



Carnegie Foundation
for the Advancement of Teaching

Improvement Science 101

Breakout Set D

Thursday, April 5, 2018

Brandon Bennett, *Principal Advisor, Improvement Science Consulting & Fellow, Carnegie Foundation*

Alicia Grunow, *Co-Founder, Improvement Collective & Senior Fellow, Carnegie Foundation*

Amanda Meyer, *Director of Improvement, CORE Districts*

Individual Reflection

What is one inequitable outcome in your school or community or our field that keeps you up at night?

Change begins with...

VISION



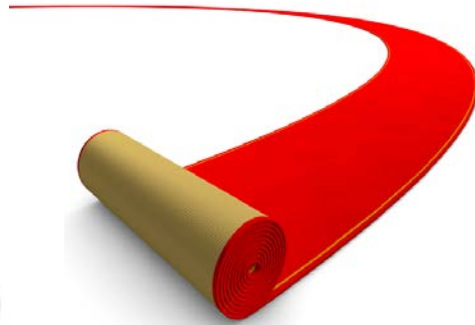
GAP

Dissatisfaction with the status quo and a recognition that existent outcomes are either not desirable or just not good enough

CURRENT REALITY



Say it
louder



Roll out



So what do we
typically do?



Superhero



Train



Skills and Tools

*Theory of
Management*

Mindsets

Improvement Science

“Quality Improvement”

A **disciplined** approach to making changes that draws on the efforts of **everyone** to collectively **learn** their way into stronger **system performance** and better outcomes for students.

