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Public Lecture Series

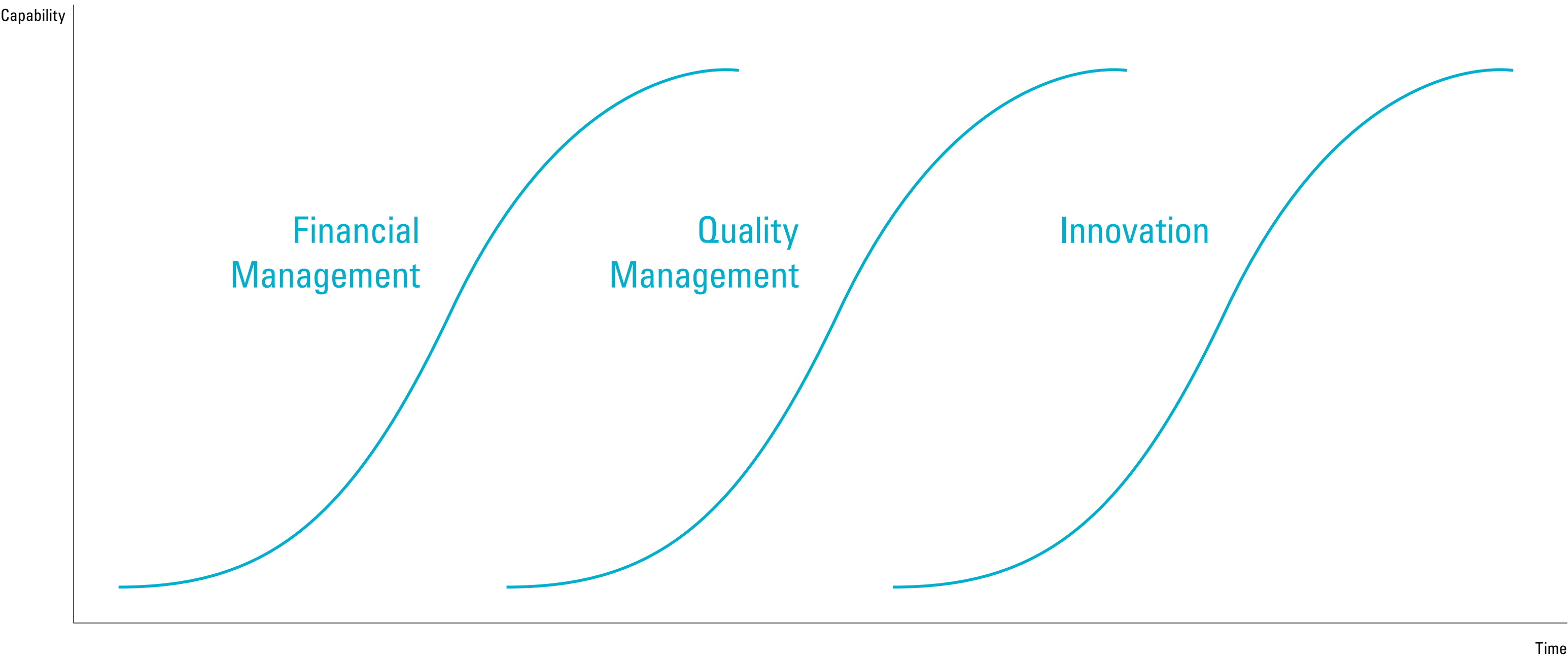
Santa Fe, New Mexico  
October 4, 2018

# Introduction to Design Thinking

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Dubberly Design Office

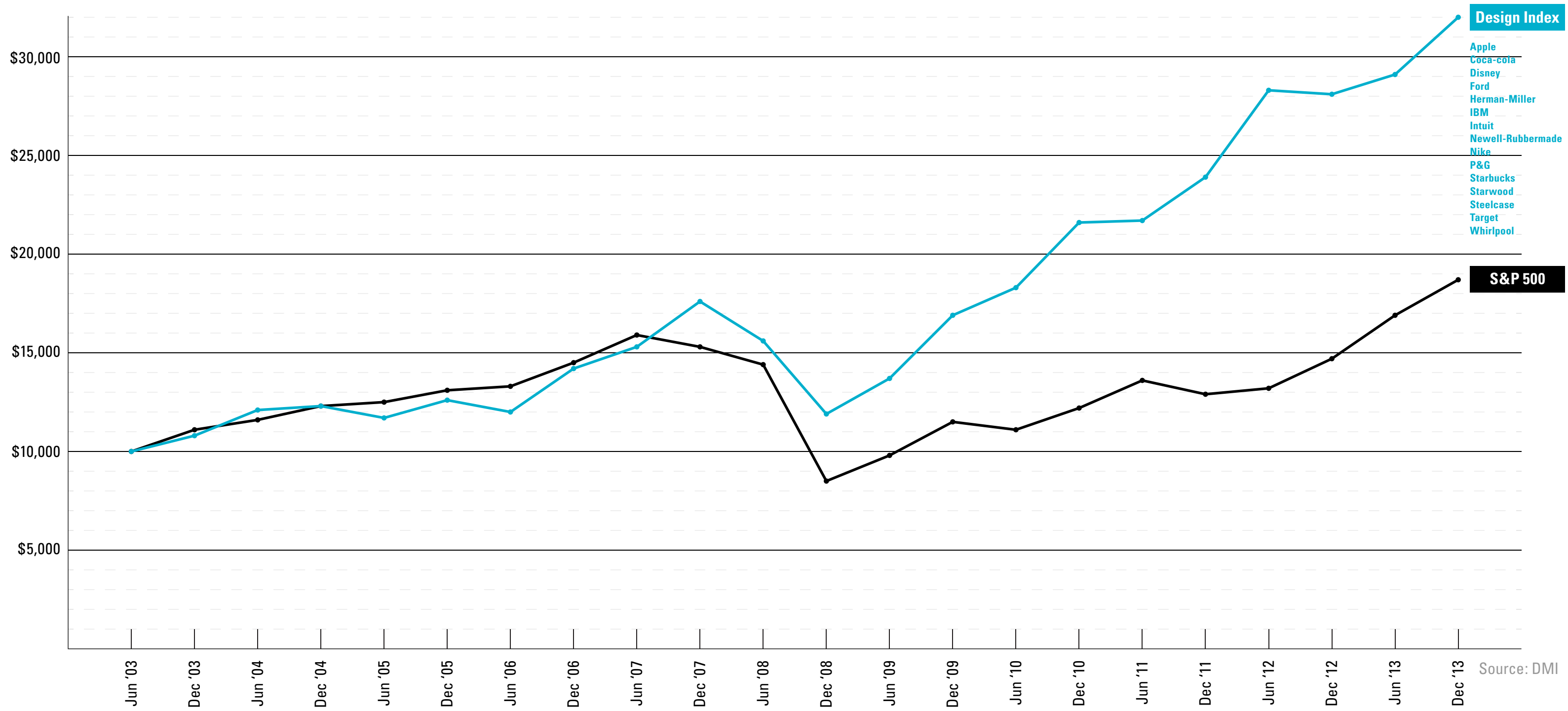
Presentation posted at  
[presentations.dubberly.com/design\\_thinking.pdf](http://presentations.dubberly.com/design_thinking.pdf)

**In a global market, efficiency and quality are table stakes.  
Competing requires innovating; “design thinking” can help.**



# IBM's Tom Watson Jr. said "Good design is good business."

## E.g.: Design Index companies significantly outperformed the S&P 500.



# Design Thinking 101: The Basics

Key terms, frameworks,  
and methods

# “Design thinking” builds on the premise that...

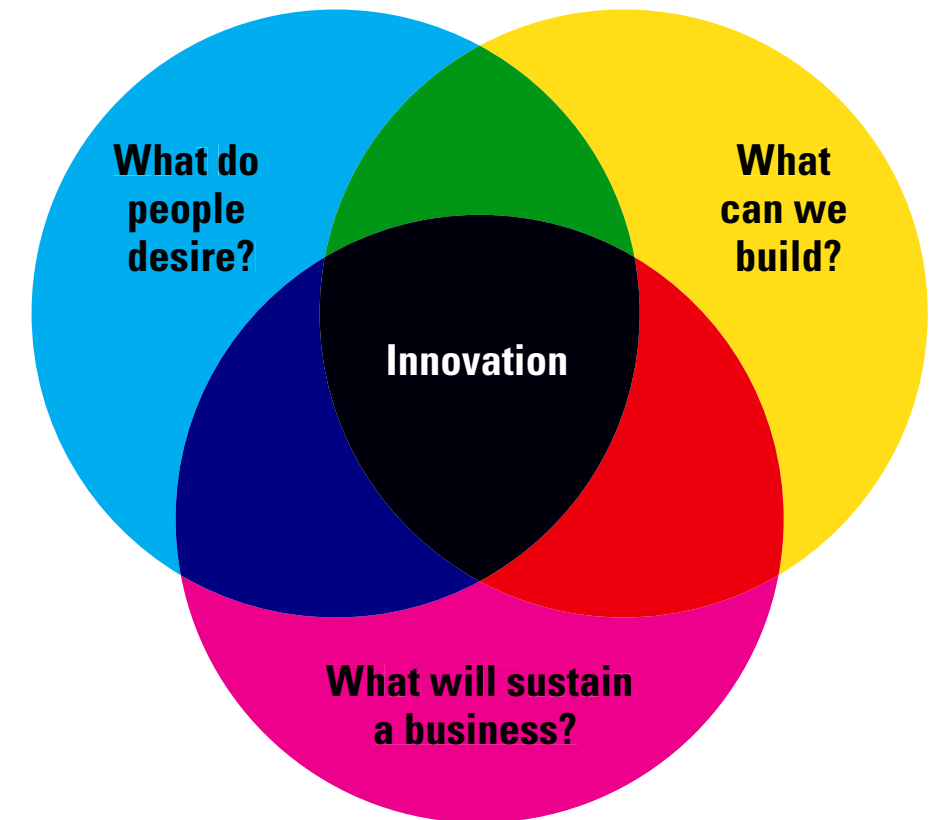
*“Thinking like a designer  
can transform the way  
you develop products, services, processes  
—and even strategy.”*

