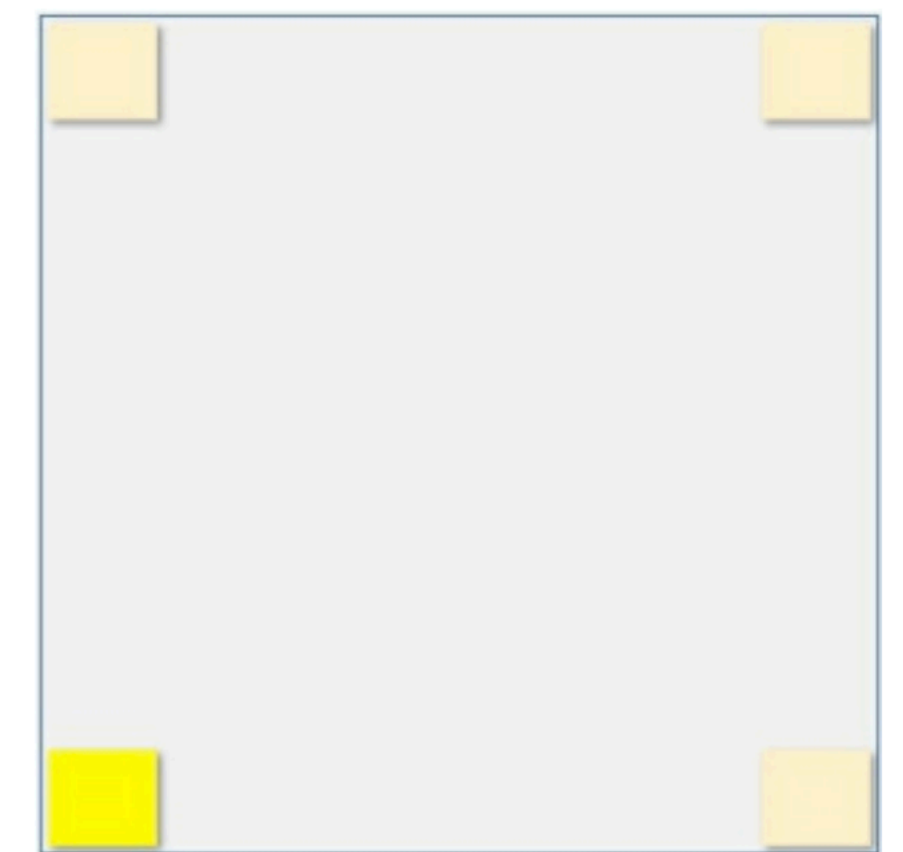
- Carefully choose the strongest single example of an outcome where *there's no one right approach* – experts will disagree. 10 experts will give you 20 different ideas, and even though some of them might be really great, typical of this kind of outcome is the sense that no single idea is sure to get you the whole way to your outcome.
- Much as you might wish it to be otherwise, you couldn't just delegate this outcome to an expert and reasonably expect a reliable plan to be laid out for you.





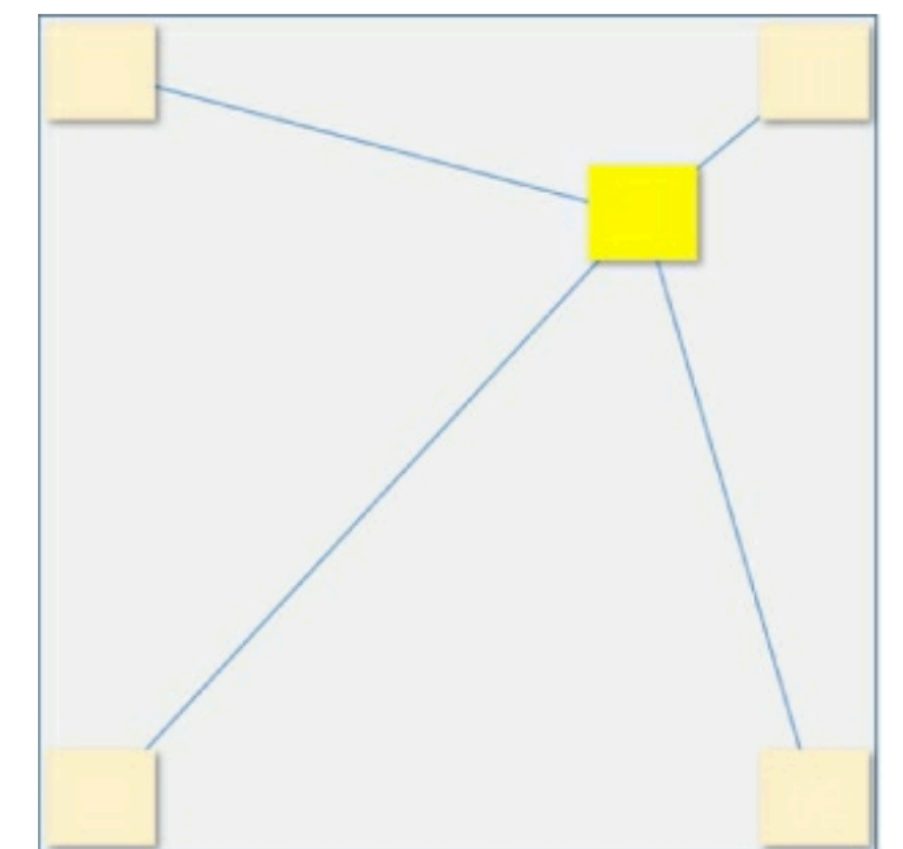
# BOTTOM LEFT

- Choose the strongest single example of an outcome where *no known approach is immediately apparent*.
- Beyond symptomatic fixes (stem the bleeding, put out the fire, etc) you're not sure that an expert will help you in the time available. You don't know which of your ideas will stick. You don't know how things will settle down after they have been disrupted – whether the source of disruption is accidental or deliberate, internal or external. You don't know where to start!



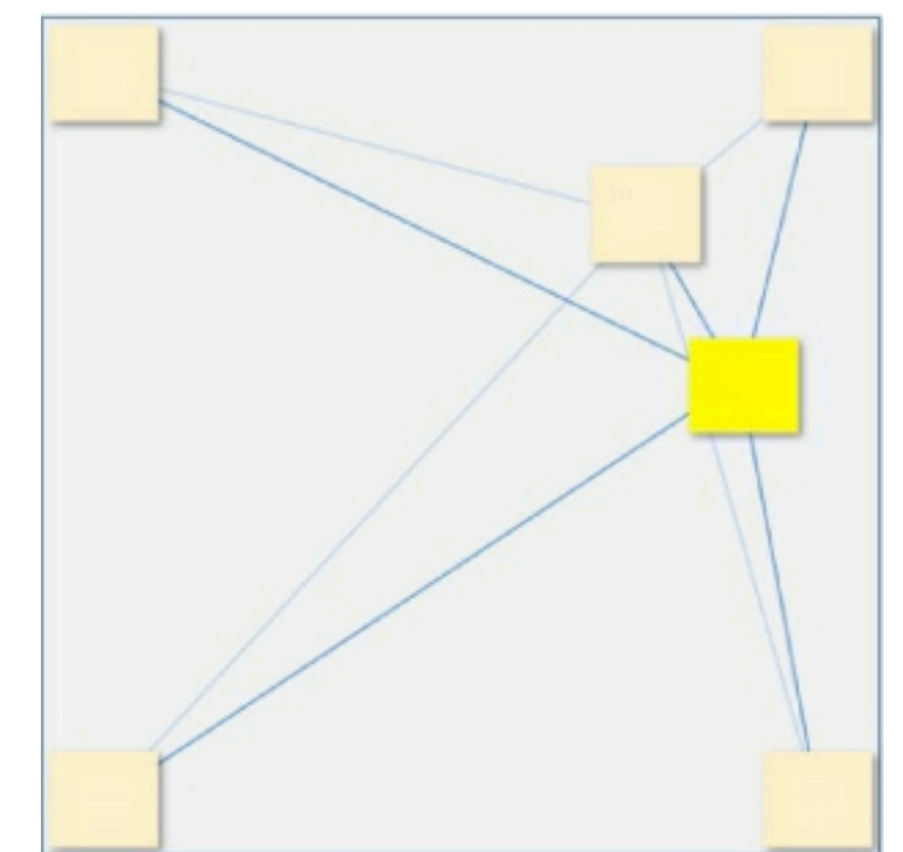
# YOUR NEXT STICKY...

- Now choose another sticky at random – just one.
- Imagine this new sticky being drawn by imaginary lines of force towards the corner stickies to which it is most similar in terms of the kind of approach.
- It might end up next to one of them, between two, or somewhere towards the middle, drawn in various degrees towards three or four corners.

