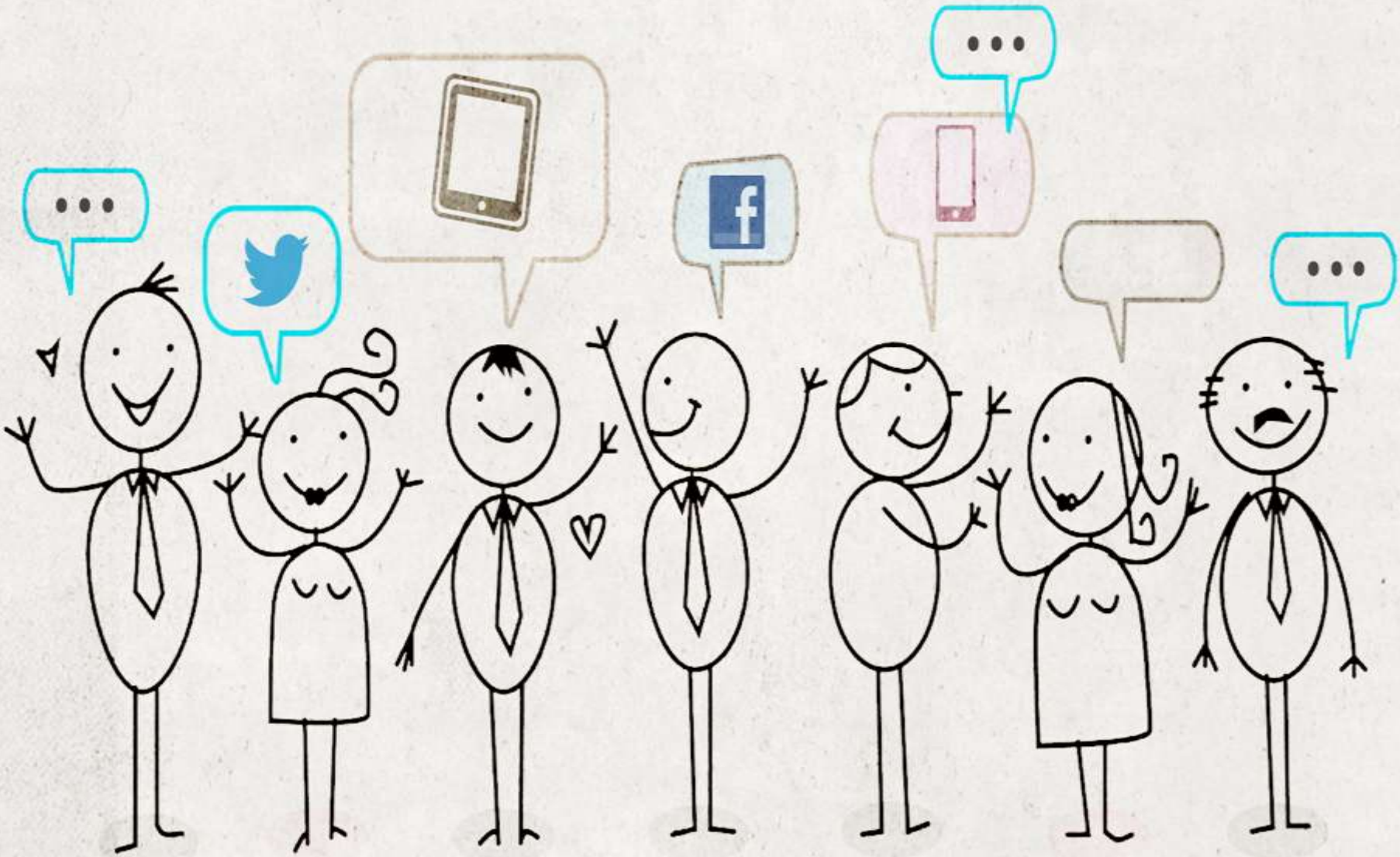
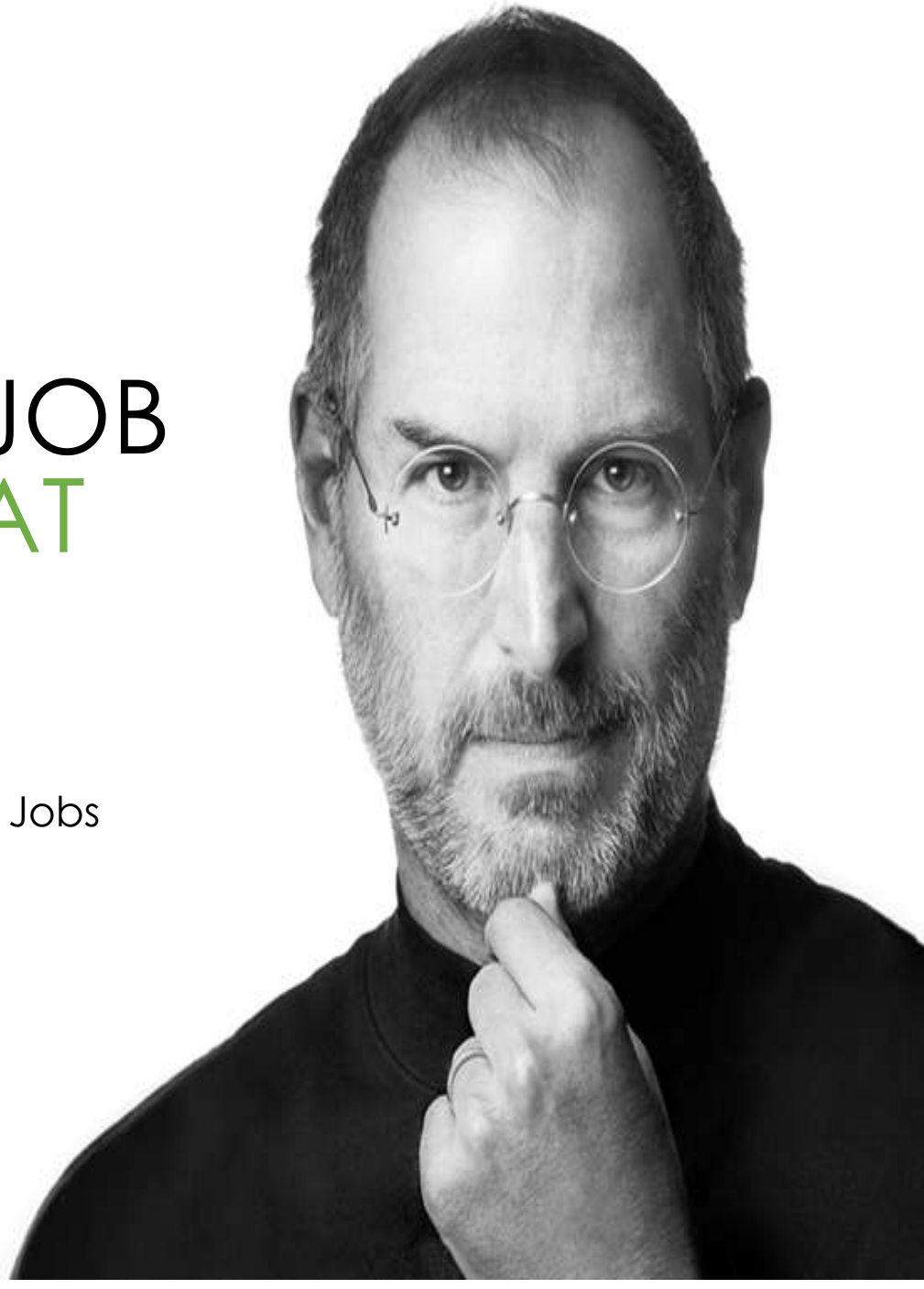
An Introduction to Design Thinking

