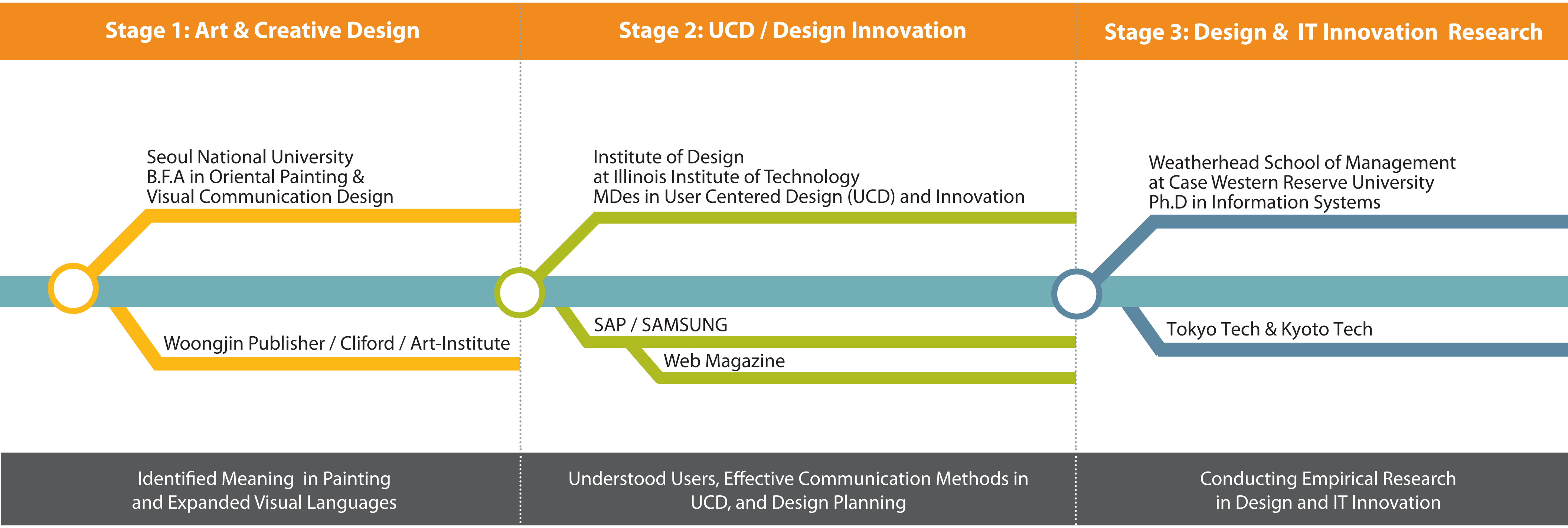
DESIGN THINKING

KYOTO INSTITUTE OF TECHNOLOGY & TOKYO INSTITUTE OF TECHNOLOGY
JAEHYUN PARK

Jae(hyun) Park



Stage 1: Art & Creative Design

Seoul National University
B.F.A in Oriental Painting &
Visual Communication Design

Woongjin Publisher / Cliford / Art-Institute

Identified Meaning in Painting
and Expanded Visual Languages

Stage 2: UCD / Design Innovation

Institute of Design
at Illinois Institute of Technology
MDes in User Centered Design (UCD) and Innovation

SAP / SAMSUNG

Web Magazine

Understood Users, Effective Communication Methods in
UCD, and Design Planning

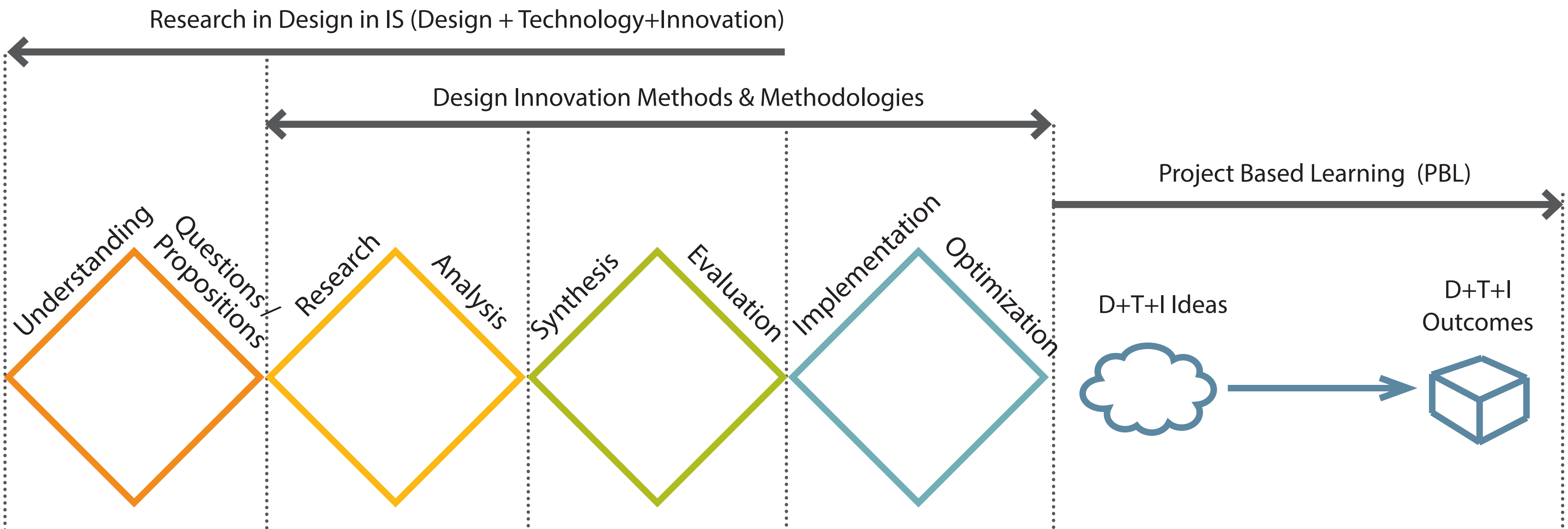
Stage 3: Design & IT Innovation Research

Weatherhead School of Management
at Case Western Reserve University
Ph.D in Information Systems

Tokyo Tech & Kyoto Tech

Conducting Empirical Research
in Design and IT Innovation

Teaching & Research Interest


Research in Design in IS (Design + Technology+Innovation)
Design Innovation Methods & Methodologies
Project Based Learning (PBL)
Understanding
Questions / Propositions
Research
Analysis
Synthesis
Evaluation
Implementation
Optimization
D+T+I Ideas
D+T+I Outcomes

Theory & Empirical Research	Research & Analysis	Synthesis & Solutions	Production & Decision-Making	**Design & iT Innovation Projects**
• Social Theories in D+T+I • Research in D+T+I • Research Methods • Research Seminars • Design Thinking & System Thinking	• D+T+I Research - Context Research - User Scale Study - Analytic Research • D+T+I Analysis - Tools and Methods	• Business Concept Illustration (BCI) • New Product Design (NPD) • Business Modeling • Prototypes	• D+T+I Approaches • D+T+I Planning • Problem Framing • Communication Planning & Promotion in D+T+I	• Complexity, Opportunity, and Visualization • UCD and Ethnographic research in D+T+I • UX & Service Design Innovation • Information, Systems, and IT Design & Innovation
G I	G U+ U- I	G U+ U- I	G U+ I	G U+ U- I

INNOVATION?

Two purposes of a business: Marketing & Development

Peter Drucker

SOUTH LASALLE
citibank

Identifying market opportunity
Creating new customers

Marketing

File Edit Controls Visualizer Advanced Help
iTunes
Search
Browse
Source
Library
Podcasts
Party Shuffle
Radio
Music Store
Purchased
60's Music
My Top Rated
Recently Played
Top 25 Most Played
Afro Cuban All Stars
Brian McKnight
Buena Vista Ibrahim Ferre
Buena Vista Social Club
Buenos Hermanos
Cachao
Cafe Cubana
classical vol3
ClassicalMisc
Compay Segundo
Cubamar
Cuban Masters
DineshDinner
DinnerMusic French
George Winston
Jack Johnson
JamesTaylor
200 East Airport Express

Name	Time	Artist	Album
☑ These Are Days	4:53	10,000 Maniacs	MTV Unplugged
☑ Eat For Two	4:22	10,000 Maniacs	MTV Unplugged
☑ Candy Everybody Wants	3:19	10,000 Maniacs	MTV Unplugged
☑ I'm Not The Man	3:46	10,000 Maniacs	MTV Unplugged
☑ Don't Talk	5:21	10,000 Maniacs	MTV Unplugged
☑ Hey Jack Kerouac	3:48	10,000 Maniacs	MTV Unplugged
☑ What's The Matter Here ?	4:50	10,000 Maniacs	MTV Unplugged
☑ Gold Rush Brides	4:11	10,000 Maniacs	MTV Unplugged
☑ Like The Weather	4:14	10,000 Maniacs	MTV Unplugged
☑ Trouble Me	3:40	10,000 Maniacs	MTV Unplugged
☑ Jezebel	4:23	10,000 Maniacs	MTV Unplugged
☑ Because The Night	3:43	10,000 Maniacs	MTV Unplugged
☑ Stockton Gala Days	5:29	10,000 Maniacs	MTV Unplugged
☑ Noah's Dove	5:07	10,000 Maniacs	MTV Unplugged
☑ Don't Talk	5:25	10,000 Maniacs	The Unplugged Collection Volum
☑ Amor Verdadero (Guajira-Son)	6:38	Afro Cuban All Stars	A Toda Cuba Le Gusta
☑ Alto Songo (Son Montuno)	6:46	Afro Cuban All Stars	A Toda Cuba Le Gusta
☑ Habana Del Este (Danzonete-...	6:39	Afro Cuban All Stars	A Toda Cuba Le Gusta
☑ A Toda Cuba Le Gusta (Son)	5:48	Afro Cuban All Stars	A Toda Cuba Le Gusta
☑ Fiesta De La Rumba (Guaguancó)	5:53	Afro Cuban All Stars	A Toda Cuba Le Gusta
☑ Los Sitio' Asere (Guaguancó-Son)	5:20	Afro Cuban All Stars	A Toda Cuba Le Gusta
☑ Pío Mentiroso (Guaracha)	4:37	Afro Cuban All Stars	A Toda Cuba Le Gusta
☑ María Caracoles (Mozambiqué)	4:48	Afro Cuban All Stars	A Toda Cuba Le Gusta
☑ Clasiqueando Con Rubén (Son)	5:12	Afro Cuban All Stars	A Toda Cuba Le Gusta
☑ Elube Changó (Son Afro)	4:02	Afro Cuban All Stars	A Toda Cuba Le Gusta
☑ Amor Verdadero	6:39	Afro Cuban All Stars	Café Cubana
☑ Habana Del Este	6:41	Afro Cuban All Stars	Café Cubana
☑ Modular Mix	5:59	AIR	Premiers Symptomes

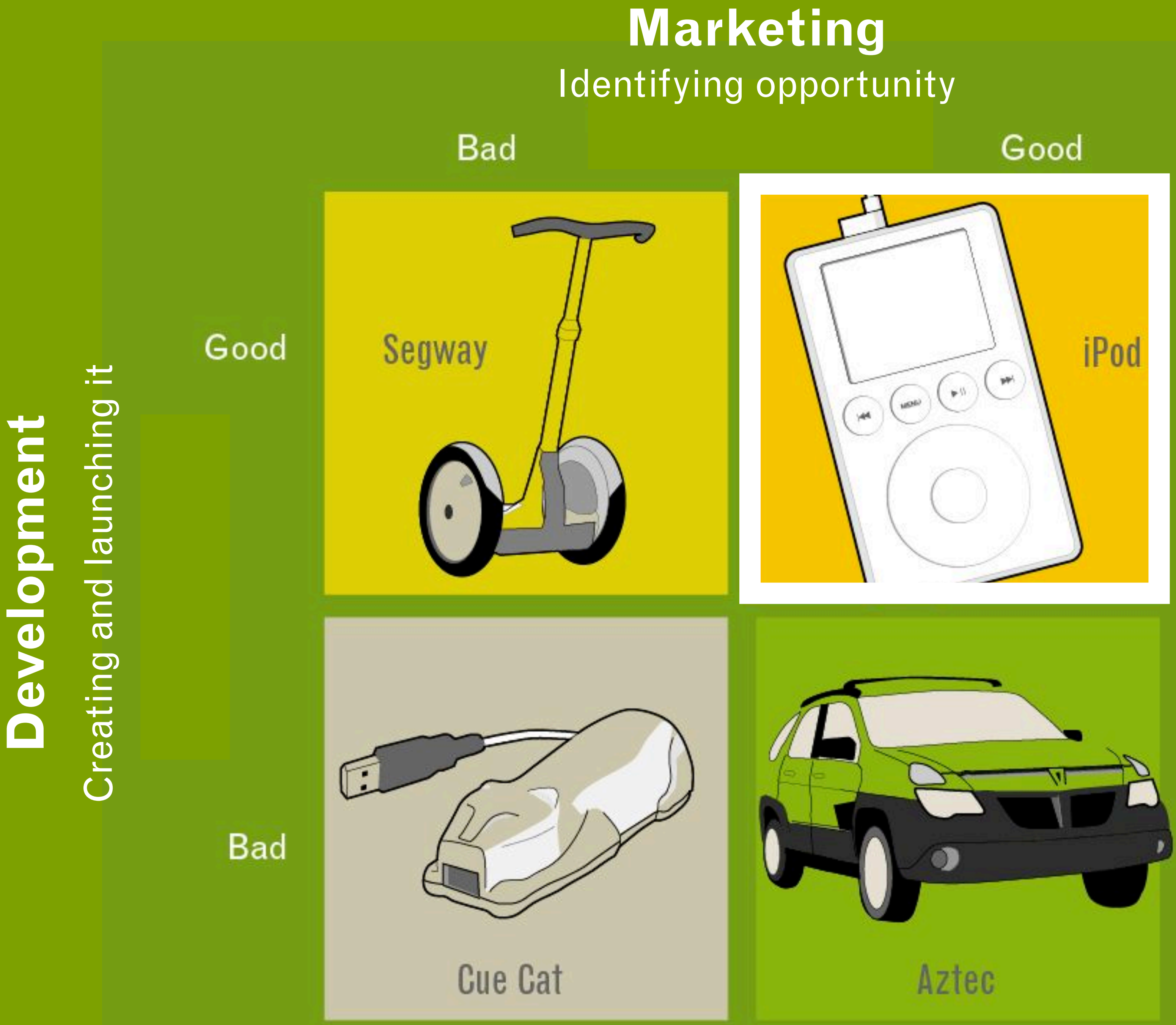
1224 songs, 3.6 days, 4.43 GB

File Edit Controls Visualizer Advanced Help
iTunes
Source
Madonna
Exclusive Catalog
New Album + Exclusive
Inside the Music Store
Choose Genre
Browse
Power Search
New Releases
Account
Hurricane Relief
Donate Here
FREE DOWNLOAD
200 East Airport Express

