

# What Will 21st-Century Designers Do?



Paul Pangaro, Ph.D.  
Chair of Interaction Design  
MFA Interaction Design  
Graduate Studies Program  
College for Creative Studies  
Detroit

Northeastern University  
October 2015

# What Will 21st-Century Designers Do?



MFA Transportation Design  
MFA Color + Materials Design  
MFA Integrated Design  
MFA Interaction Design  
Graduate Studies Program  
College for Creative Studies  
Detroit

# What Will 21st-Century Designers Do?



## Top 5 Factors in Success Across More Than 200 Companies



Timing

42%



Team / Execution

32%



Idea "Truth" Outlier

28%



Business Model

24%



Funding

14%



Pause



Volume

Filmed March 2015 at TED2015

**Bill Gross: The single biggest reason why startups succeed**



Subtitles



Transcript



Fullscreen

# How to be “evolutionarily current”?

Understand the 21st-century:

- enable experiences more than make products
- deliver services more than objects
- move information more than physical material

# What Will 21st-Century Designers Do?

What are the critical and practical skillsets?

# What is Interaction Design in 2015?

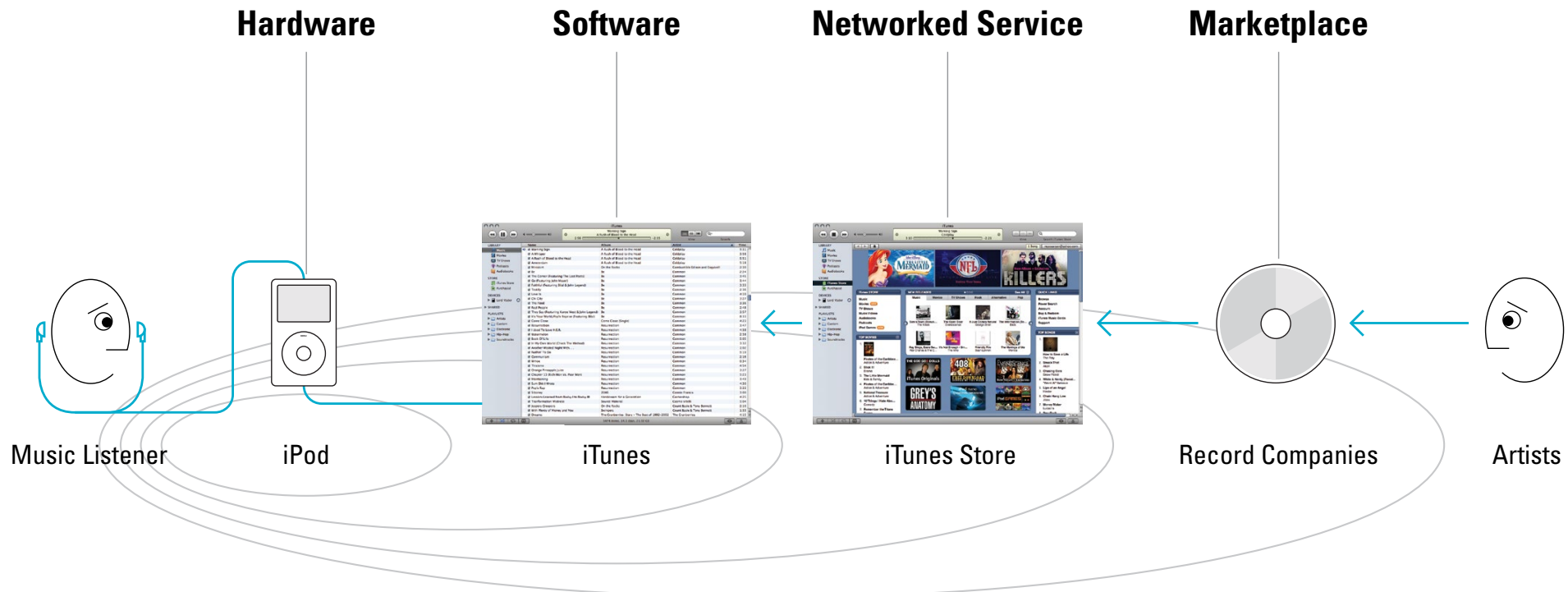
# IxD means...

User experiences are enabled by systems of systems...



# IxD means...

iPod is not a stand-alone product; it's an integrated system—  
**a product-service ecology.**



*Hugh Dubberly & Jodi Forlizzi*

# IxD means Systems

User experiences are enabled by systems of systems:



User experiences are enabled by “product-service ecologies”.

... therefore, IxD requires a degree of Systems Literacy.

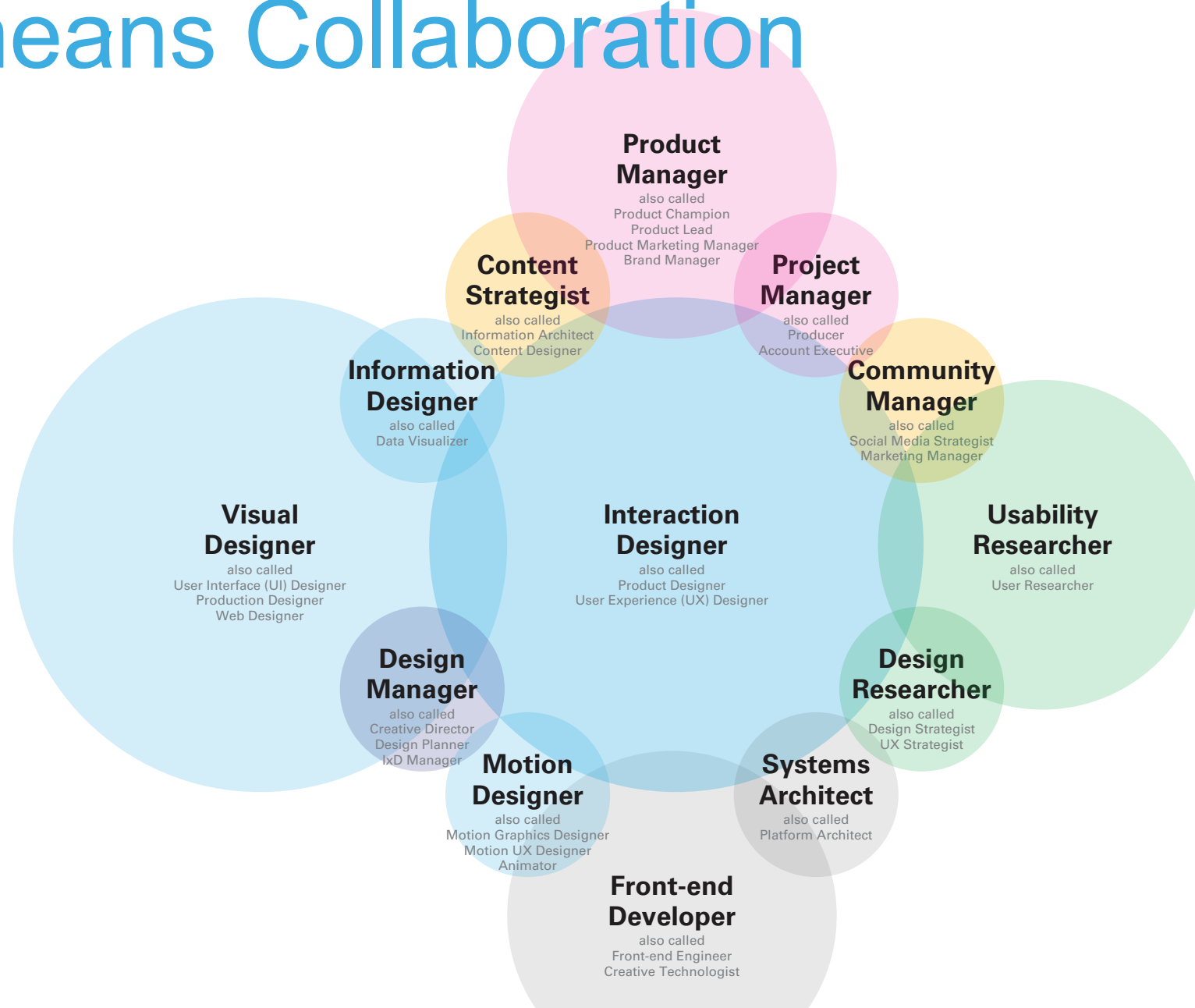
# IxD means ...

No designer will understand all components of a product-service ecology.

The design workflow is not a pipeline, it is a collaboration.

IxD designers will inevitably work in teams...

# IxD means Collaboration



# IxD means Collaboration

No designer will understand all components of a product-service ecology.

The design workflow is not a pipeline, it is a collaboration.

IxD designers will inevitably work in teams...

... therefore, IxD must encompass Collaboration Literacy.