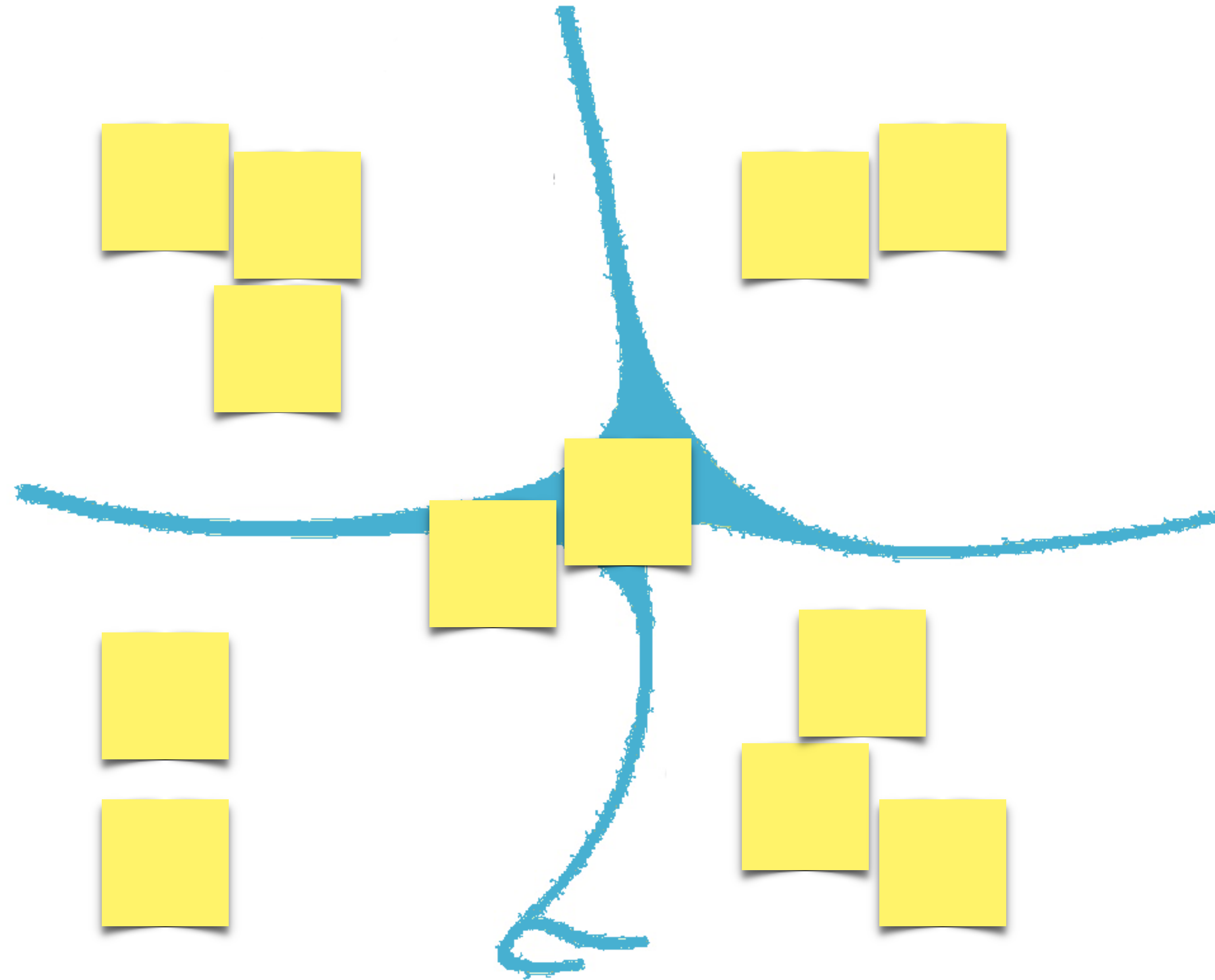


# REMAINING STICKIES

- Now add your remaining stickies one at a time, trying to place them relative to those you've placed already, rearranging as necessary.
- Some will have a strong affinity approach-wise with one of your four exemplars and will be easy to place near one of the corners. Others will seem to have a natural position somewhere relative to two or three existing stickies.
- Any that really won't be placed authentically this way should be arranged in a central region.



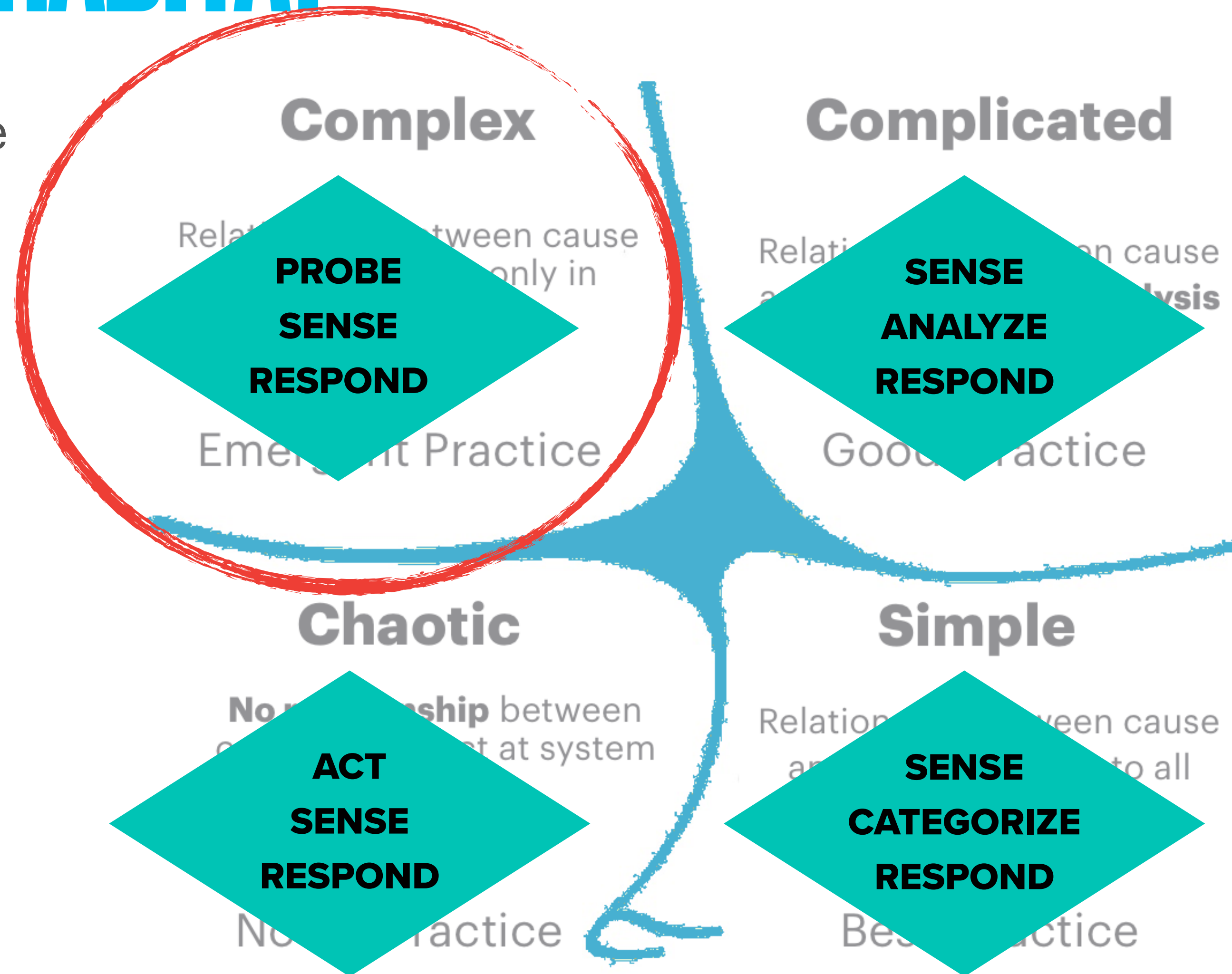
# SENSEMAKING





# CYNEFIN: “HABITAT”

- Allow ideas that are not useful to fail in small, contained and tolerable ways (Dave Snowden)
- Make decisions in situations of high uncertainty.