The creation of a new offering

Development

INNOVATION=
VISION (Market)
+ INVENTION (Development)


Segway
iPod
Cue Cat
Aztec

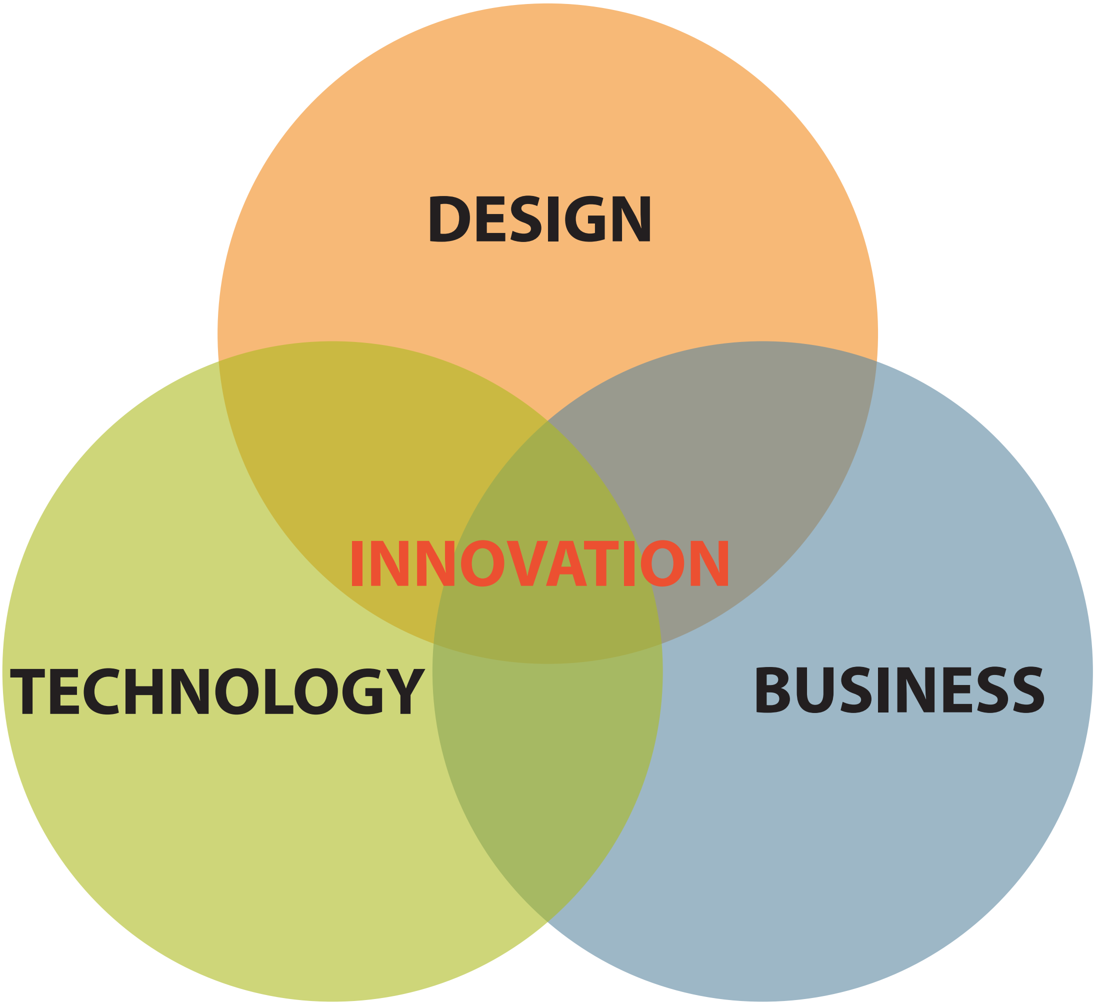
Marketing
Identifying opportunity

Bad
Good

Development
Creating and launching it

Good
Bad

You have to do both well


DESIGN
INNOVATION
TECHNOLOGY
BUSINESS

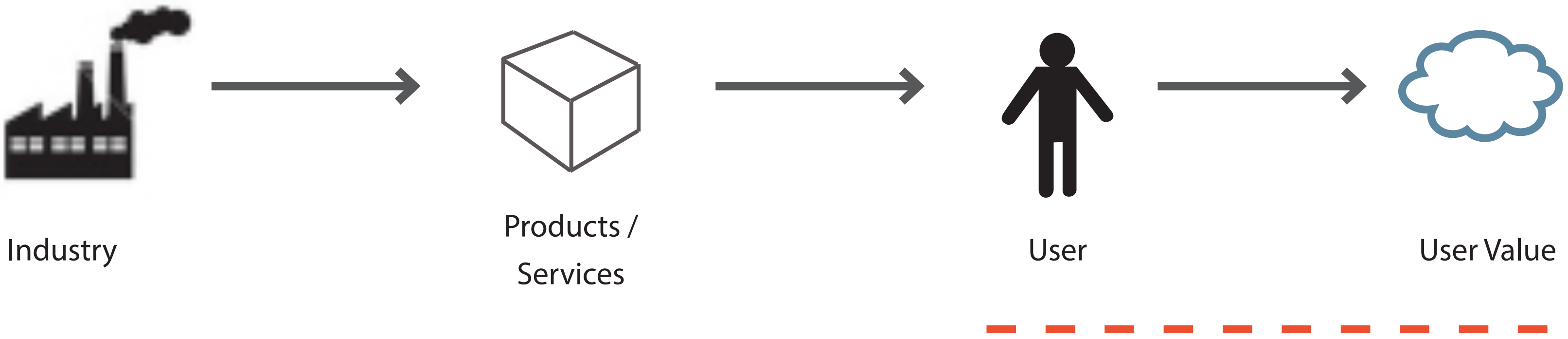
Why Human-Centered **Innovation?**

1.

Design-Business Paradigm Shift

from **industry-centered** *to* **user-centered**

Industry-centered



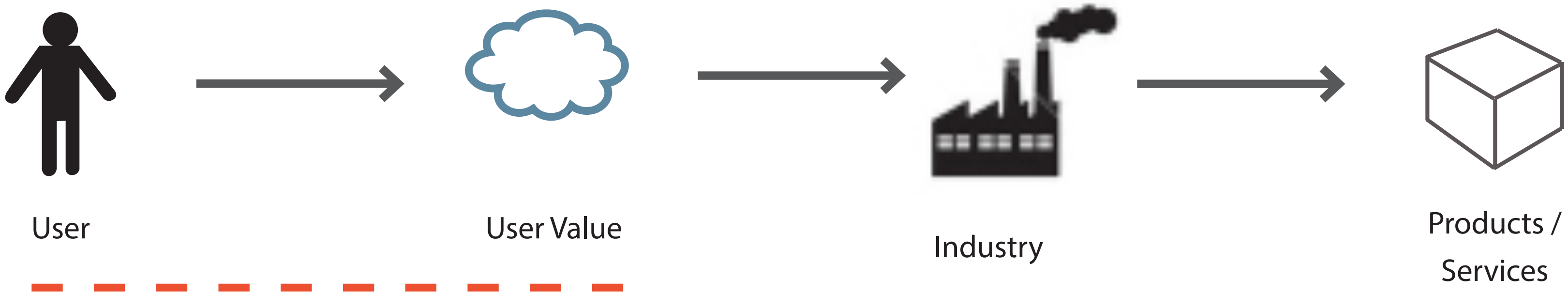
Industry

Products / Services

User

User Value

User-centered



User

User Value

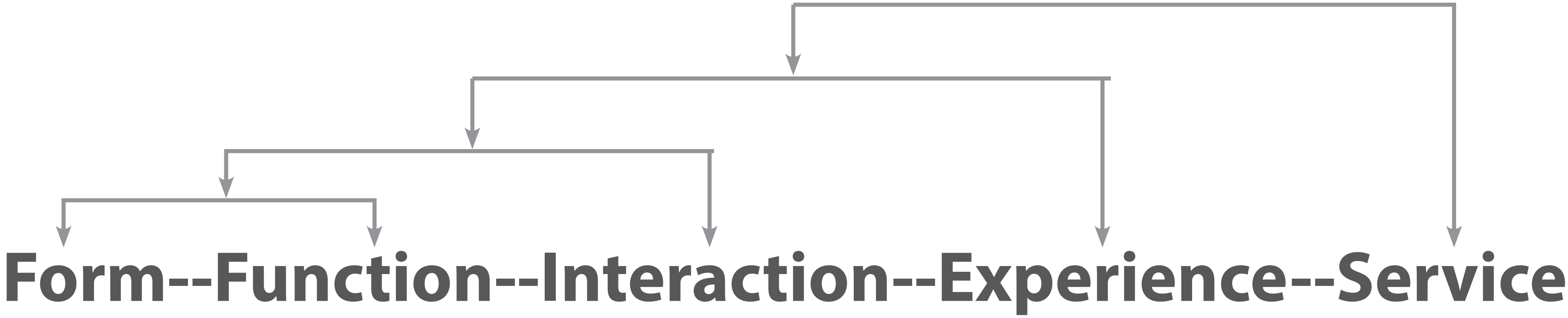
Industry

Products / Services

2.

Expanding Design Meanings

Form--Function--Interaction--Experience--Service



Form--Function--Interaction--Experience--Service

2D / 3D

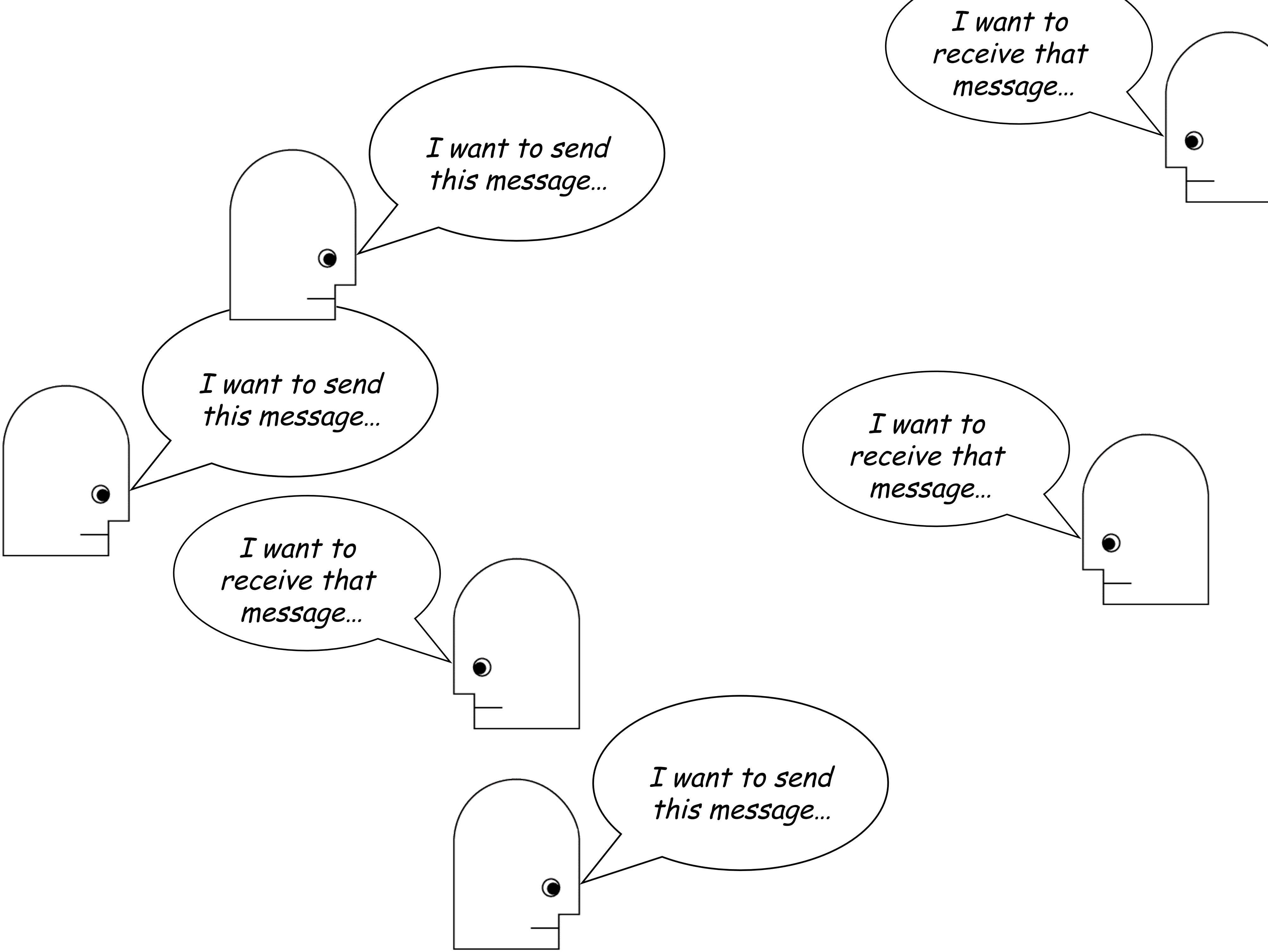
Interface & Interaction

User Experience & Systems

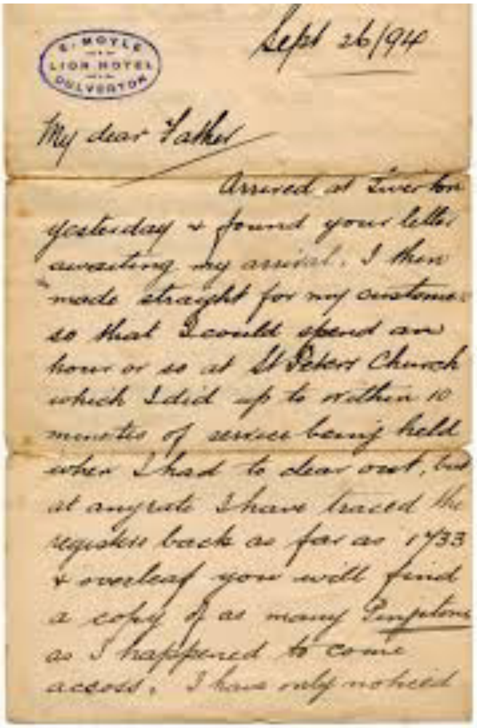
Design & System Thinking

EXAMPLE:
Telephone

LONG LONG TIME AGO...