Be problem-focused
and user-centered



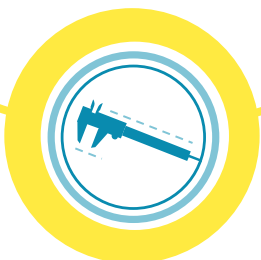
Attend to
variability



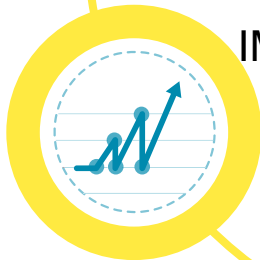
See
the system



Embrace
measurement



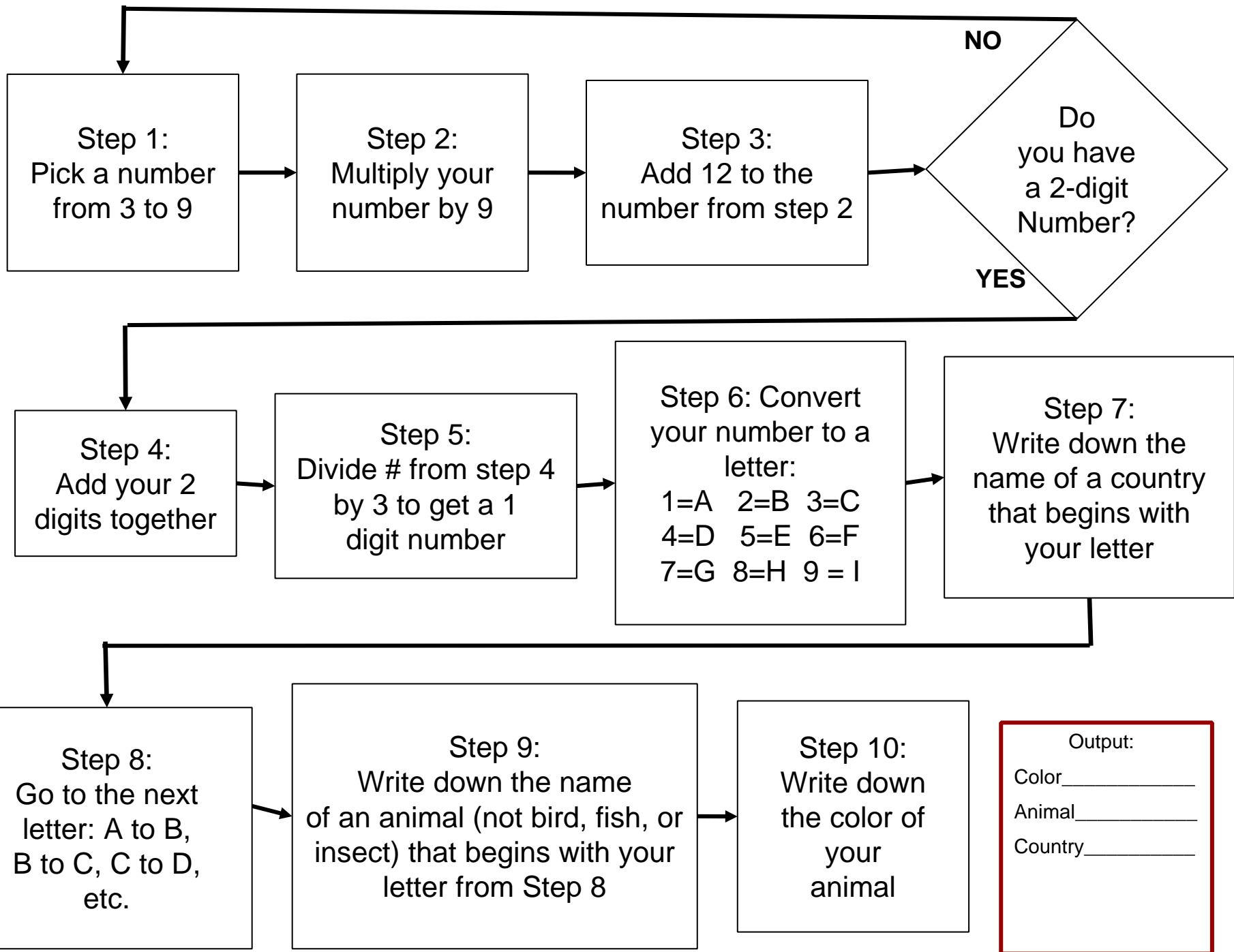
Learn through
disciplined
inquiry



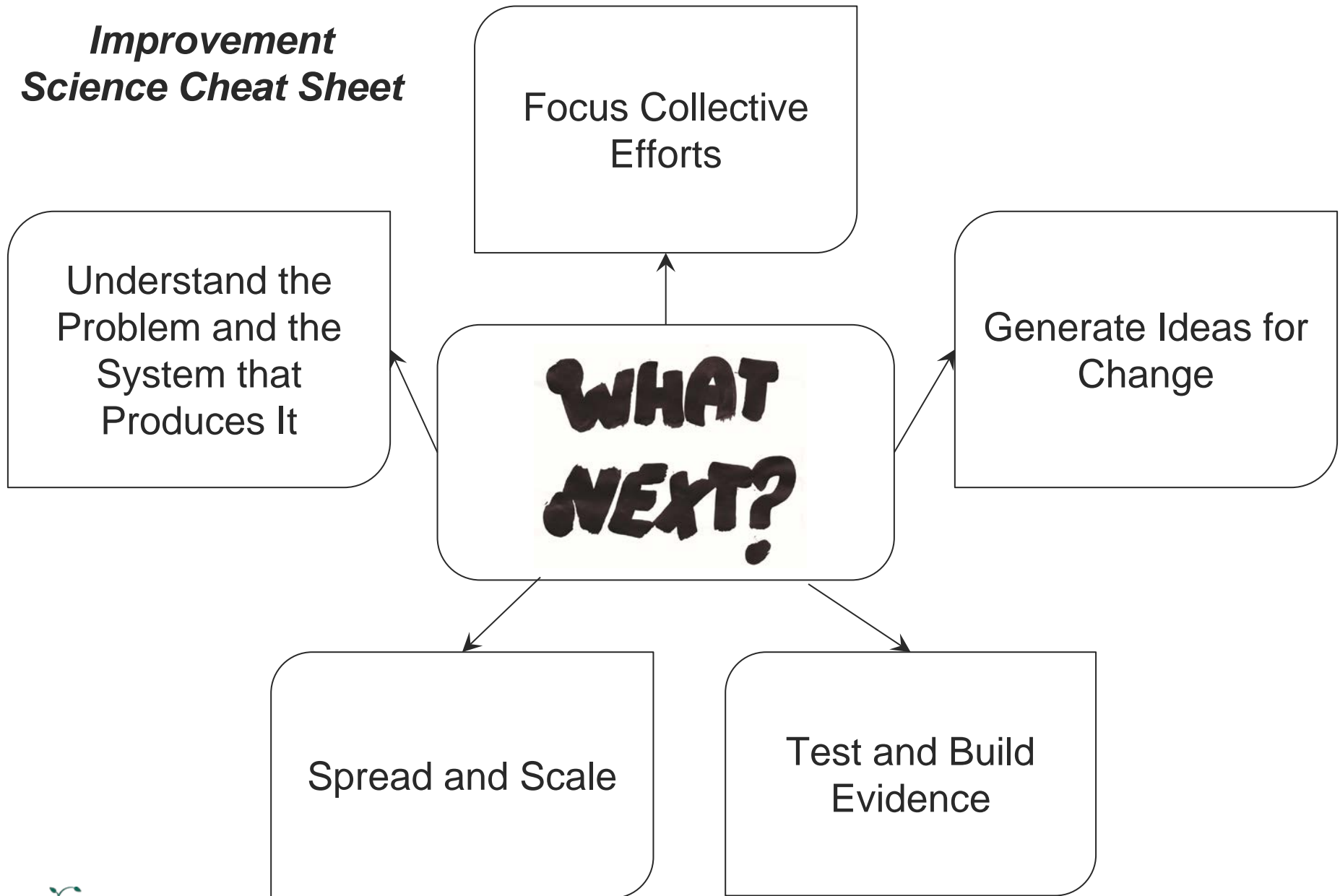
Organize as
networks



6
CORE PRINCIPLES OF
IMPROVEMENT SCIENCE



Improvement Science Cheat Sheet



Case: College-going Rates



Improvement Science Cheat Sheet

Understand the
Problem and the
System that
Produces It

Focus Collective
Efforts

**WHAT
NEXT?**

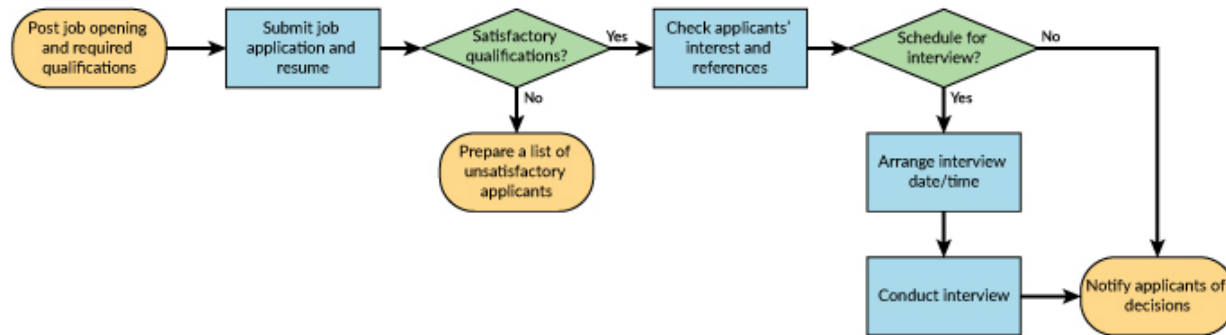
Generate Ideas for
Change

and Scale

Test and Build
Evidence



Tool: Process Map



What is it? A graphical representation of the steps that come together to produce a particular outcome

Why is it useful?

- Processes are a basic building block of systems.
- Creates a shared understanding of current practice that can then be analyzed and improved.

Triad Activity: Let's map!

College Application Process Map



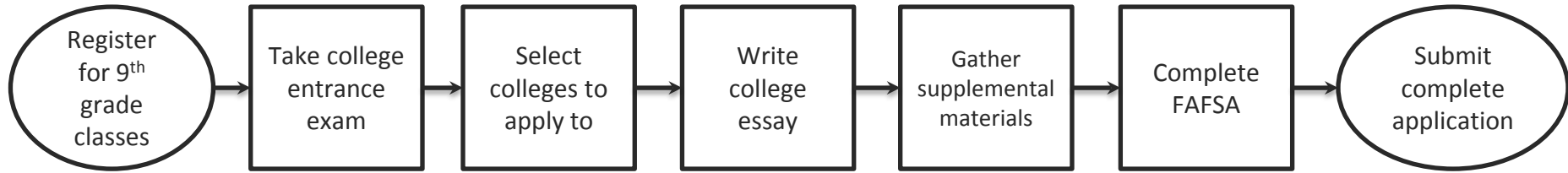
Beginning Boundary: ?