# WHAT DID WE LEARN?

**THOUGHTS?**  
**OBSERVATIONS?**

# EXPERIMENTS AND PRODUCT MANAGEMENT

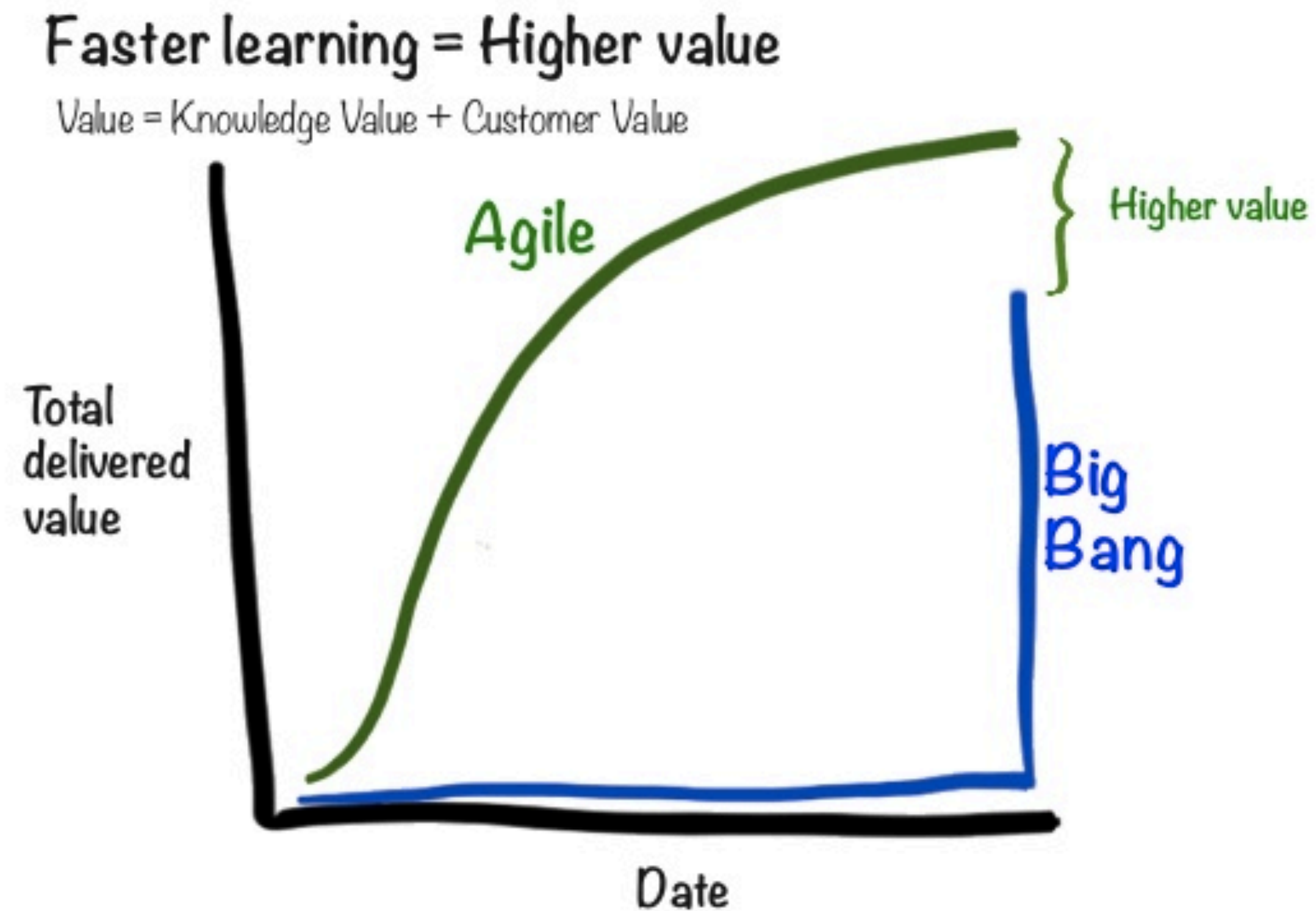


# SIGNS OF BLACK-HOLE AGILE

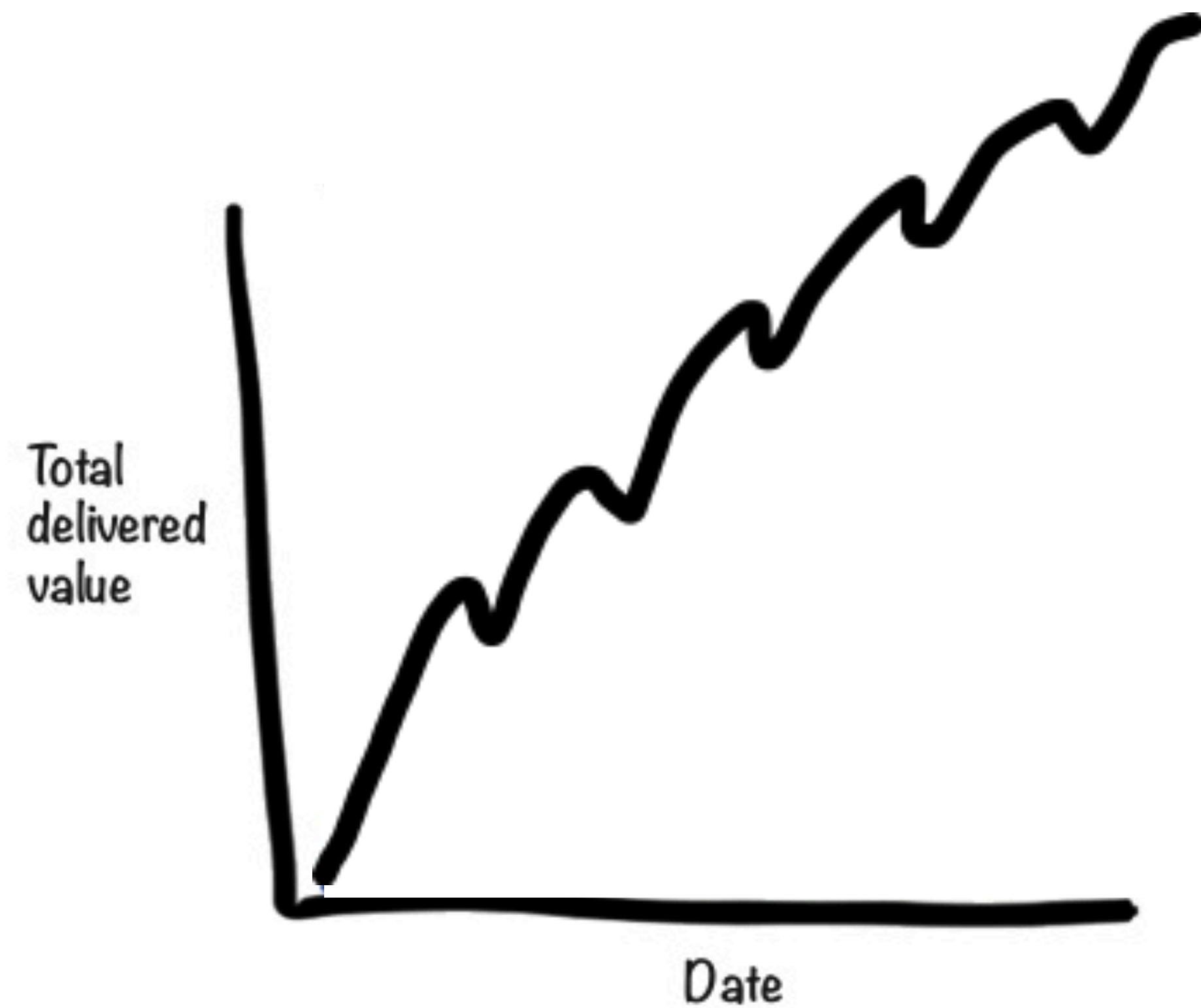
- Done means coded/tested/released (not Validated)
- Releases are celebrated more than user success
- No feature ever fails
- Planning starts with feature ideas