— **Tim Brown**, Harvard Business Review, June 2008



# But what IS “design thinking”?

*“... methods to match people’s needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity.”*



— **Tim Brown** continues

# Design thinking is a set of values:

## **Optimism:**

Believe in change;  
entertain ambiguity

## **Empathy:**

Focus on people,  
include outliers

## **Collaboration:**

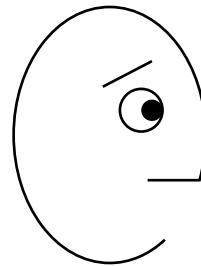
Build teams +  
seek variety

## **Conversation:**

Engage + share —  
find + tell stories

## **Systems:**

See networks +  
plan holistically



# Design thinking is also a set of actions:

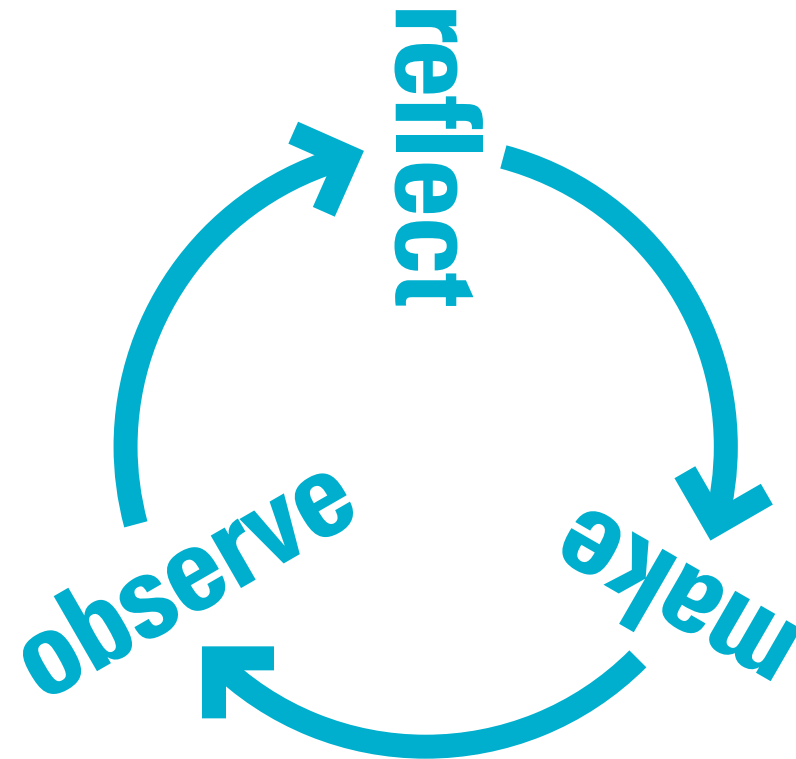
**Observe:** Find needs — stated + latent

**Reflect:** Understand + integrate

**Make:** Adjust + prototype rapidly

**Test:** Seek feedback — observe again

**Iterate:** Try early + learn quickly





# Observation draws on ethnography — writing about people + culture.

Three frameworks for contextual observation:

**AEIOU:** Activity, Environment, Interaction, Object, User

— Rick Robinson

**POEMS:** People, Objects, Environments, Messages, Services

— VJ Kumar

**Ax4:** Actors, Activities, Artifacts, Atmosphere

— Paul Rothstein

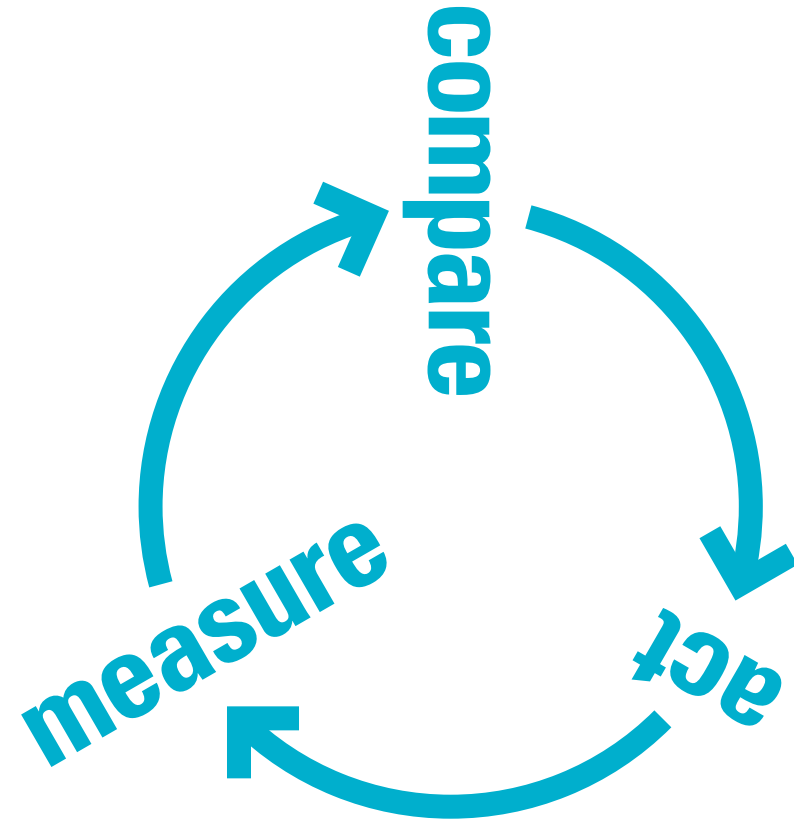


Margaret Mead interviewing a subject.

# Reflection is where you decide what to do next.

What's the delta  
between what you observed  
and what's desired?

Which direction do you go  
to close the gap?



# Making things improves conversations with stake-holders.

*“The goal of prototyping isn’t to finish. It is to learn about the strengths and weaknesses of the idea and to identify new directions that further prototypes might take.”*

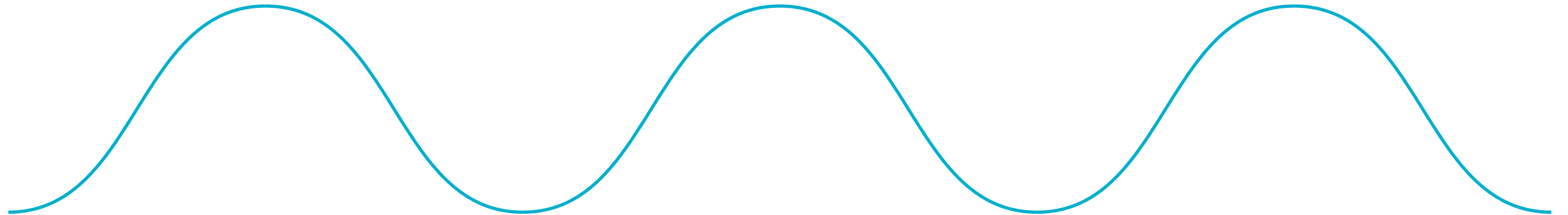
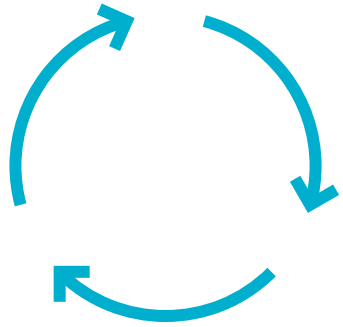
— **Tim Brown** again



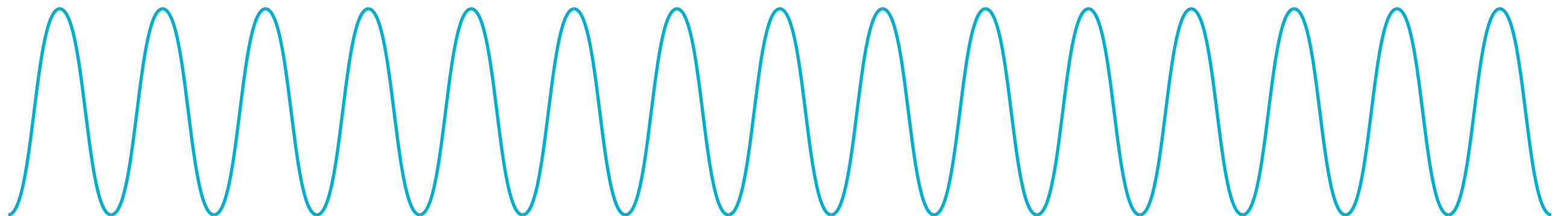
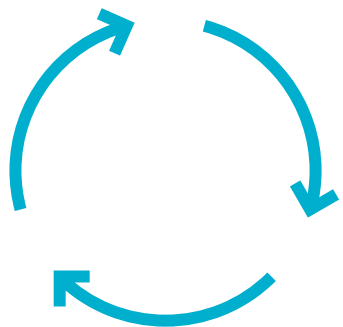
Rapid prototyping of a surgical device, made during a meeting with surgeons by IDEO.