Ending Boundary: Complete college applications submitted

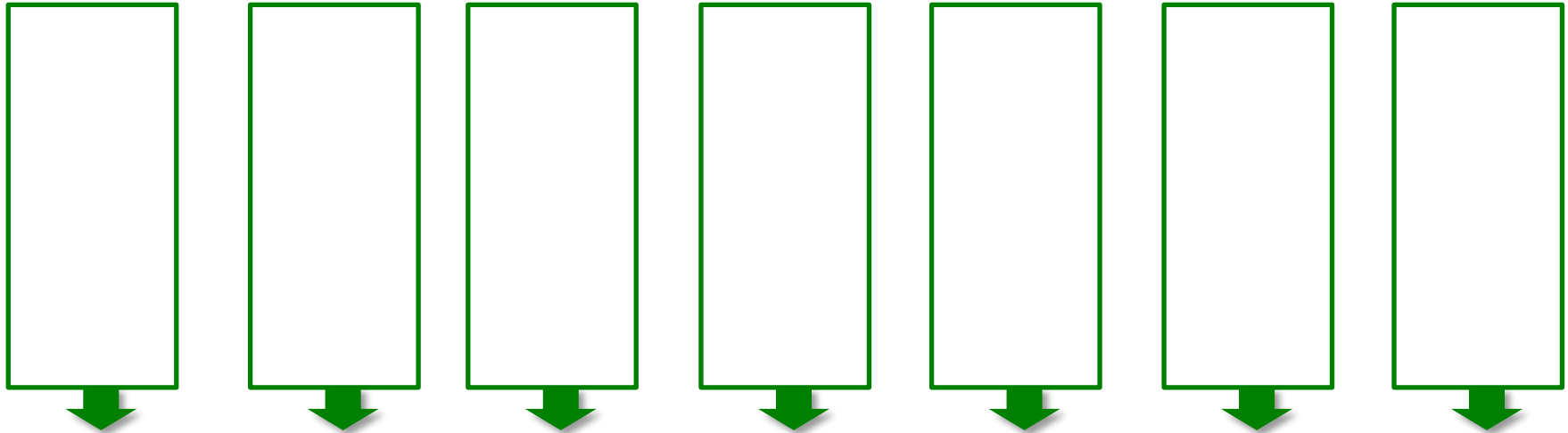
Create a **high-level process map** consisting of **at least 5 steps** in the college application process.

One possible map of the process

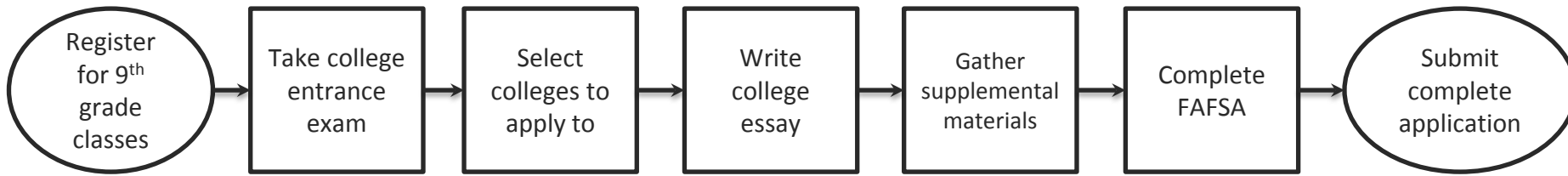
Current Process



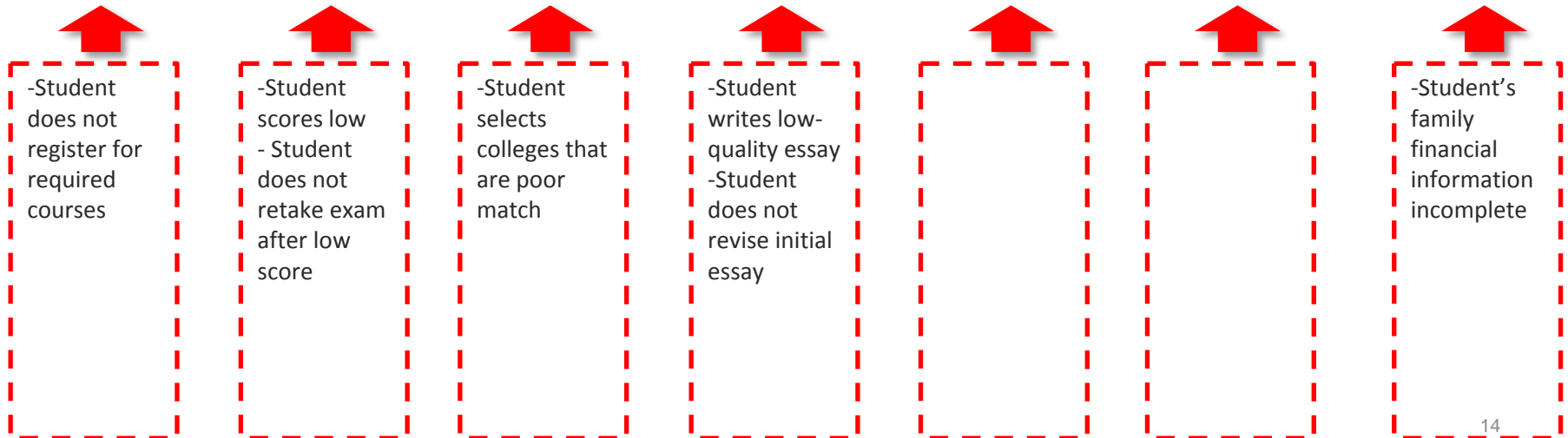
Change Ideas



Current Process



Failure Modes



Ways to “See the System”

1. **Empathy Exercises:** Engage users to understand the system from their point of view.
2. **Leverage Data:** Collect & analyze data to identify important causes & understand variation in performance across the system.
3. **Map the Current System:** Create a shared picture of “what is.”