Apply **Human Meaning** to Technology



“IT’S NOT THE CUSTOMER’S JOB TO KNOW WHAT THEY WANT.”

Steve Jobs



esign Thinking

"You can't dig a new hole by digging the same one deeper."

-- Edward de Bono

The World's 25 Most Innovative Companies

2006 survey and analysis of 1,070 senior executives in 63 countries by The Boston Consulting Group

Our 2006 list of the world's most respected names in innovation sends two powerful messages. First, design is a differentiator. Apple again rules the roost, and design-focused companies—from Procter & Gamble to IDEO to BMW—are all on the rise. Need further proof? Just look at design-friendly retailers IKEA and Target, both new to the list.

The other message? Innovation is becoming ever more broadly defined. True product innovators have their place on our list—Nokia and newcomer Research In Motion come to mind. But respondents to the *BusinessWeek*-Boston Consulting Group survey value other kinds of innovators, too, from process masters, who remake the supply chain, logistics, or sales channels, to business model revolutionaries, who create brand-new ways of doing business. Take a look at who's up and who's down.

Methodology

The *BusinessWeek*-Boston Consulting Group 2006 senior management survey on innovation was distributed electronically to executives worldwide in early 2006. In February surveys were sent to the largest 1,500 global corporations, determined by market capitalization in U.S. dollars, with instructions to distribute the survey to their top 10 executives. The survey was also accessible on several Web sites: the BCG Innovation Institute, *BusinessWeek*, Knowledge@Wharton, and the *Nightly Business Report*. Survey participation was voluntary and anonymous, and the survey closed in April, 2006. The survey consisted of 19 general questions on innovation and an optional 8 questions that focused on innovation metrics.

A total of 1,070 executives answered the survey. Of those, 46% were from North America, 30% from Europe, and 16% from Asia or the Pacific region. To avoid vote-stuffing, respondents were asked to identify the most innovative company outside their own industry. For a full list of the top 100 companies, go online to businessweek.com/innovate.