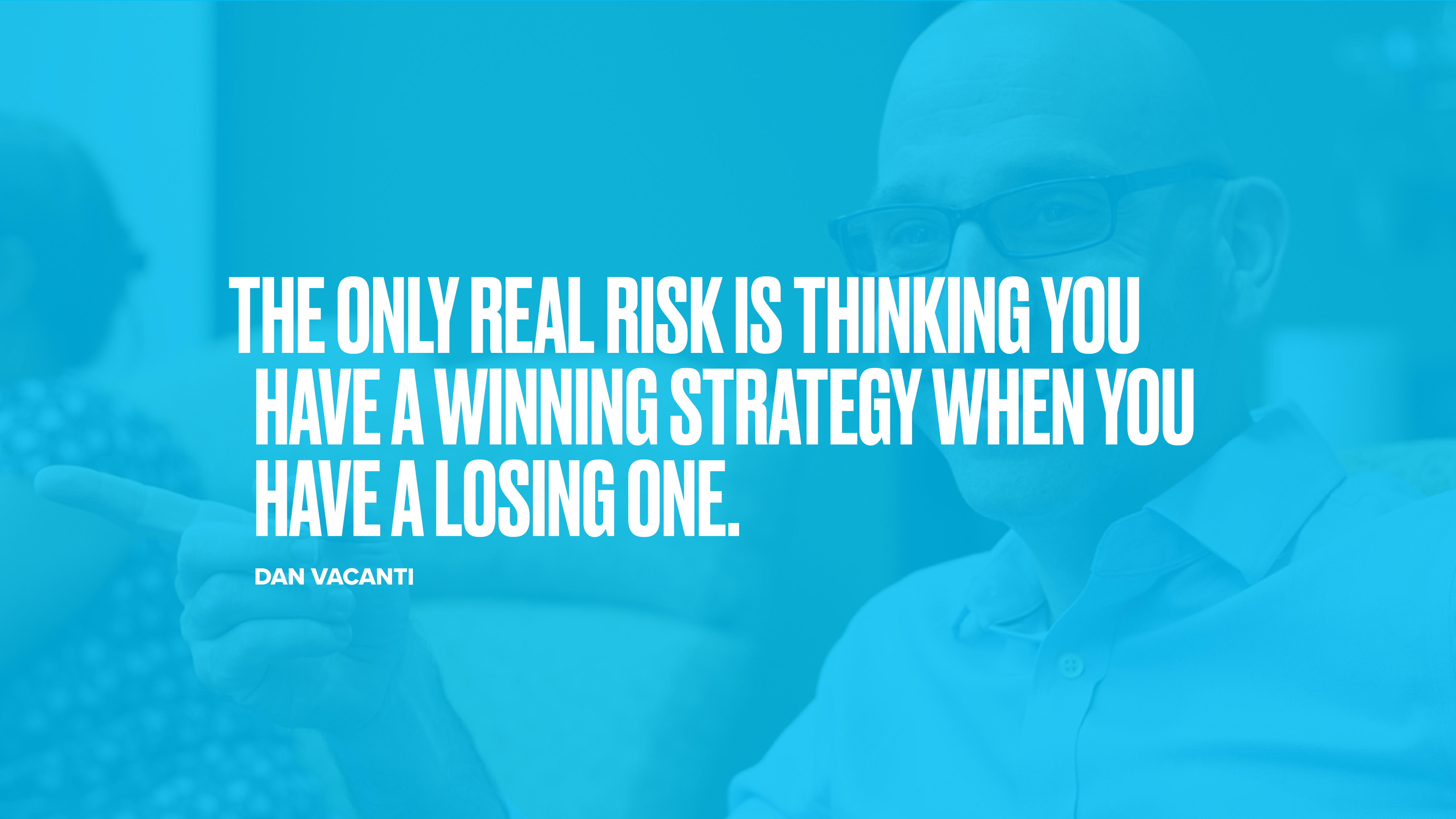
# AGILE VALUE PROP WHEN WE VALIDATE



Henrik Kniberg



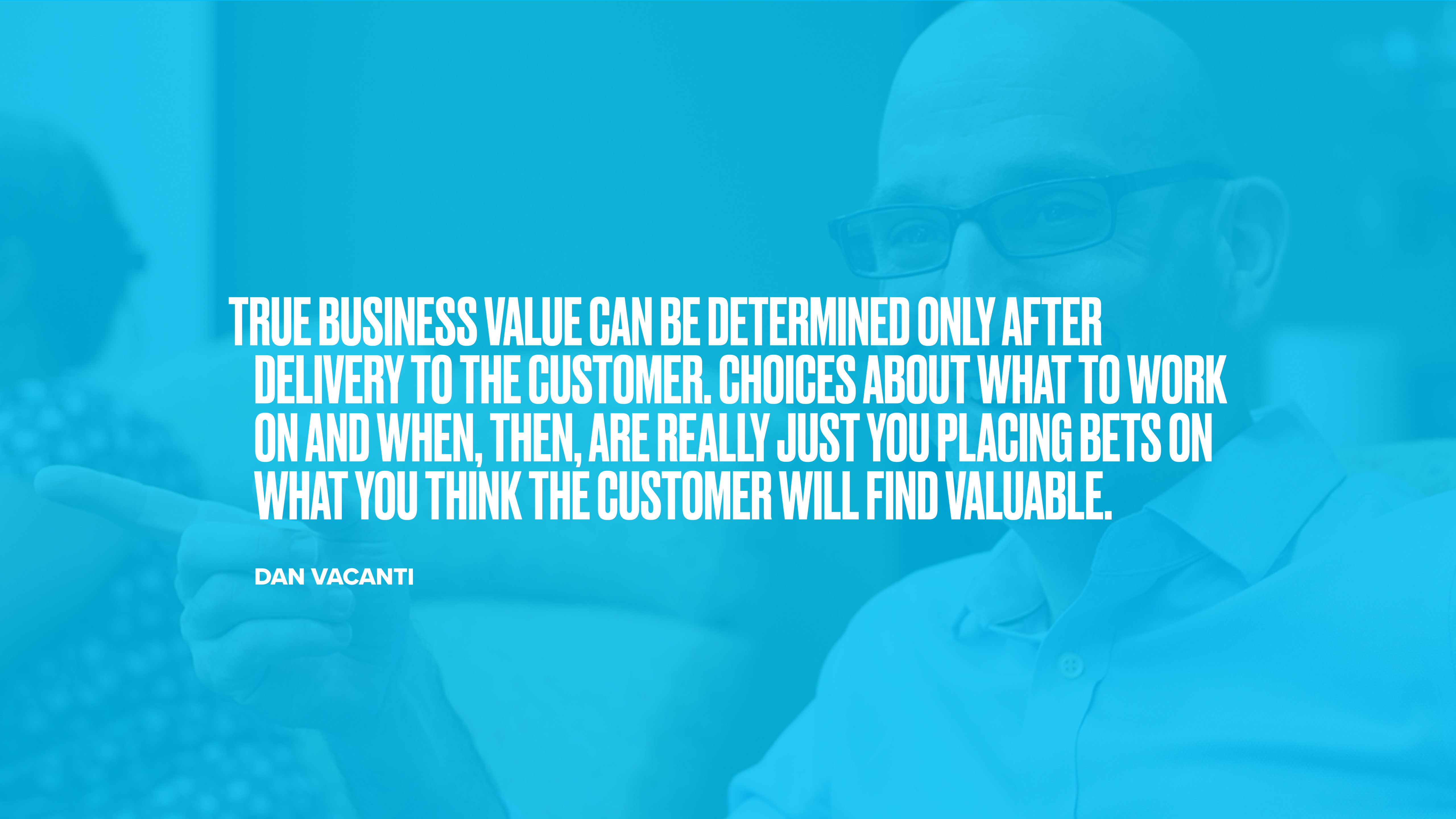


A blue-tinted background image of a man with glasses, wearing a light blue button-down shirt, pointing his right index finger towards the left. The image is semi-transparent, allowing the text to be overlaid clearly.

**THE ONLY REAL RISK IS THINKING YOU  
HAVE A WINNING STRATEGY WHEN YOU  
HAVE A LOSING ONE.**

**DAN VACANTI**



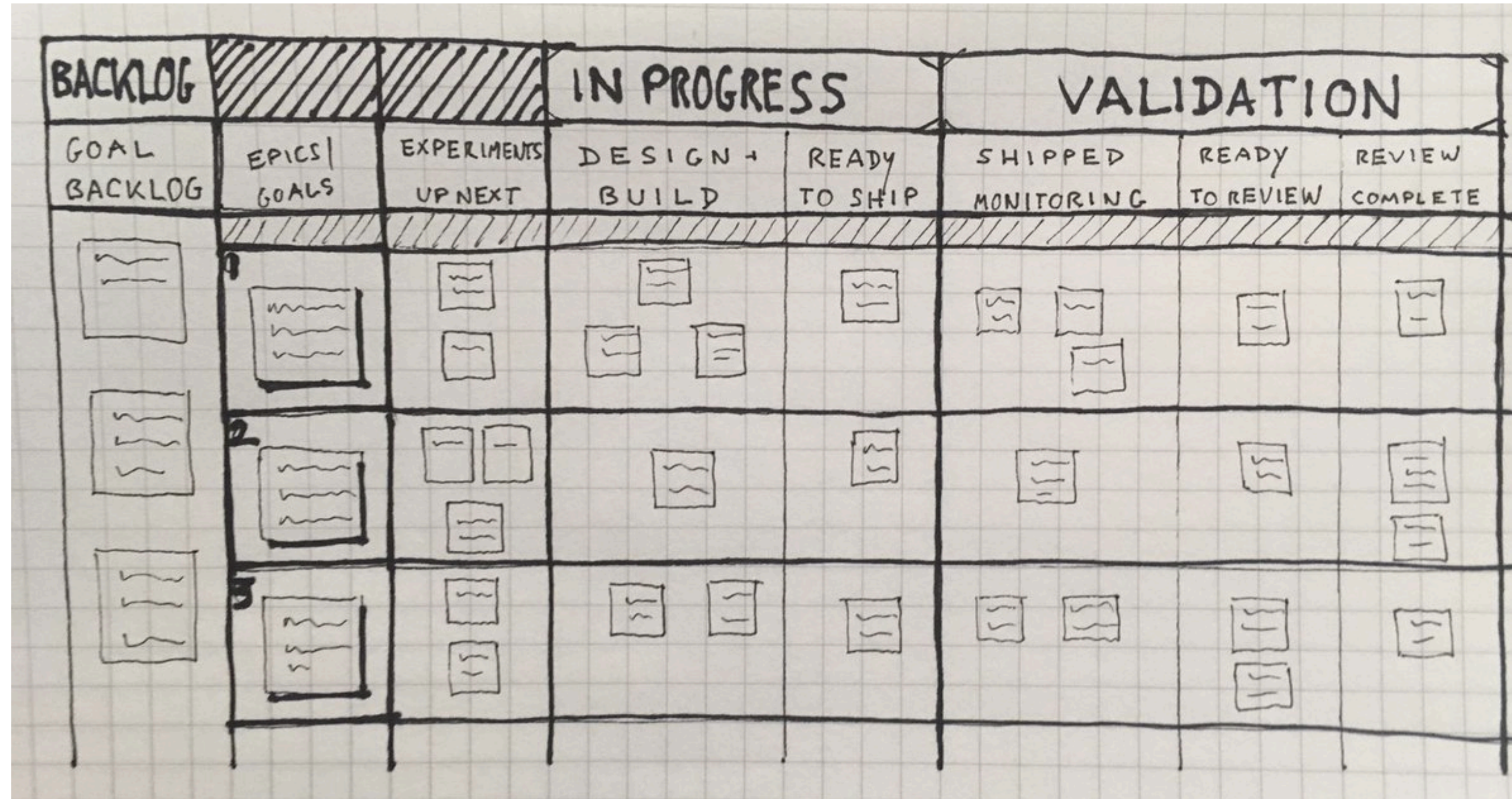


**TRUE BUSINESS VALUE CAN BE DETERMINED ONLY AFTER  
DELIVERY TO THE CUSTOMER. CHOICES ABOUT WHAT TO WORK  
ON AND WHEN, THEN, ARE REALLY JUST YOU PLACING BETS ON  
WHAT YOU THINK THE CUSTOMER WILL FIND VALUABLE.**

**DAN VACANTI**



# WHAT IS "DONE" FOR YOU?





# Geeking with Greg

Tuesday, April 25, 2006

## Early Amazon: Shopping cart recommendations

I have talked about a couple fun projects ([\[1\]](#) [\[2\]](#)) I did at Amazon even though I was supposed to be working on other things. This story is more extreme, a project I was explicitly forbidden to do and did anyway.

I loved the idea of making recommendations based on the items in your Amazon shopping cart. Add a couple things, see what pops up. Add a couple more, see what changes.

The idea of recommending items at checkout is nothing new. Grocery stores put candy and other impulse buys in the checkout lanes. Hardware stores put small tools and gadgets near the register.

But here we had an opportunity to personalize impulse buys. It is as if the rack near the checkout lane peered into your grocery cart and magically rearranged the candy based on what you are buying.

Health food in your cart? Let's bubble that organic dark chocolate bar to the top of the impulse buys. Steaks and soda? Get those snack-sized potato chip bags up there right away.