**Self
Motivation**



Transcripts

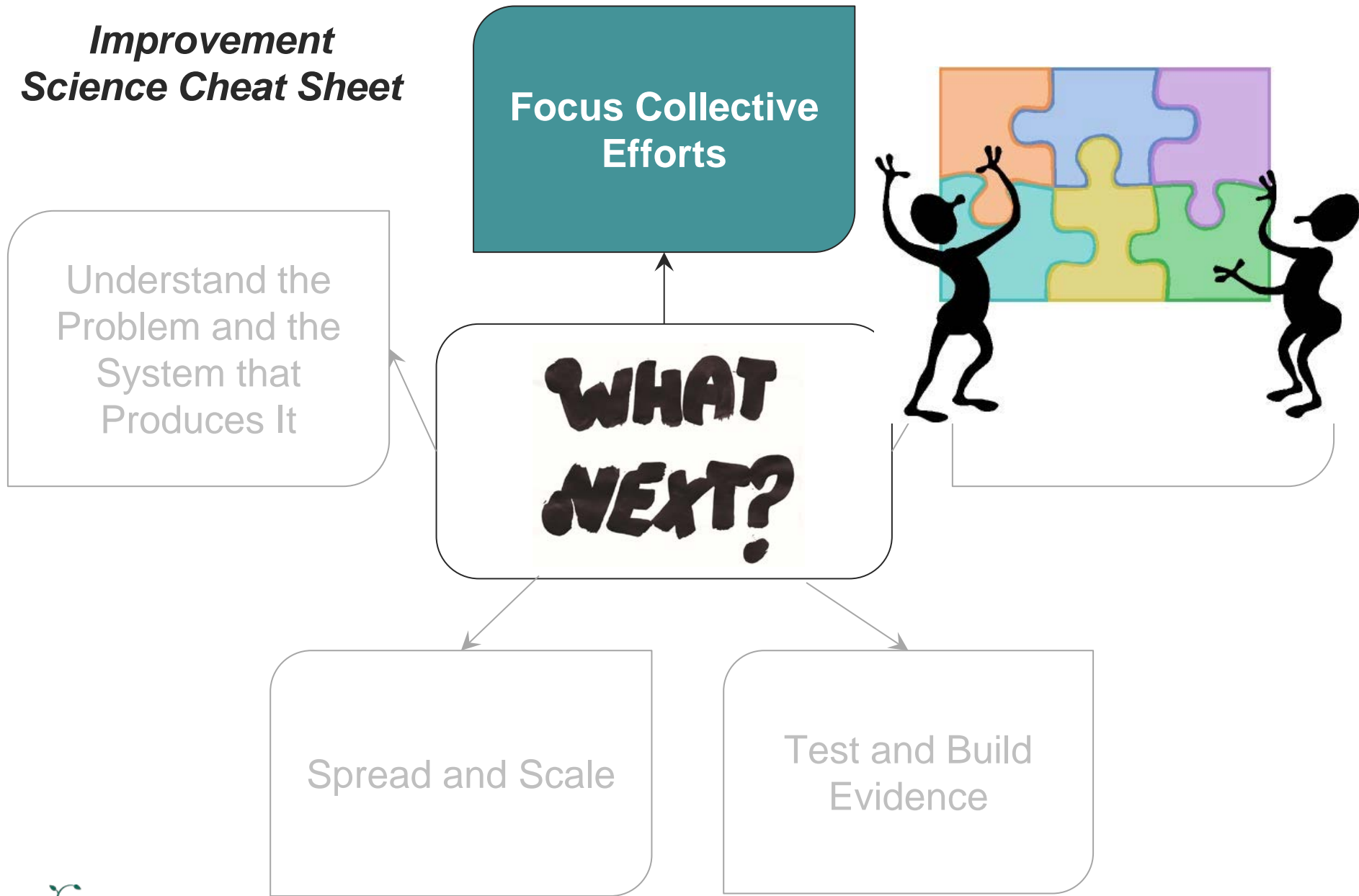
Money

**Family
Financial
Knowledge**

**On-line
Applications**

**Personal
Statements**

Improvement Science Cheat Sheet

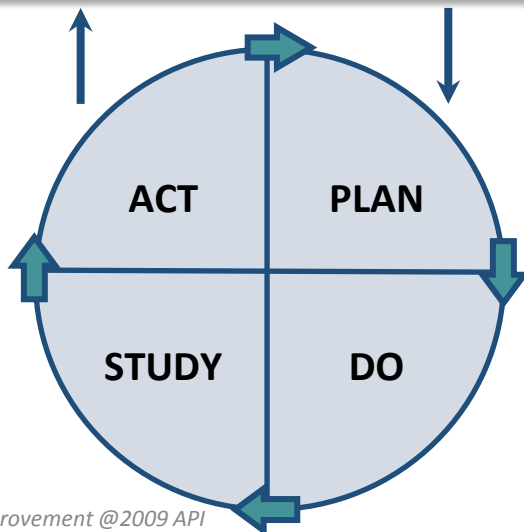


An “Engine” for Learning

What specifically are we trying to accomplish?

What change(s) might we introduce and why?

How will we know if a change is an improvement?



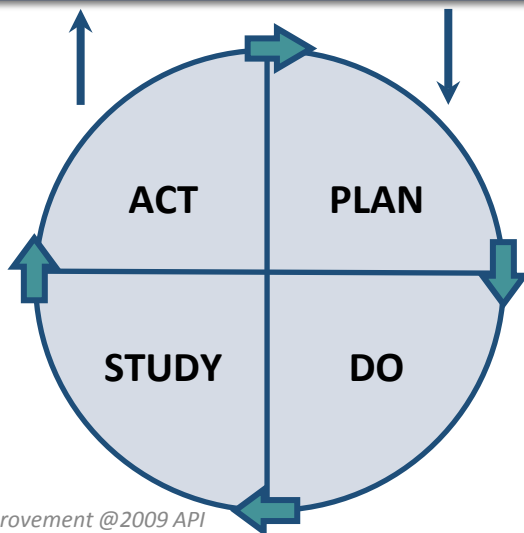
An “Engine” for Learning

What specifically are we trying to accomplish?

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AIM STATEMENT



Crafting an Aim Statement

What specifically are we trying to accomplish?

- **What will be improved?** (clear operational definitions)
- **How much?** (measureable, specific, numerical goals)
- **By when?** (time frame)
- **For what/whom?** (target population/setting or system/process)

Examples of Aim Statements

(A) By June 2018, increase the percentage of district students who attend a post-secondary learning institution from 45% to 65%.

(A) By June 2018, increase from 35% to 80% the percentage of low-income students in the district who complete the FAFSA.

Triads: Give it a try!