I want to receive that message…
I want to send this message…
I want to send this message…
I want to receive that message…
I want to receive that message…
I want to send this message…

Communication Tools

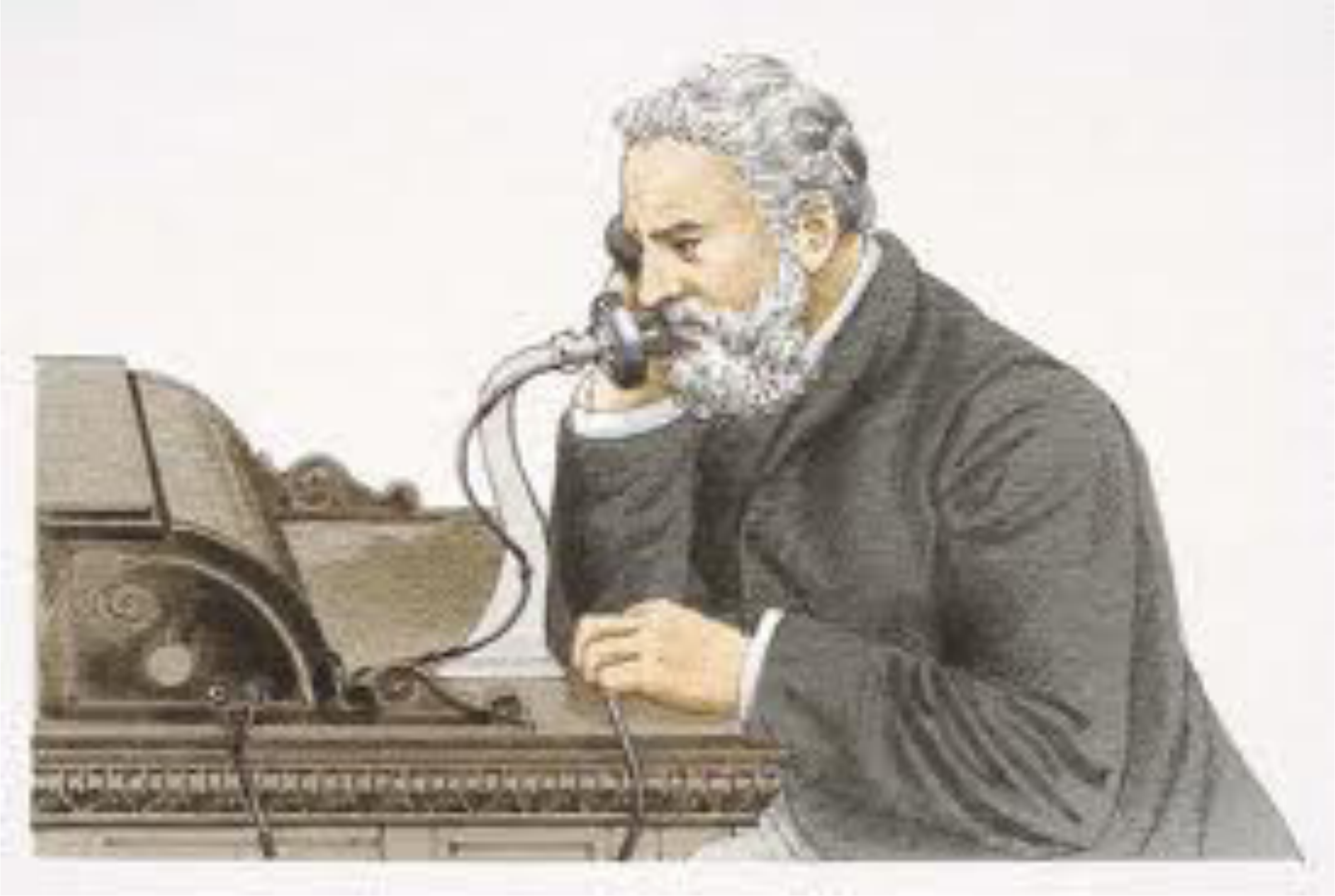


E. MOYLE
LION HOTEL
DULVERTON

Sept 26/94

My dear Father

Arrived at Tiverton yesterday & found your letter awaiting my arrival. I then made straight for my customers so that I could spend an hour or so at St Peters Church which I did up to within 10 minutes of service being held when I had to clear out, but at any rate I have traced the registers back as far as 1733 & overleaf you will find a copy of as many Pimpstones as I happened to come across. I have only noticed



2

Visionphone

e!
TM

MEGAPIXEL
11:35 AM
MOTOROLA
Video
Camera

SAMSUNG
Send
Delete
More
Sony Ericsson

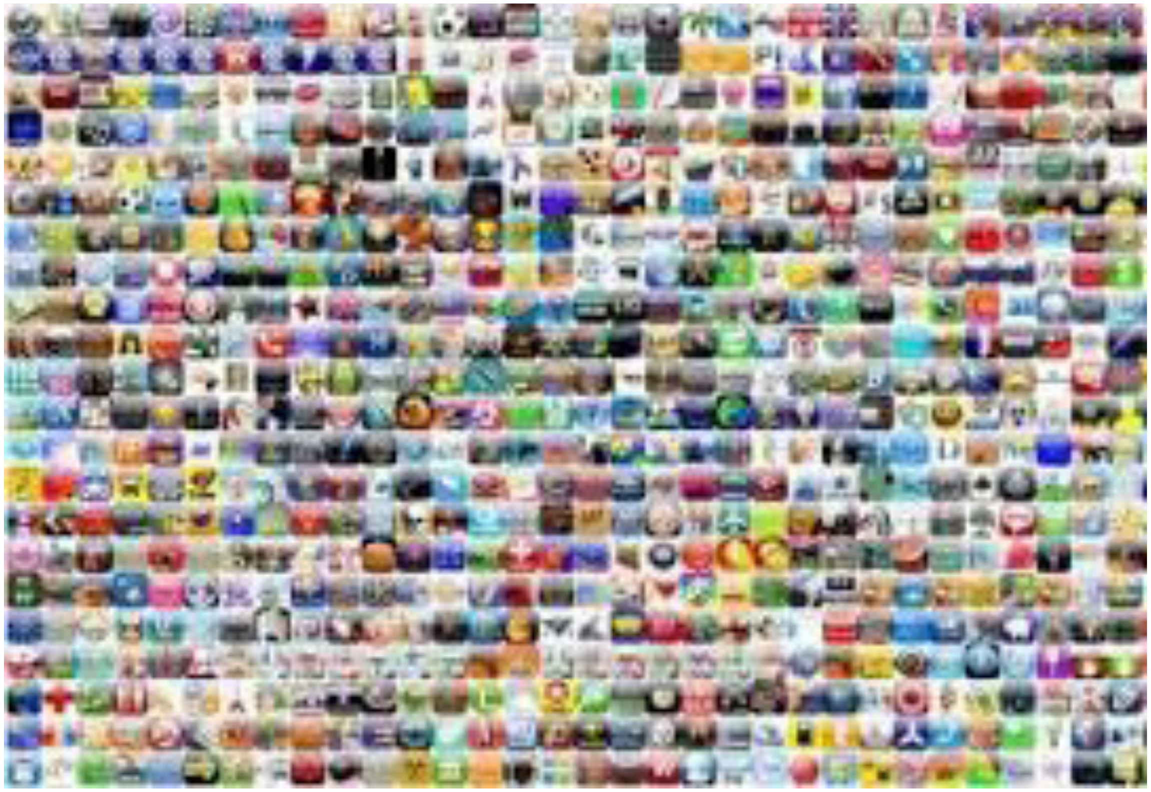
Introducing iPhone

iPhone combines three products — a revolutionary mobile phone, a widescreen iPod with touch controls, and a breakthrough Internet communications device with desktop-class email, web browsing, maps, and searching — into one small and lightweight handheld device. iPhone also introduces an entirely new user interface based on a large multi-touch display and pioneering new software, letting you control everything with just your fingers. So it ushers in an era of software power and sophistication never before seen in a mobile device, completely redefining what you can do on a mobile phone.

Widescreen iPod
Revolutionary Phone
Breakthrough Internet Device
High Technology

iLife '09

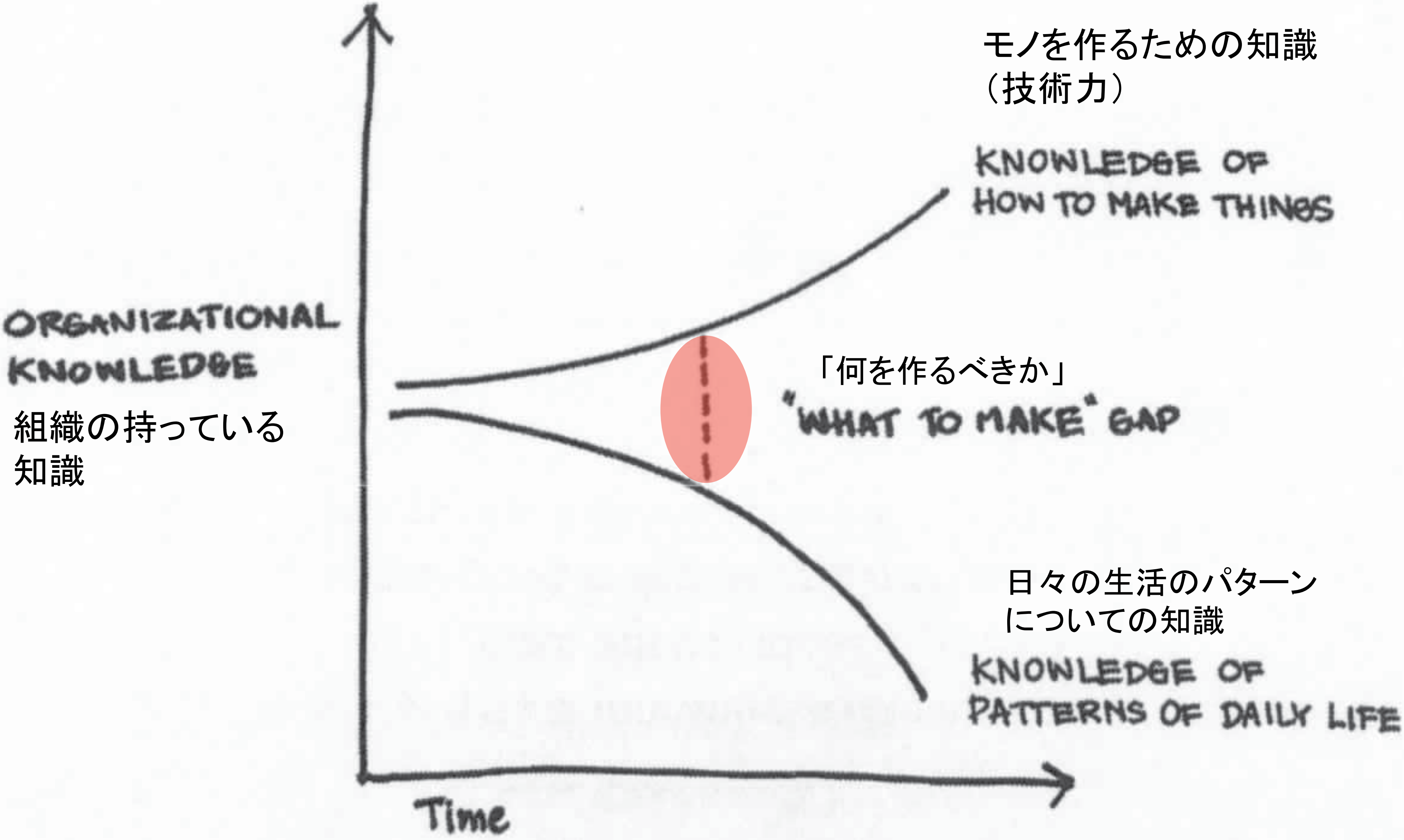
iPhoto. iMovie. GarageBand. iWeb.
All part of every new Mac.



Google play

INNOVATOR’S DILEMMA

Company's dilemma



モノを作るための知識
（技術力）

組織の持っている
知識

「何を作るべきか」

日々の生活のパターン
についての知識

For me...
a customer-centered innovation
approach makes an innovation

DESIGN THINKING

KYOTO INSTITUTE OF TECHNOLOGY
JAEHYUN PARK

“ Understanding of people’s desires”

Understanding people’s everyday life
→ Business and design opportunity

“design thinking is like an inquiry systems about our everyday life”

“ Understanding People → Insights”

For Extreme Weathers

Instantclassroom

Make Training Possible
for more people, in more places

Design A New Experience for the Prevention and Mitigation of disasters of Extreme Weather

Team Guardian X weathernews

Zong Weijie
He Ning
Yu Jichuan
Luong Quang Huan
Thongsookmark Chanatip
Sakada Kotaro

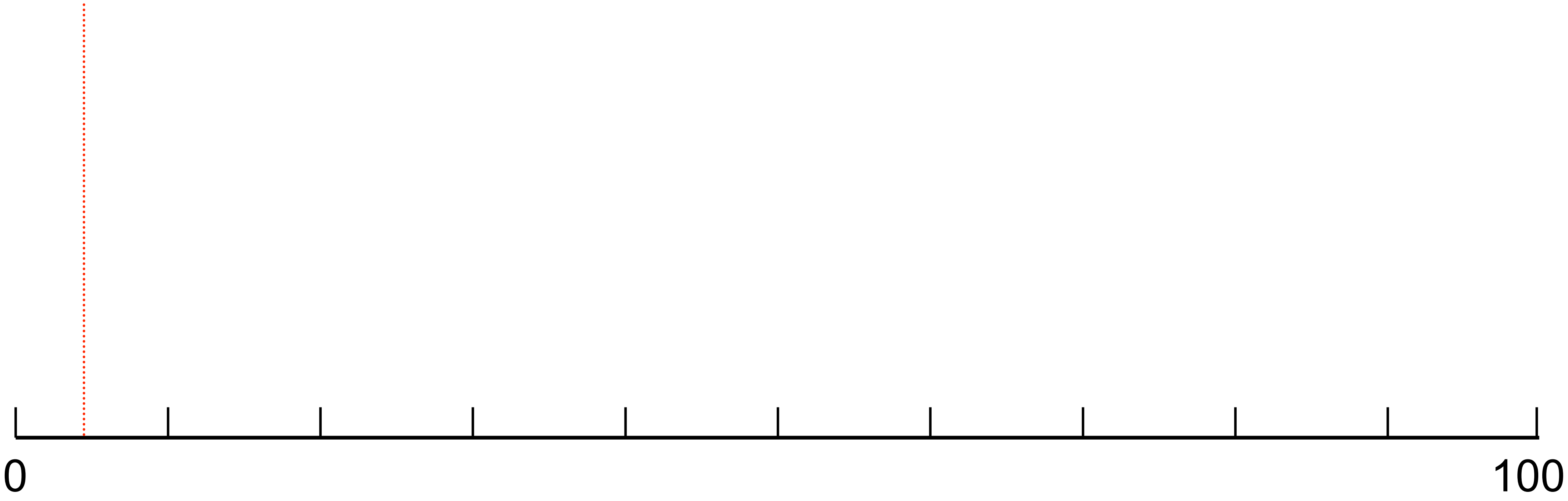
Shunichi Hama
Kaori Oyama
Marc Ericson Santos