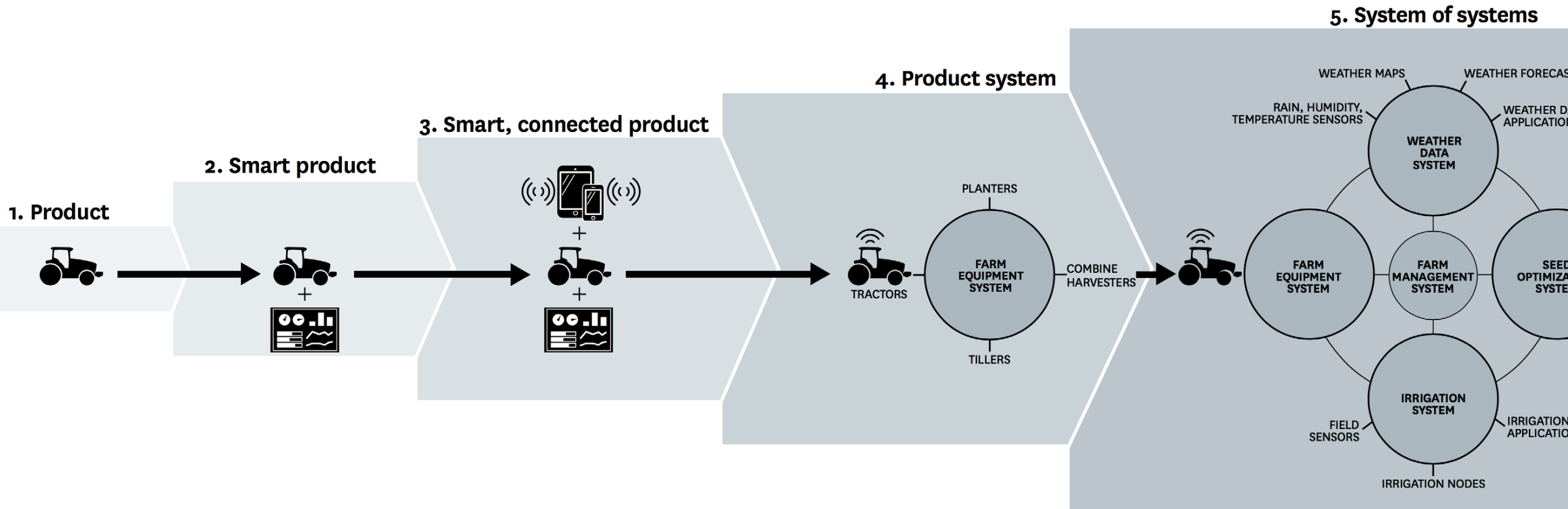
# IxD means...

Devices and everything are becoming connected.

Internet of Things is the new utopia of connectivity—and an emerging reality.

Every digital device and app must play nice with IoT...

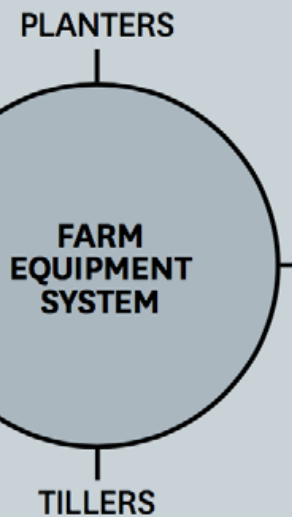
# IxD means “Internet of Things”



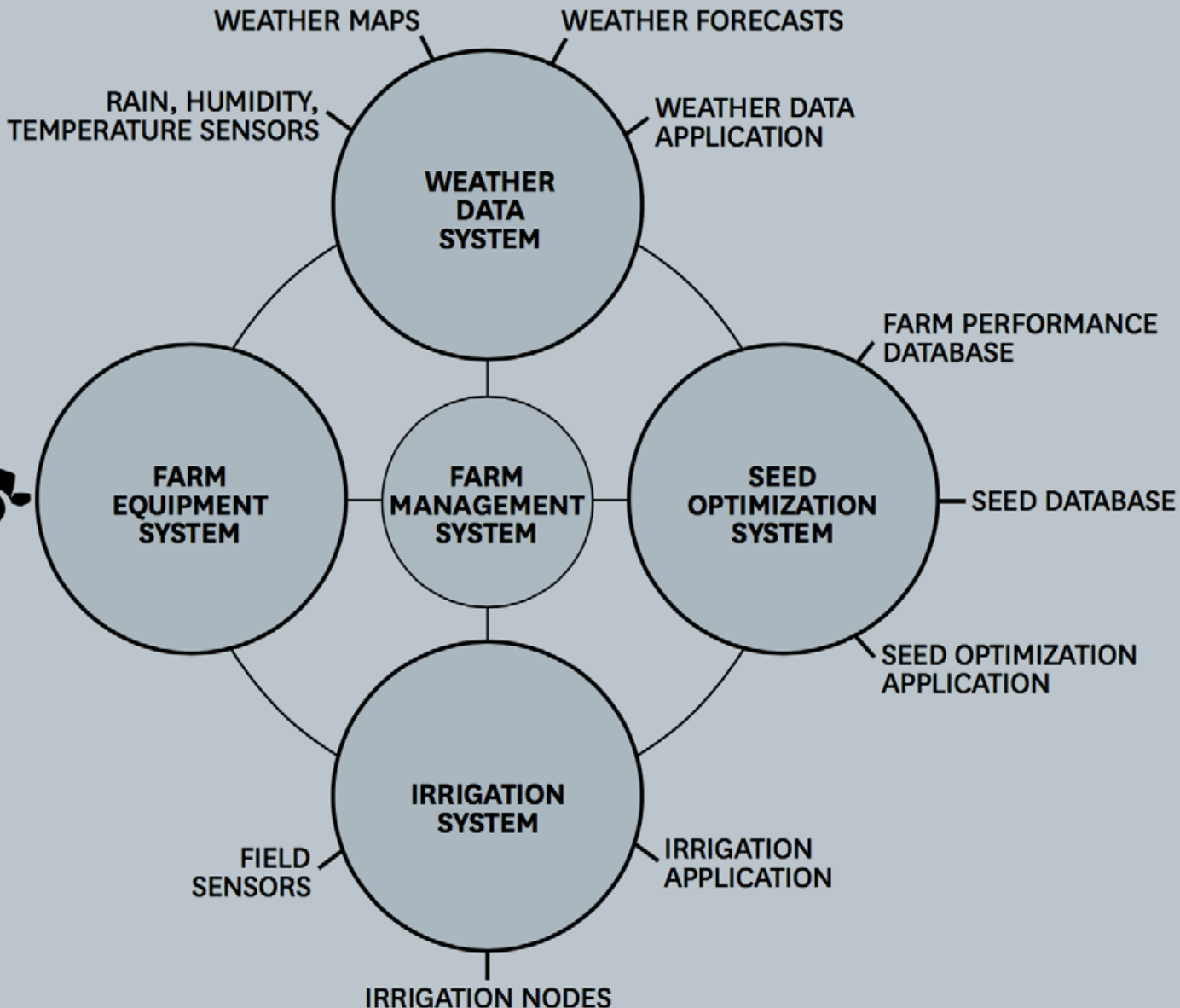
*after Michael Porter / Dubberly Design Office*

# 5. System of systems

Product system



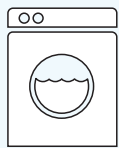
COMBINE HARVESTERS



*after Michael Porter / Dubberly Design Office*



**1. Product**



Hardware

+



Sensors\*

e.g., temperature, water level,  
door open/closed

+

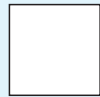
**2. Smart Product**



Displays

+

COMPUTER



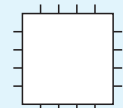
Software

+



Memory

+



Micro Controllers or Processors

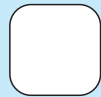
+



Digital Sensors

+

**3. Connected Product**



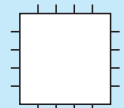
User-facing Apps

+



Cloud Services

+

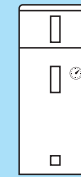


Coms Chips

+

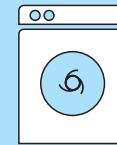
**4. Integrated System of Products**

INTEGRATED LAUNDRY SYSTEM



Connected Water Heater

+



Connected Dryer

+



Smart Consumables  
e.g., food, clothes and detergent  
with RFID chips

+

**5. Systems of Systems  
or Product-Service Ecologies**

CONNECTED HOME



Integrated Entertainment System

+



Integrated Kitchen System

+



External Services

+



Other Home Product Systems

# IxD means “Internet of Things”

Devices and everything are becoming connected.

Internet of Things is the new utopia of connectivity—and an emerging reality.

Every digital device and app must play nice with IoT...

... therefore, IxD must include IoT Literacy.

# IxD means... Code

All digital devices run code.

Designers need not become software engineers or code their own native iOS app.

But designers must understand what digital devices can—and cannot—do.

They must be comfortable with the logic, conventions, and systems of software that invade our lives—and be able to understand and counter “software thinking”.

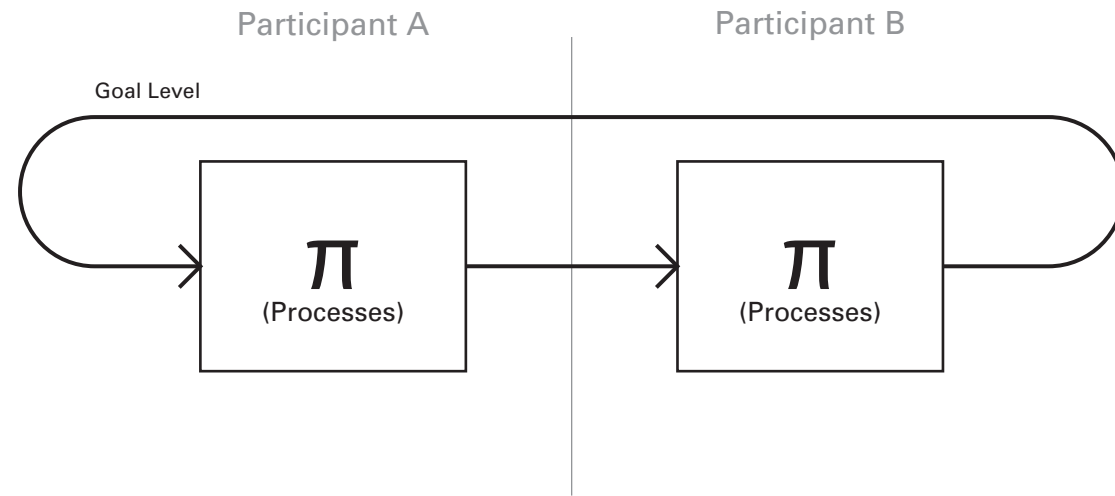
... therefore, IxD must include Coding Literacy.