# Iteration drives quality; more iteration = better quality.

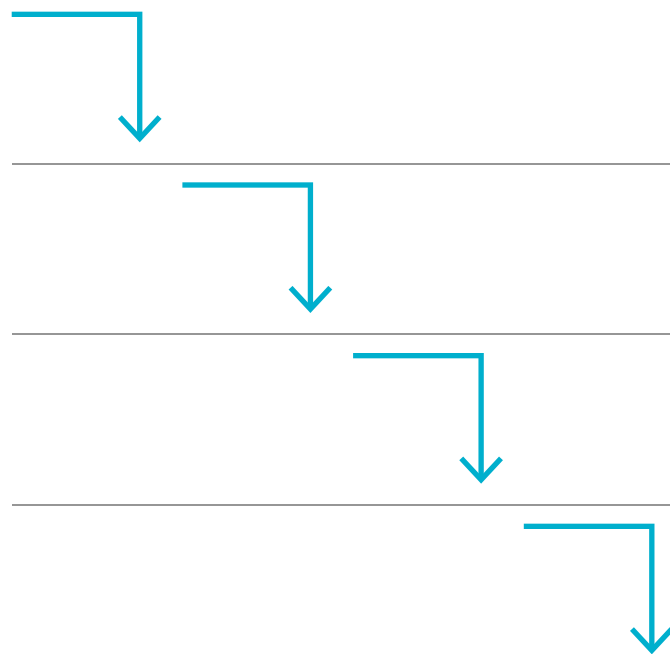
Low frequency — slow cycle time



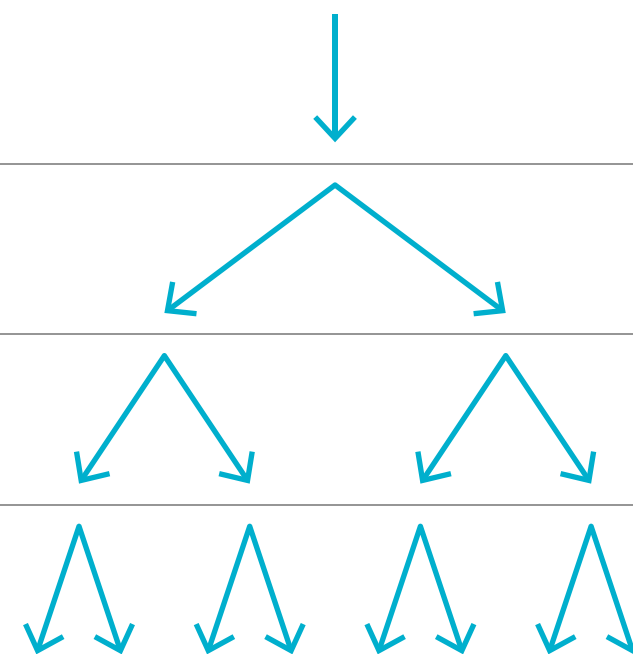
High frequency — fast cycle time



# Anti-patterns: Water-fall + top-down.



Water-fall may put design at the end.  
Design thinking advocates involvement  
from the start, not just at the end.

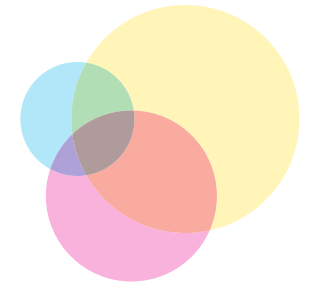
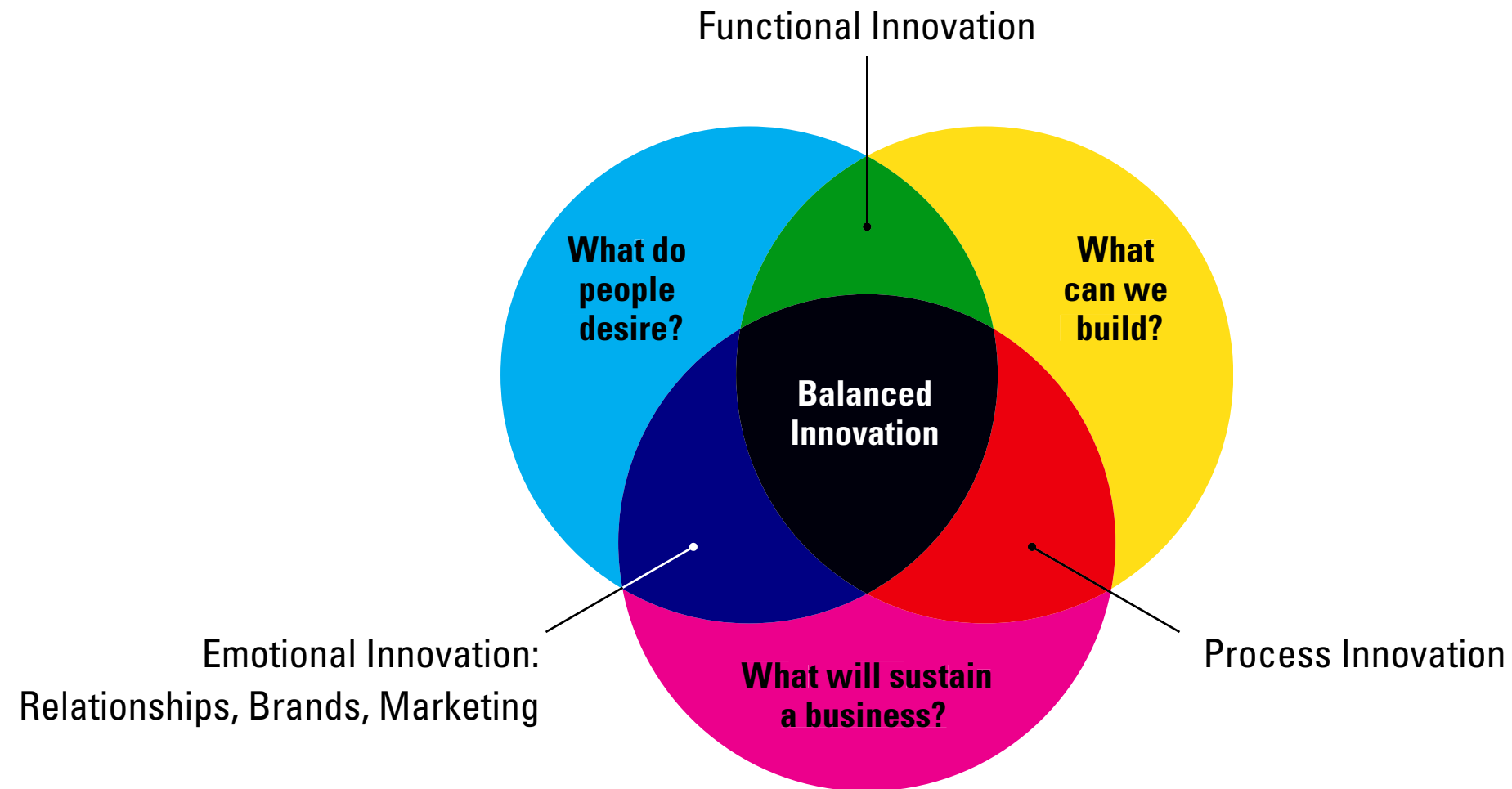


Top-down may assume specs.  
Needs come from people;  
specs emerge from the process.

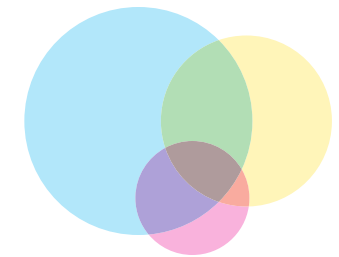
# Design Thinking 201: The Advanced Class

Broadening and deepening  
the frameworks

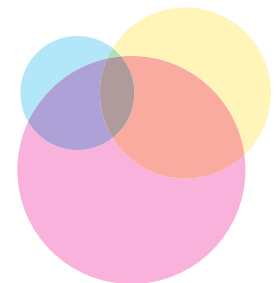
# Balanced innovation motivates the “design thinking” movement.