▲ Process Innovation
■ Product Innovation
● Business Model Innovation

RANK 2006‡	RANK 2005	COMPANY	WHY	BEST PRACTICES	1995-2005 MARGIN GROWTH‡‡	1995-2005 STOCK RETURNS‡‡
1	1	Apple	Hello, iPod World. Outstanding design and innovative software platforms create an unrivaled user experience.	■ ●	7.1%	24.6%
2	8	Google	Allows one of the world's brightest crops of engineers time to experiment. Focuses on simplicity and the customer.	■ ●	n/a**	n/a**
3	2	3M	Revamped its vaunted R&D labs in 2003 to centralize basic research. With new CEO George Buckley, an engineer is back at the helm.	■	3.4	11.2
4	14	Toyota	A master of manufacturing innovation, and now, hybrid technology. New cost-cutting strategy calls for reducing vehicle system costs as a whole.	▲ ■	10.7	11.8
5	3*	Microsoft	Primes Windows and Office sales with innovations. A new combo of Web and PC services, called Live, is off to a solid start.	■ ●	2.0	18.5
6	3*	General Electric	Transforming from an efficiency powerhouse to one that values bold ideas. Now rates managers on traits such as "imagination and courage."	▲ ■	5.7	13.4
7	9*	Procter & Gamble	Its "connect and develop" model calls for 50% of new products to come from outside. Design and innovation execs are now part of the org chart.	▲ ■ ●	4.4	12.6
8	9*	Nokia	Global handset leader. Diverse teams create future-oriented "world maps" to track macro trends. Designed low-cost phones for emerging markets.	▲ ■ ●	0.0	34.6
9	19	Starbucks	Would you like a movie with your latte? The creator of the $3 coffee has started marketing films. Taps an army of baristas for customer insight.	■ ●	2.2	27.6
10	7	IBM	Donated 500 of its more than 40,000 patents to help build new technology ecosystems. Co-invests in projects with clients and partners.	▲ ■ ●	-0.7	14.4
11	11	Virgin	Adds its hip lifestyle brand to everything from airlines to insurance. Enters new businesses at lightning speed.	●	private	private
12	12	Samsung	An intense design focus, speedy product cycles, and rigorous metrics make the South Korean company a creative force in electronics.	▲ ■	-4.5***	22.7
13	5	Sony	Fell eight spots this year; is trying to claw its way back with a focus on high-def products and a revamped management structure.	■	-11.0	5.1
14	6	Dell	Revolutionized the PC supply chain and sales channels. But stuck in Apple's shadow, Dell fell eight spots this year.	▲ ●	2.0	39.4
15	18	IDEO	Designed the Palm V and Leap chair. Now helps some of the biggest companies learn design thinking and transform their cultures.	▲ ■	private	private
16	20	BMW	Brings teams together to collaborate inside an innovative research center. Sets up competitions between designers for new car models.	▲ ■	9.1	14.2
17	16*	Intel	Expanding beyond microprocessors and outside the PC. Poised to launch more products in 2006 than at any time in its history.	■ ●	-0.3	13.8
18	15	eBay	Built the world's largest online marketplace and a new way of doing business. Launching a fixed-price site to cater to busy consumers.	●	13.0***	n/a**
19	new	IKEA	A focus on affordable design and a different retail experience have turned the Swedish retailer's shoppers into cult fans.	▲ ■ ●	private	private
20	13	Wal-Mart	Wields technology and pioneers processes to streamline its supply chain. A beleaguered image may have prompted its seven-spot fall.	▲	1.9	16.2
21	16*	Amazon	Continuously focuses on improving the online experience. Ramping up R&D spending on search and Web services for outside merchants.	▲ ■	25.0***	n/a**
22	new	Target	Embraced design as a differentiator in the discount market. Creative marketing and temporary stores surprise devoted customers.	■ ●	7.4	25.2
23	23*	Honda	Known for excellent engineering, Honda is thinking outside the car, launching solar cell production for homes and businesses next year.	■	8.0	12.9
24	new	Research In Motion	Breakthrough mobile devices changed the way business communicates. Dominates the wireless e-mail market.	■	57.0***	n/a**
25	21*	Southwest Airlines	Created the low-cost airline model through operational innovation. Developed fare marketing software for consumers' desktops.	▲ ●	-0.1	13.9
Median			Most Innovative Companies		3.4	14.3
Median			Standard & Poor's 1200 global stock index		0.4	11.1

‡In the 2006 rankings, we broke ties by comparing 10-year annualized total shareholder returns between 1995 and 2005. In ties between a public and a private company, the public company was favored. ‡‡Annualized based on 1995-2005 fiscal year earnings before interest and taxes as percent of revenues ‡‡‡Annualized, Dec. 29, 1995 to Dec. 30, 2005, price appreciation and dividends. *Ties. In 2005, Southwest Airlines tied with Hewlett-Packard for #21; Honda tied with Cisco Systems and DaimlerChrysler for #23. **Insufficient data ***Based on fewer than 10 years of data

Data: Analysis and data provided in collaboration with the innovation practice of The Boston Consulting Group. Also, Standard & Poor's Compustat® data and company reports.

what is design?