# IxD means...

*Hello*—the whole point of IxD is designing for people.

People have goals—and are constantly trying to achieve them.

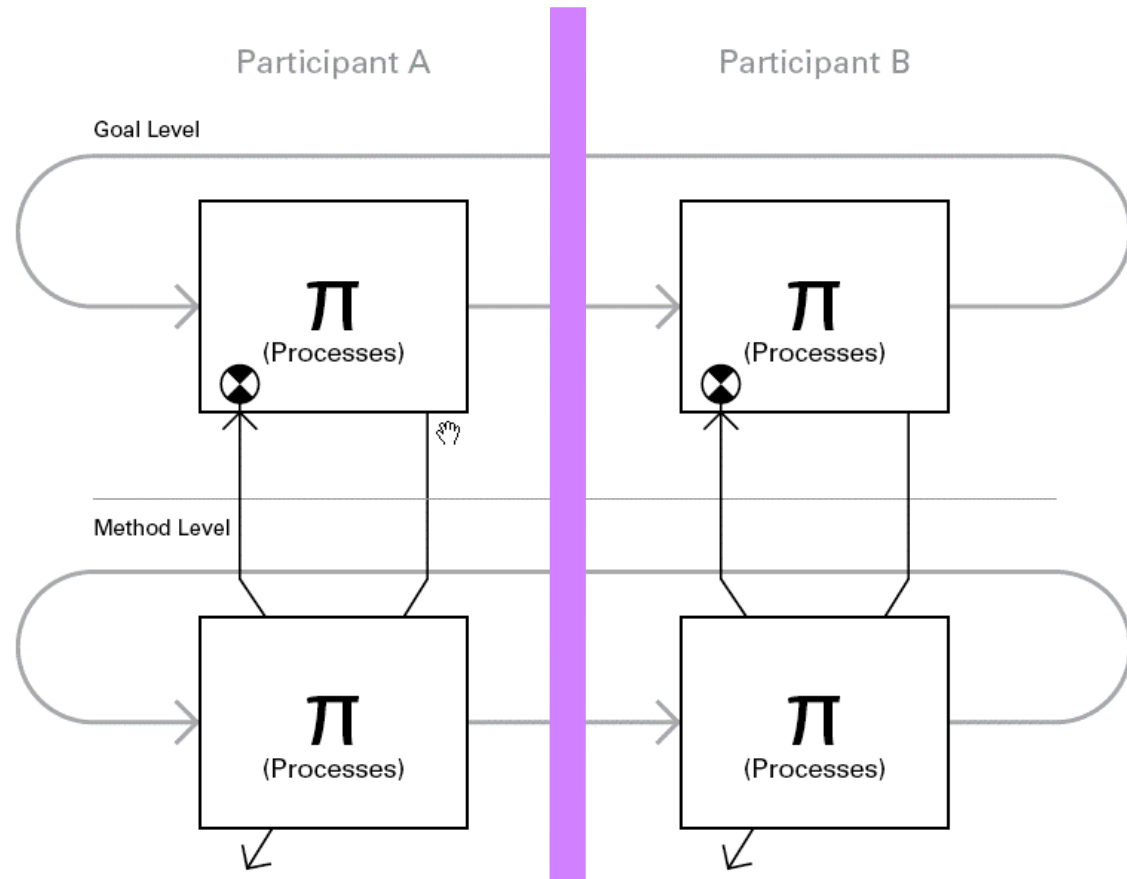
Designers must understand interaction as a way of achieving goals.



**Example:**

A: Can I have a hamburger?

B: Sure, you want fries with that?



**Example:**

A: (upper) I'd like to have a hamburger for dinner.

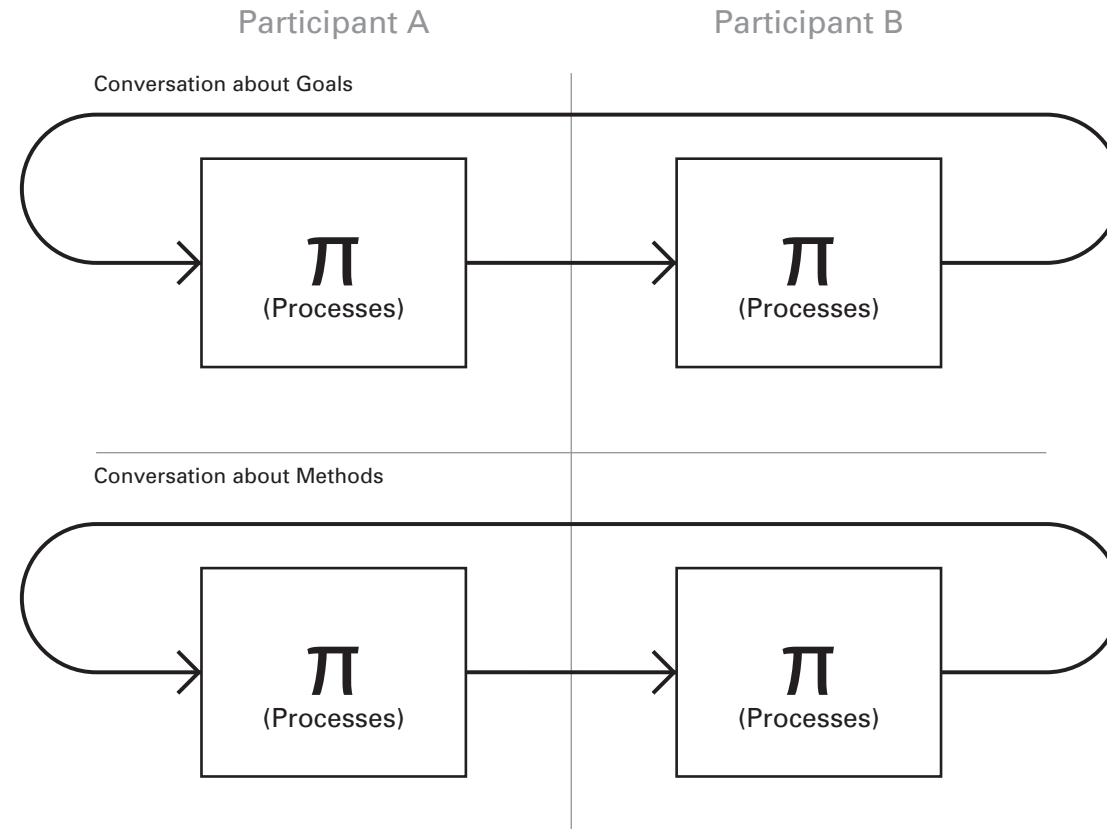
A: (lower) [Performs the actions of taking the meat out of the fridge, putting it on the grill, turning the grill on, watching until it's done, etc.]

A: (upper) I've cooked the hamburgers and achieved my goal.

B: (upper) I'd like to eat chicken. I'll go get takeout.

B: (lower) [Gets coat, leaves the apartment, walks to the takeout place, orders the food, waits until it's done, pays for it, brings it home and then eats it.]

B: (upper) I've eaten the chicken and achieved my goal.



**Example:**

A: (upper) I'm thinking we might want to have hamburgers for dinner.

B: (upper) Well, ok. We had them last night. What about chicken instead?

A: (upper) Chicken is fine too.

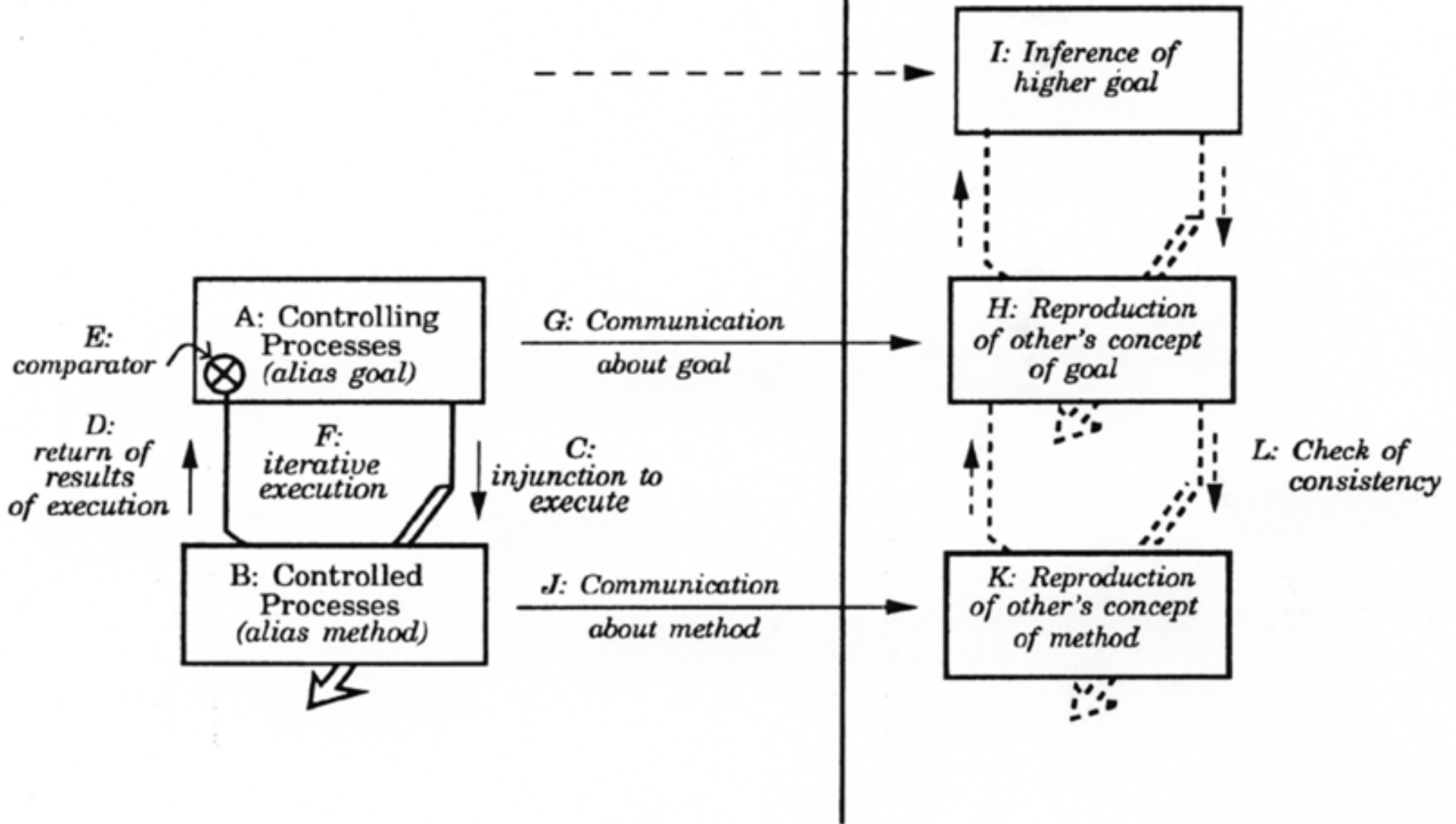
B: (lower) We don't have any chicken defrosted.