Novell

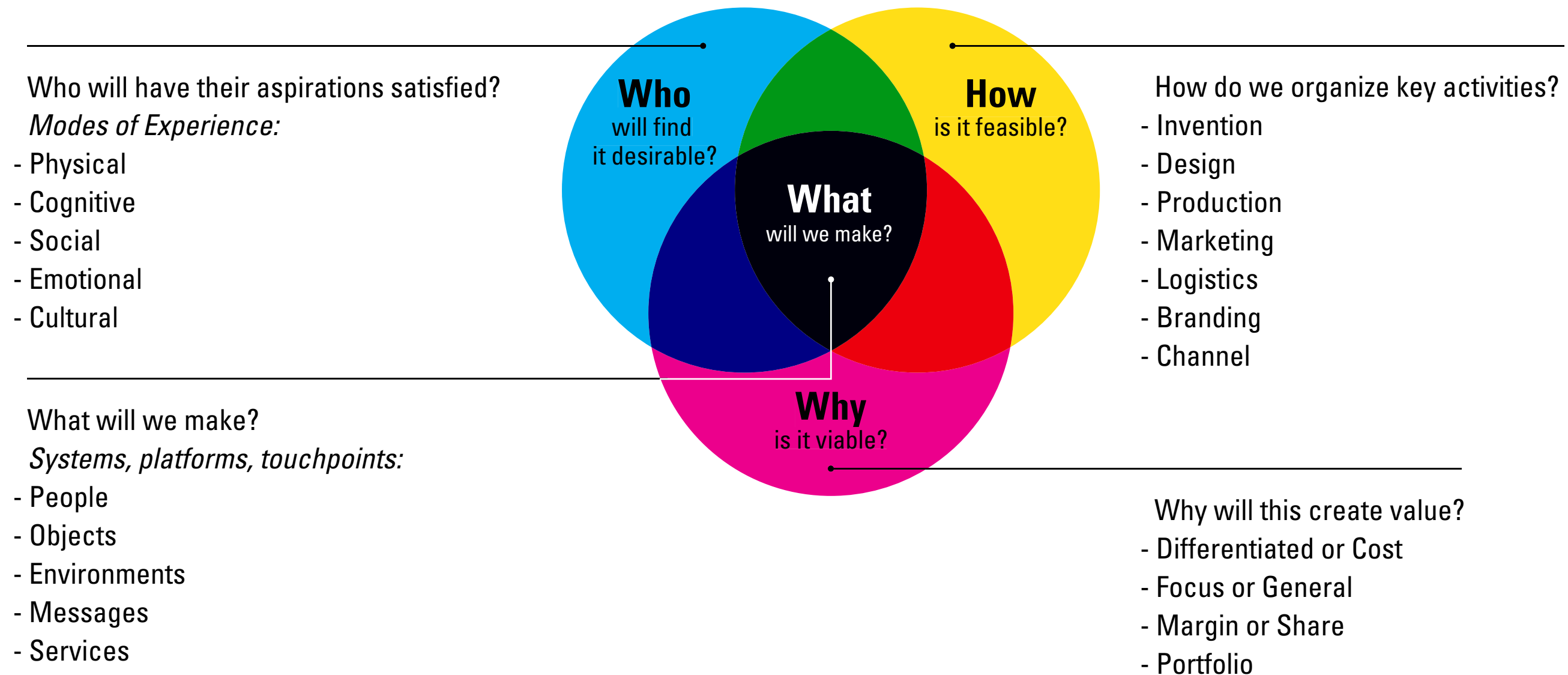


Apple



Microsoft

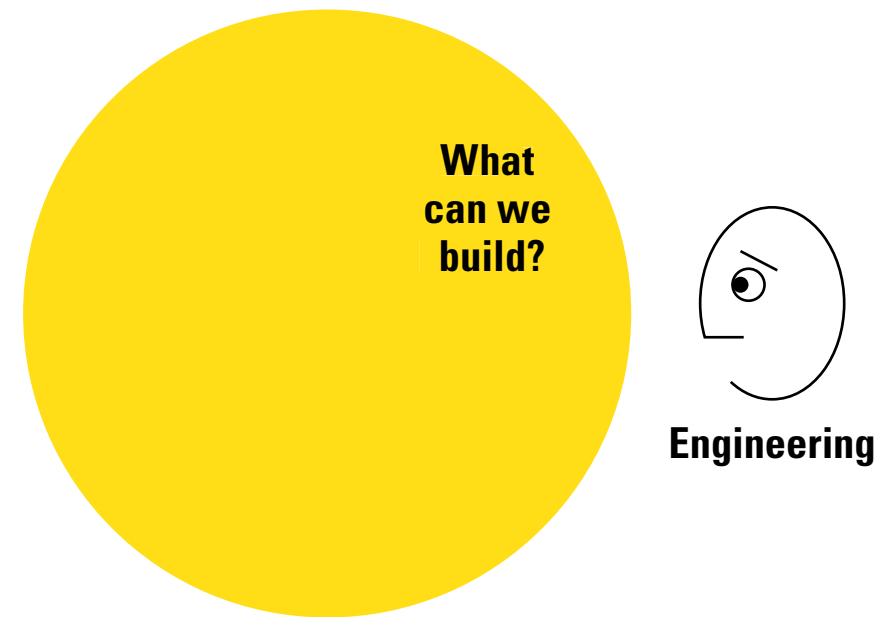
# Another take: "The Innovation Dashboard"



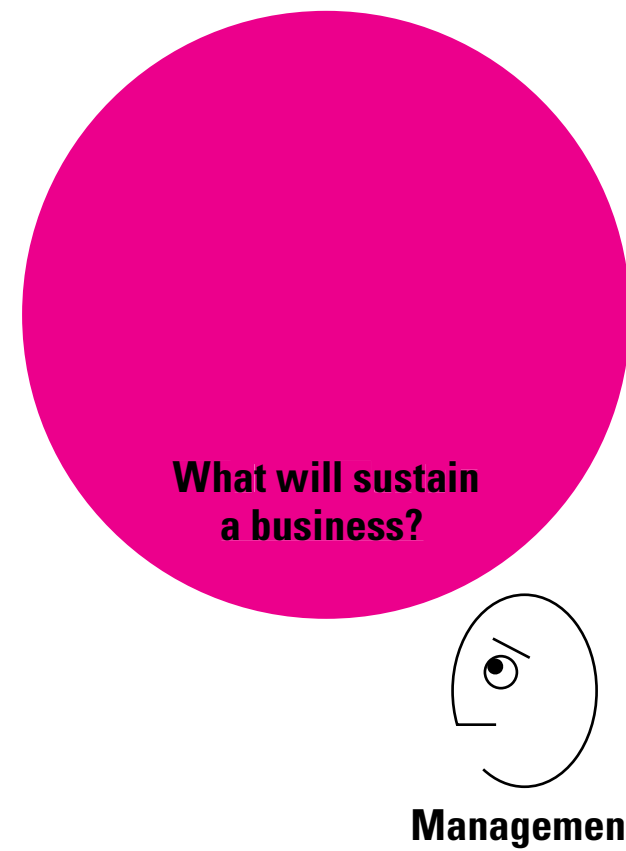
— Patrick Whitney, 2014



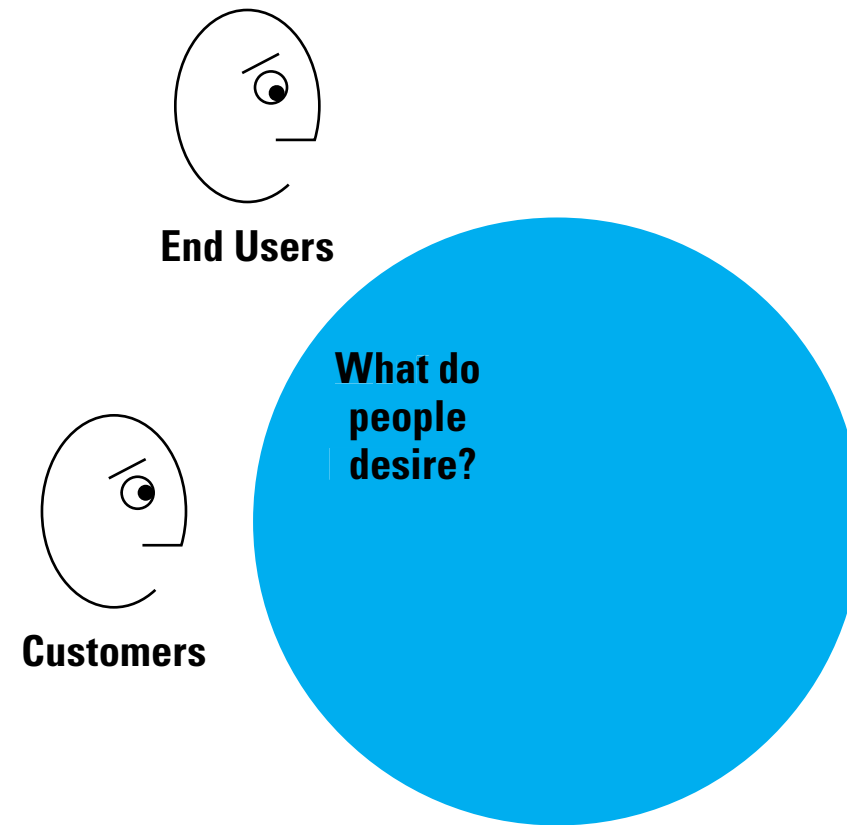
# Engineers tend to focus on technology.