WeCook

In reality,

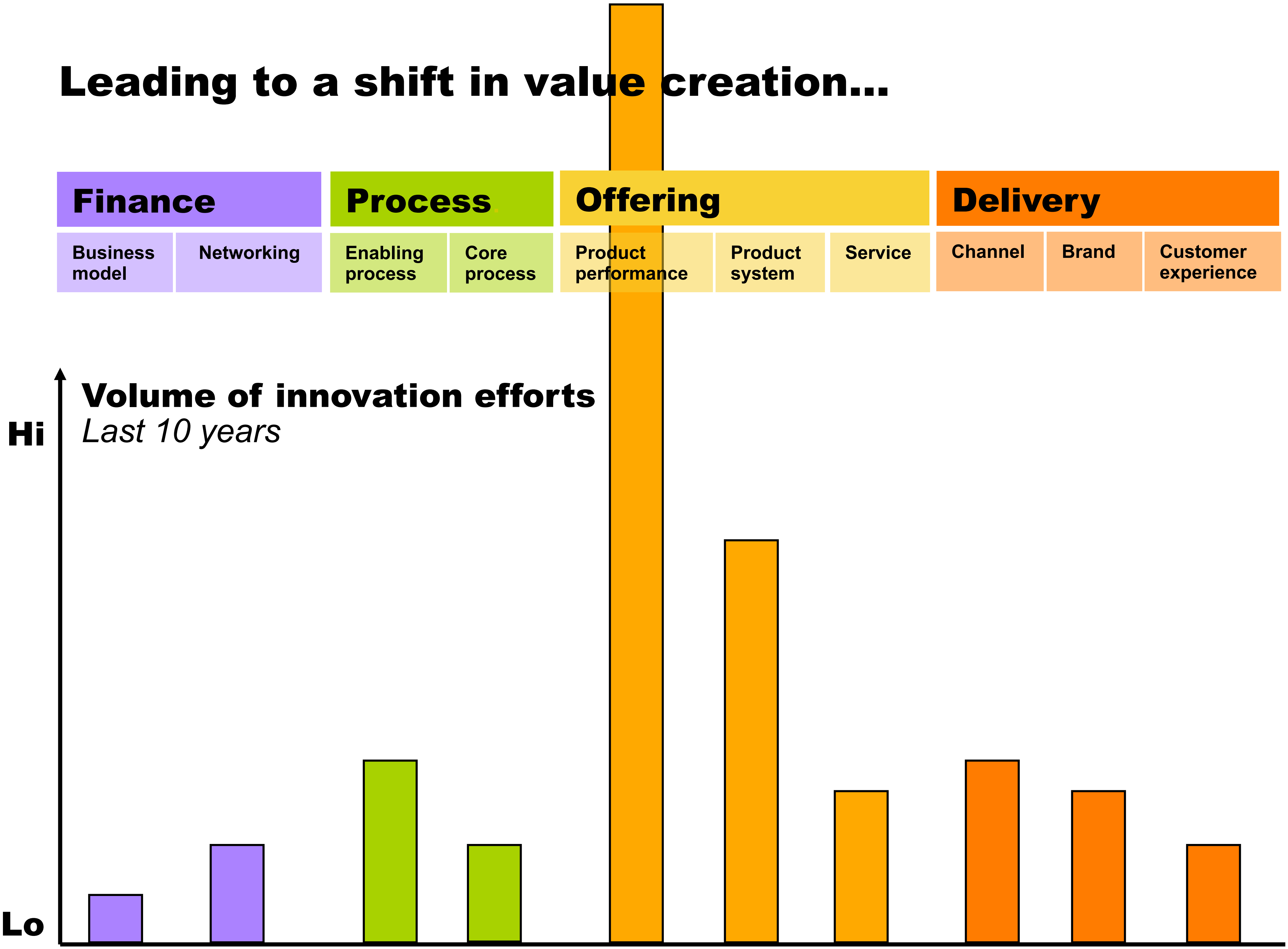
innovation mostly fails

4% ***The global innovation success average, across all geographies and all industries…***



Source: Doblin analysis

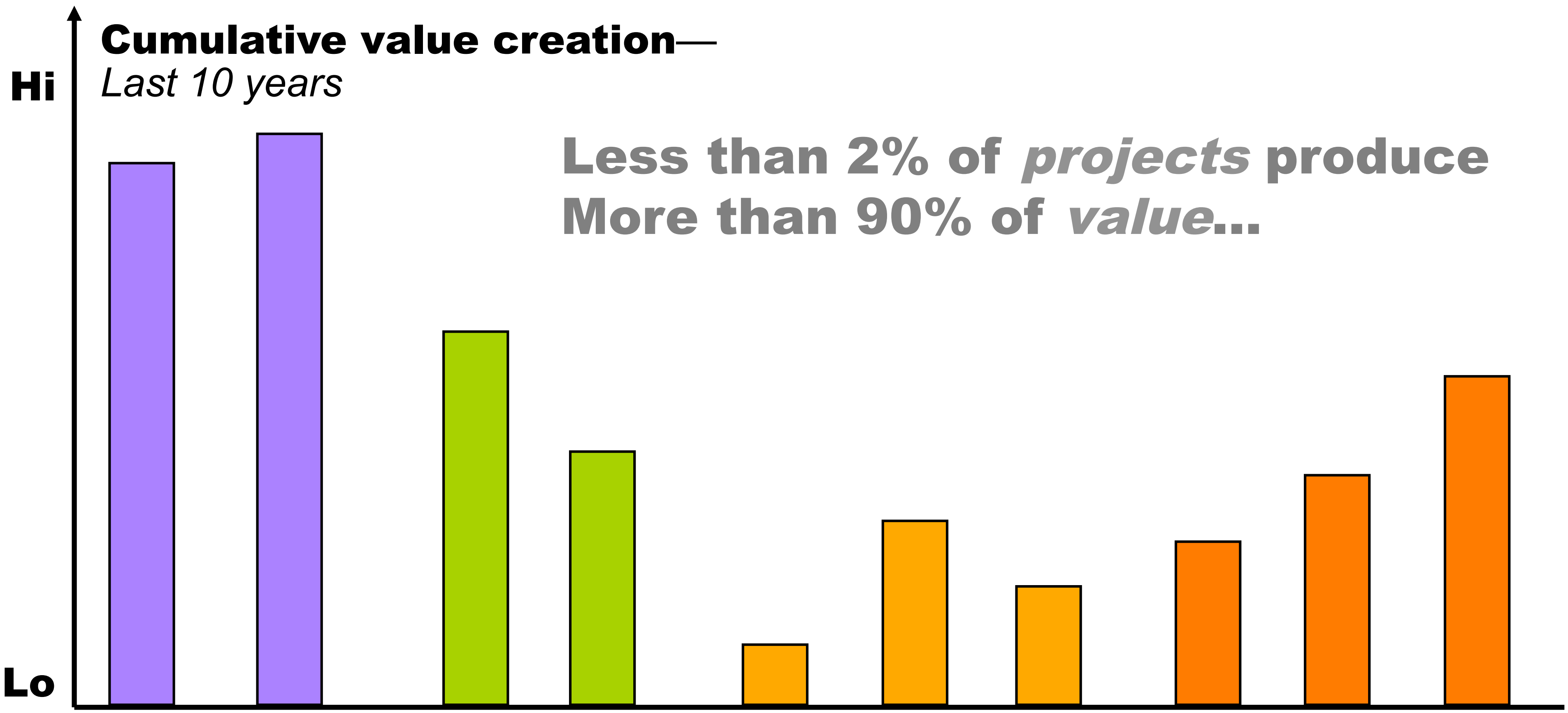
Leading to a shift in value creation…



Source: Doblin analysis

Leading to a shift in value creation…

Finance		**Process**		**Offering**			**Delivery**		
Business model	Networking	Enabling process	Core process	Product performance	Product system	Service	Channel	Brand	Customer experience



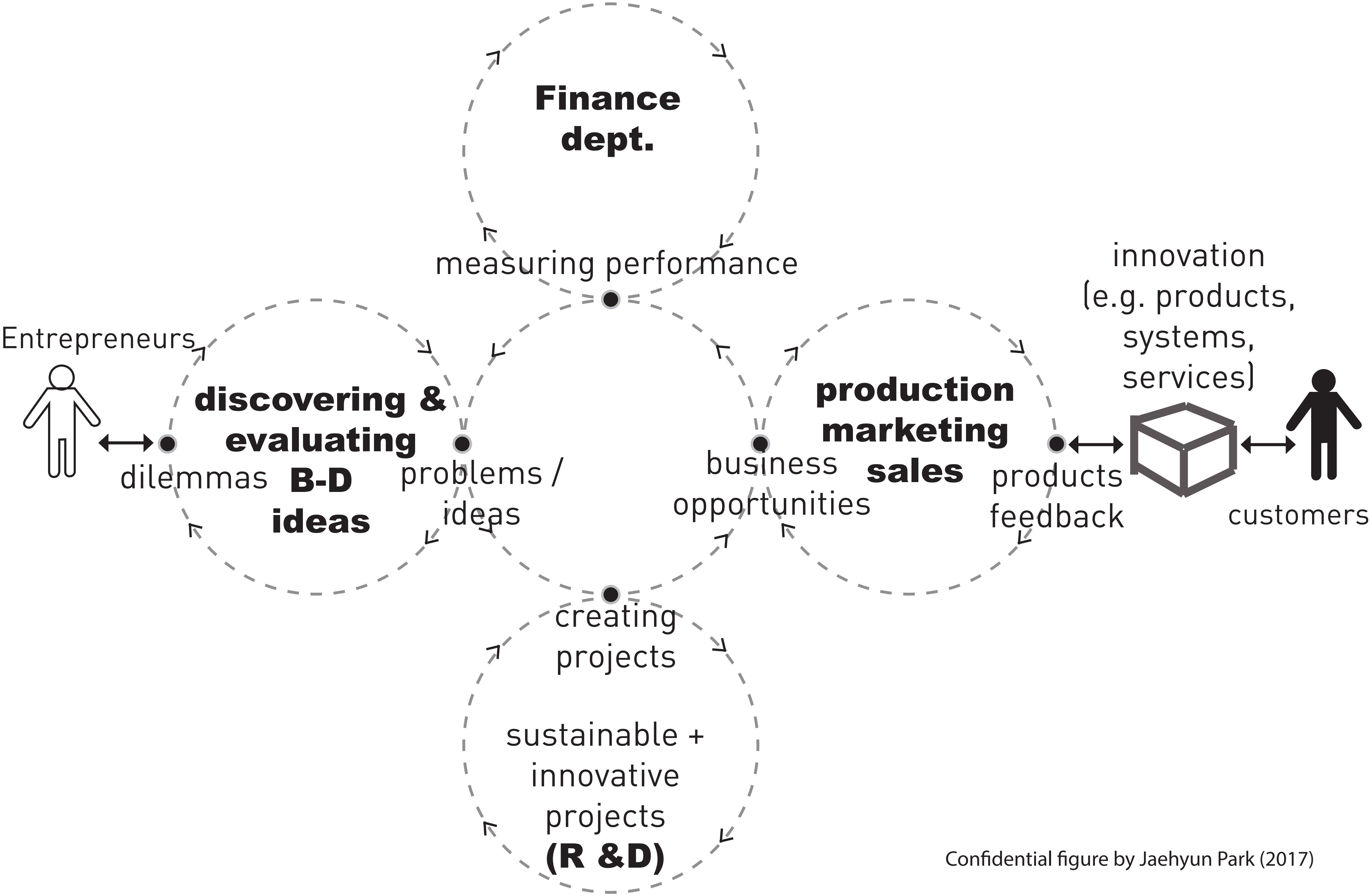
Cumulative value creation—
Last 10 years

Less than 2% of *projects* produce
More than 90% of *value*…

Source: Doblin analysis

Configurations				Offering		Experience			
Profit Model	Network	Structure	Process	Product Performance	Product System	Service	Channel	Brand	Customer Engagement

→Cycle of Innovator's dilemma


Finance dept.
measuring performance
Entrepreneurs
dilemmas
discovering & evaluating B-D ideas
problems / ideas
business opportunities
production marketing sales
products feedback
innovation (e.g. products, systems, services)
customers
creating projects
sustainable + innovative projects **(R &D)**

Confidential figure by Jaehyun Park (2017)