A: (lower) You could go to that takeout place and bring it back.

B: (lower) I went last time, so it's your turn.

A: (lower) I've been twice recently.

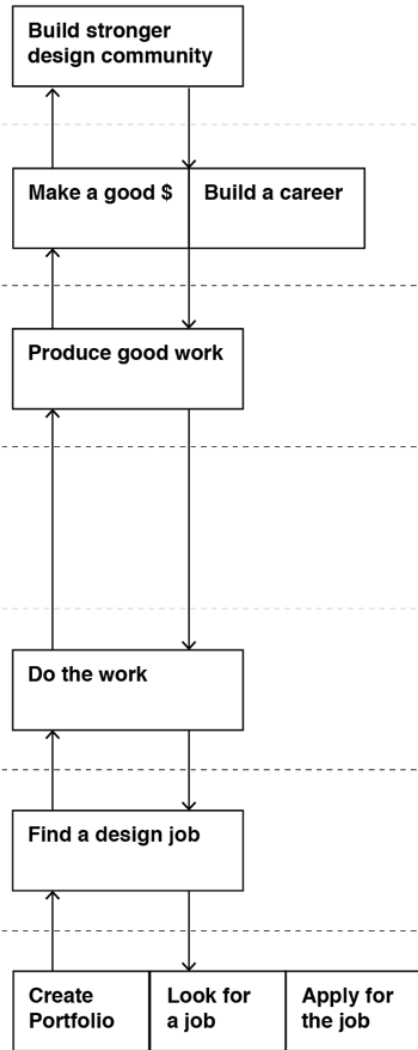
B: (lower) Yes, ok, I'll go after I finish reading my email.