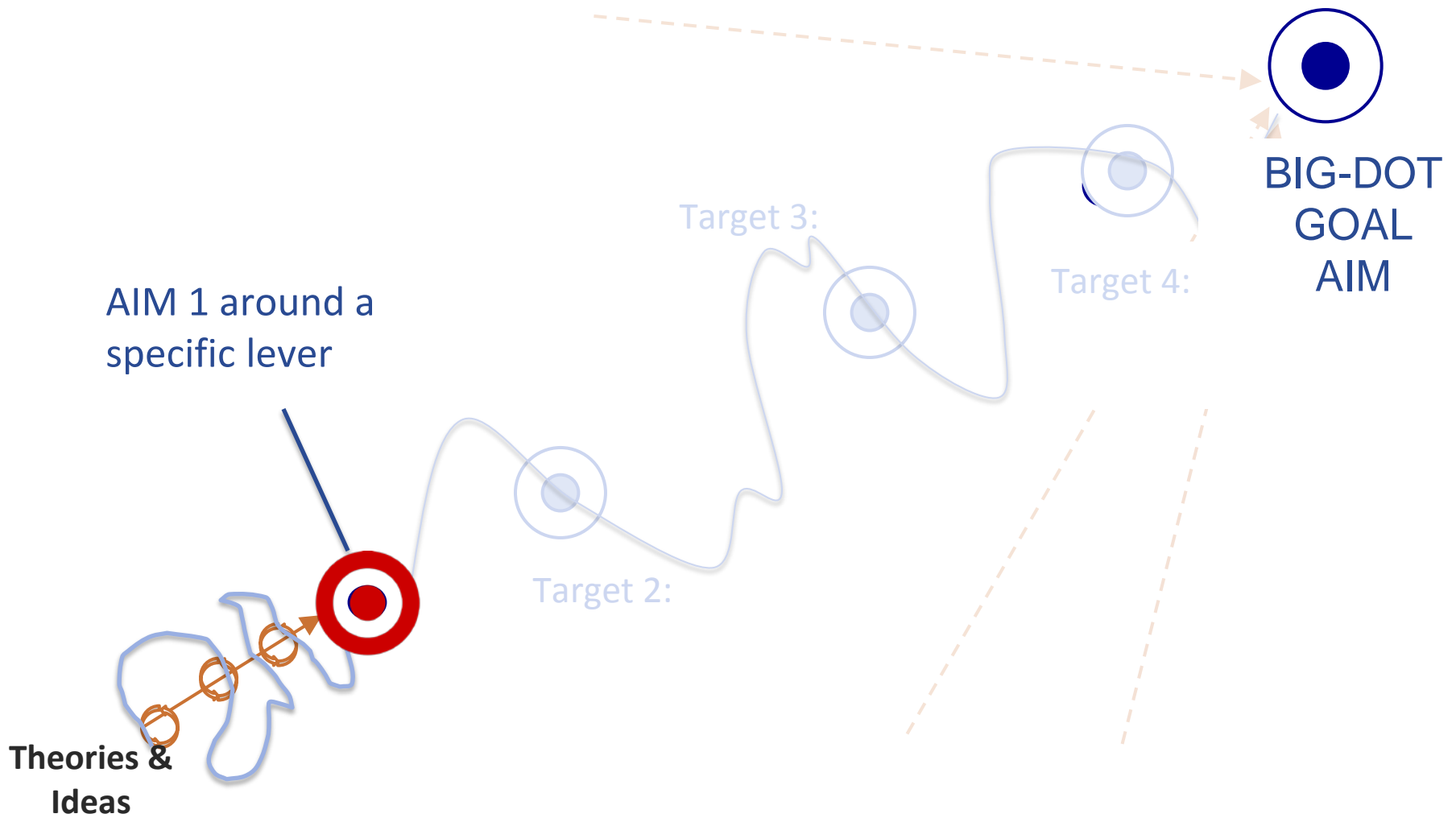
Imagine your triad is a district team thinking about the college-going disparities between your students. How would you revise this draft aim statement?

Close the gap in college-going rates in our district.

It should include:

- **What will be improved?** (clear operational definitions)
- **How much?** (measureable, specific, numerical goals)
- **By when?** (time frame)
- **For what/whom?** (target population/setting or system/process)

Evolving Aim Statements



Improvement Science Cheat Sheet

Focus collective
efforts

Understand the
Problem and the
System that
Produces it

WHAT NEEDS

Generate ideas
for change

Spread and Scale



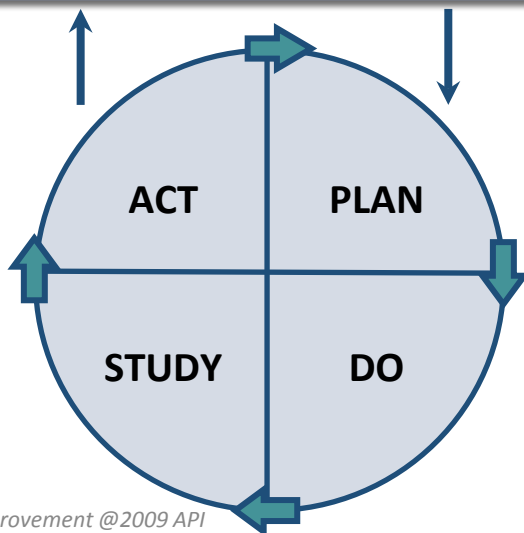
An “Engine” for Learning

What specifically are we trying to accomplish?

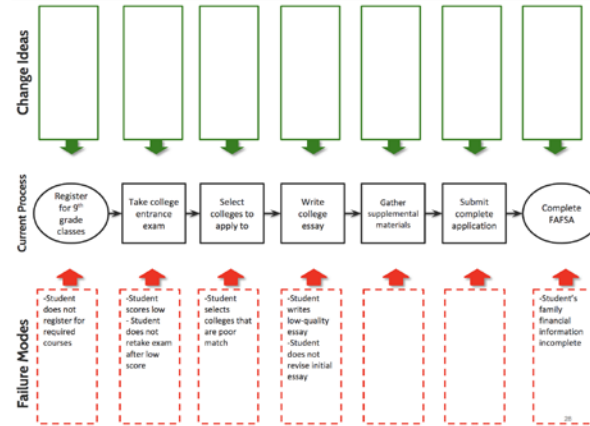
What change(s) might we introduce and why?

How will we know if a change is an improvement?