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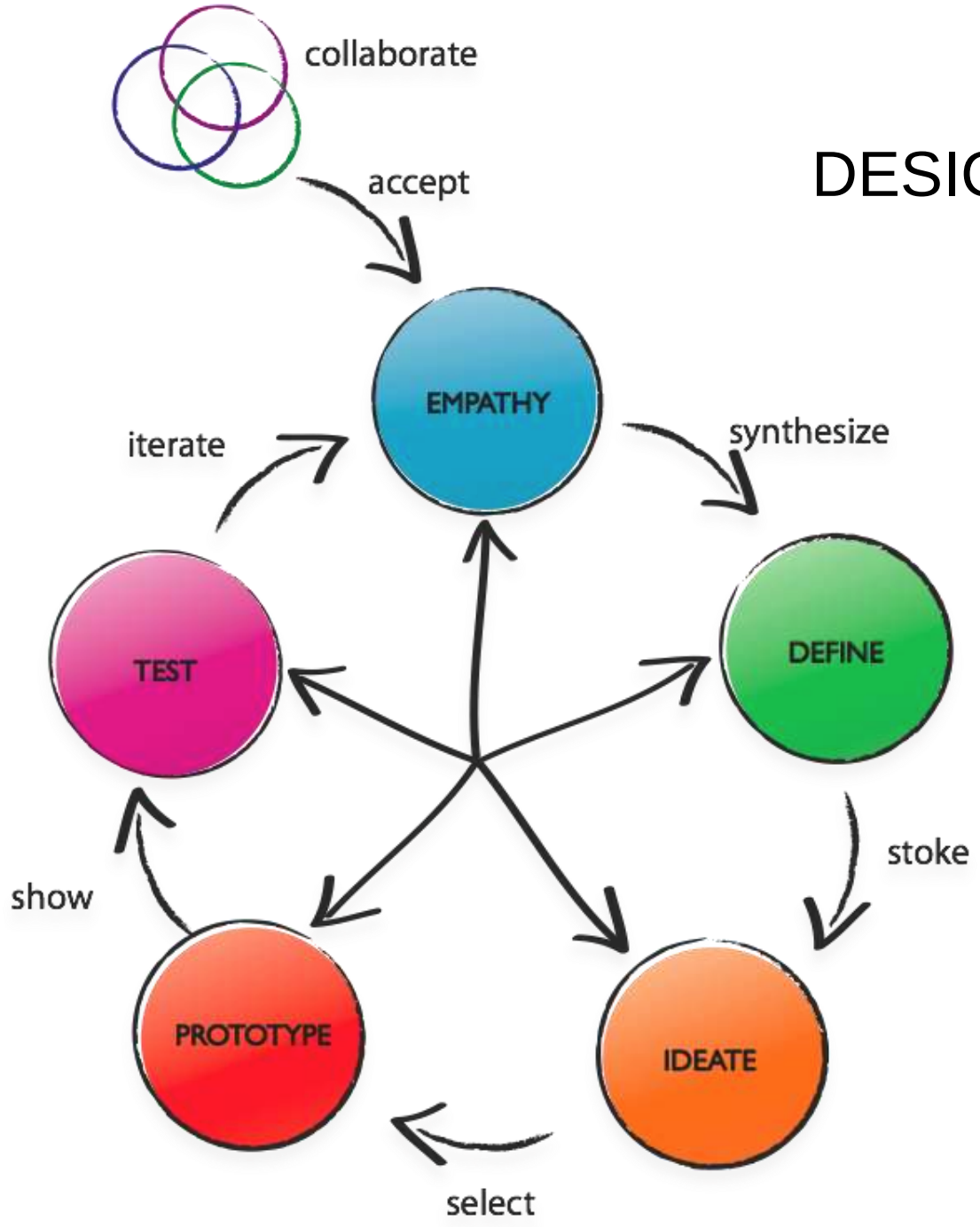
DESIGN IS NOT A PRODUCT

DESIGN IS NOT AN EXPERIENCE

DESIGN IS A PROCESS...



What Is Design Thinking?

"A creative, intentional problem-solving process that puts users at the center."

IDEO - *Design Thinking for Libraries: A Toolkit for Patron-Centered Design*
designthinkingforlibraries.com

Why Design Thinking?

Provides language, processes, and tools to help us spark creativity and solve problems.

Learning from various communities of practice helps us think in fresh ways.

What is Design Thinking?

- ✓Encourages creative consideration of a wide array of innovative solutions.
- ✓Can be applied to any field, including higher education.
- ✓Approaches challenges from the point of view of the *end user*.
- ✓Calls for a deep understanding of that user's unmet needs.

What is Design Thinking?

A Mindset that is:

- ✓Human-Centered & Empathic
- ✓Collaborative
- ✓Optimistic
- ✓Experimental

What is Design Thinking?

In short, Design Thinking is the confidence that new, better things are possible and that you can make them happen.

Design Thinking in Action: Problem = Opportunity

- ✓Discovery
- ✓Interpretation
- ✓Ideation
- ✓Experimentation
- ✓Evolution

Design Thinking in Action

Challenge: How can we begin now to prepare to meet the needs of students in the future?

Design Thinking in Action

- ✓Your table has been assigned a “college student of 2030.”
- ✓Your goal is to use design thinking to “prototype” methods for meeting the needs of that student.

Design Thinking Process: Let's Begin!

Design Thinking Process

Student #1 was born in 2012 and will be the first generation in his family, with whom he is very close, to attend college. He doesn't know what he wants to major in or "what he wants to be when he grows up" but his biggest passion is immersion in virtual reality.

Design Thinking Process

Student #2 was born in 2011 to a prominent, wealthy American political family. Expected to follow in the "family business," she aspires to live and work abroad in a completely different field and plans to start college after a "gap year," much to her family's consternation.

Design Thinking Process

Student #3 was born in 1995 and is a single father who works full time. He has been unable to advance in his profession (and he dreams of a career in an entirely different field).