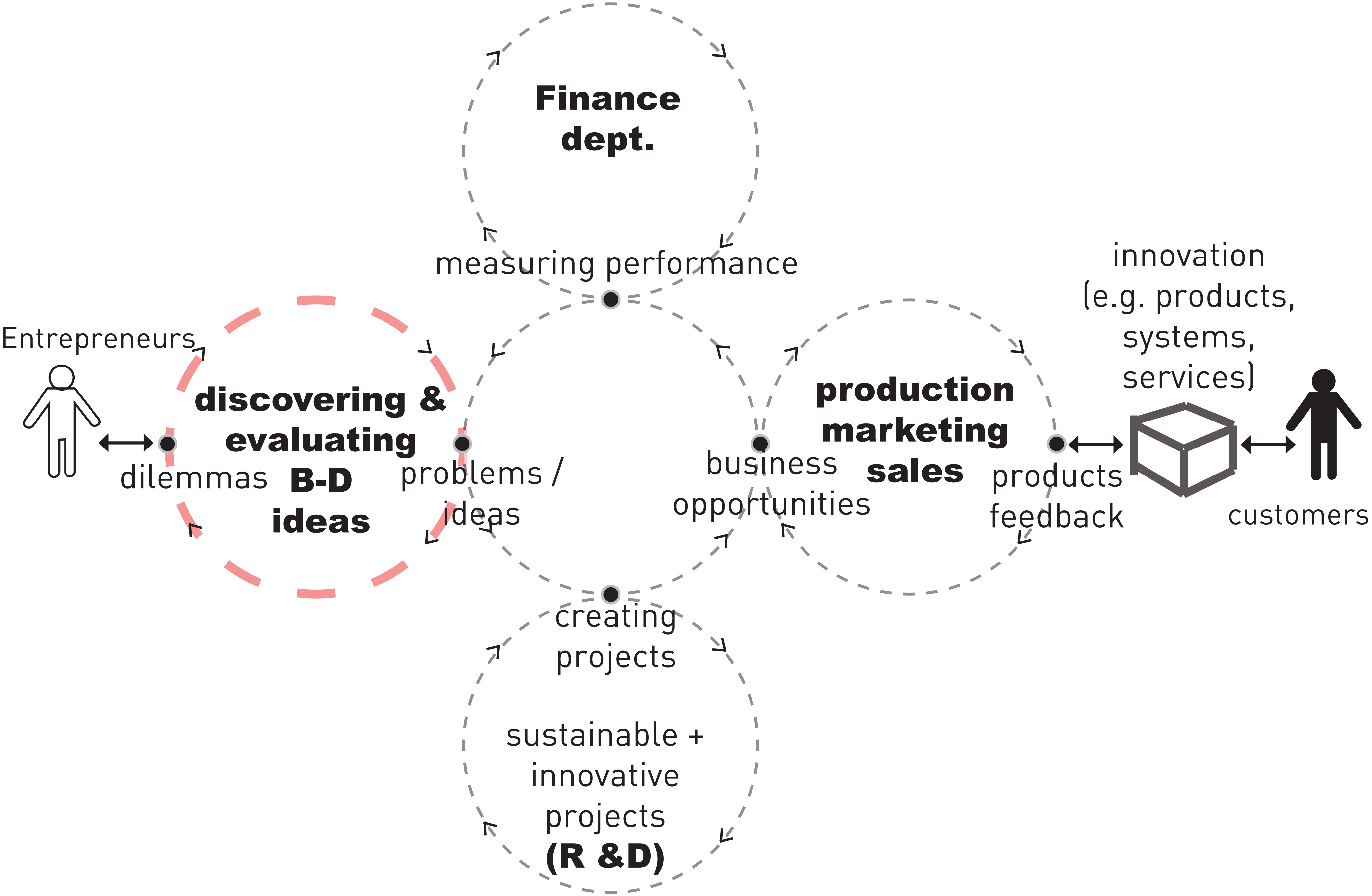
SWEZ

-For Sleep & Wake up Easily-

Members

- **Tomohiro OKA**
- **Ryota MITANI**
- **So SUGIURA**
- **Justinian**

→Cycle of Innovator's dilemma



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production marketing sales
products feedback
customers
creating projects
sustainable + innovative projects (R &D)

Dilemmas / Problems

<-->

Questions

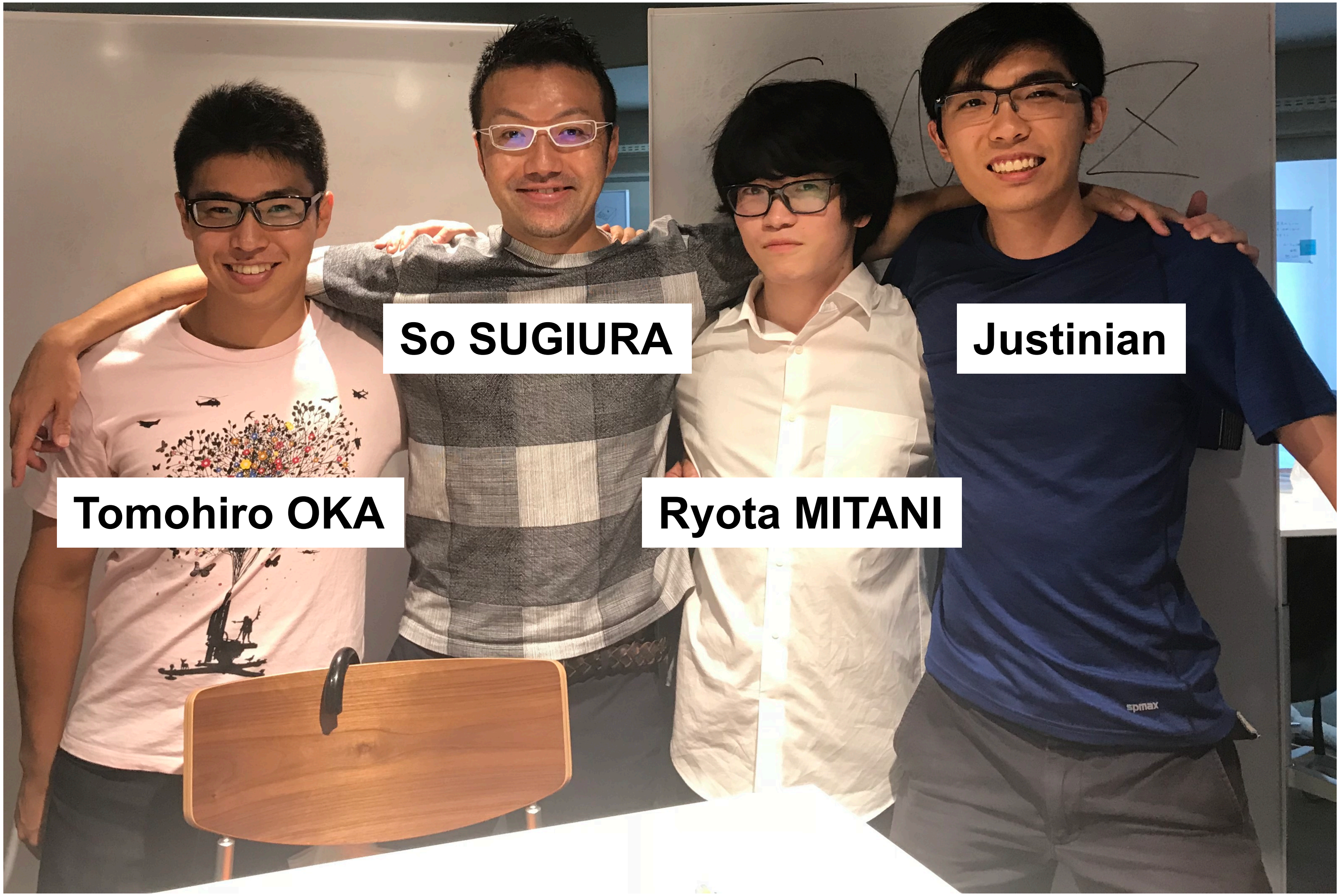
<-->

Innovations

Members

SWEZ

-For Sleep & Wake up Easily-



So SUGIURA

Justinian

Tomohiro OKA

Ryota MITANI

Have you missed the last train due to a fun party?

Over **600** **People**

in Shibuya Are Stranded **Everyday**

MVPG

SWEZ
-For Sleep & Wake up Easily-

Mission

Good Sleeping Provide Good Society

Value

Cheaply providing a bed room for a night
to the person who can't go home

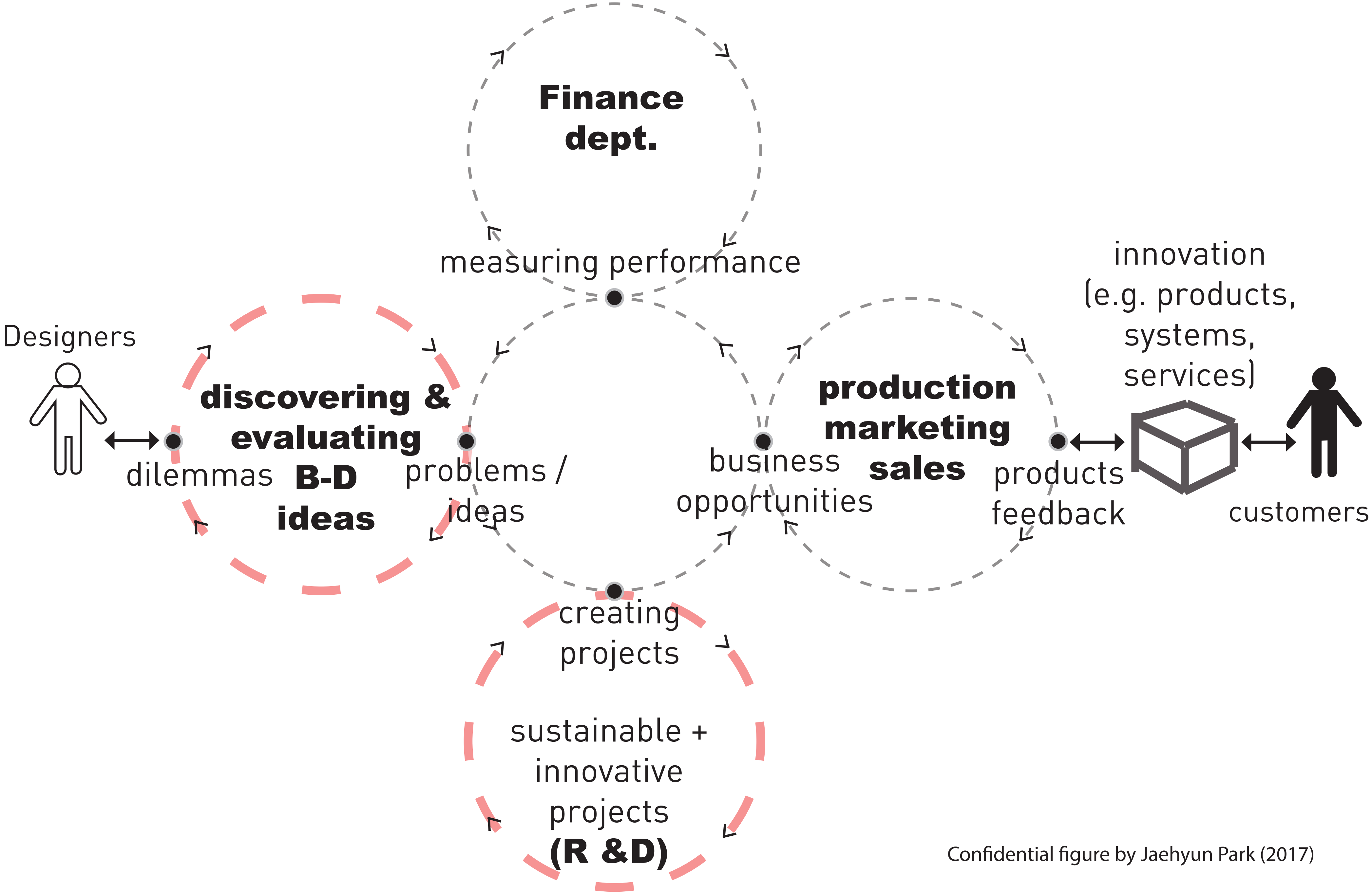
Principle

- Provide a room which is specific to sleeping
- User can try new product related to sleeping

Goal

Reset fatigue for tomorrow

→ Cycle of Designer's dilemma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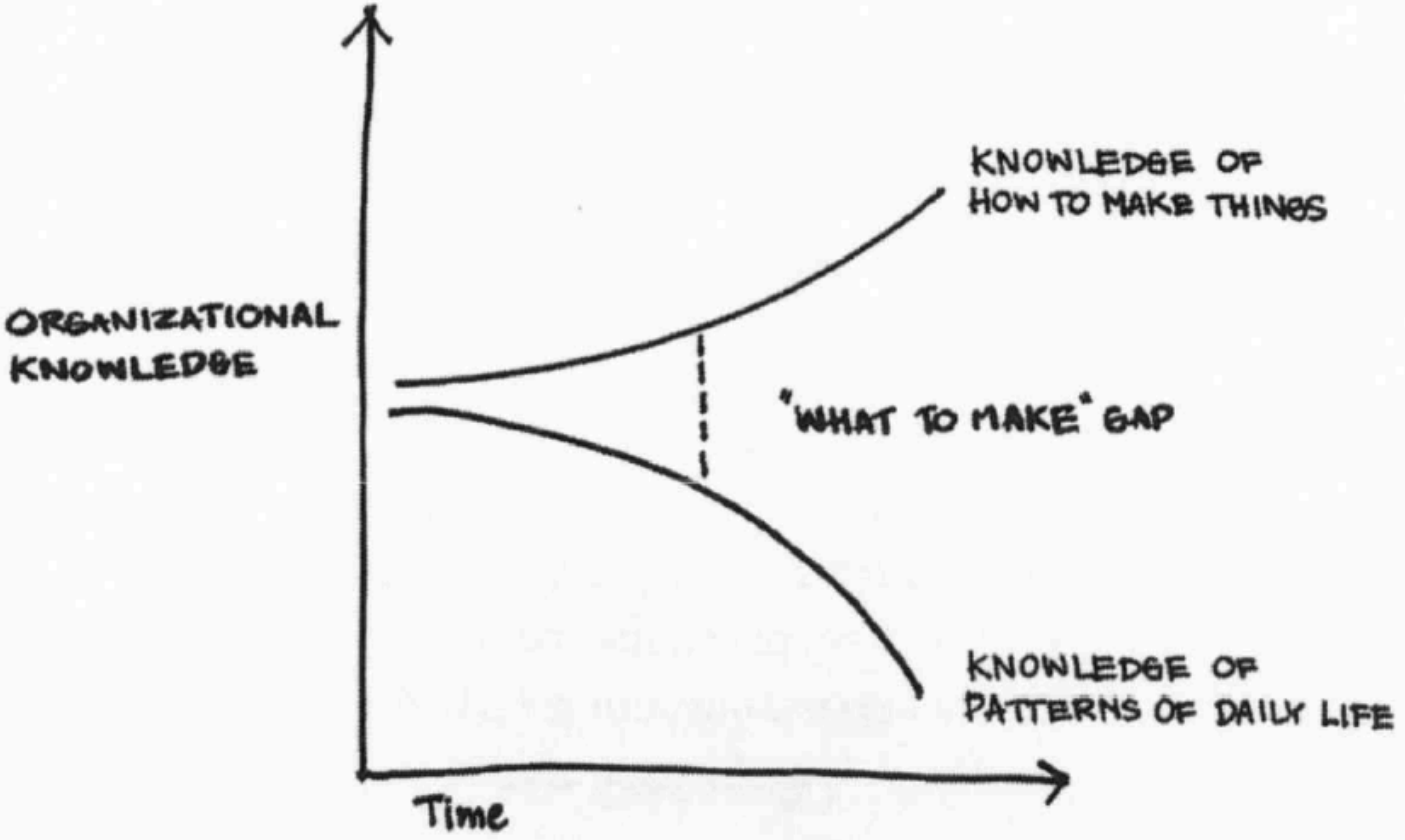
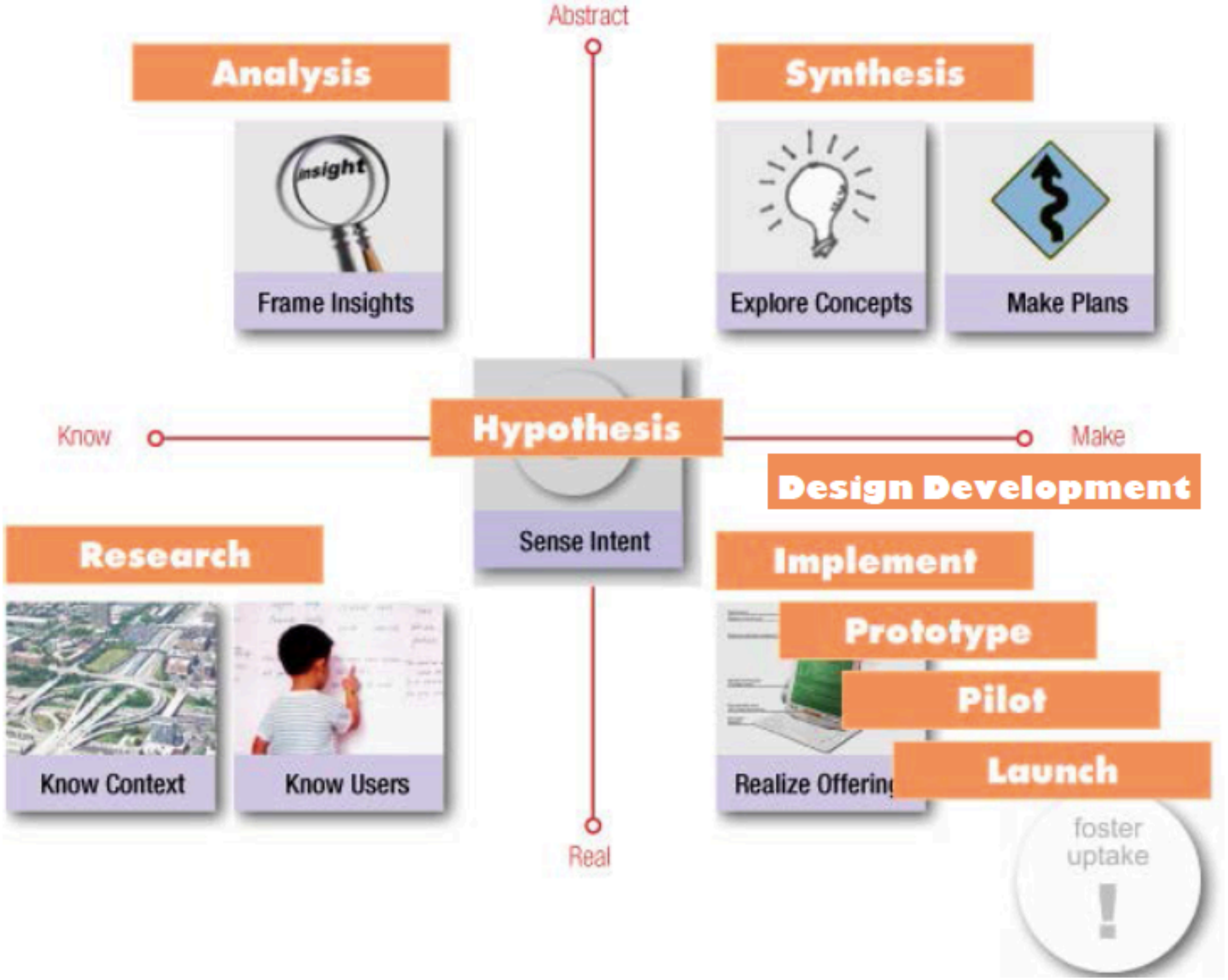
Confidential figure by Jaehyun Park (2017)