### About Me



GREG LINDEN

[View my complete profile](#)

### Subscribe to the Feed



[Subscribe in a reader](#)

### More Geeking with Me

[Tweeting with Greg](#)

### Blog Archive

► [2021](#) (1)

► [2020](#) (2)

► [2019](#) (2)

**THE REALITY IS THAT YOU DON'T KNOW IN ADVANCE  
WHICH PROJECTS OR FEATURES WILL SUCCEED:  
THE AVERAGE FAILURE RATE IS ANYWHERE  
BETWEEN 50 AND 80%.**





# Microsoft experimented with a 4-day workweek, and productivity jumped by 40%

Lisa Eadicicco Nov 4, 2019, 8:39 AM





**EVALUATING WELL-DESIGNED AND EXECUTED  
EXPERIMENTS THAT WERE DESIGNED TO IMPROVE A  
KEY METRIC, ONLY ABOUT 1/3 WERE SUCCESSFUL AT  
IMPROVING THE KEY METRIC!**

**RONNY KOHAVI, “ONLINE EXPERIMENTATION AT MICROSOFT”**

# HYPOTHESIS-DRIVEN DEVELOPMENT

## Hypothesis-driven development

We believe *<this capability>*

Will result in *<this outcome>*

We will have confidence to  
proceed when

*<we see a measurable signal>*

# GENERATING EXPERIMENTS



# ELEMENTS OF GOOD EXPERIMENTS

- Time-based
- Measurable
- Single variable (Control!)
- Provable (and disprovable) hypothesis
- Psychological safety to fail
- Learning is the outcome

# HOW WOULD YOU DESIGN THESE AS EXPERIMENTS?

- Company policy to give a bonus to employees who refer new hires
- Implementing SAFe
- A new team-leadership model
- Work-from home policy
- [Your own example from earlier]

# SCOTLAND CANVAS

Title:

Owner:

<div>Context</div> <div>Our problem is...</div>	<div>Actions</div> <div>To prove/disprove the hypothesis we will...</div>	
<div>Hypothesis</div> <div>We believe we can solve it by...</div>	<div>Results</div> <div>We will declare success or failure when...</div>	
	<div>Success</div>	<div>Failure</div>
<div>Rationale</div> <div>We believe this because...</div>	<div>Follow-up</div> <div>As a result of success or failure we will...</div>	
	<div>Success</div>	<div>Failure</div>





# LEADER BACKBRIEFING

Title:

Owner:

<div>Context</div> <div>Our problem is...</div>	<div>Actions</div> <div>To prove/disprove the hypothesis we will...</div>	
<div>Hypothesis</div> <div>We believe we can solve it by...</div>	<div>Results</div> <div>We will declare success or failure when...</div>	
	<div>Success</div>	<div>Failure</div>
<div>Rationale</div> <div>We believe this because...</div>	<div>Follow-up</div> <div>As a result of success or failure we will...</div>	
	<div>Success</div>	<div>Failure</div>



# AGENDASHIFT CANVAS

Change:			
Owner:		Mentor:	
Context / scope:		Aligned to objective:	

Hypothesis		Assumptions & Dependencies	
We believe that		Assumptions (to be validated)	Dependencies (to be resolved)
will result in			
If successful, we might expect to see:			
Risks		Pilot experiments (new A3s)	
Downside (to be invalidated/mitigated)	Upside (to be nurtured)	(owner)	
People		Insights	
Directly impacted	Other stakeholders & influencers		



# NORTON CANVAS

Title: What issue/opportunity are we talking about?

<p>Background:</p> <ul style="list-style-type: none"><li>• Concise</li><li>• Why are we talking about this issue/opportunity?</li><li>• What problem are we trying to solve or learn about?</li></ul>	<p>Experiment:</p> <ul style="list-style-type: none"><li>• How will we do [ action / countermeasure ]?<ul style="list-style-type: none"><li>○ Specific steps</li><li>○ Individuals involved</li><li>○ Timelines</li><li>○ Outcome targeted</li></ul></li><li>• Will there be a control?</li></ul>
<p>Current Situation:</p> <ul style="list-style-type: none"><li>• Clear and concise</li><li>• Where does it happen?</li><li>• When does it happen?</li><li>• What is the impact?</li><li>• What value can we realize?</li></ul>	<p>Measurement:</p> <ul style="list-style-type: none"><li>• How will we measure the experiment?<ul style="list-style-type: none"><li>○ Measurements must connect to outcome(s)?</li></ul></li><li>• Measurements should be easily understood, sharable, auditable.</li><li>• What is baseline?</li></ul>
<p>Analysis:</p> <ul style="list-style-type: none"><li>• Root cause analysis<ul style="list-style-type: none"><li>○ Evidence that supports Hypothesis</li></ul></li><li>• Facts - data over anecdote</li><li>• May also include<ul style="list-style-type: none"><li>○ Data that supports current situation</li><li>○ Data that quantifies current impact</li></ul></li></ul>	<p>Outcome(s):</p> <ul style="list-style-type: none"><li>• What actually happened to the system after the experiment?<ul style="list-style-type: none"><li>○ Measurements</li></ul></li><li>• Was hypothesis validated?<ul style="list-style-type: none"><li>○ Progressive results – achieved measurable outcomes</li><li>○ Neutral results – no significant change</li><li>○ Regressive results – counter to desired outcomes</li></ul></li><li>• What have we learned?</li></ul>
<p>Hypothesis:</p> <ul style="list-style-type: none"><li>• We believe that doing: [ action / countermeasure ]</li><li>• For [ these people / this process ]</li><li>• Will achieve [ this/these measurable outcome(s) ]</li></ul>	<p>Next Steps:</p> <ul style="list-style-type: none"><li>• This is what will happen based on experiment outcomes.<ul style="list-style-type: none"><li>○ Progressive results - how will we scale it?</li><li>○ Neutral or Regressive results - what's the next experiment we can try?</li></ul></li></ul>



# WHAT DID WE LEARN?

**HOW DID THAT GO?**

**CONNECTING EXPERIMENTS TO STRATEGY**

						10													
						9													
						8													
						7													
						6													
						5													
						4													
						3													
						2													
						1													

The orientation that informs all of our decisions





						10																		
						9																		
						8																		
						7																		
						6																		
						5																		
						4																		
						3																		
						2																		
						1																		
					<div><div>Tactics</div><div>The coherent actions we will take</div></div>																			
					<div><div>True North</div><div>The orientation which informs what we do</div></div>																			
					<div><div>Strategies</div><div>The guiding policies that enable us to achieve our aspirations</div></div>																			
					<div><div>Evidence</div><div>The outcomes we can measure</div></div>																			
5	4	3	2	1	<div><div>Aspirations</div><div>The results we hope to achieve</div></div>										1	2	3	4	5	6	7	8	9	10
					1																			
					2																			
					3																			
					4																			
					5																			


The results we hope to achieve, organizational impact , outcomes (lagging indicators)



The guiding policies that enable us to achieve the results.

					10														
					9														
					8														
					7														
					6														
					5														
					4														
					3														
					2														
					1														
					Strategies The guiding policies that enable us	Tactics The coherent actions we will take													
						True North The orientation which informs what we should do													
						Evidence The outcomes that indicate progress													
						Aspirations The results we hope to achieve												1	2
					5													3	4
					4													5	6
					3													7	8
					2													9	10
					1														
						1													
						2													
						3													
						4													
						5													





The coherent activities that we act on to implement change (experiments)

[illegible]

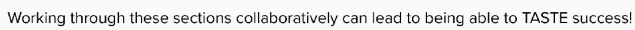
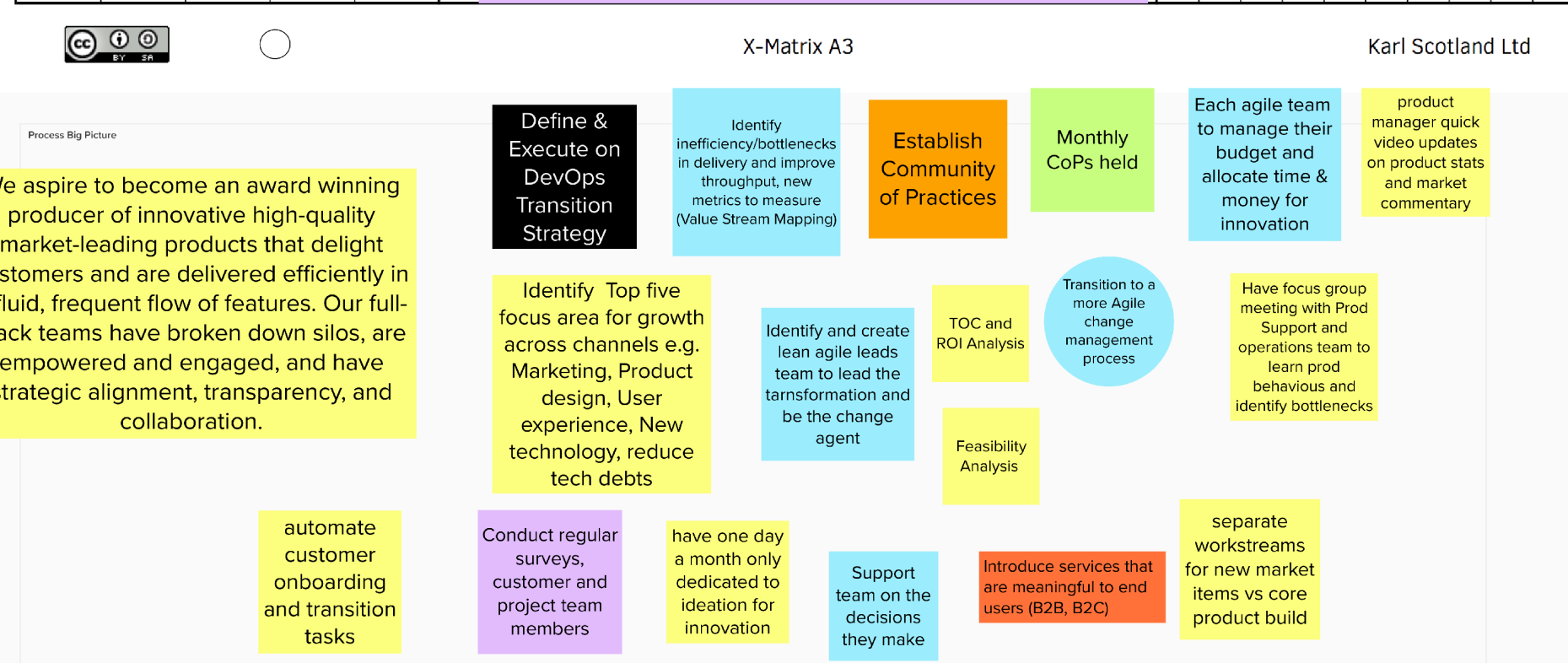


					10																
					9																
					8																
					7																
					6																
					5																
					4																
					3																
					2																
					1																
5	4	3	2	1	Strategies The guiding policies that enable us	Tactics The coherent actions we will take					Evidence The outcomes that indicate progress	1	2	3	4	5	6	7	8	9	10
						True North The orientation which informs what we should do															
						Aspirations The results we hope to achieve															
					1																
					2																
					3																
					4																
					5																

Evidence  
that the  
strategies are  
working,  
leading  
indicators of







**Aspirations (Results)**  
The results we hope to achieve. They represent the organizational impact we want to have. They are lagging indicators, success or failure only being declared at the end of the journey. They usually reflect the nature of the business and its economics. These are not targets, but should reflect the size of the ambition and the challenge ahead.  
The Aspirations are implemented by Strategies.