Design Thinking Process

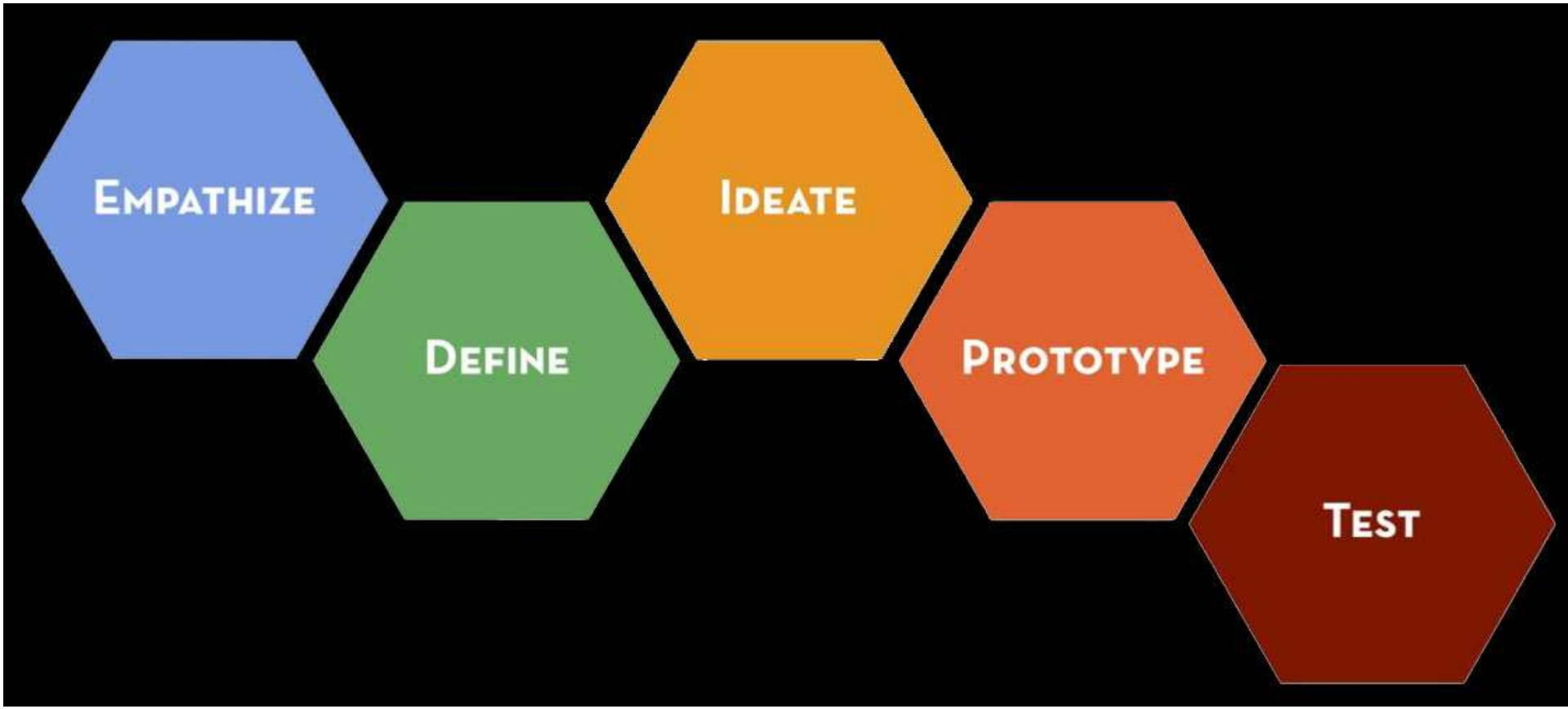
Student #4 was born in 1975 and took early retirement after years of a successful career. She has a degree but is returning to college in order to explore the possibility of a second career.

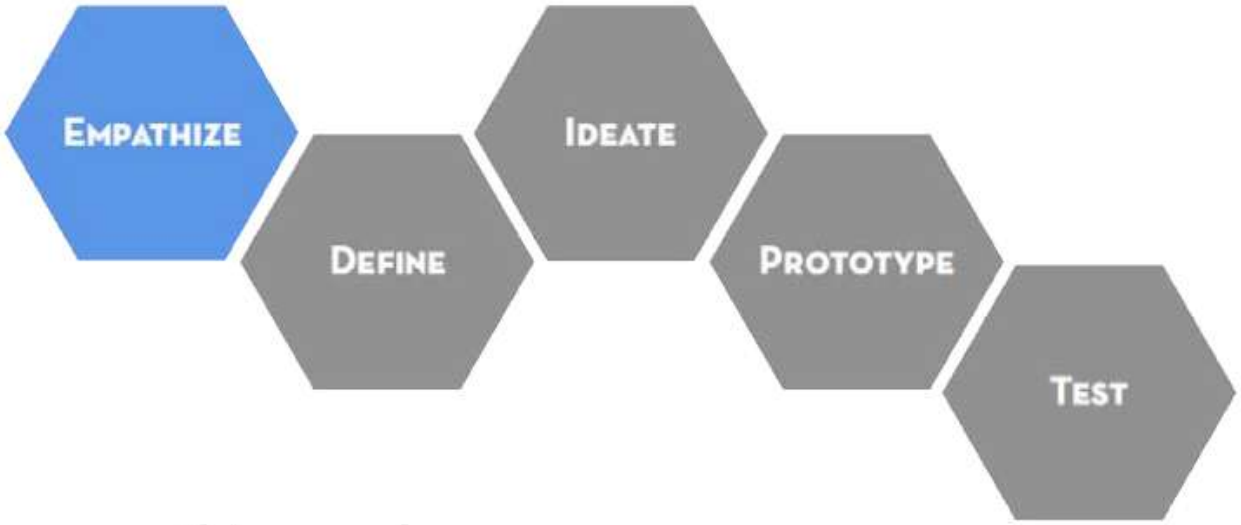
Design Thinking Process

Student #5 was born in 2013 and is graduating with honors a year early from high school. Her passions are music and medicine, and English is her second language. Her immigrant parents have struggled to make ends meet and have been unable to save for their child's college education.

Design Thinking Process

Student #6 was born in 2005 and has limited mobility but is eager to pursue higher education in order to gain a credential to pursue a home-based career.