ORGANIZATIONAL KNOWLEDGE
KNOWLEDGE OF HOW TO MAKE THINGS
"WHAT TO MAKE" GAP
KNOWLEDGE OF PATTERNS OF DAILY LIFE
Time



Abstract

Analysis

Frame Insights

Synthesis

Explore Concepts

Make Plans

Know

Hypothesis

Sense Intent

Make

Design Development

Research

Know Context

Know Users

Implement

Prototype

Pilot

Launch

Realize Offerin

foster uptake

!

Real

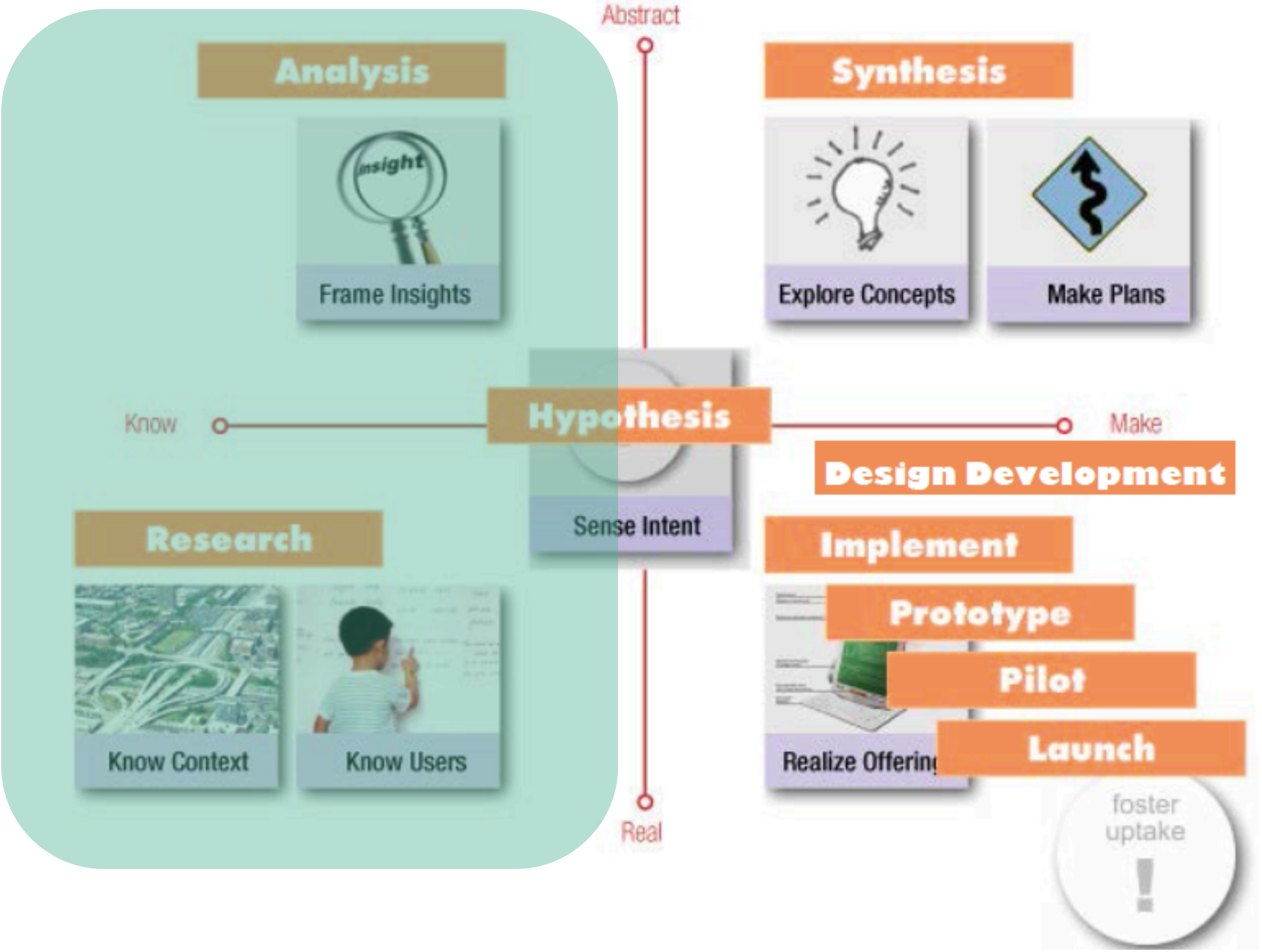
Empathize

Redefine

Ideate

Prototype

Test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Realize Offering
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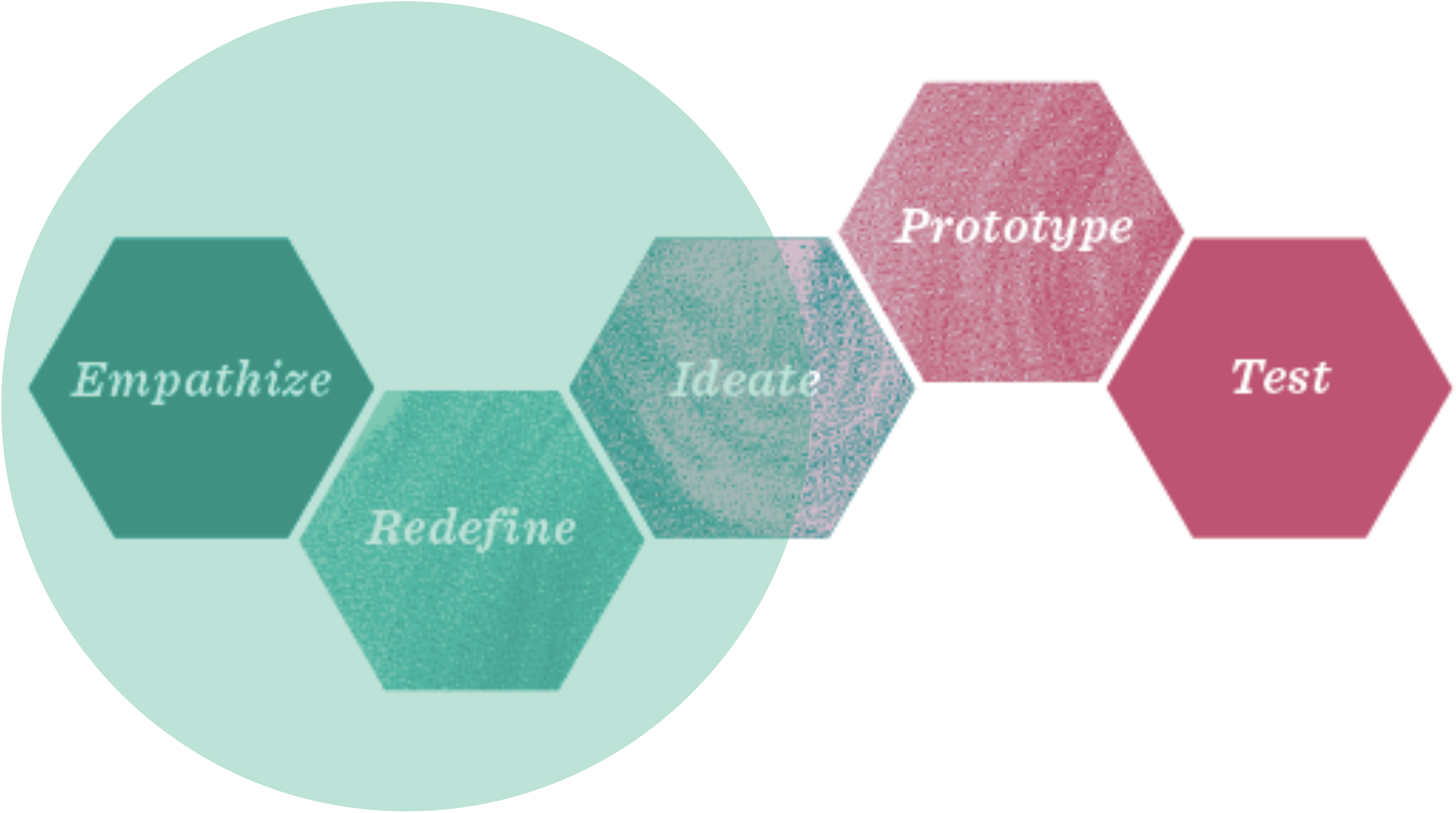
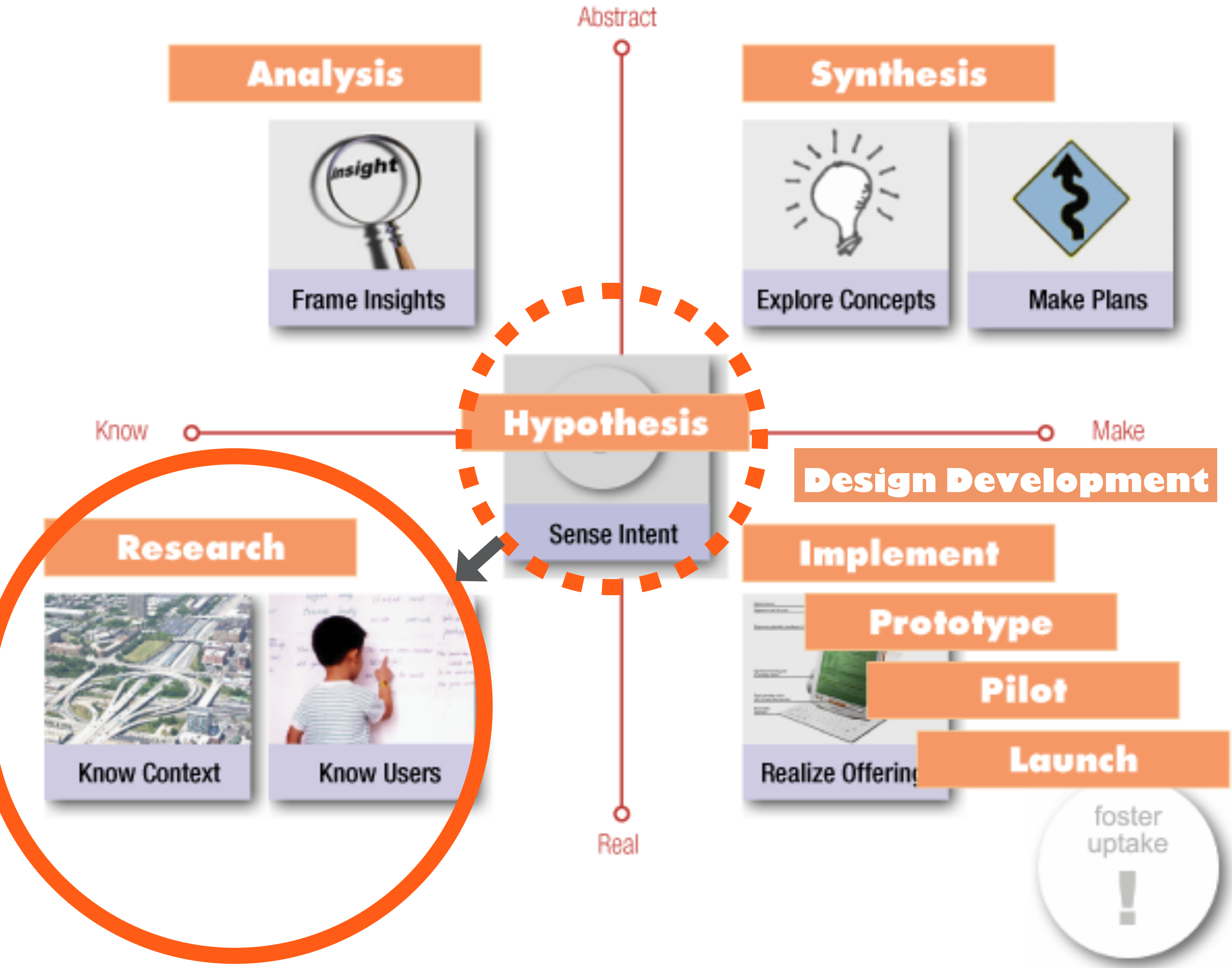
foster
uptake
!