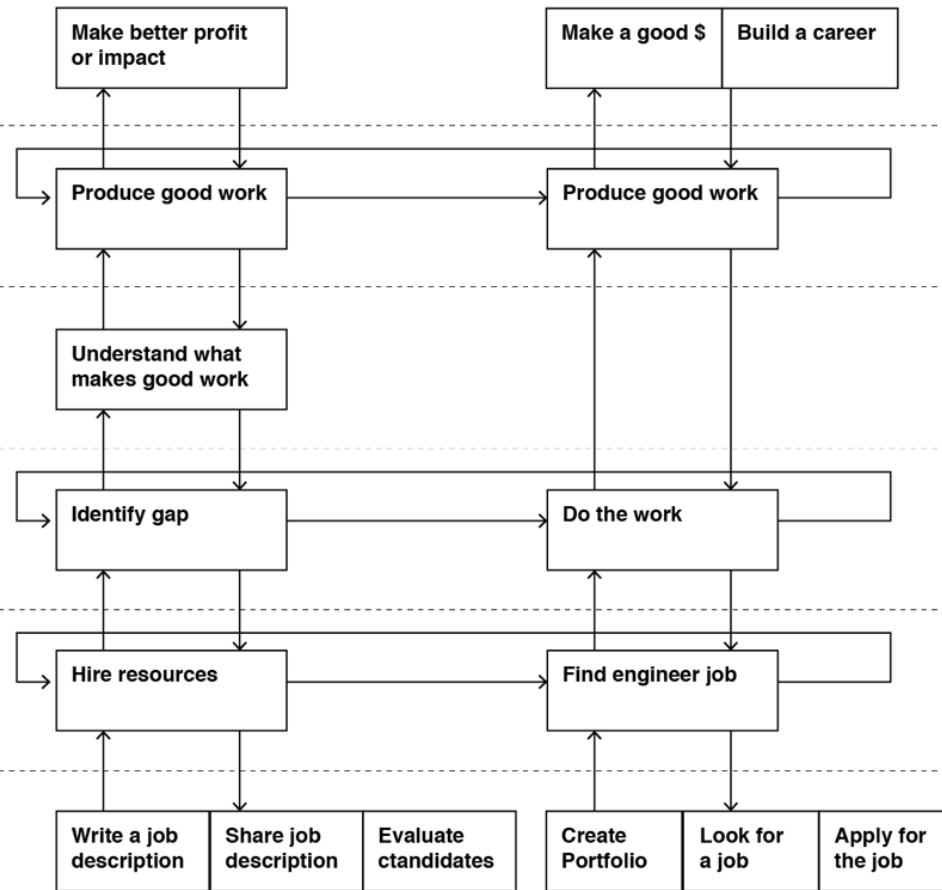
# CURRENT CONVERSATION

## DESIGNERS IN INDIA

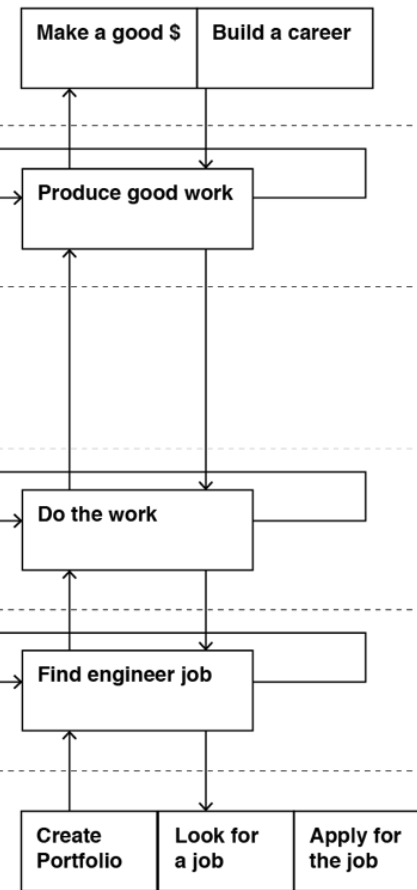


NO CONVERSATION OR VERY LITTLE CONVERSATION

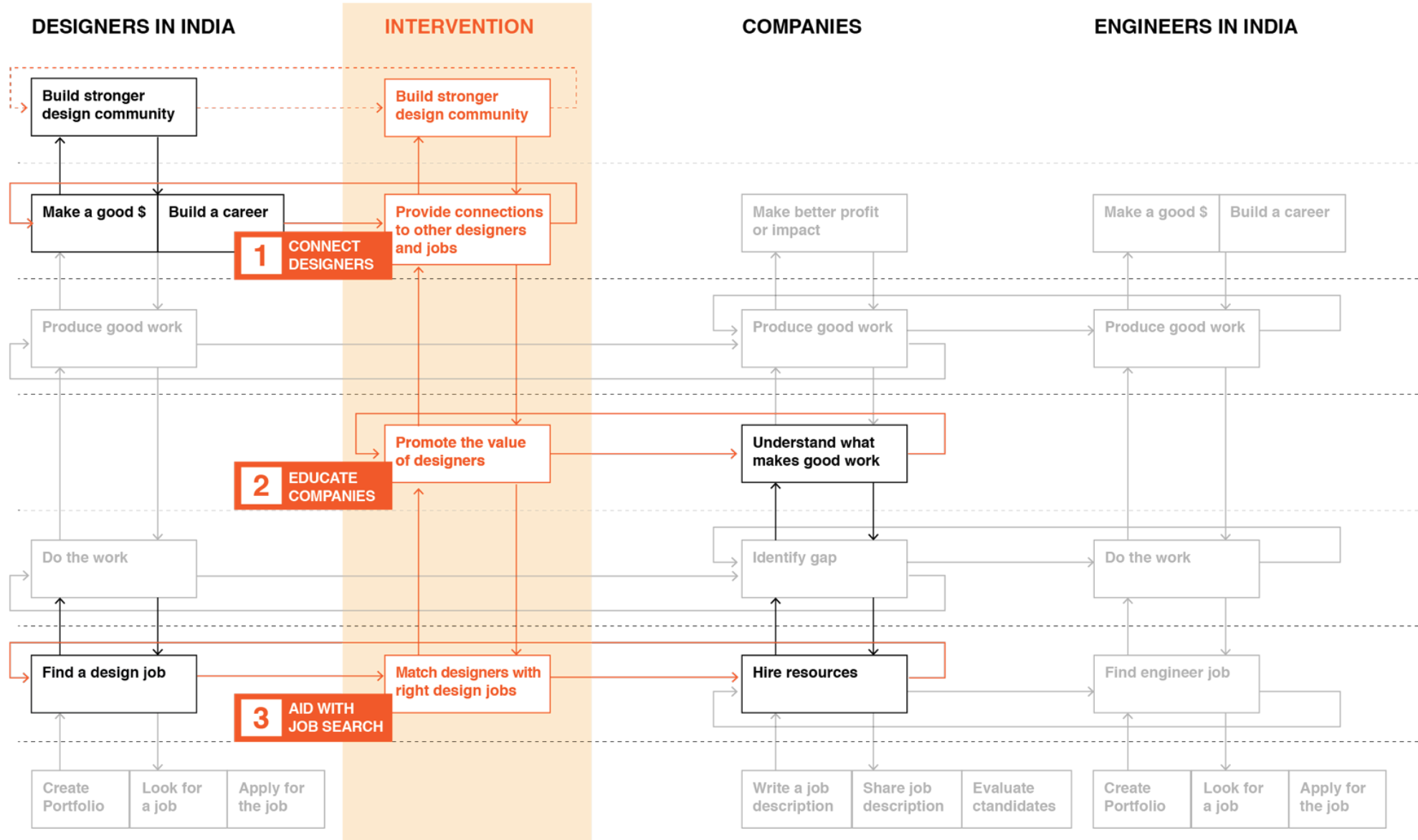
## COMPANIES



## ENGINEERS IN INDIA



# INTERVENTION TO INCLUDE DESIGNERS



# IxD means Designing for Us

*Hello*—the whole point of IxD is designing for people.

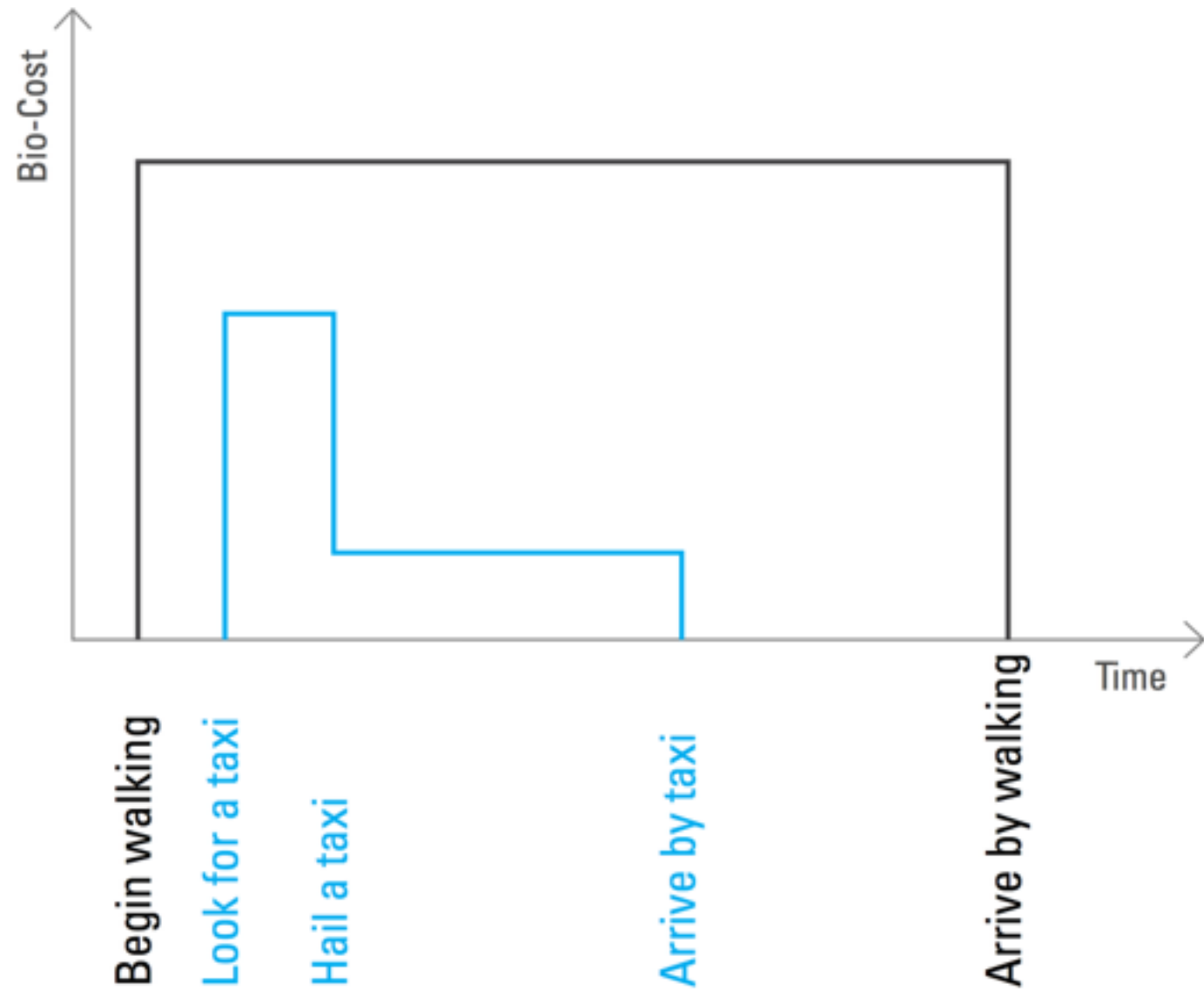
People have goals—and are constantly trying to achieve them.

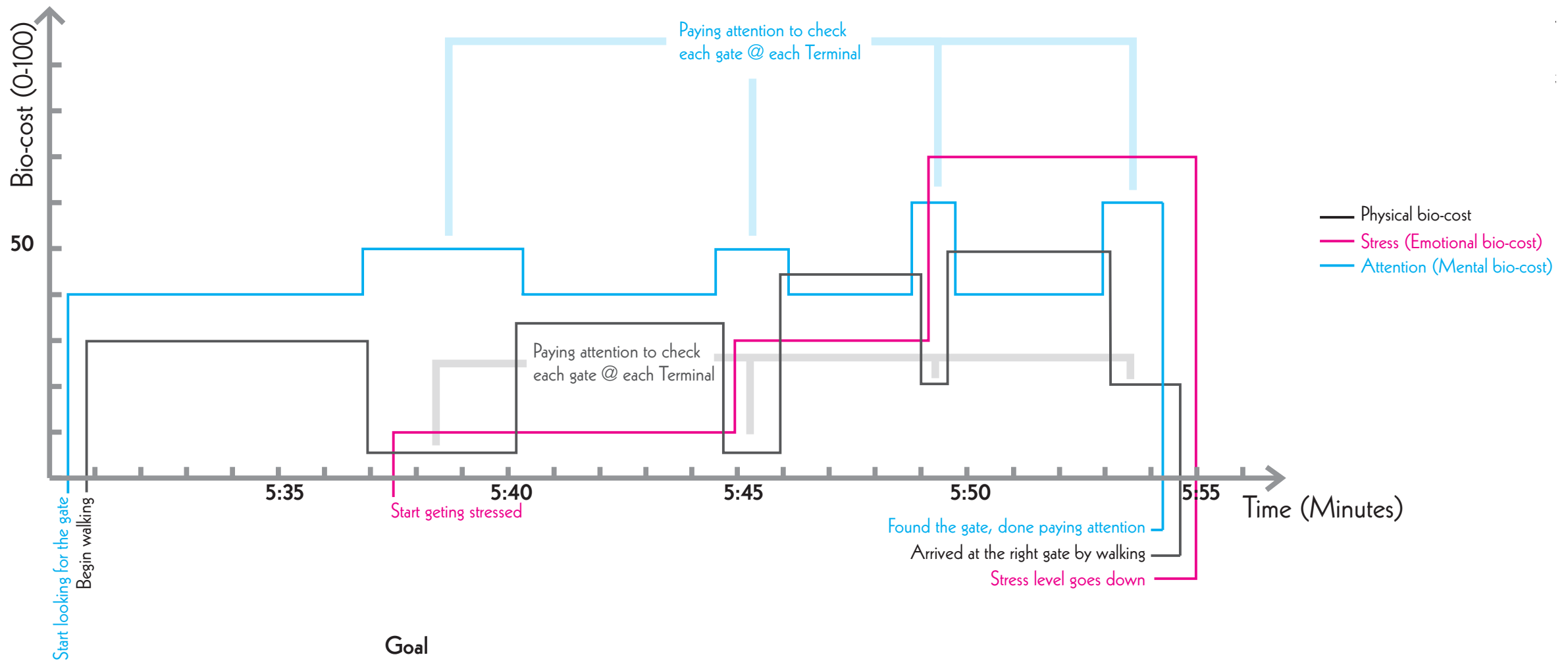
Designers must understand interaction as a way of achieving goals.