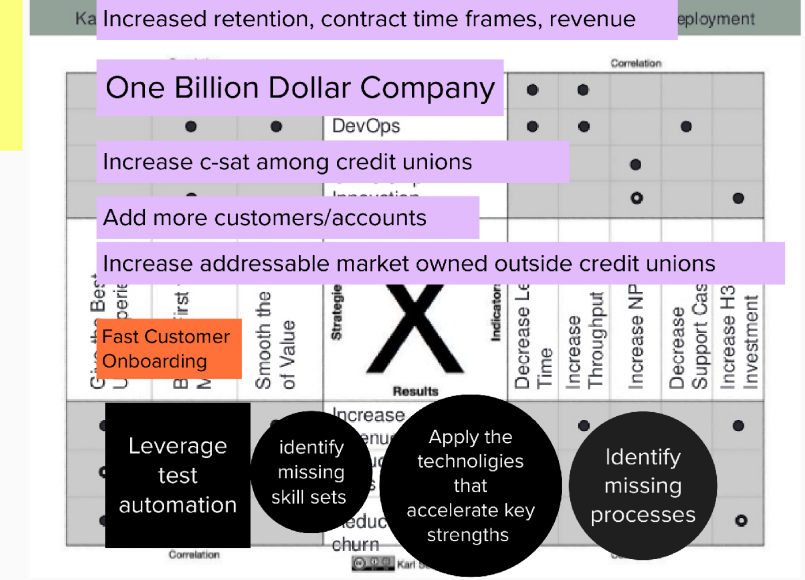
The Strategies lead to Evidence (Outcomes).

The right Outcomes will generate the successful Results.

### Tactics

For change to be successful, there should be a correlation between the various elements in this model (and it should be remembered that correlation is not causation). Each element will have some level of contribution to another. This will range from strong or direct, to weak or indirect, or there may sometimes be none. You could also say that the correlations are Probable, Possible, or Plausible. All together there should be coherence (albeit messy) to the **Be a Forbes Top Company (and/or Tampa Bay)**

By starting with the Outcomes, we can identify the Tactics that will generate the Outcomes. There is a greater chance that the Tactics chosen are ones which do implement the Strategies and generate the Outcomes. The intent is to avoid hastily justifying the Tactics. It is very easy to hastily justify the Tactics based on the Strategies.

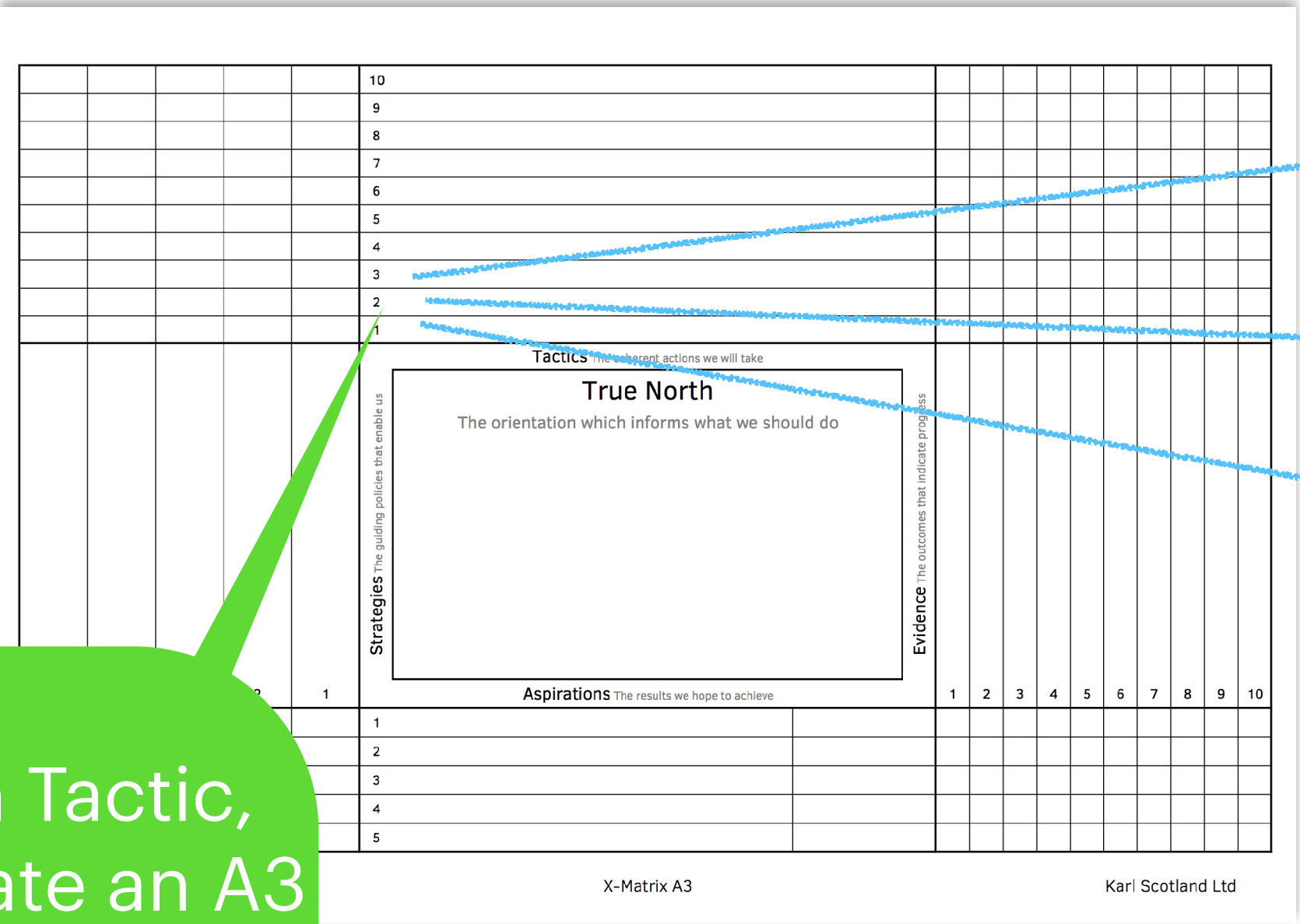




How well do the elements correlate with each other? Where do we have strong alignment? No alignment?

Platform (Culture, time, space) for innovation					1 Define & Execute on DevOps transition Strategy	
Employee empowerment, removal of constraints, recognition of the value of our people					Tactics The coherent actions we will take	
Creating a culture of flexible product delivery					<div><div>Strategies The guiding policies that enable us</div><div><p>True North</p><p>The orientation which informs what we should do</p><p>Empowered and engaged people delivering customer-centric products fast, fluidly and frequently.</p></div><div>Evidence The outcomes that indicate progress</div></div>	
Achieving the maximum flexibility and modularity in our technical choices (DevOps investment)						
Focus on user engagement and satisfaction					Aspirations The results we hope to achieve	
5	4	3	2	1	1	Win an award for our products
					2	Increase speed to market by 50%
					3	Be an employer of choice (Glassdoor best places to work top 100)
					4	Increase revenue proportion of our proprietary products to 60%
					5	Be the industry solution leader in total addressable market

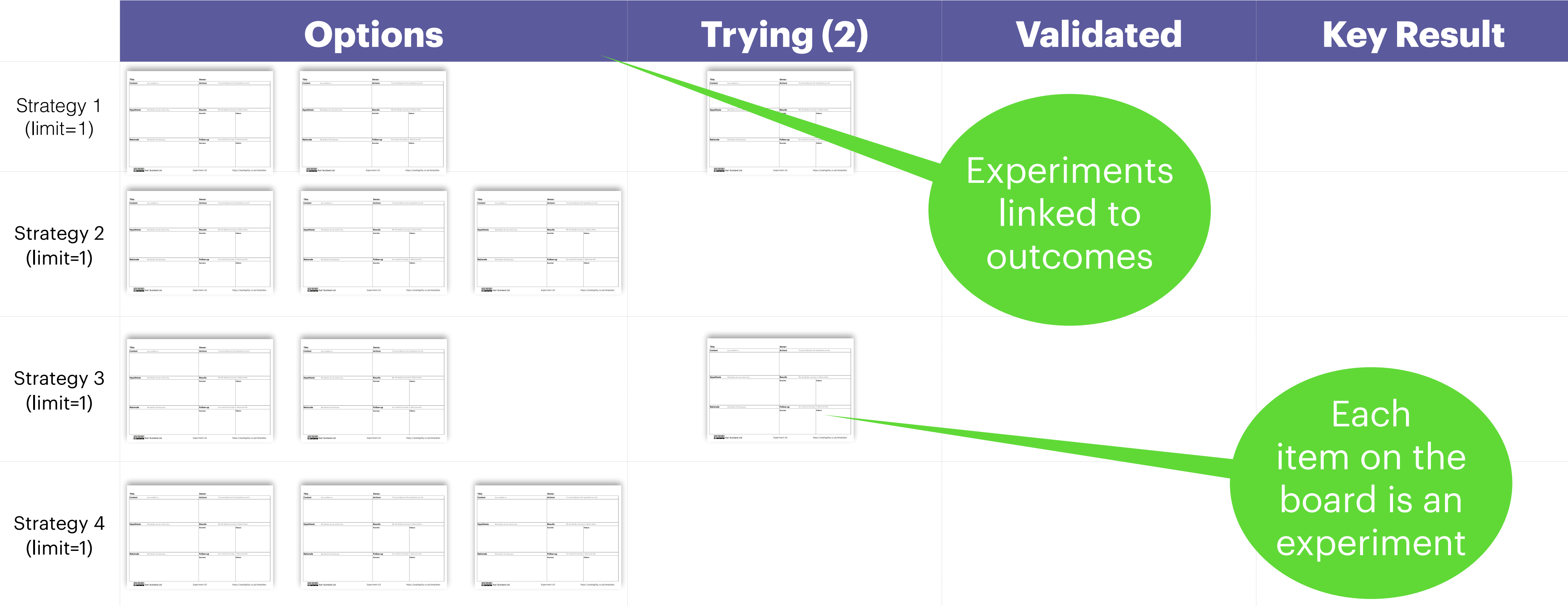
For each Tactic, we generate an A3 Experiment Canvas.