CHANGE IDEAS



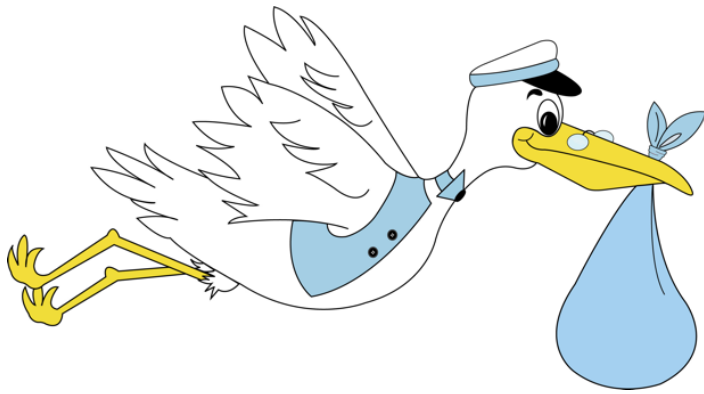
Tool: (Simplified) Failure Mode Effects Analysis



What is it? A systematic method to identify process problems/ breakdowns that may result in the inability to achieve desired outcomes consistently.

Why is it useful? Helps to identify where to target changes in order to change outcomes.

Where Do Change Ideas Come From?



1. **Research knowledge:** What does academic literature have to say about solving this problem?
2. **Practice knowledge:** What have other organizations in the field done to solve this problem?
3. **Design/Creative Thinking:** What new solutions might we design to address this problem?
4. **Analysis of the problem:** What does our analysis of the problem indicate may be a helpful solution?

Improvement Science Cheat Sheet



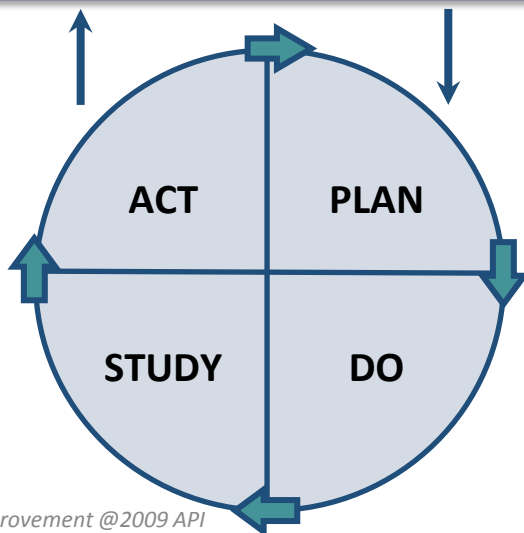
An “Engine” for Learning

What specifically are we trying to accomplish?

What change(s) might we introduce and why?

How will we know if a change is an improvement?

MEASURES



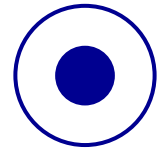
How will we know if a change is an

improvement?

Ultimate outcomes

LAGGING OUTCOME:

% students go to college



OUTCOME: % students that are accepted to at least one college

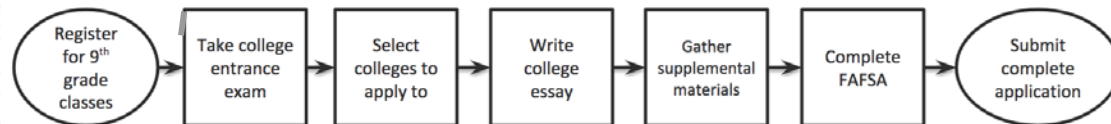


PROCESS MEASURE: % of students completing FAFSA

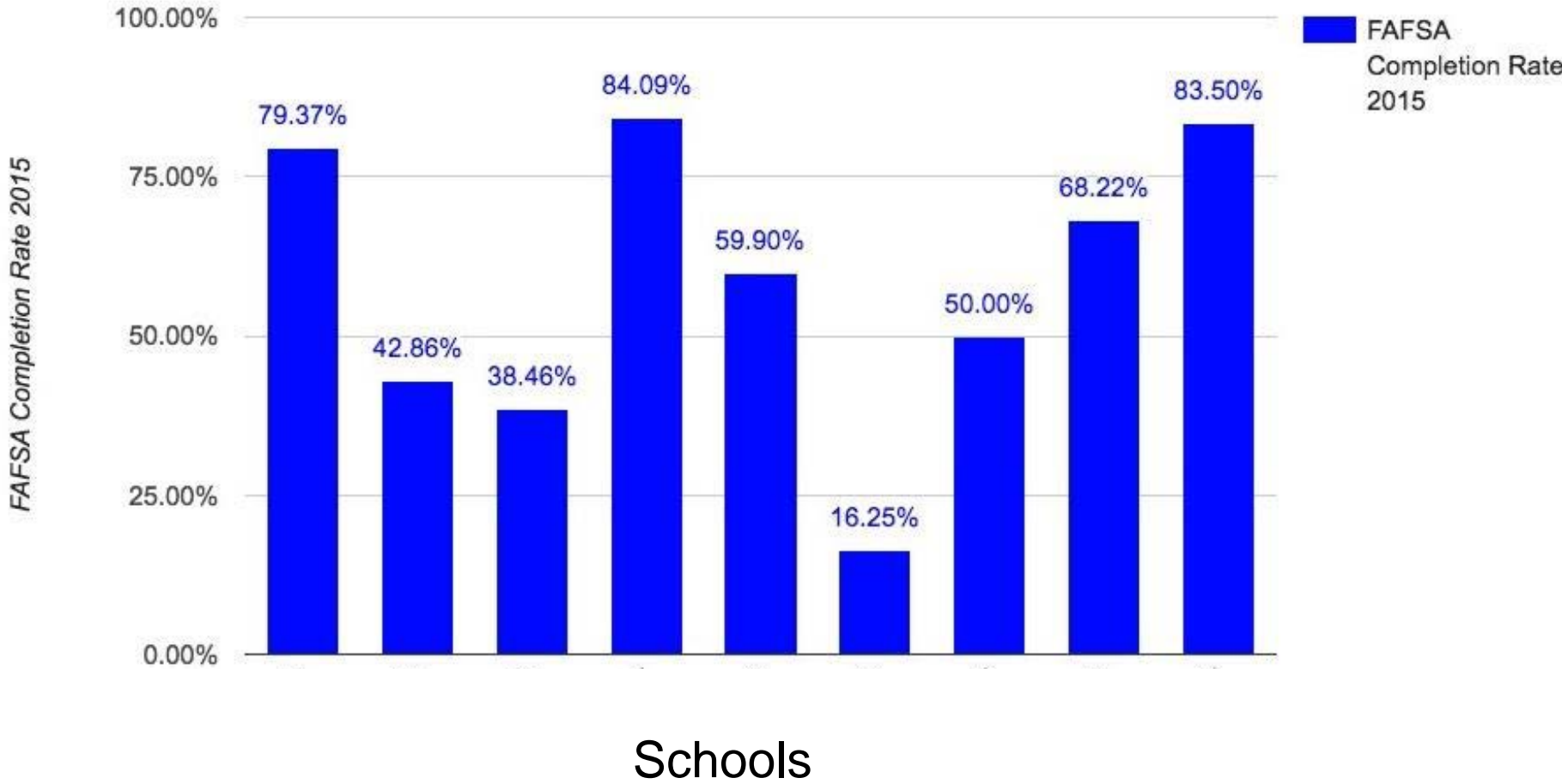
PROCESS MEASURE: % students taking SAT or ACT