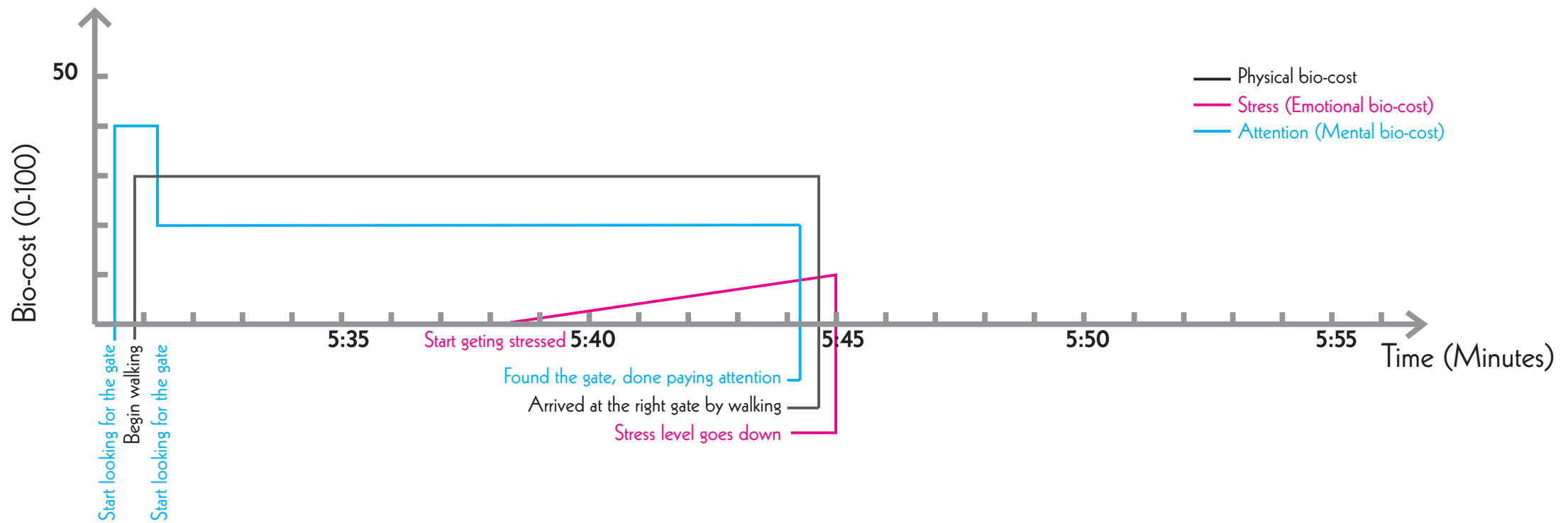
... therefore, IxD must use Frameworks for Interaction to model:

- human goals and how we achieve them
- means for lowering the mental, emotional, and physical effort required

Figure 1: Bio-cost of physical effort to travel by taxi (cyan) versus walking (black).







# IxD means Designing for Us

*Hello*—the whole point of IxD is designing for people.

People have goals—and are constantly trying to achieve them.

Designers must understand interaction as a way of achieving goals.

... therefore, IxD must use Frameworks for Interaction to model:

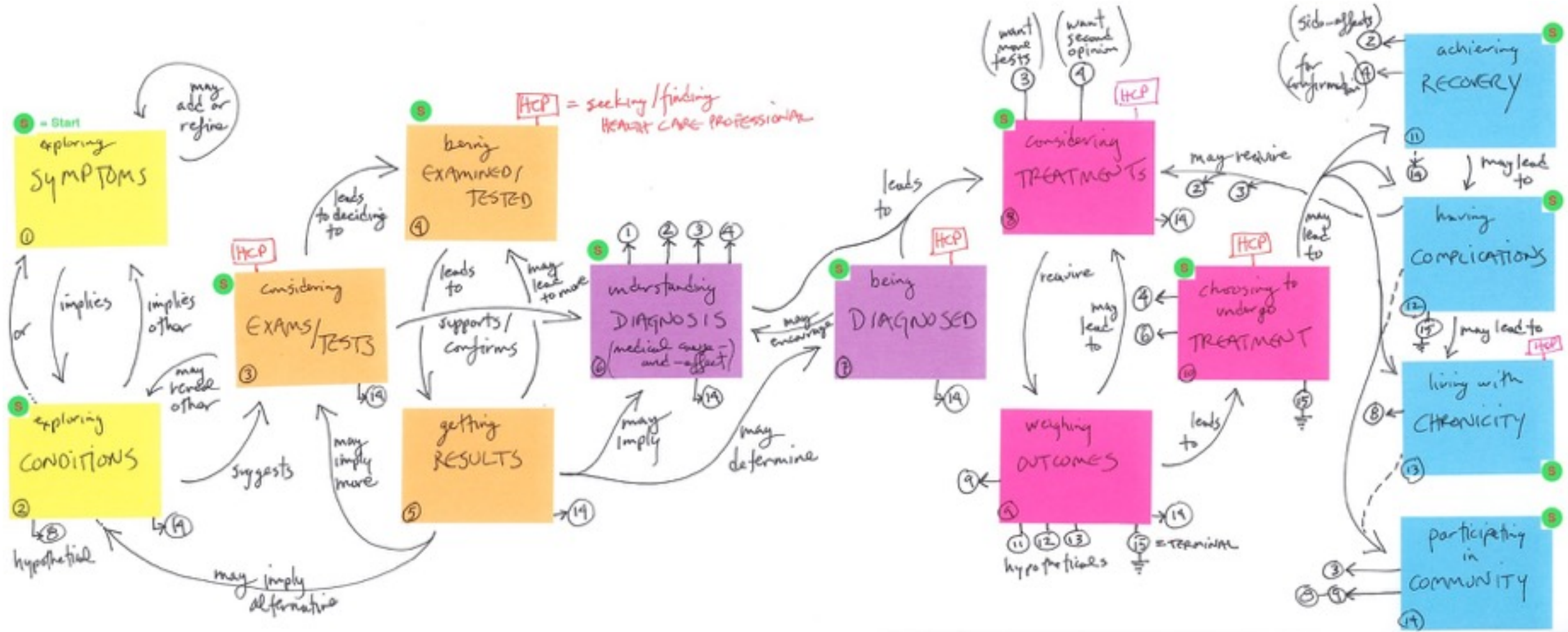
- human goals and how we achieve them
- means for lowering the mental, emotional, and physical effort required
- how we understand choices and create new ones
- how each of us can be supported to design our own life.

# IxD means...

Humans learn through conversation.



# Conversation Flow



# IxD means...

Humans learn through conversation.

We need conversation to relate, negotiate, cooperate, collaborate.

# IxD means...

CONVERSATION

e,e,e...