The A3 Experiment Canvas is a template for documenting an experiment. It consists of several sections:

- Title:** A field for the title of the experiment.
- Owner:** A field for the owner of the experiment.
- Context:** A field for the context of the experiment, with the subtitle 'Our problem is...'. It is divided into two columns: 'Context' and 'Actions'.
- Actions:** A field for the actions to be taken, with the subtitle 'To prove/disprove the hypothesis we will...'. It is divided into two columns: 'Context' and 'Actions'.
- Hypothesis:** A field for the hypothesis, with the subtitle 'We believe we can solve it by...'. It is divided into two columns: 'Hypothesis' and 'Results'.
- Results:** A field for the results, with the subtitle 'We will declare success or failure when...'. It is divided into two columns: 'Success' and 'Failure'.
- Rationale:** A field for the rationale, with the subtitle 'We believe this because...'. It is divided into two columns: 'Rationale' and 'Follow-up'.
- Follow-up:** A field for the follow-up, with the subtitle 'As a result of success or failure we will...'. It is divided into two columns: 'Success' and 'Failure'.

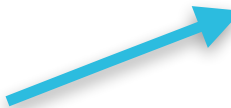
The bottom of the canvas includes a Creative Commons license (CC BY SA), the text 'Karl Scotland Ltd', the title 'Experiment A3', and the URL 'https://availagility.co.uk/templates'.



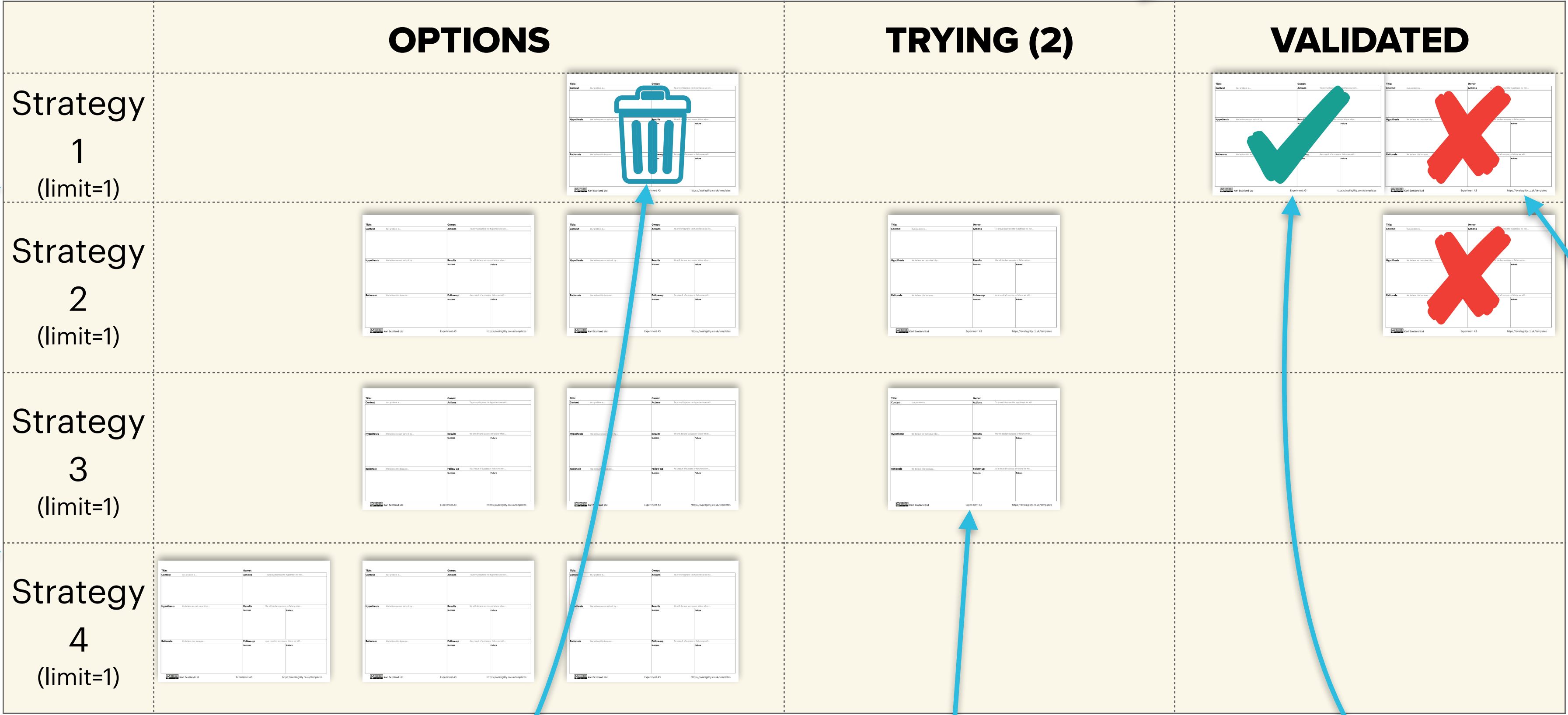


# THE EXPERIMENT BOARD

Goals can be expressed as OKRs, problems to be solved.



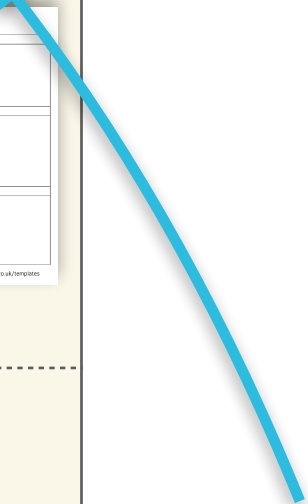
Limit work-in-progress for each goal to one experiment.



Limit work-in-progress across all goals.



The first option didn't solve the problem, so we pulled in the next option.



Now that we've solved the problem with a previous option, we can trash this one, maximizing the amount of work not done.

Each item on the board is an A3 Experiment canvas.

This experiment solved the problem/ delivered the key result.

# TYPES OF FAILURE

	Preventable	Complex	Intelligent
Definition	Deviations from known process that produce unwanted outcomes	Unique and novel combinations of events and actions that give rise to unwanted outcomes	Novel forays into new territory that lead to unwanted outcomes
Common Causes	Behavior, skill, attention deficiencies	Complexity, variability, novel factors imposed on familiar situations	Uncertainty, experimentation, risk taking
AKA	Process deviation	System breakdown	Unsuccessful trial
Contexts Where Each Is Most Salient	Production line manufacturing Fast-food services Basic utilities and services	NASA shuttle program Aircraft carrier Nuclear power plant	Drug development New product design

# DESTIGMATIZING FAILURE

	Traditional Frame	Destigmatizing Frame
Concept of Failure	Failure is not acceptable.	<b>Failure is a natural by-product of experimentation.</b>
Beliefs About Effective Performance	Effective performers don't fail.	Effective performers <b>produce, learn from and share the lessons</b> from intelligent failures.
Goal	Prevent failure.	Learn fast.
Impact of Frame	People hide failures to protect themselves.	Open discussion, fast learning and innovation.