Empathize
Redefine
Ideate
Prototype
Test



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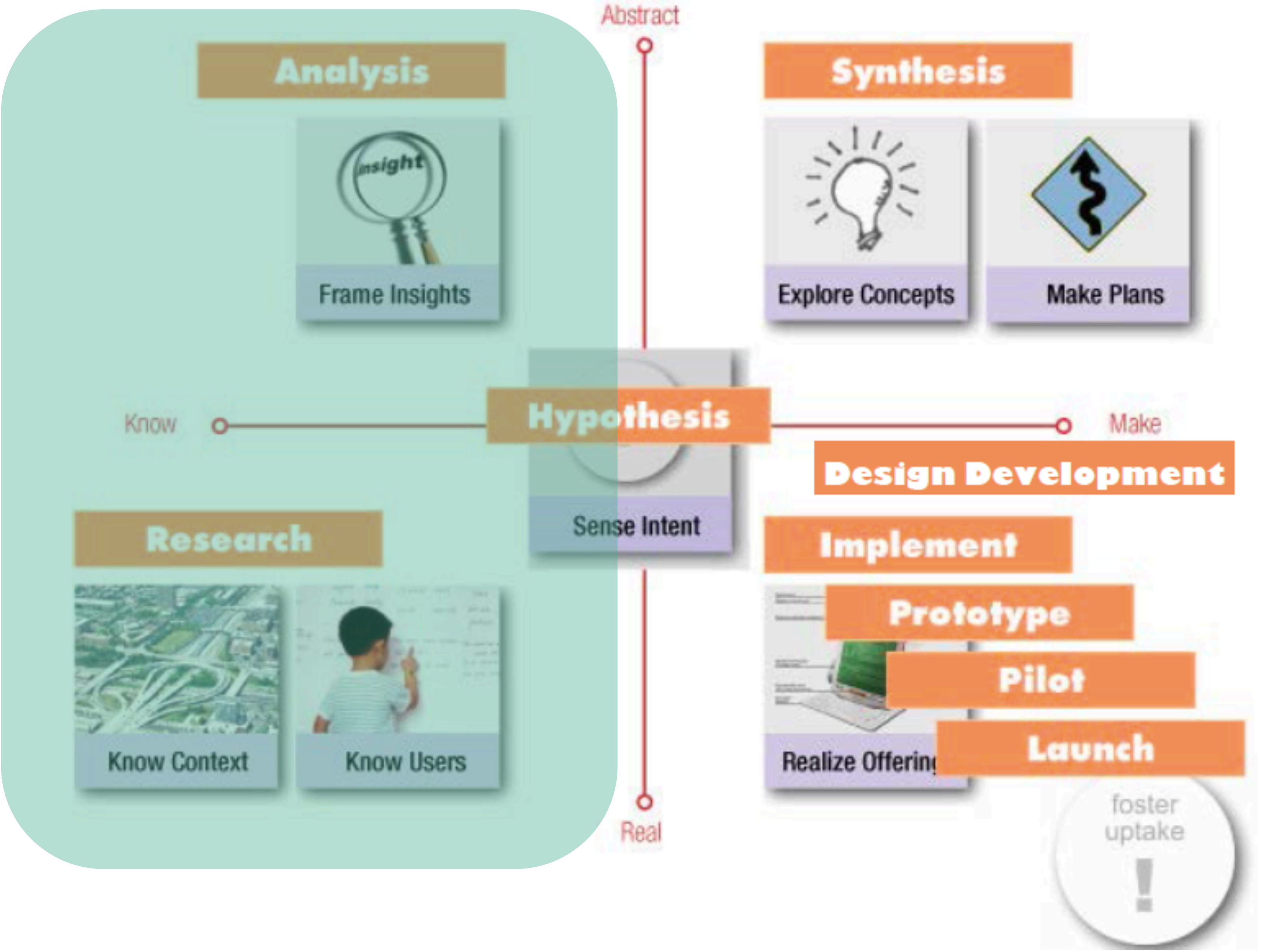

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foster uptake

!

observations

fly on the wall (watching without saying)

shadowing (following a person with permission)

context inquiry (watching and asking)

interviews

direct storytelling

unfocus group

role playing

extrem-user interviews

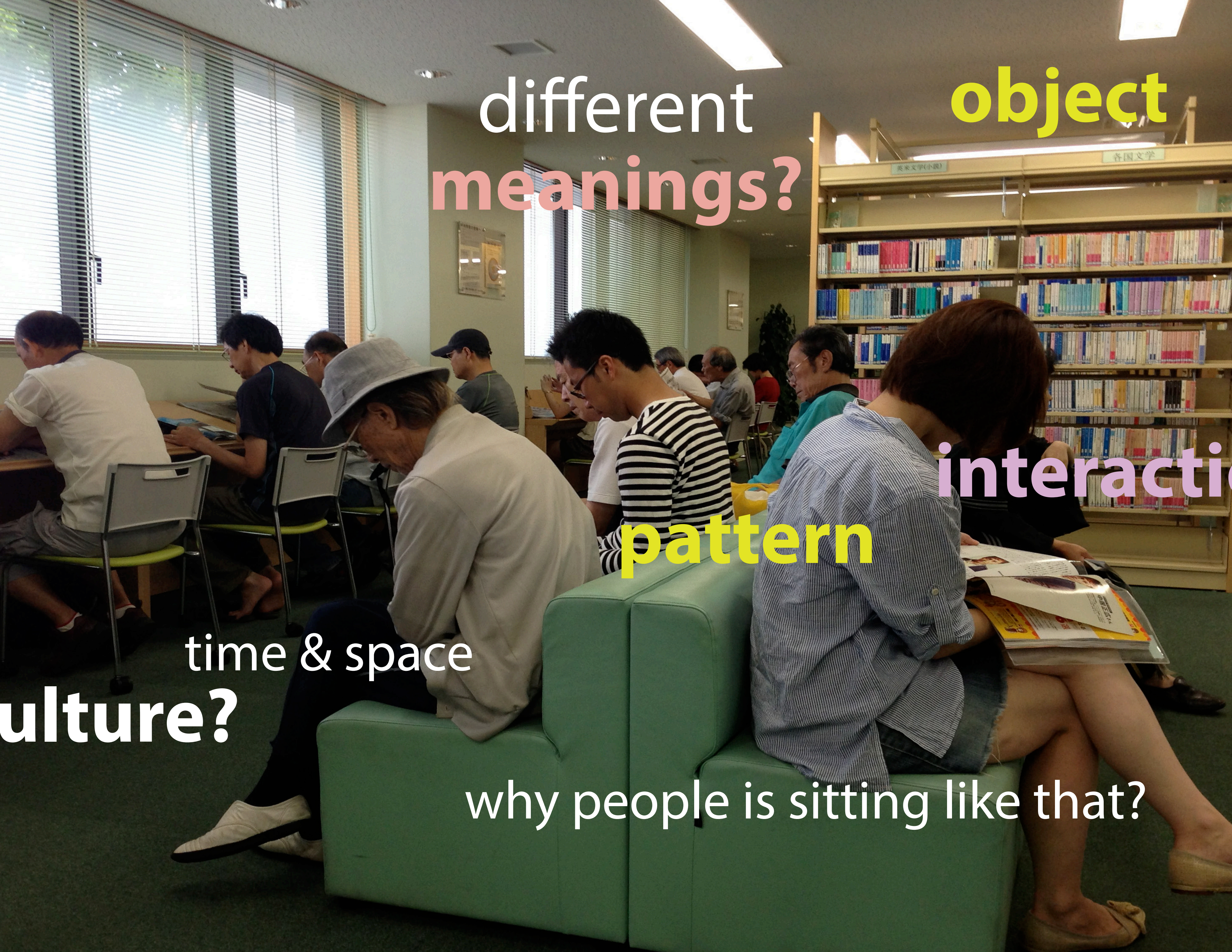
desk tour

you **go** to them
you **talk** to them
you **write** stuff down

会いに行き、
話をして、
理解したことを書き出す

1·2
りんかい線
Rinkai Line
1~4
埼京線
Saikyō Line
1·4
湘南新宿ライン
Shōnan-Shinjuku Line
5·6
成田エクスプレス
Narita Express
5·6
東武線直通（特急）
Through service to Tōbu Line
(Express Train)
7·8·11·12
中央線（快速）
Chūō Line (Rapid)
9·10
中央本線（特急）
Chūō Line (Limited Express)
東口
East Exit
东出口
동쪽 출구
西
Sei
精算機
Fare Adjustment Machine
14 山手線
Yamanote Line
原宿・渋谷・品川方面
13 中央・総武線（各駅停車）
Chūō-Sōbu Line (Local)
水道橋・秋葉原・千葉方面
中央・総武線（各駅停車） 13
水道橋・秋葉原・千葉方面
山手線 14
Yamanote Line
原宿・渋谷・品川方面
14
13
KIOSK

observe
with
hypothesis



different

meanings?

object

interacti

pattern

time & space

ulture?

why people is sitting like that?

pick multiple bags
Health Nuts
NON-FOOD OFFERINGS
CONVENIENCE time
"worked late (again)"
"easy + fast" 3-4 days a week
How can I create a nutritious meal in ½ hour?
TIME IS MAJOR FACTOR IN HEALTHY FOOD SELECTION
SPEED
"preoccupied with work"
HEALTHY FOOD REQUIRES TIME TO PREPARE
NOTIME for food
"Ran out of time."
convenience
lack of time
fixed morning routine
VALUE "SOFT" (HOLISTIC) HEALTH
community
VALUE COMMUNITY
eating disorders
Why Liquid Extracts?
Optimal Absorption
Multiple Ways To Use
The Taste Difference
Fresh Herb Extraction
Organic & Sustainable
HERB PHARM
MEAT
light, fresh, fast and convenient
late night bad food eating

Day 2 Log

Write down what you ate today. Do your best to include all meals and snacks. Fill in as much as possible.

Time?	What did you eat, where and why (1 word) did you eat it?
8⁰⁰	Toast - Home - Breakfast
10⁰⁰	Banana
1⁰⁰	Slice Pizza + Diet Coke - Out Fast
4⁰⁰	1 Teuscher Truffle - Office - Delicious
8⁰⁰	Greek salad + Chicken Soup
10⁰⁰	5 strawberries - home - Dessert

Did you exercise today? How? No

Why or why not? I worked late (again)

Did you take vitamins today? yes

Describe dinner today. Where did you … the food? (this could be you) How was …

I made a fresh … salad + fresh … w/ dumplings. … taste for this … light + good

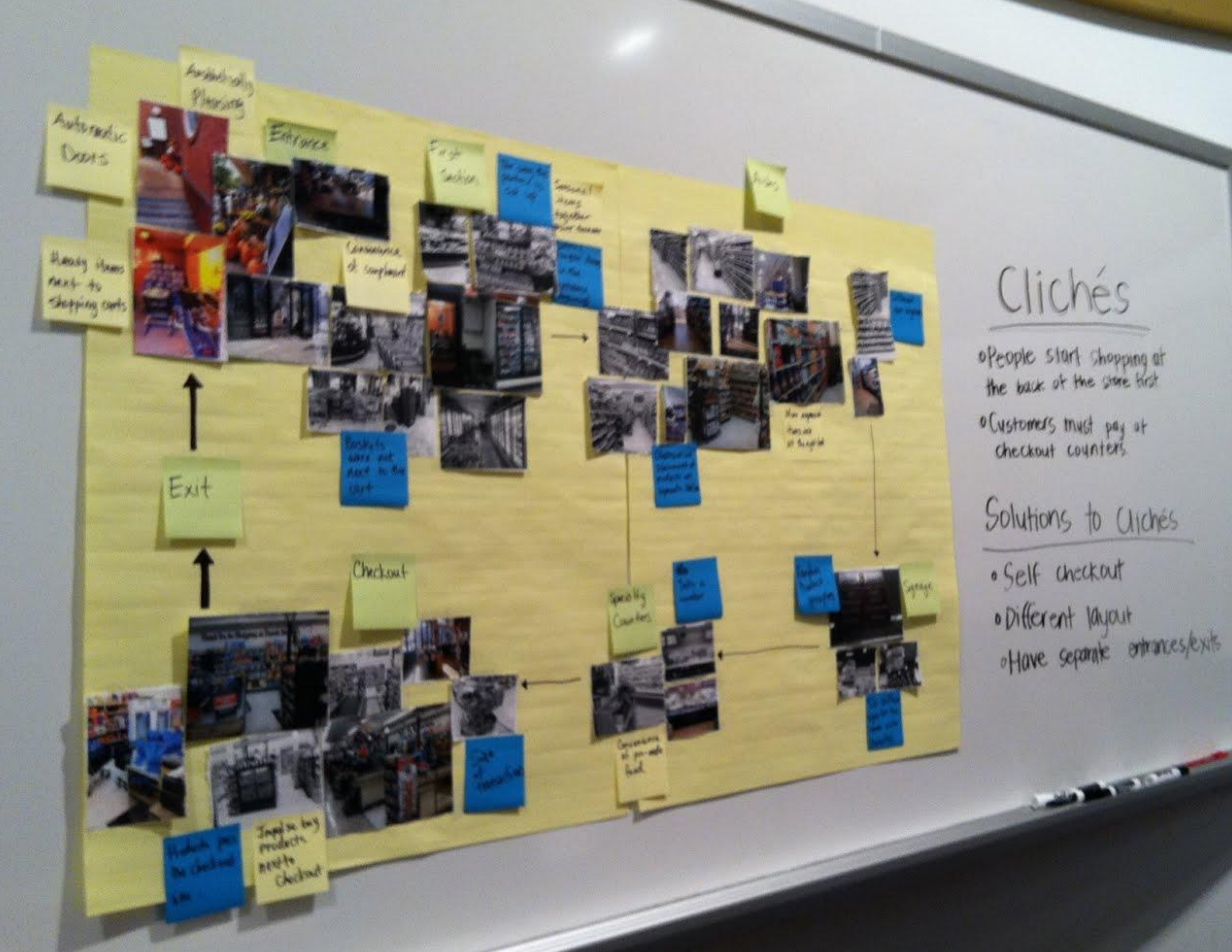
Use your camera to take some pictur…

- The place you had dinner
- Someone you shared a m…
- The person who made yo… (this could be you)