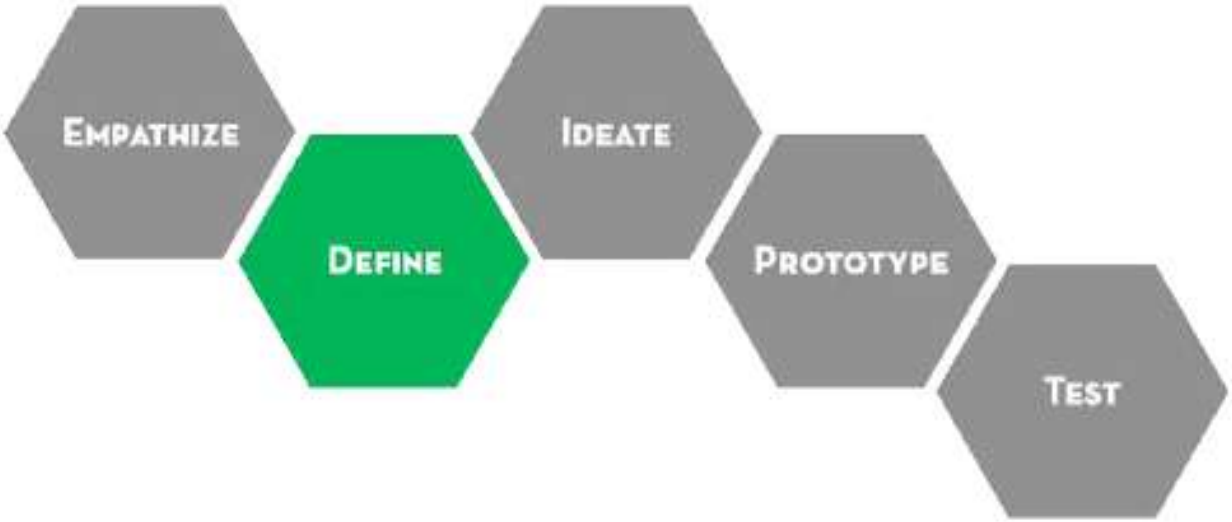

Empathize
Define
Ideate
Prototype
Test



WHAT is the empathize mode

Empathy is the foundation of a human-centered design process. To empathize, we:

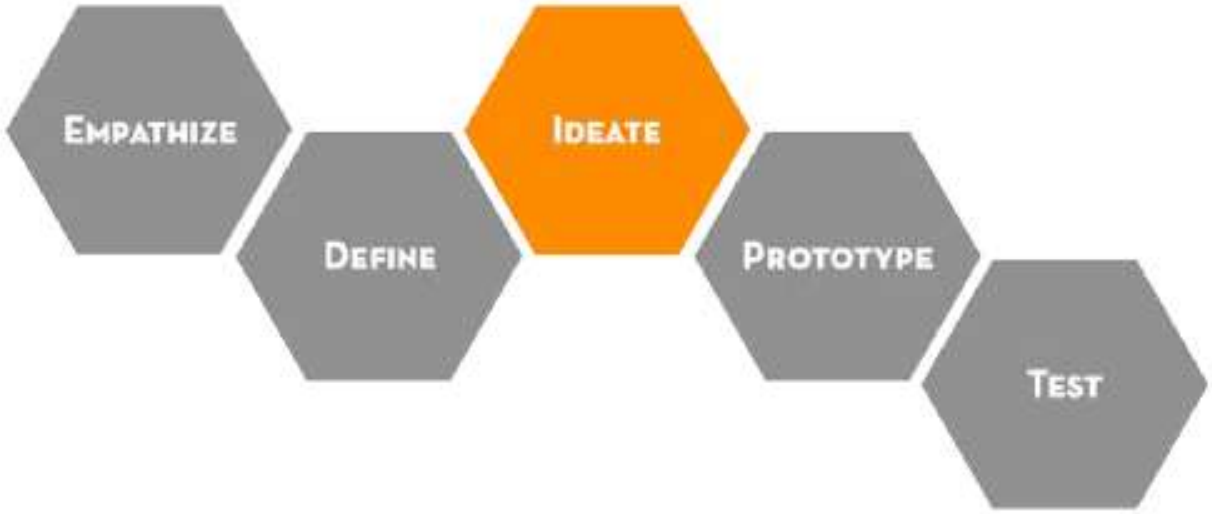
- **Observe.** View users and their behavior in the context of their lives.
- **Engage.** Interact with and interview users through both scheduled and short 'intercept' encounters.
- **Immerse.** Experience what your user experiences.



WHAT is the define mode

The define mode is when you unpack and synthesize your empathy findings into compelling needs and insights, and scope a specific and meaningful challenge. It is a mode of "focus" rather than "flaring." Two goals of the define mode are to develop a deep understanding of your users and the design space and, based on that understanding, to come up with an actionable problem statement: **your point of view**. Your point of view should be a guiding statement that focuses on specific users, and insights and needs that you uncovered during the empathize mode.

More than simply defining the problem to work on, your point of view is your unique design vision that you crafted based on your discoveries during your empathy work. Understanding the meaningful challenge to address and the insights that you can leverage in your design work is fundamental to creating a successful solution.



WHAT is the ideate mode

Ideate is the mode during your design process in which you focus on idea generation. Mentally it represents a process of "going wide" in terms of concepts and outcomes–it is a mode of "flaring" rather than "focus." The goal of ideation is to explore a wide solution space - both a large quantity of ideas and a diversity among those ideas. From this vast depository of ideas you can build prototypes to test with users.

One Conversation at a Time

Go for Quantity

Headline!