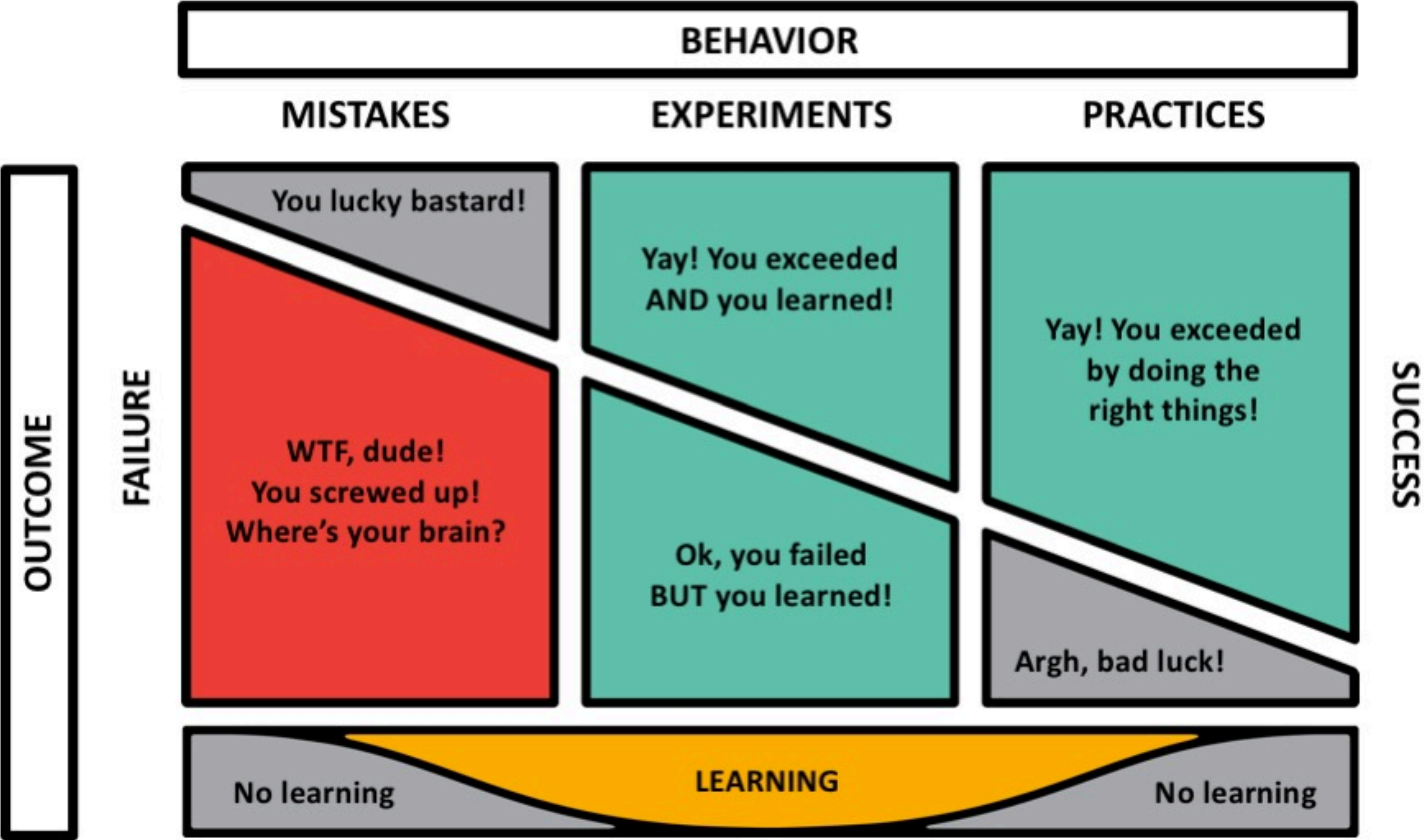




# PRODUCTIVE RESPONSES TO FAILURE

Preventable Failure	Complex Failure	Intelligent Failure
<ul style="list-style-type: none"><li>— Training</li><li>— Retraining</li><li>— Process improvement</li><li>— System redesign</li><li>— Sanctions, if repeated or otherwise blameworthy actions are found</li></ul>	<ul style="list-style-type: none"><li>— Failure analysis from diverse perspectives</li><li>— Identification of risk factors to address</li><li>— System improvement</li></ul>	<ul style="list-style-type: none"><li>— Failure parties</li><li>— Failure awards</li><li>— Thoughtful analysis of results to figure out implications</li><li>— Brainstorming of new hypotheses</li><li>— Design of next steps or additional experiments</li></ul>

# CELEBRATION GRID





# Why Etsy engineers send company-wide emails confessing mistakes they made





# SCIENCE FAIR





# YOKOTEN: “HORIZONTAL DEPLOYMENT”





# OTHER CONSIDERATIONS

- Language: “Fail Fast” → “Prove/disprove hypothesis”
- Leaders SETT the boundaries (“Safe Enough To Try”)
- Organizational experiments board
- “Goldratt User Stories”
- Finding your optimal WIP limit
- Retrospective actions
- A/B tests

**BEWARE**





AKA Observer Effect

# HAWTHORNE EFFECT





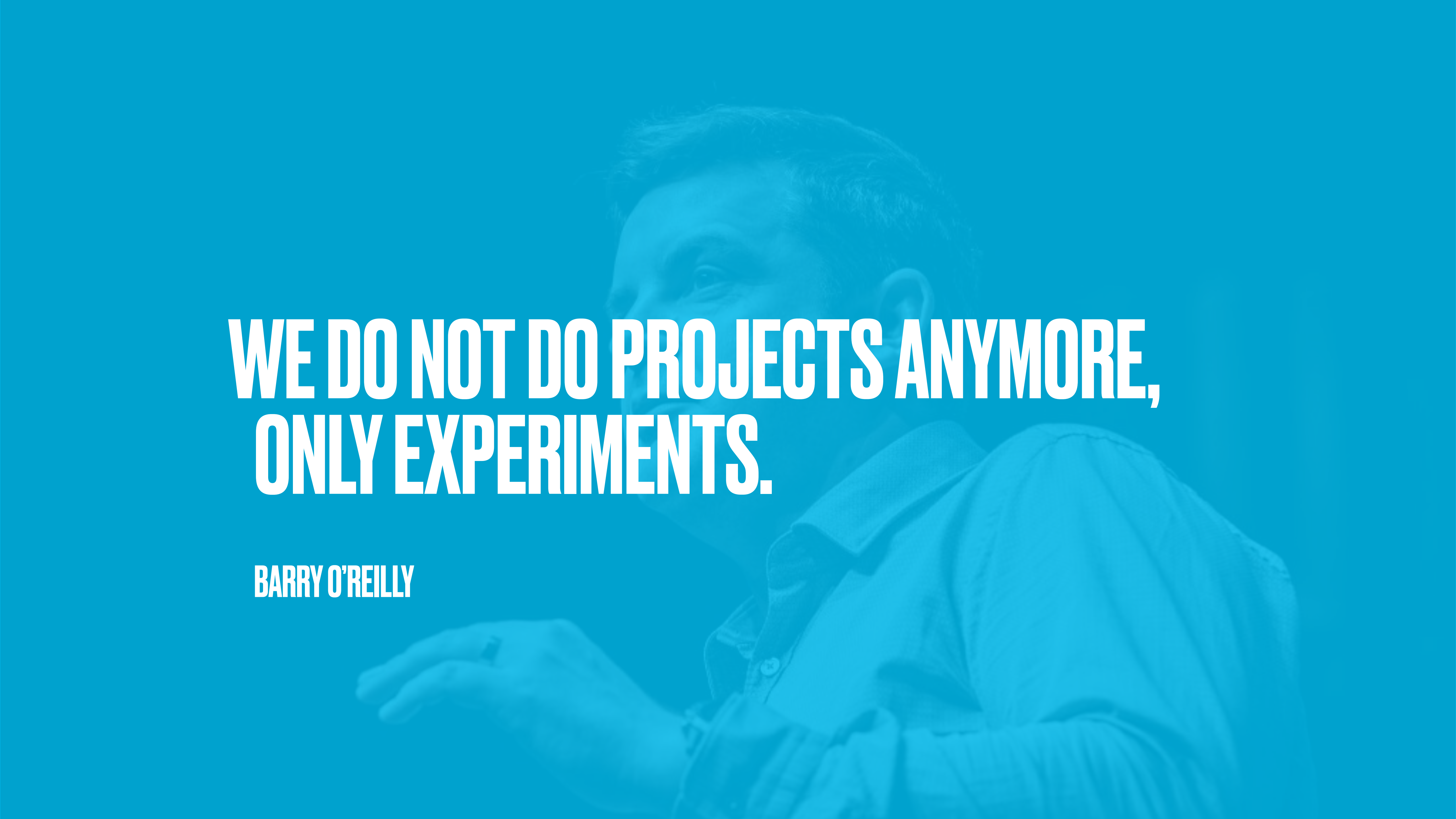
# SELECTING SAFE-TO-FAIL EXPERIMENTS

- 1. Any experiment must be something you can do something about and that you believe stands a chance of having a positive effect.
- 2. Secondly, it has to be a change with an observable or measurable effect – so that you can see if the change was good or bad.
- 3. The experiment must be something you believe you can dampen down if it goes wrong (ie safe to fail) or amplify the effect if it goes well.

# WHO CAN BENEFIT FROM EXPERIMENTS?

- **Product Owners: Measurable outcomes from user stories**
- **Coaches: Impact on people, teams, departments**
- **Transformation Agents: Evolutionary organizational fitness**
- **Developers**
- **Teams: Retrospective actions**
- **Organizations: Leverage scale by running multiple experiments**





**WE DO NOT DO PROJECTS ANYMORE,  
ONLY EXPERIMENTS.**

**BARRY O'REILLY**



1. Eleusis Expeditious and Eleusis Express (<https://availagility.co.uk/resources/games/eleusis-expeditious/>)
2. A3 Experiment Canvas from Karl Scotland (<https://availagility.co.uk/>)
3. Safe-to-Fail Probes (<http://cognitive-edge.com/methods/safe-to-fail-probes/>)
4. How to Fail like a Pro, Freakonomics Radio: 370.
5. Unlearn by Barry O'Reilly
6. Company-wide Agility with Beyond Budgeting, Open Space & Sociocracy by John Buck and Jutta Eckstein
7. Principles of Product Development Flow by Don Reinertsen
8. How to Measure Anything by Douglas W. Hubbard
9. pretty much anything from John Cutler
10. Jurgen Appelo: <https://management30.com/practice/celebration-grids/>
11. The Surprising Power of Online Experiments (<https://hbr.org/2017/09/the-surprising-power-of-online-experiments>)
12. Online Controlled Experiments: Lessons from Running A/B/n Tests for 12 years (<http://bit.ly/KDD2015Kohavi>)
13. Thinking in Bets by Annie Duke

14. How to Implement Hypothesis-Driven Development (<https://barryoreilly.com/how-to-implement-hypothesis-driven-development/>)
15. Beyond the Black Hole: Product Management for Continuous Delivery, Elizabeth Ayer, FlowCon 2019
16. The Fearless Organization by Amy Edmondson
17. Don't Be a Ditka, Dan Vacanti (<https://www.infoq.com/presentations/prioritization-scarcity-stress-uncertainty/>)
18. Goldratt User Stories (<https://yorkesoftware.com/2018/03/09/goldratt-user-stories/>)
19. "Online Experimentation at Microsoft" Kohavi et al (<http://stanford.io/130uW6X>)
20. Robert Hooke, first Curator of Experiments (<https://royalsociety.org/science-events-and-lectures/2003/summer-science/mr-hooke/>)
21. <https://itrevolution.com/the-three-ways-principles-underpinning-devops/>
22. Complexity Thinking Dimitar Bakhardzhiev
23. Mike Burrows, Agendashift
24. Adam Light
25. <https://www.katatogrow.com>
26. <https://docondev.com/blog/2019/11/8/the-experiment-canvas>
27. [mattphilip.wordpress.com](http://mattphilip.wordpress.com)