**CONVERSATION**  
*e,e,e...*

BUILDS →

**NEW  
KNOWLEDGE**

*What did we learn?*

**CONVERSATION**  
e,e,e...

BUILDS

*What did we learn?*

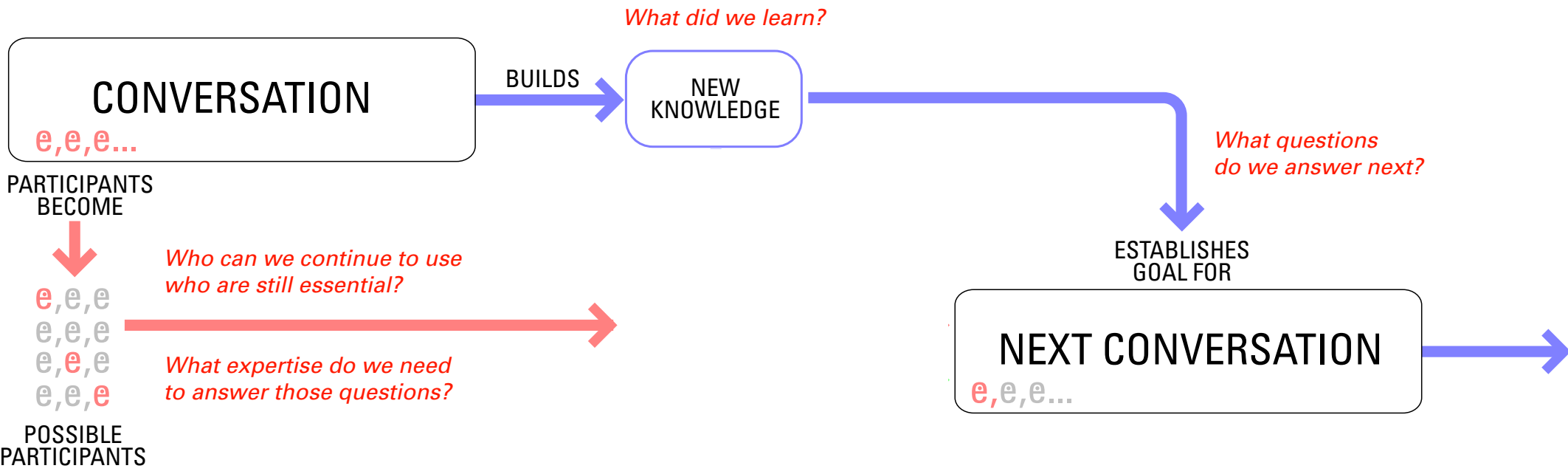
**NEW  
KNOWLEDGE**

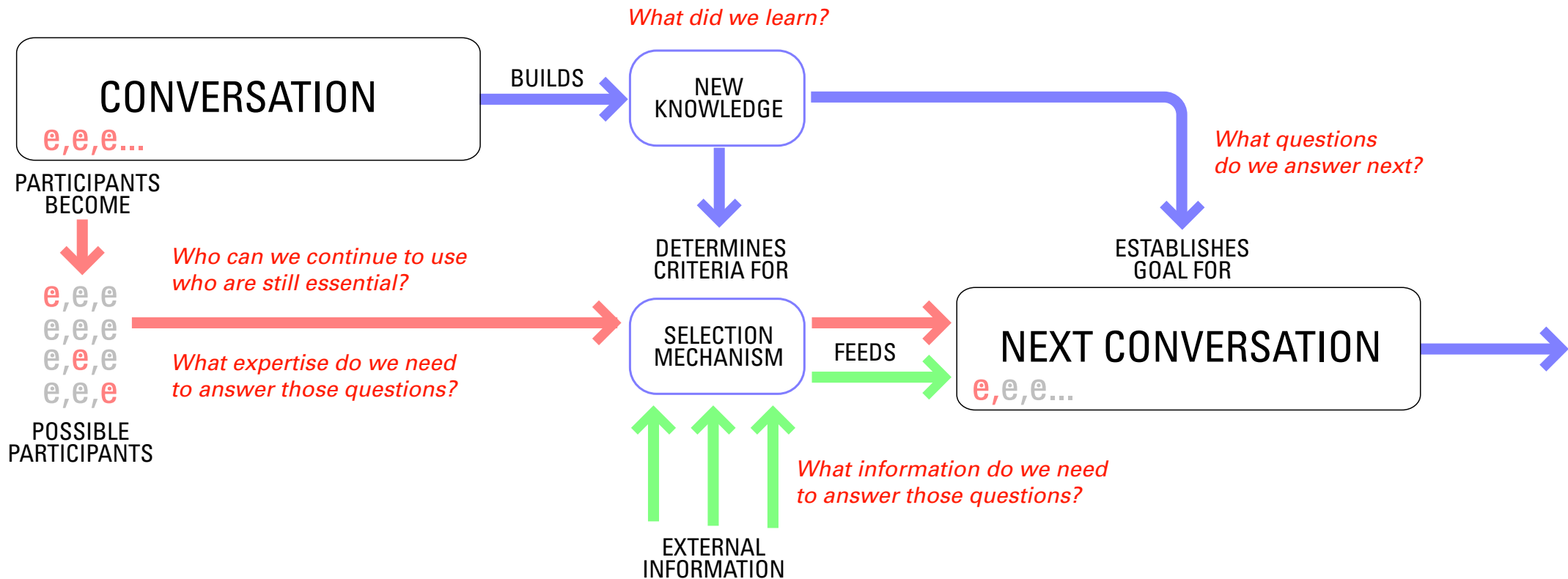
*What questions  
do we answer next?*

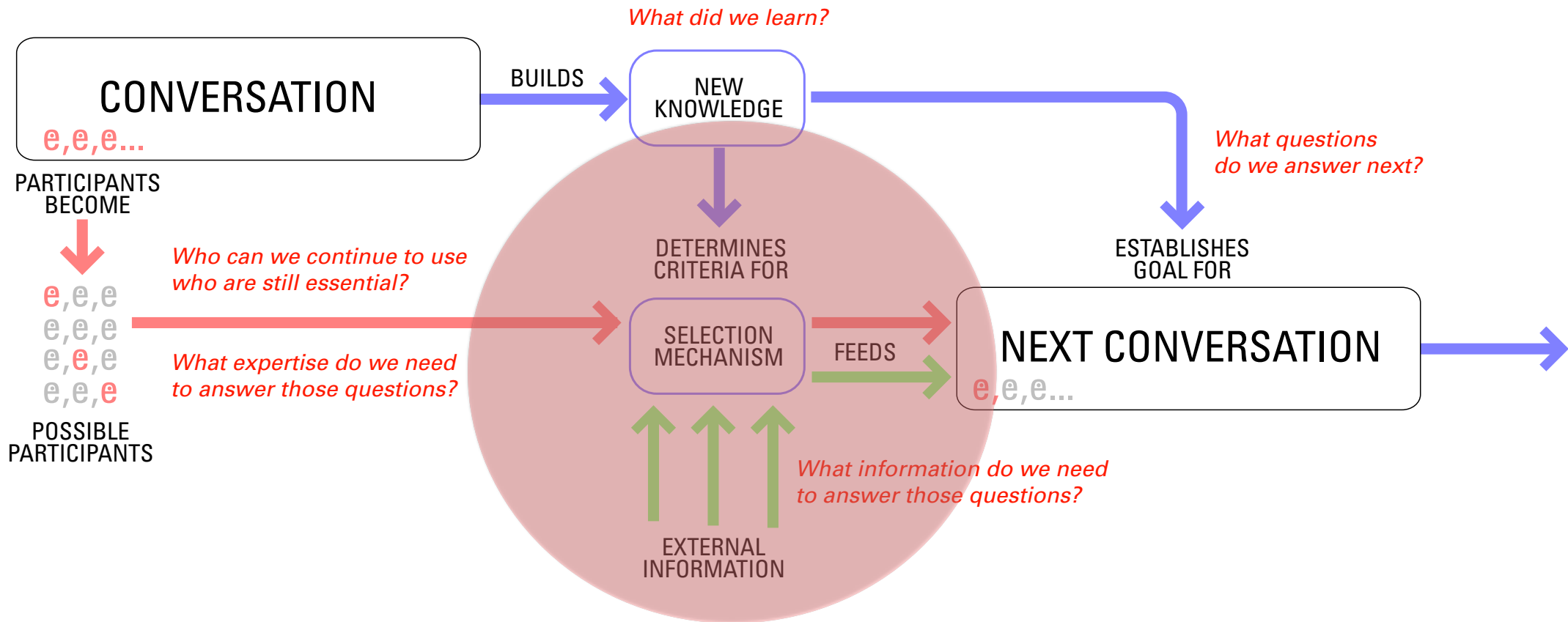
ESTABLISHES  
GOAL FOR

**NEXT CONVERSATION**  
e,e,e...



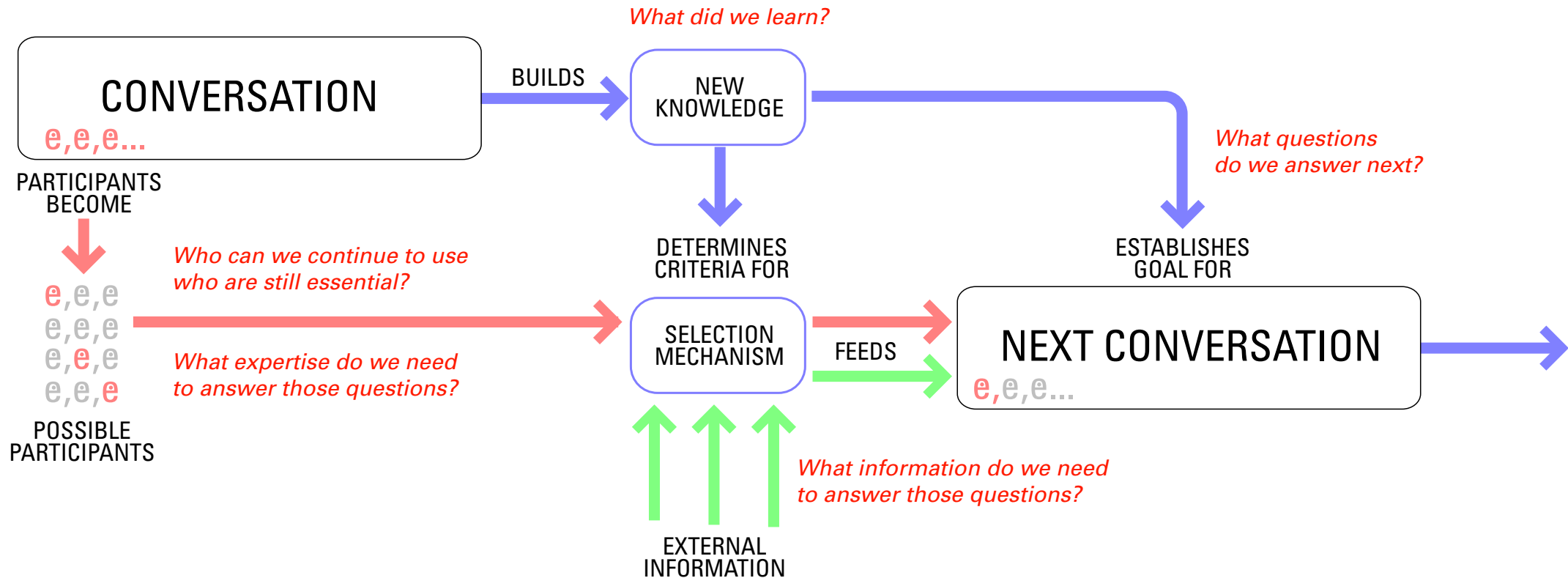








# Designing the Cadence of Conversation



catalyst

ideation

solution

delivery

AGENCY & CLIENT  
e,...

INITIAL GOALS

SELECT

AGENCY & CLIENT  
e,e,e...

"BEFORE" & "AFTER"

SELECT

AGENCY & CLIENT  
e,e,e,e...

360° SOLUTION PLAN

SELECT

AGENCY & CLIENT  
e,e,e,e,e...