Frequently-collected; embedded in daily work

Current Process



FAFSA Completion Rate 2015



**Percentages calculated using student numbers for 2015 from publically accessible databases

Improvement Science Cheat Sheet

Focus collective efforts

Understand the Problem and the System that Produce

Generate ideas for change

WHAT NEXT?

ACT

- Next steps: Adapt, adopt, abandon

PLAN

- What's your change?
- What's your prediction?
- Plan to conduct test

STUDY

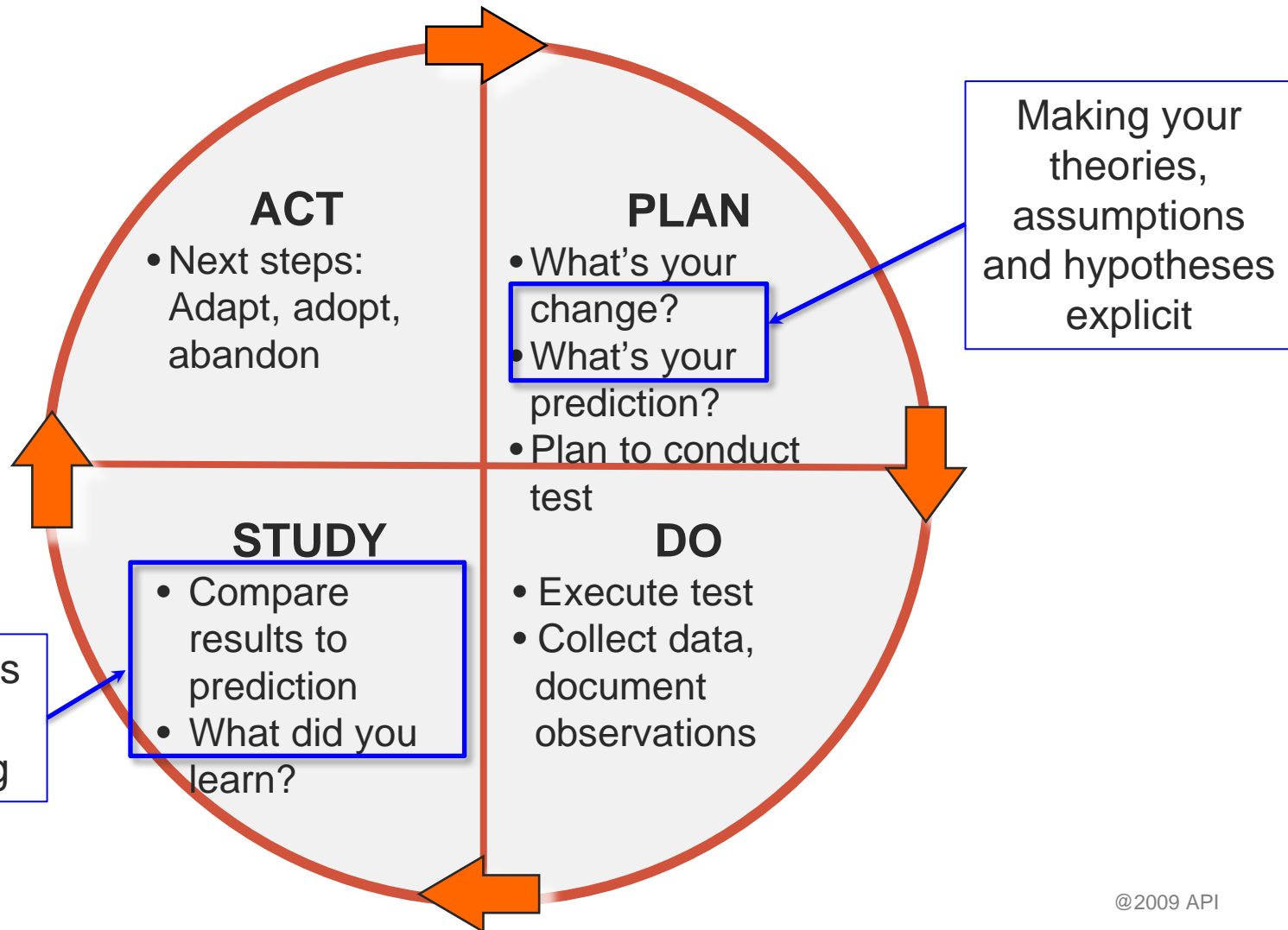
- Compare results to prediction
- What did you learn?

DO

- Execute test
- Collect data, document observations

Test and Build Evidence

Tool: The PDSA Cycle



NEXT CYCLE:

Test a personal statement writing unit into 11th grade

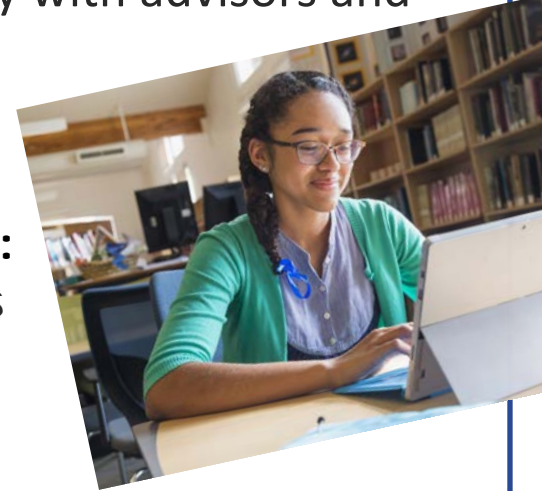
Extend AppFest to Full day

CHANGE IDEA:

AppFest half-day with advisors and seniors

PREDICTIONS:

80% of students will complete at least one full application



4. ACT

1. PLAN

RESULTS:

50% completed full application

LEARNINGS:

Sitting with them helped, but large number of students hadn't completed personal statements yet!