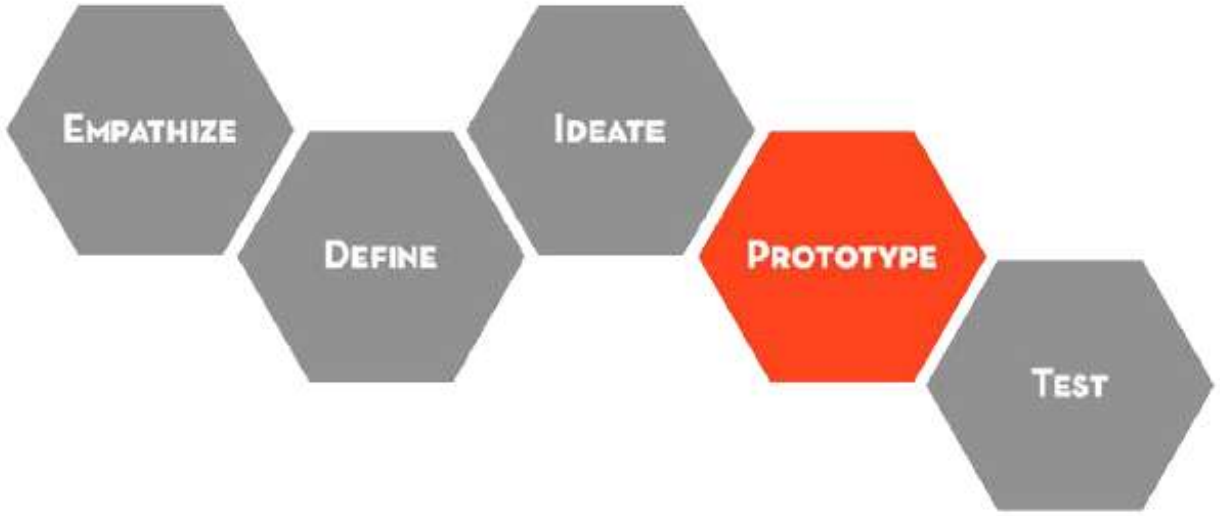
Build on the Ideas of Others

Encourage wild ideas

Be Visual

Stay on Topic

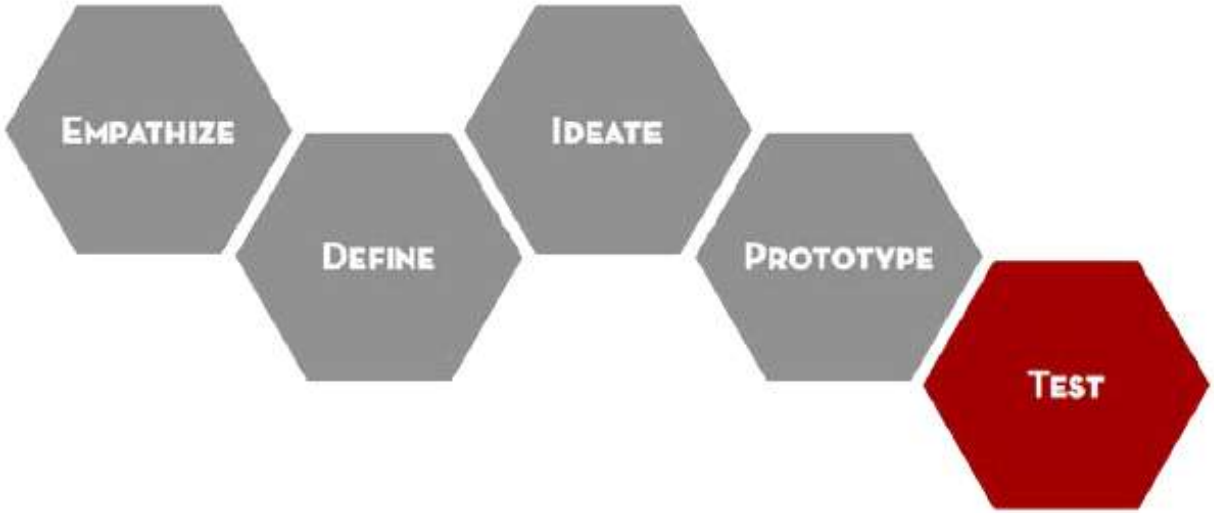
Defer Judgement -
NO Blocking



WHAT is the prototype mode

Prototyping is getting ideas and explorations out of your head and into the physical world. A prototype can be *anything* that takes a physical form - be it a wall of post-it notes, a role-playing activity, a space, an object, an interface, or even a storyboard. The resolution of your prototype should be commensurate with your progress in your project. In early explorations keep your prototypes rough and rapid to allow yourself to learn quickly and investigate a lot of different possibilities.

Prototypes are most successful when people (the design team, the user, and others) can experience and interact with them. What you learn from those interactions can help drive deeper empathy, as well as shape successful solutions.



WHAT is the test mode

Testing is the chance to refine our solutions and make them better. The test mode is another iterative mode in which we place our low-resolution artifacts in the appropriate context of the user's life. Prototype as if you know you're right, but test as if you know you're wrong.