360° DEPLOYMENT

SELECT

UNPREDICTABLE CONTACT WITH AGENCY

IDENTIFY NECESSARY ROLES AND EXPERTISE

CORE ROLES

NECESSARY PARTICIPANTS

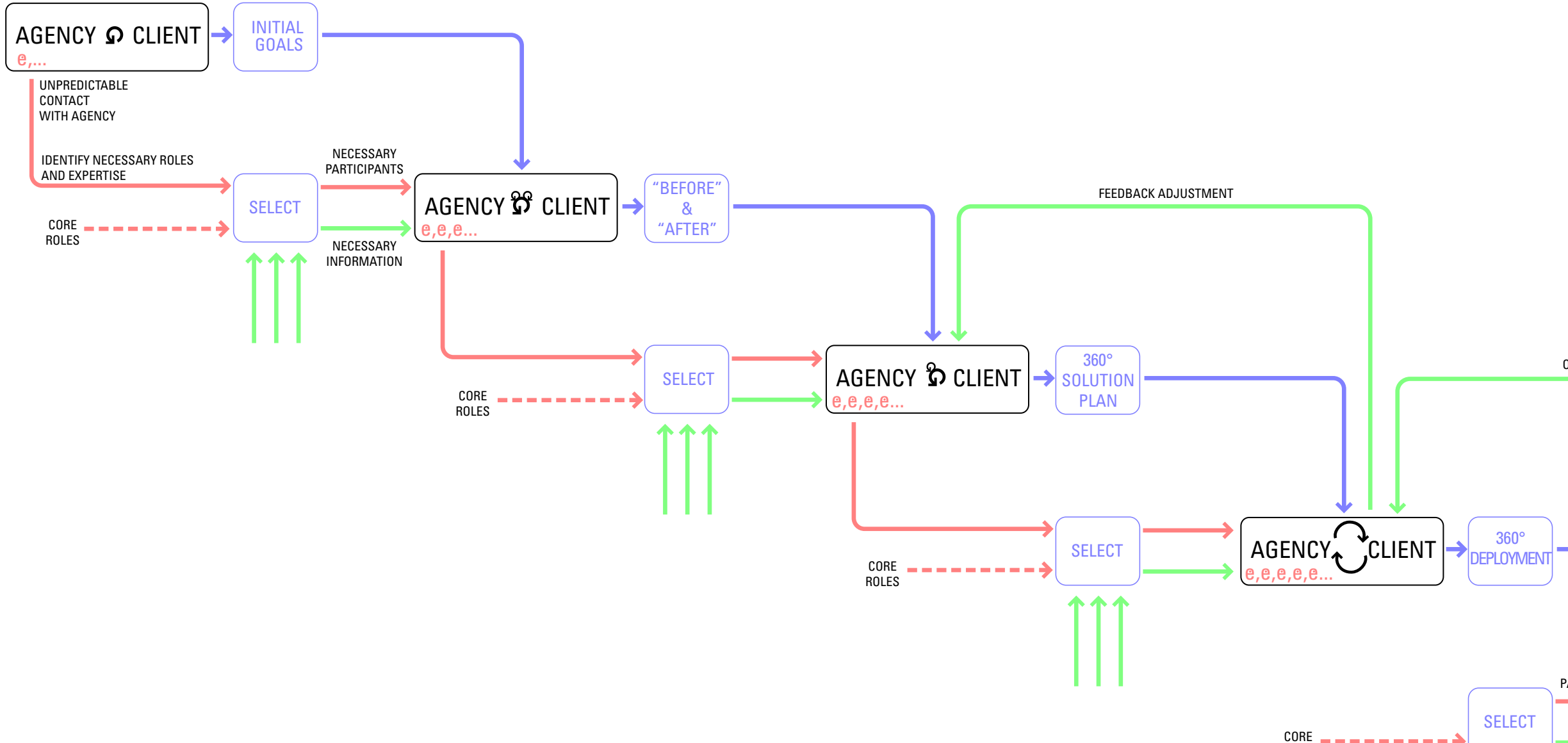
NECESSARY INFORMATION

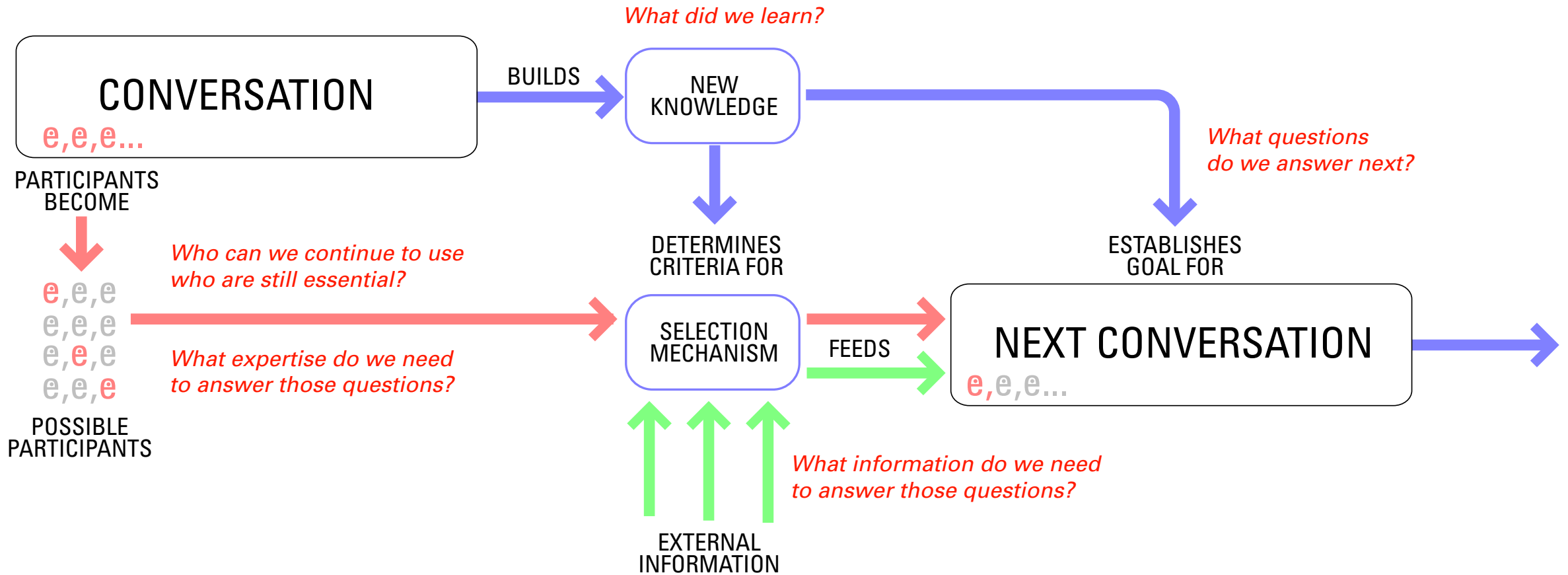
CORE ROLES

CORE ROLES

CORE

FEEDBACK ADJUSTMENT





Given the conversation we've just had, focus on the questions above to make the next conversation successful.

In short, given where we want to go:

Who are the necessary and sufficient participants?

What is the necessary and sufficient information?

# IxD means Conversation

Humans learn through conversation.

We need conversation to relate, negotiate, cooperate, collaborate.

... therefore, IxD must enable conversation in the interactions we design.

# IxD means Designing for Conversation

Humans learn through conversation.

We need conversation to relate, negotiate, cooperate, collaborate.

... therefore, IxD must enable conversation in the interactions we design.

# IxD means Designing for Conversation

Humans learn through conversation.

We need conversation to relate, negotiate, cooperate, collaborate.

... therefore, IxD must enable conversation in the interactions we design.

... therefore, IxD must encompass Conversation Literacy.

# INTERACTION DESIGN PRACTICE

- Systems Literacy
- Collaboration Literacy
- IoT Literacy
- Coding Literacy
- Frameworks for Interaction & Conversation Literacy
  
- 21st-century Economics
- Social Equality

# What is “21st-century value creation”?

Designing what is exchanged in a transaction:

- craft age = object for money (or barter) with someone you know personally
- industrial age = object for money with someone you don't know personally
- post-industrial age = “atoms to bits” = trading information



# What is “21st-century value creation”?

Designing what is exchanged in a transaction:

- craft age = object for money (or barter) with someone you know personally
- industrial age = object for money with someone you don't know personally
- post-industrial age = “atoms to bits” = trading information
- platform age = trading convenience for data

*after Hugh Dubberly*

# What is “21st-century value creation”?

Designing what is exchanged in a transaction:

- craft age = object for money (or barter) with someone you know personally
- industrial age = object for money with someone you don't know personally
- post-industrial age = “atoms to bits” = trading information
- platform age = trading convenience for data
- conversation age = trading insight for collaboration

# What is “value creation”?

For an organization or business = increasing productivity by:

- creating order from disorder—“work”
- lowering uncertainty—risk

# What is “value creation”?

For an organization or business = increasing productivity by:

- creating order from disorder—“work”
- lowering uncertainty—risk

For a person = increasing productivity by:

- lowering the human costs of achieving a goal — “bio-cost”
  - time load
  - cognitive load
  - emotional load
- lowering uncertainty

# What Will 21st-Century Designers Do?

What are the critical and practical skillsets?

# What Will 21st-Century Designers Do?

## Focus on Necessary Literacies

- 21st-century Economics
- Collaboration
- Interaction & Conversation
- Ethics & Responsibility

# Literacy: 21st-century Economics

Skill: Be evolutionarily current—be of your own time...

Understand value creation in the 21st-century:

- enable experiences more than make products
- deliver services more than objects
- move information more than physical material
- facilitate conversational engagement

# Literacy: 21st-century Economics

Skill: Sharply define the benefits and value created to ensure a successful (business / social) outcome...

Do not focus on products or services —  
— focus on reducing uncertainty for your organization and bio-cost for the user.



# Literacy: Collaboration

Skill: Design the Designing...

Do not design or create “our team”—  
— design a “cadence of conversations”.

# Literacy: Interaction & Conversation

Skill: Establish a shared model of the intentions of the interaction and the system that will deliver it...

Model the conversation in the user's head and the evolution of her cognitive model.

# Literacy: Ethics & Responsibility

Skill: “Act always to increase the number of choices.”

“A is better off when B is better off.”

– Heinz von Foerster, “Ethics and Second-order Cybernetics”

# What Will 21st-Century Designers Do?

Be evolutionarily current—be of your own time

- Enable participation / experiences—model humans in the loop
- Focus on information networks for value creation
- Create order from disorder—reduce org's effort to achieve goals
- Reduce bio-cost—human effort to achieve personal goals
- Design the designing
- “Act always to increase the number of choices.”



CCCS

Thank you.

[ppangaro@collegeforcreativestudies.edu](mailto:ppangaro@collegeforcreativestudies.edu)  
[paul@pangaro.com](mailto:paul@pangaro.com)