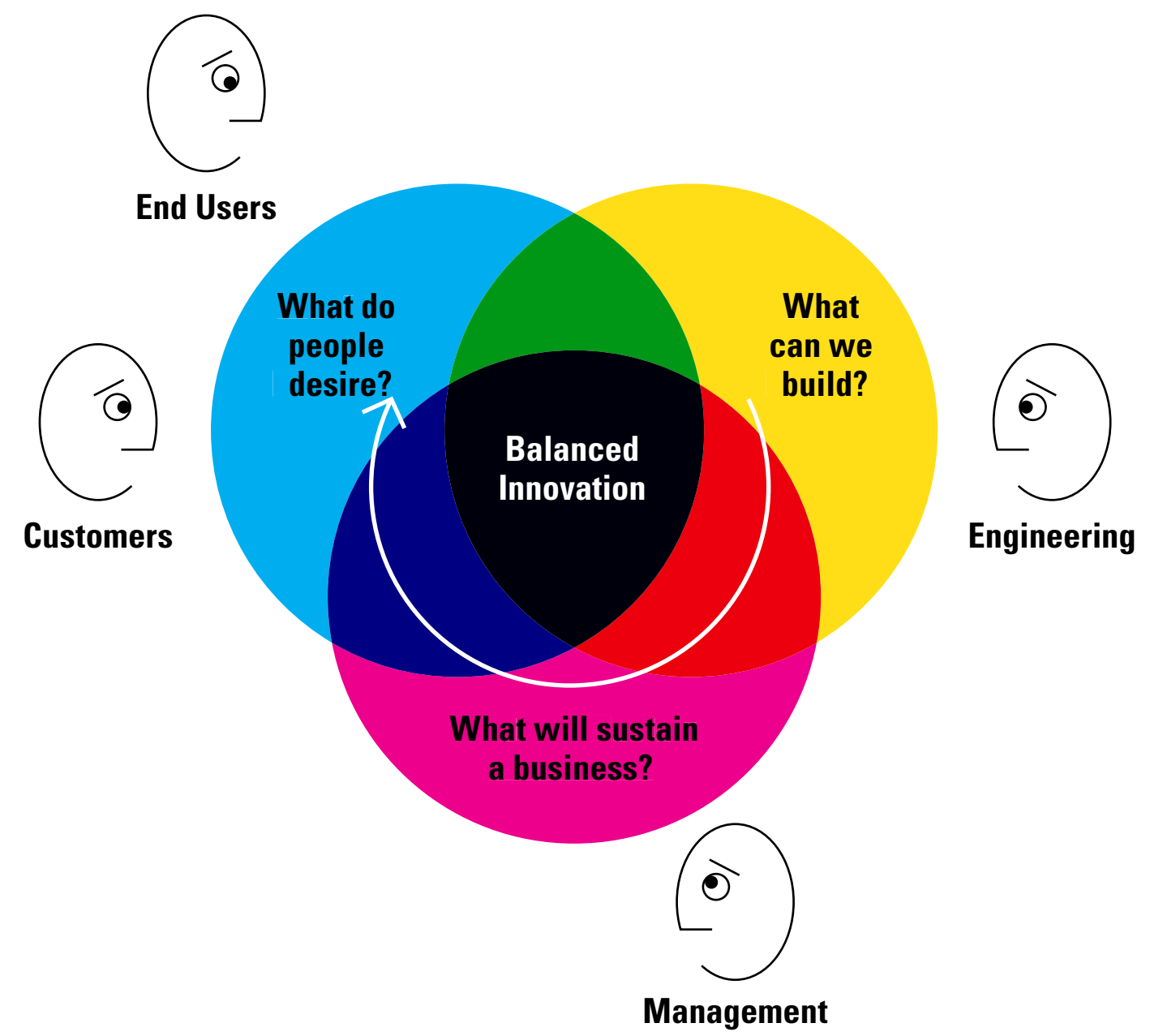
# Managers tend to focus on making money.



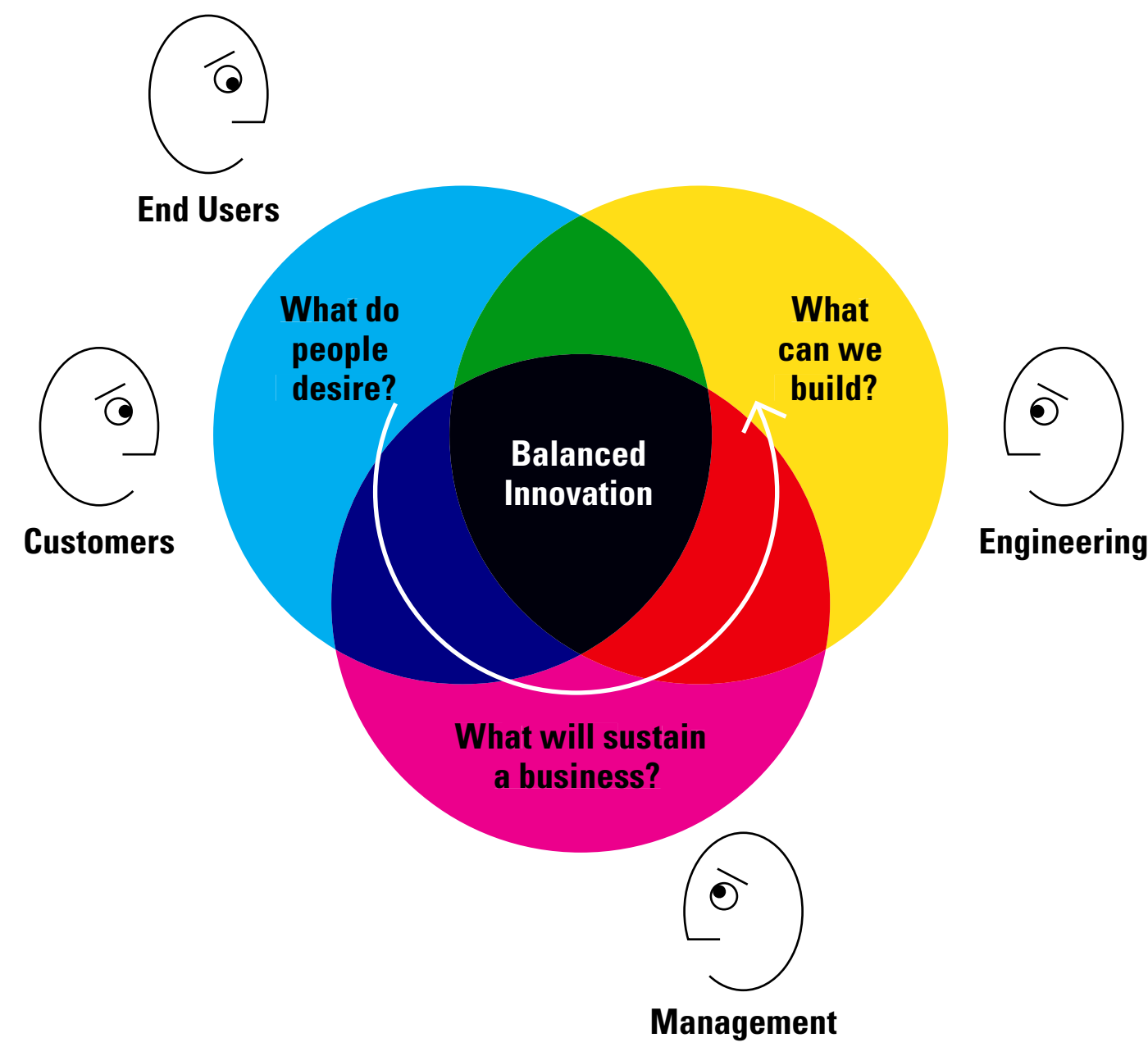
# Designers tend to focus on users and their goals.



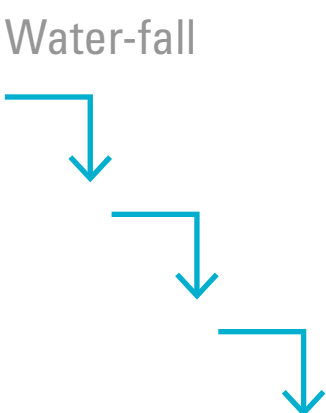
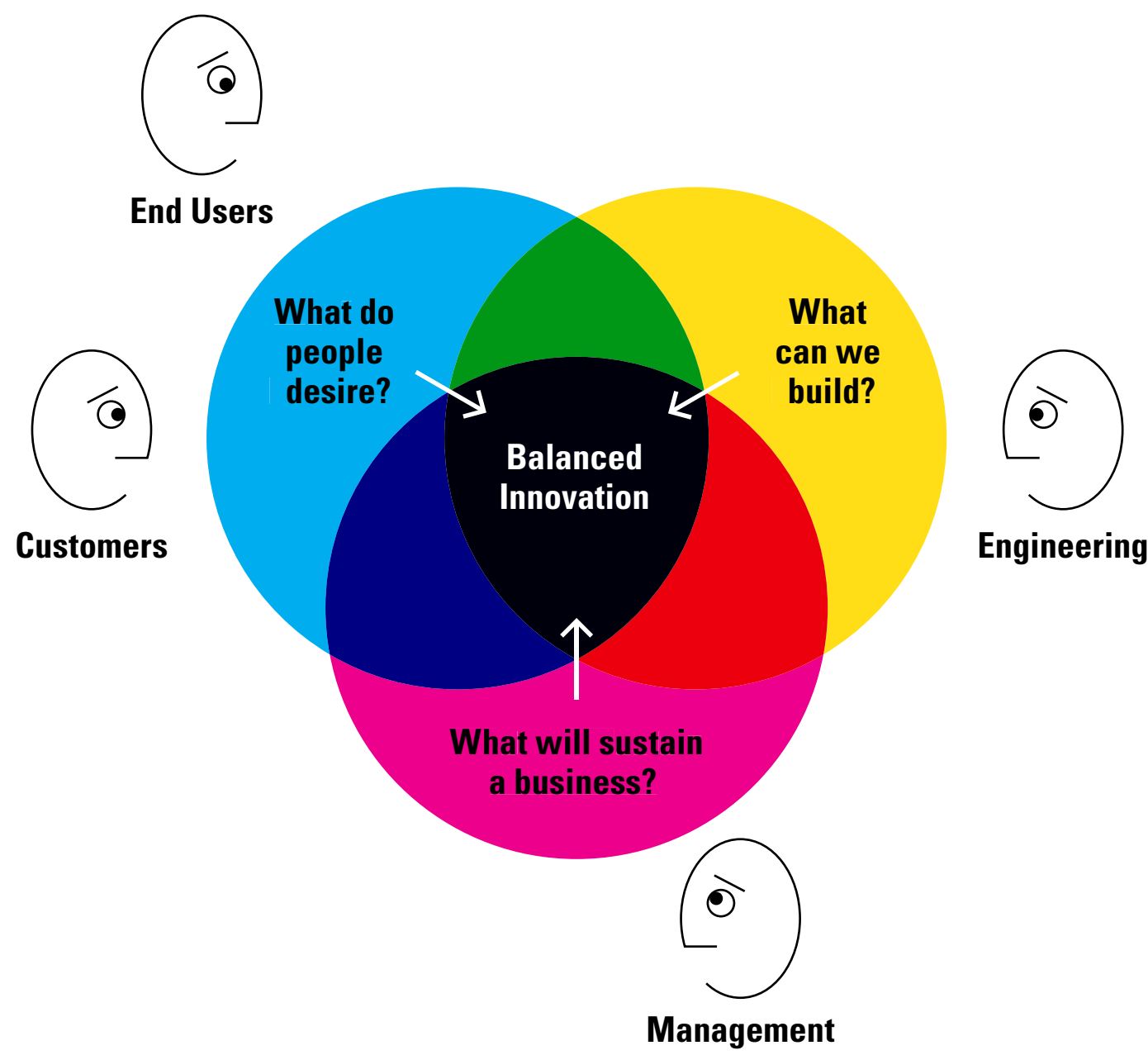
# Silicon Valley often starts with technology.