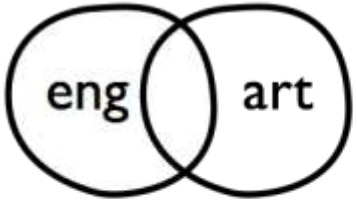
DESIGN → design thinking

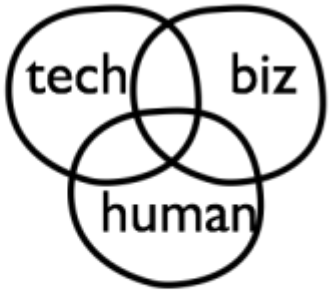
individuals

teams

products

experiences





Innovations → Innovators

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The Traditional Value Chain

ADAPTED FROM DISRUPTIVE BUSINESS BY ALEXANDER MANU

imagine. create. innovate.
DESIGNTHINKING with SAP

Why Design Thinking

We want to **engage** before needs are defined

EMERGENT BEHAVIORS
DISRUPTIVE TECHNOLOGY
NEW BUSINESS MODELS

EXPLORATION & DISCOVERY

1

Undiscovered Need Identified

DESIGN EXPERIENCE
DESIGN PRODUCT
DESIGN SERVICE

2

Cycles of Design

DEVELOP
MAKE
MARKET
SERVICE

3

Smaller cycles of Making

VALUE REALIZATION

UNKNOWN NEED SATISFIED

4

Breakthrough outcome

PROBLEM FINDING

PROBLEM SOLVING

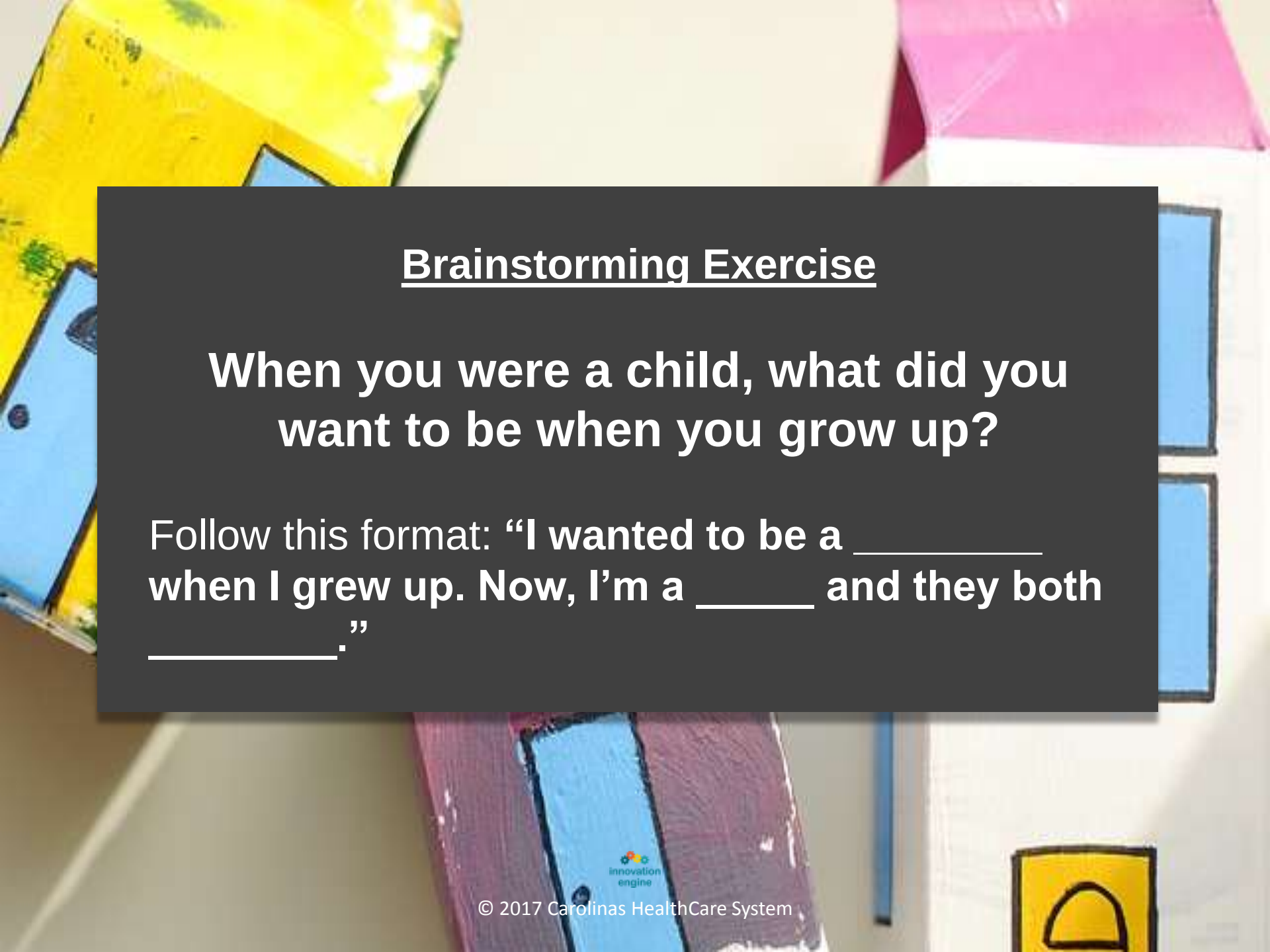
Design Thinking Session

Brainstorming Exercises

innovation engine

Brainstorming Exercise

What is the best way to package bananas?



Brainstorming Exercise

When you were a child, what did you want to be when you grow up?

Follow this format: **“I wanted to be a _____ when I grew up. Now, I’m a _____ and they both _____.”**

Team Building Exercise

Marshmallow Challenge

In 10 minutes, build the tallest free-standing structure out of 20 sticks of spaghetti, 3 feet of tape, 3 feet of string, and one marshmallow. The marshmallow must be on top.

innovation engine

Mountains vs. Beaches