Full application was more time-intensive than anticipated!

2

OBSERVATIONS:

~100 seniors attended, 30 advisors

Fewer students successfully completed

Triad Activity:

Go back to one of your proposed changes to the college application process. Plan a test of the change.

Change Idea to be Tested:	
Details of the test: <i>When, where, and with who will you enact the change idea?</i>	
Predictions: <ul style="list-style-type: none">• <i>What will be the results of enacting this change?</i>• <i>How might this change fail?</i>• <i>How might this change negatively affect another part of your system?</i>	

Improvement Science Cheat Sheet

Focus collective
efforts

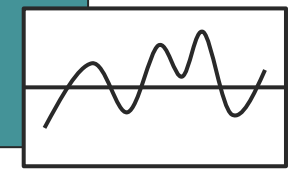
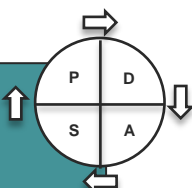
Understand the
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WHAT NEXT?

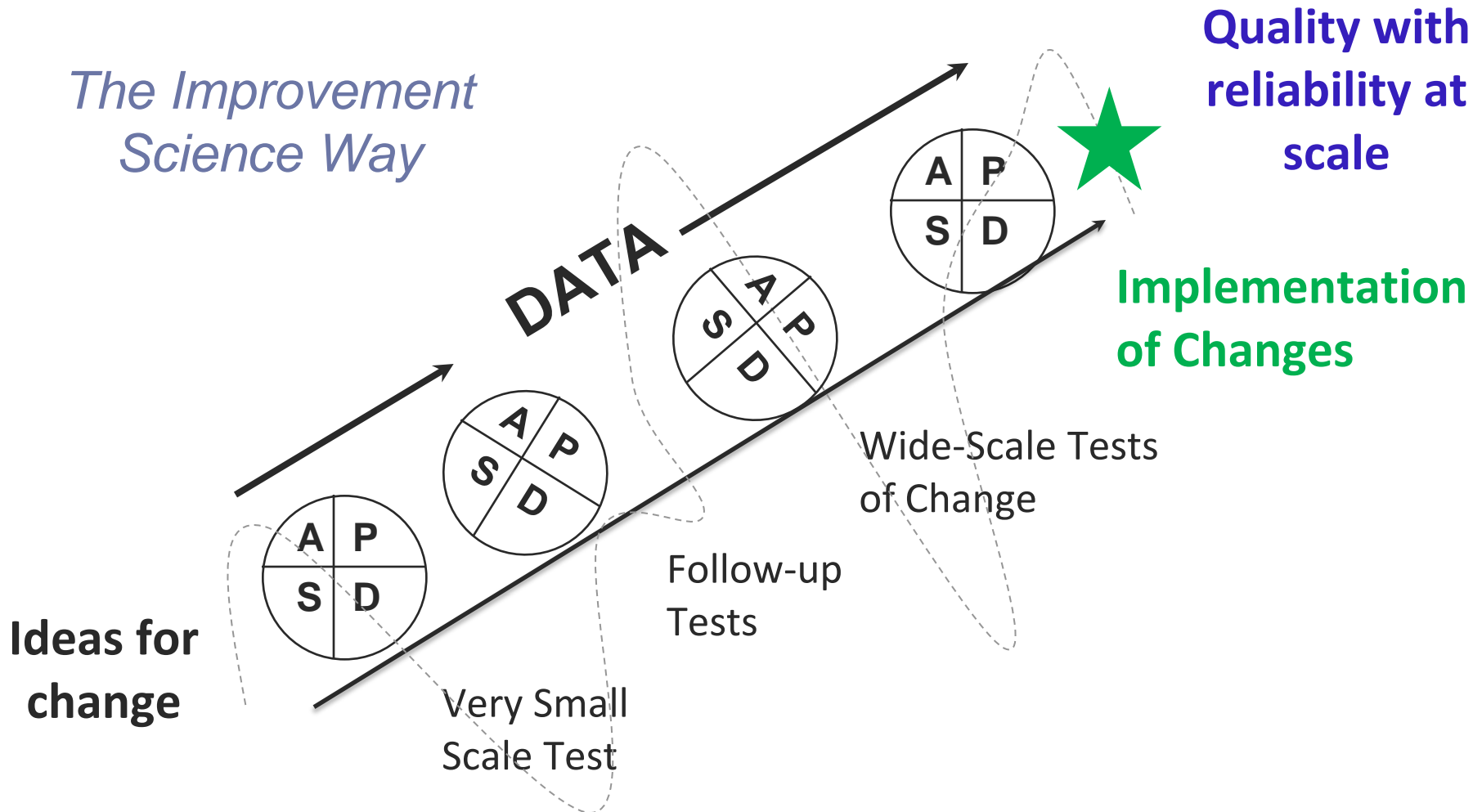
Generate ideas for
change

Spread and
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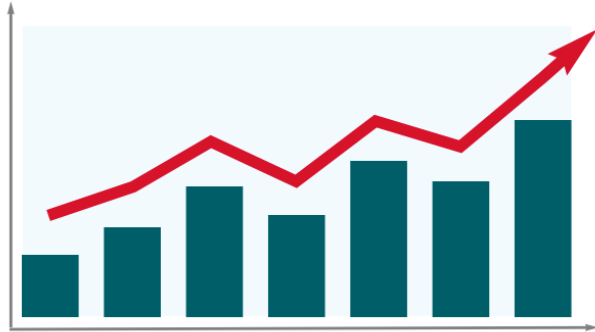
Test and Build
Evidence



How Do We Make Change?



What are the “End” Goals?



Measurable
improvement

Specified changes that
led to the improvement



Improvement capacity to
apply to future work



Reflections on Improvement Science:

As you think about applying improvement science to the problematic outcome you named at the start of the session...



What is one thing that could immediately help you?



Where do you anticipate challenges with this approach?



What questions do you still have?