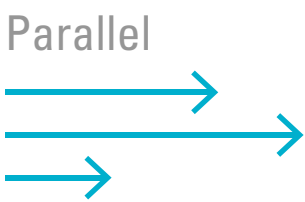
# Starting with user needs might be better.



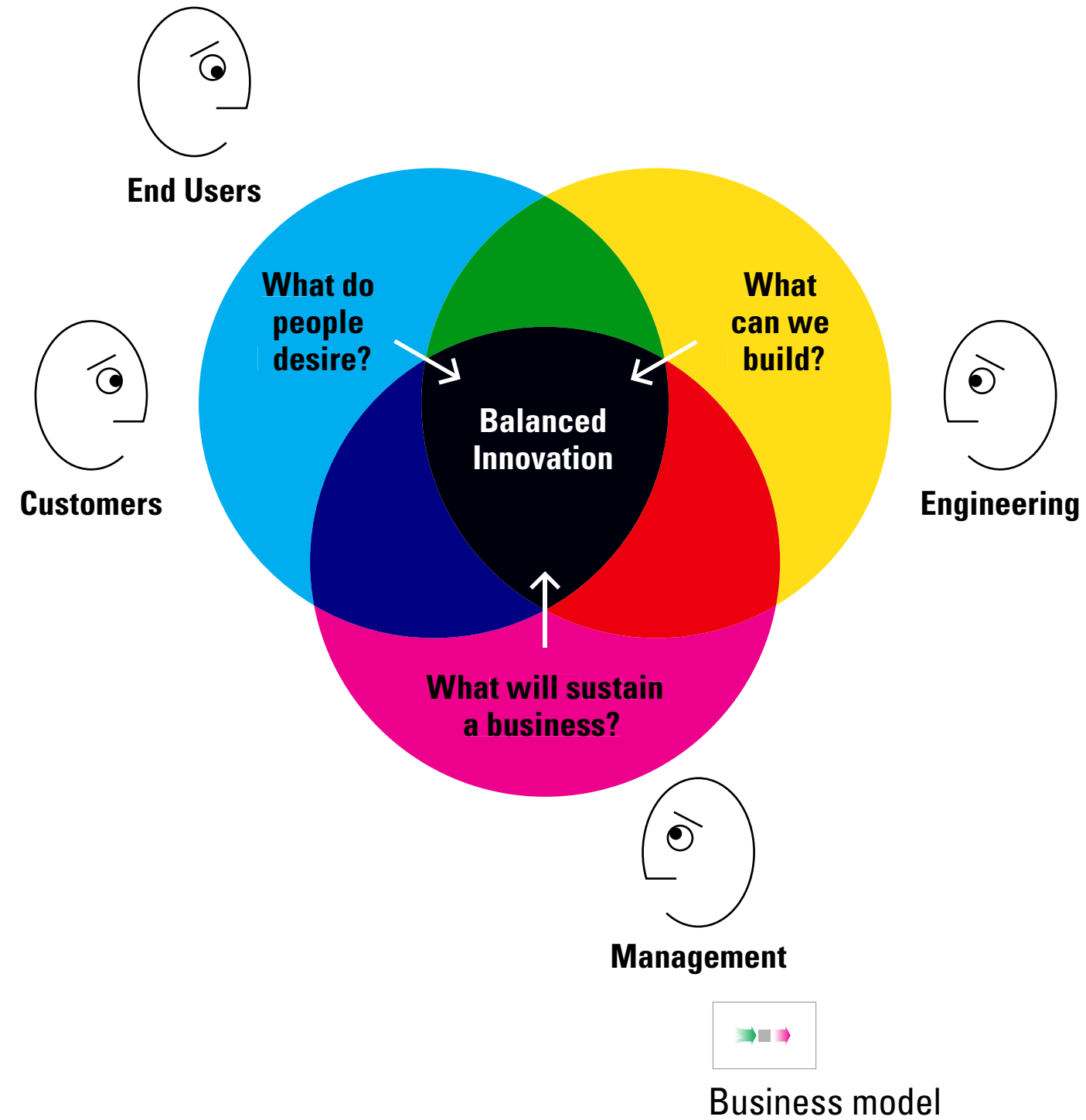
# The challenge is optimizing all three simultaneously.



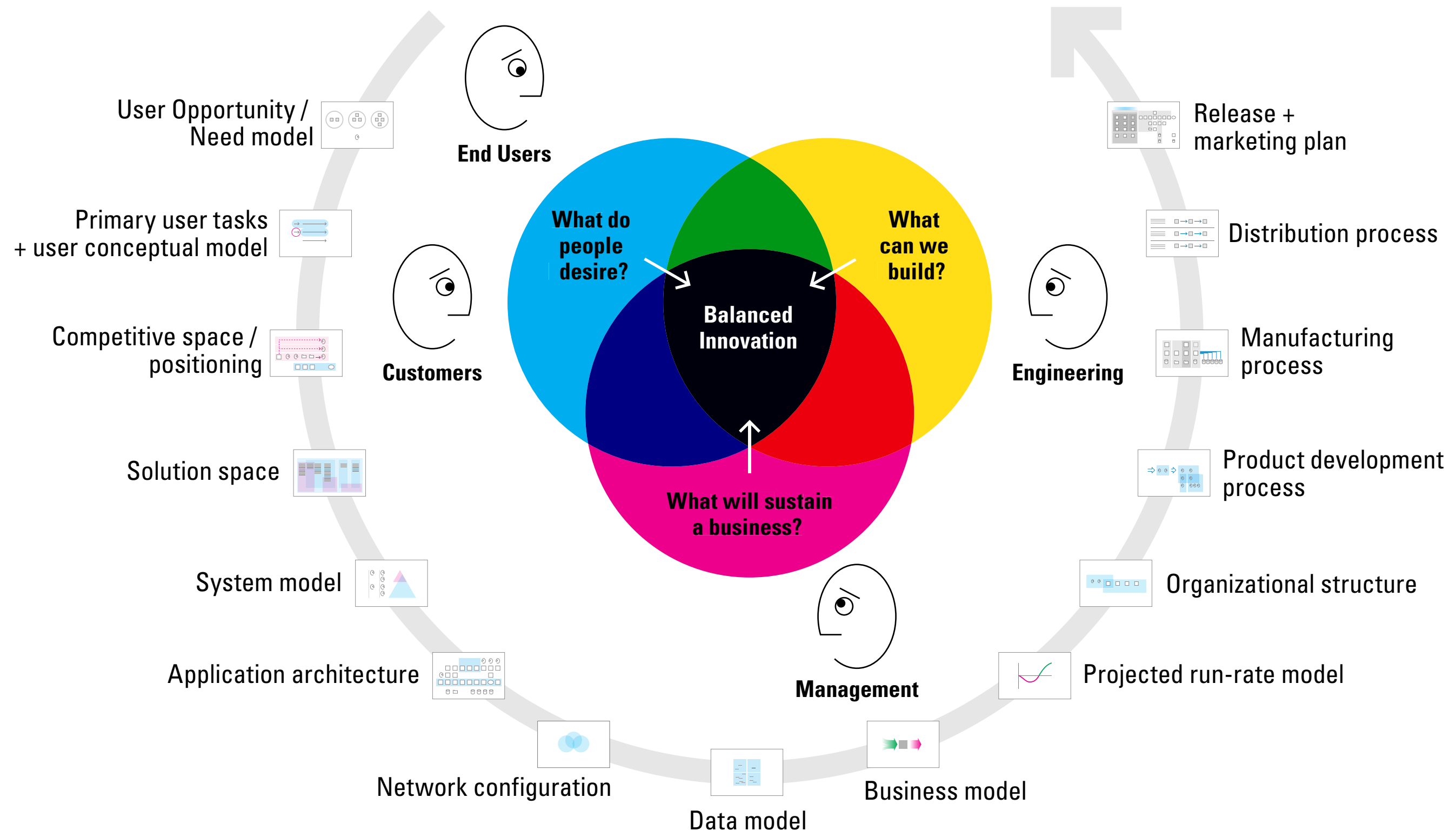
vs.



# Models support the process, e.g., a business model.

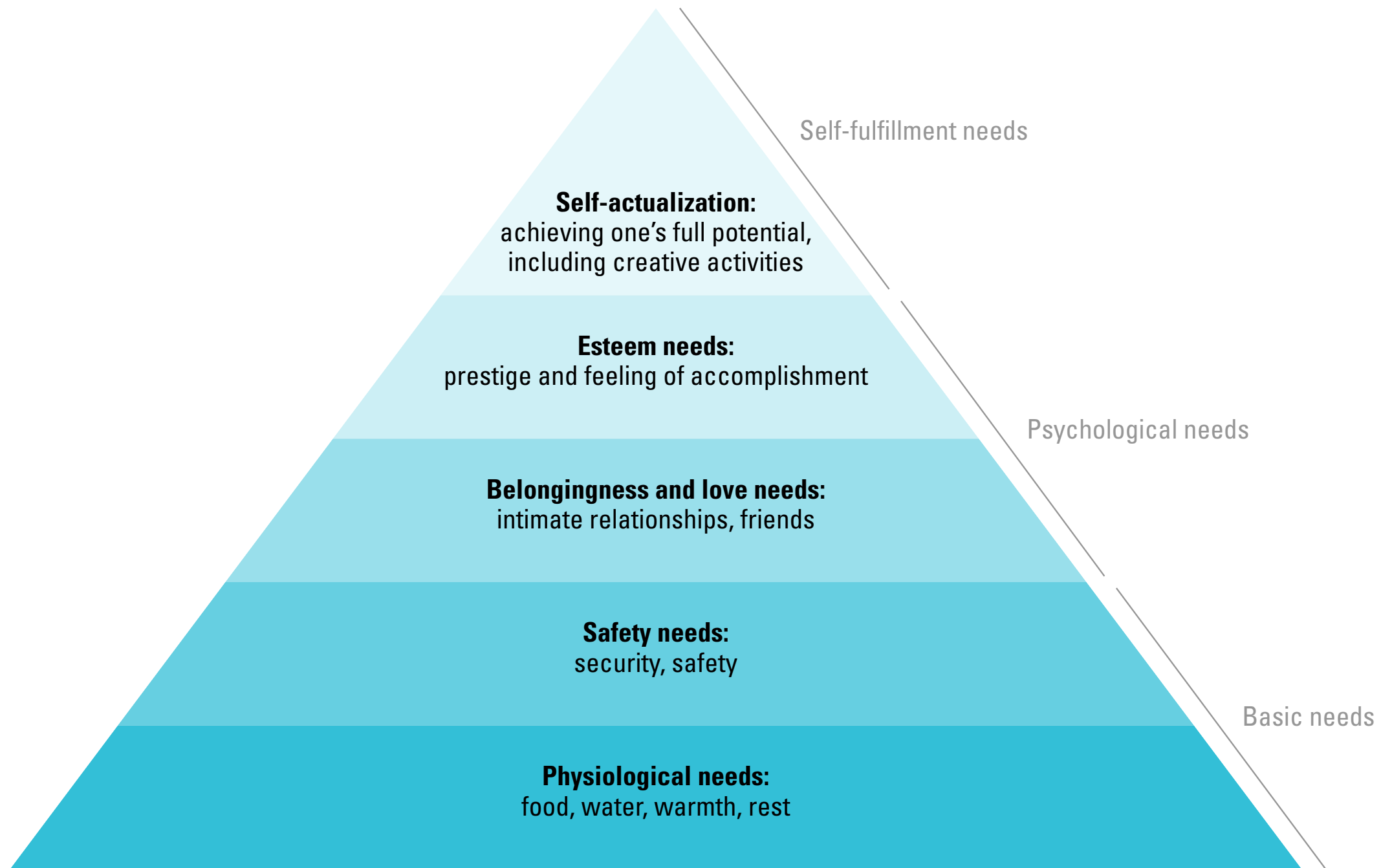


# Design literacy requires familiarity with many models.



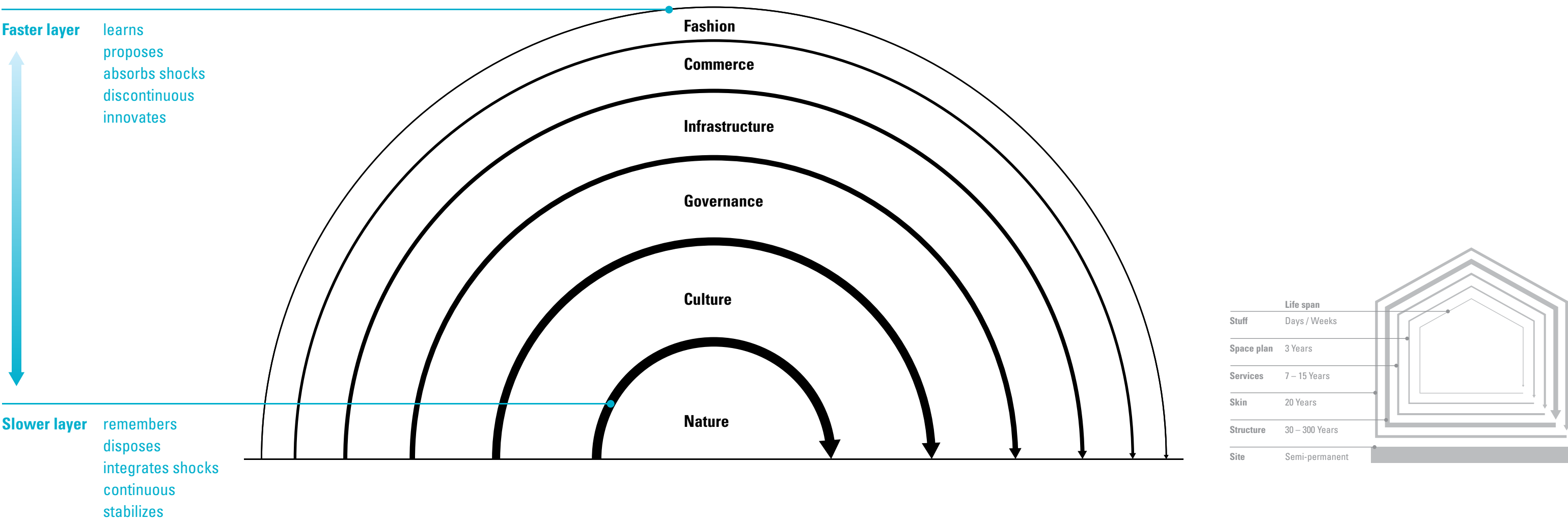


# For example, **Hierarchy of Human Needs**



— **Abraham Maslow, 1943**

# For example, Pace Layer Model



— Stewart Brand, 1999, based on a model by Frank Duffy

# For example, **Levels of Systems**

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the level of **Frameworks**

Only the geography and anatomy of the subject is described and analyzed;  
a kind of system of static relations.  
[Most architecture and graphic design systems are of this type.]

---

the level of **Clockworks**

Machines that are determined.

---

the level of **Thermostats**

The level of control in mechanical and cybernetical [sic] systems.

---

the level of the **Cell**

As an open and self-maintaining system,  
having a throughput that transforms unpredicted inputs into outputs  
[what Maturana, Varela, and Uribe later called an “autopoetic” system].

---

the **Genetic** and **Societal** level

Of plants and accumulated cells.

---

the level of the **Animal**

Specialized receptors, a nervous system, and an “image”.

---

the **Human** level

All of the previous six—plus self-consciousness.  
The system knows that it knows, and knows that it dies.

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the level of the **Social Organism**

The unit at this level is a role, rather than a state;  
messages with content and meaning exist, and value systems are developed.

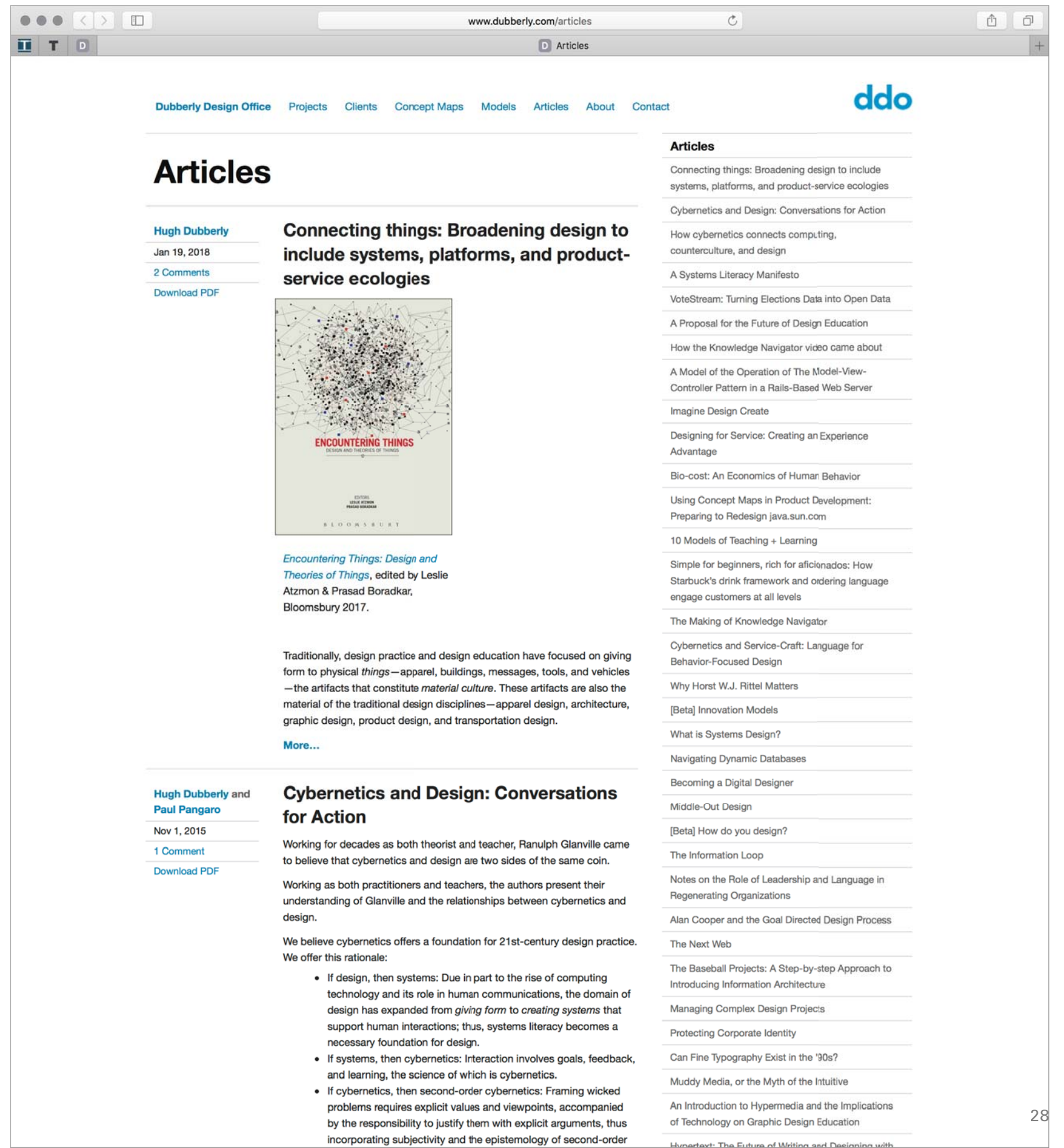
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the level of **Transcendental** systems

The “ultimates” and “absolutes” and the “inescapables”  
with systematic structure.

— **Kenneth Boulding**, 1956

# We've begun to document models useful to design.



# Design Thinking 501: The Grad Seminar Meta-design or an epistemology of design

**In the 1800s, the Ecole Des Beaux-Arts set design trends.  
The frame of “design-as-art” is still widely held.**





**In the 1960s, design turned to “problem solving”.  
The frame of “design-as-science” emerged.**

*“Everyone designs  
who devises **courses of action**  
aimed at changing existing situations  
into preferred ones.”*

— **Herbert Simon**, *Sciences of the Artificial*, 1969



# The problem with problems is:

Whose “problem” is it?

Who defines the problem?

Who frames the situation?

## **Auteur Model of Designing**

Doctor – Patient

Master – Apprentice

**vs.**

## **Facilitator Model of Designing**

Recognizing a “symmetry of ignorance”

Conversation about what we value



Margaret Mead interviewing a subject.



# Not all “problems” are created equal:

**Simple:** Already defined; need solving — also tame, benign  
e.g.,  $2+2=?$ , put a man on the moon

**Complex:** Need definition — also common  
e.g., what should we build?

**Wicked:** Cannot agree on a definition — also mess, tangle  
e.g., poverty, Palestine

— **Peter Rowe**, after Horst Rittel

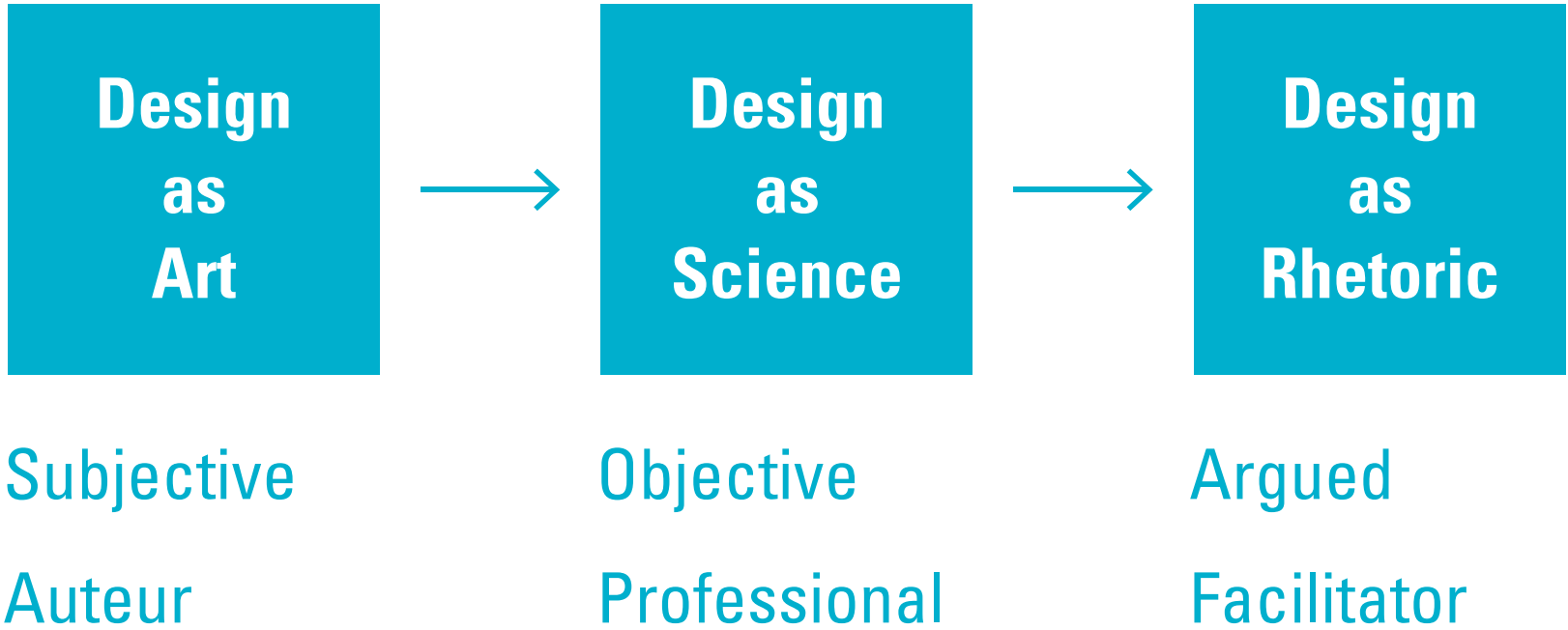
**By the 1970s, critics were writing about the social context of design.  
The frame of “design-as-rhetoric” began to appear.**

*“... wicked-problem solving must be understood as an **argumentative process**: one of raising questions and issues towards which you can assume different positions, with evidence gathered and arguments built for and against these different positions.”*



— **Horst Rittel**, “On the Planning Crisis: Systems Analysis of the ‘First and Second Generations,’” 1972

**In the frame of rhetoric, design is a conversation — about what we value and what we take forward.**



Ethos	Pathos	Logos		— Aristotle, 350 BC
	Delight	Solidity	Commodity	— Vitruvius, ~50 BC
	Visceral	Behavioral	Reflective	— Don Norman, 2003

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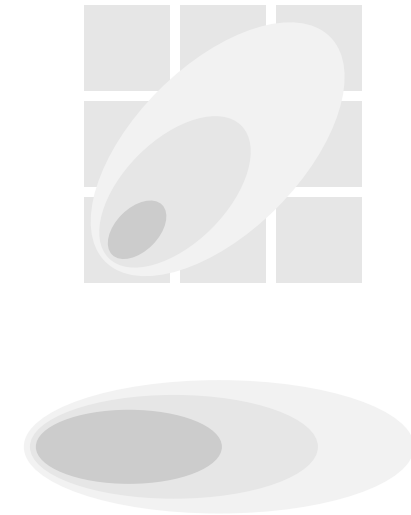
# Some final thoughts

*“Design has also evolved from the design of objects both physical and immaterial, to the design of systems, to the design of complex adaptive systems.*

*This evolution is shifting the role of **designers**; they are no longer the central planner, but rather participants within the systems they exist in.*

*This is a fundamental shift — one that requires a new set of values.”*

— **Joi Ito**, Director, MIT Media Lab, “Design and Science”, 2016



## Further reading:

- Design Thinking Origin Story, Jo Szepanska
- Design Thinking for the Greater Good, Liedtka, Salzman, Azer
- The Evolution of Design Thinking, HBR, Brown, Martin, Kolko, Yoo, and Kim
- 101 Design Methods, VJ Kumar
- Design Thinking, HBR, Tim Brown
- Design Thinking, Peter Rowe
- How Designers Think, Brian Lawson
- Universal Traveller, Don Koberg and Jim Bagnall
- Sciences of the Artificial, Herbert Simon
- The Universe of Design, Horst Rittel
- Notes on the Synthesis of Form, Christopher Alexander

# Contra-indications: The Design Thinking Backlash

- Design Thinking is Fundamentally Conservative and Preserves the Status Quo. HBR, Natasha Iskander
- The Divisiveness of Design Thinking, Jon Kolko
- In Defense of Design Thinking, Which is Terrible, Khoi Vinh
- Design Thinking Is a Boondoggle, The Chronicle of Higher Education, Lee Vinsel
- Why Design Thinking in Business Needs a Rethink, MIT, 5. Kupp, Anderson, and Reckhenrich
- Design Thinking is Bullshit, video, Natasha Jen
- Design Thinking is a Failed Experiment. So what's next? Bruce Nussbaum



**In 1999,  
IDEO redesigned shopping carts  
on ABC TV's Nightline.**





**Special thanks to**  
**Marie Longserre**  
**Jon Mertz**  
**Mark Johnson**  
**Ryan Reposar**

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