Framework as organizing structure - AEIOU

活動	環境	相互交流	モノ	ユーザ
A	E	I	O	U
Activities	Environments	Interactions	Objects	Users

interaction　相互交流・相互作用


Aesthetically Pleasing
Automatic Doors
Entrance
First Section
Seasonal items together
Heavy items next to shopping carts
Convenience of complement
Aisles
Exit
Baskets were not next to the cart
Checkout
Specialty Counters
Signage
Convenience of pre-made food
Impulse buy products next to checkout

Clichés

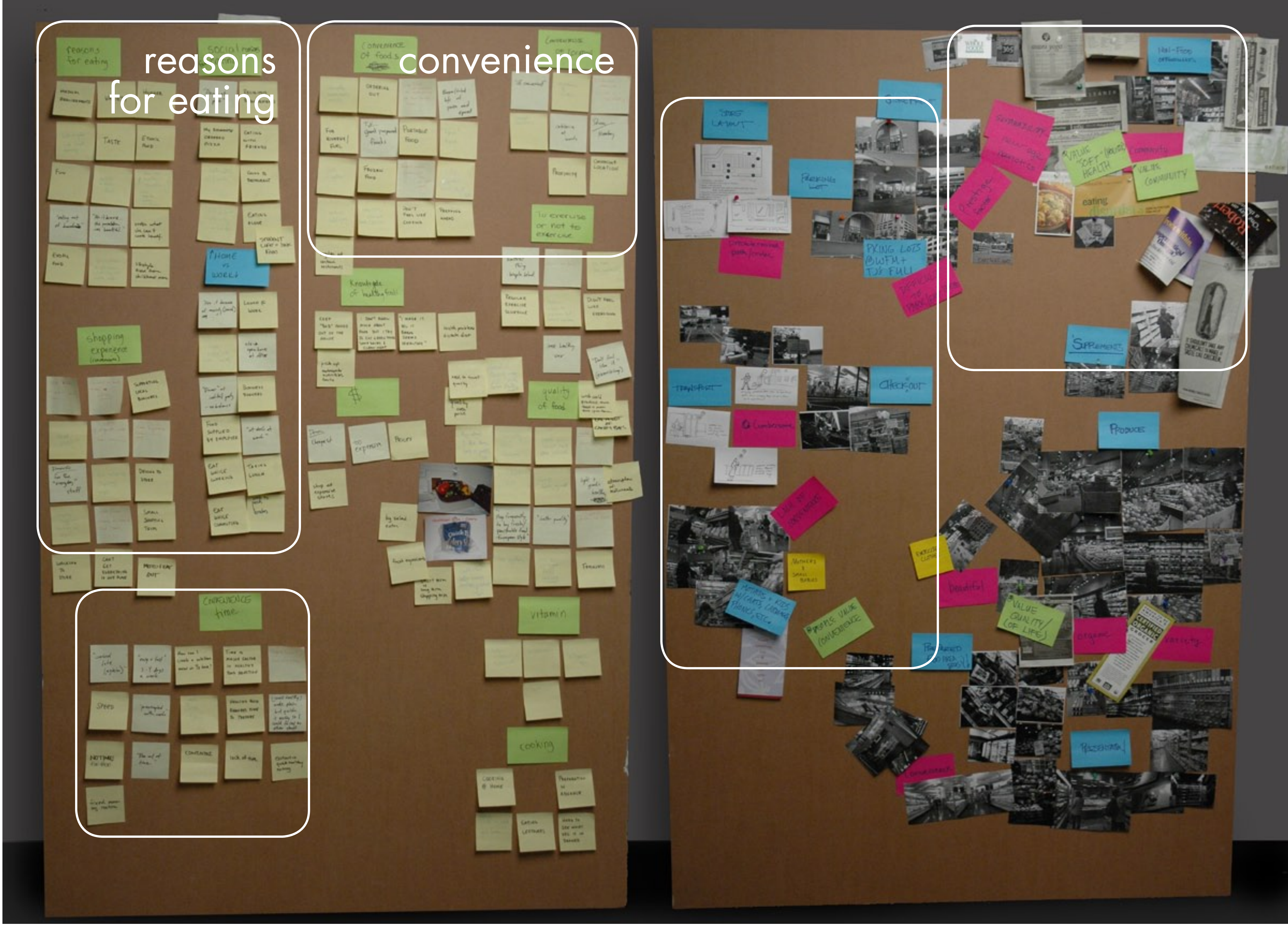
- People start shopping at the back of the store first
- Customers must pay at checkout counters.

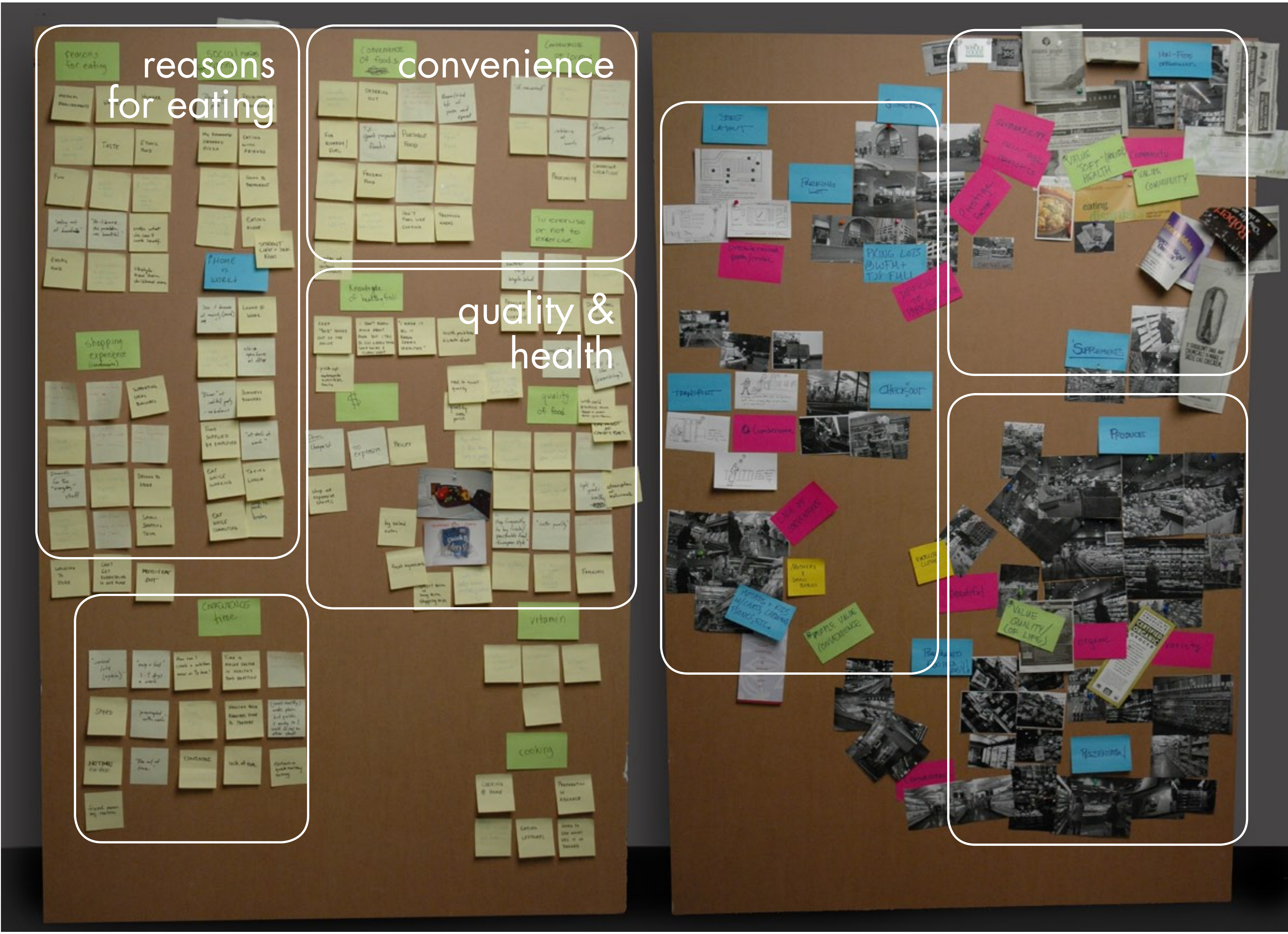
Solutions to Clichés

- Self checkout
- Different layout
- Have separate entrances/exits

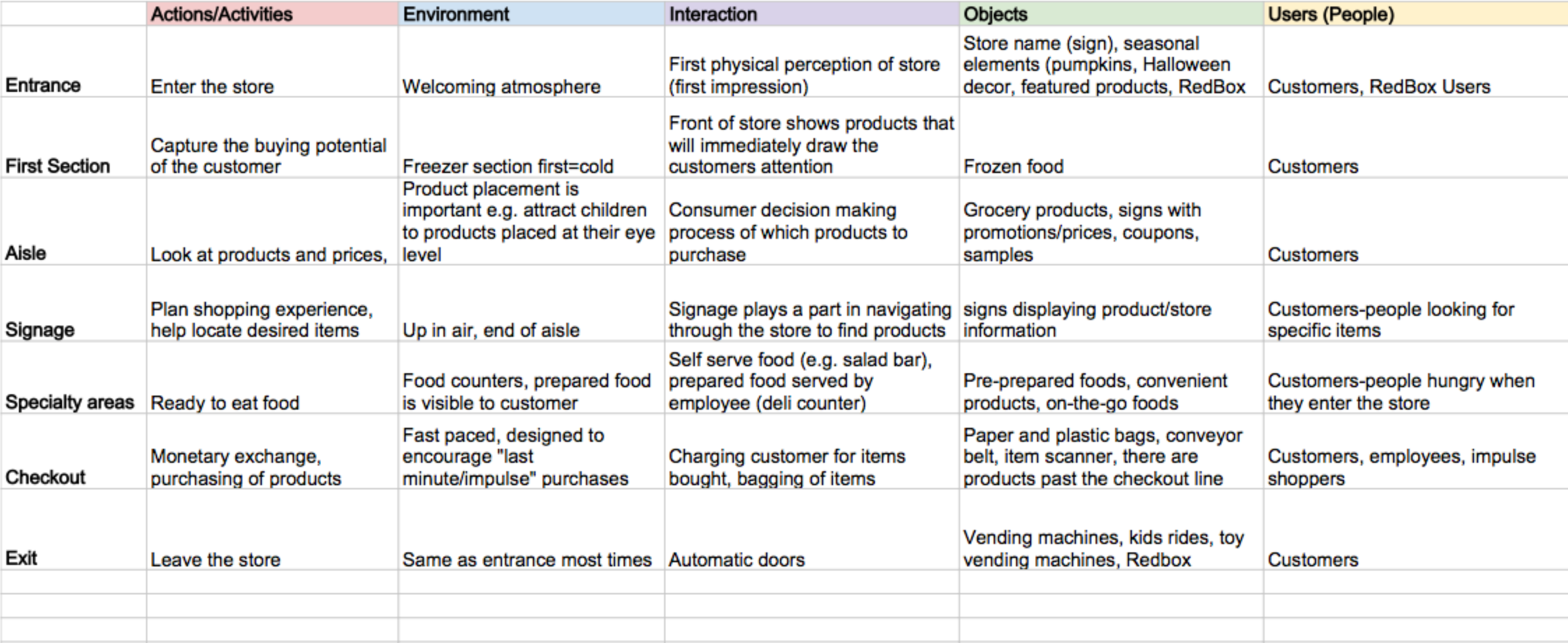
reasons for eating
social reasons
shopping experience
Phone vs. work
convenience of foods
convenience of location
Knowledge of health food
to exercise or not to exercise
quality of food
convenience time
vitamin
cooking
Store Front
Store Layout
Parking Lot
PKING LOTS @WFM + TJs FULL
Transport
Checkout
Supplements
Non-Food offerings
Value community
Produce
Value Quality (of life)
organic
variety
beautiful
Prepared Foods
People value convenience
eating

reasons for eating


reasons for eating
convenience
shopping experience
HOME vs WORK
Knowledge of health food
quality of food
vitamin
cooking
CONVENIENCE time
STORE LAYOUT
PARKING LOT
TRANSPORT
CHECKOUT
PRODUCE
SUPPLEMENTS
VALUE COMMUNITY
organic
variety
beautiful


reasons for eating
convenience
quality & health
vitamin
cooking

食糧雑貨店の事例



	Actions/Activities	Environment	Interaction	Objects	Users (People)
Entrance	Enter the store	Welcoming atmosphere	First physical perception of store (first impression)	Store name (sign), seasonal elements (pumpkins, Halloween decor, featured products, RedBox	Customers, RedBox Users
First Section	Capture the buying potential of the customer	Freezer section first=cold	Front of store shows products that will immediately draw the customers attention	Frozen food	Customers
Aisle	Look at products and prices,	Product placement is important e.g. attract children to products placed at their eye level	Consumer decision making process of which products to purchase	Grocery products, signs with promotions/prices, coupons, samples	Customers
Signage	Plan shopping experience, help locate desired items	Up in air, end of aisle	Signage plays a part in navigating through the store to find products	signs displaying product/store information	Customers-people looking for specific items
Specialty areas	Ready to eat food	Food counters, prepared food is visible to customer	Self serve food (e.g. salad bar), prepared food served by employee (deli counter)	Pre-prepared foods, convenient products, on-the-go foods	Customers-people hungry when they enter the store
Checkout	Monetary exchange, purchasing of products	Fast paced, designed to encourage "last minute/impulse" purchases	Charging customer for items bought, bagging of items	Paper and plastic bags, conveyor belt, item scanner, there are products past the checkout line	Customers, employees, impulse shoppers
Exit	Leave the store	Same as entrance most times	Automatic doors	Vending machines, kids rides, toy vending machines, Redbox	Customers

Framework as organizing structure - POEMS

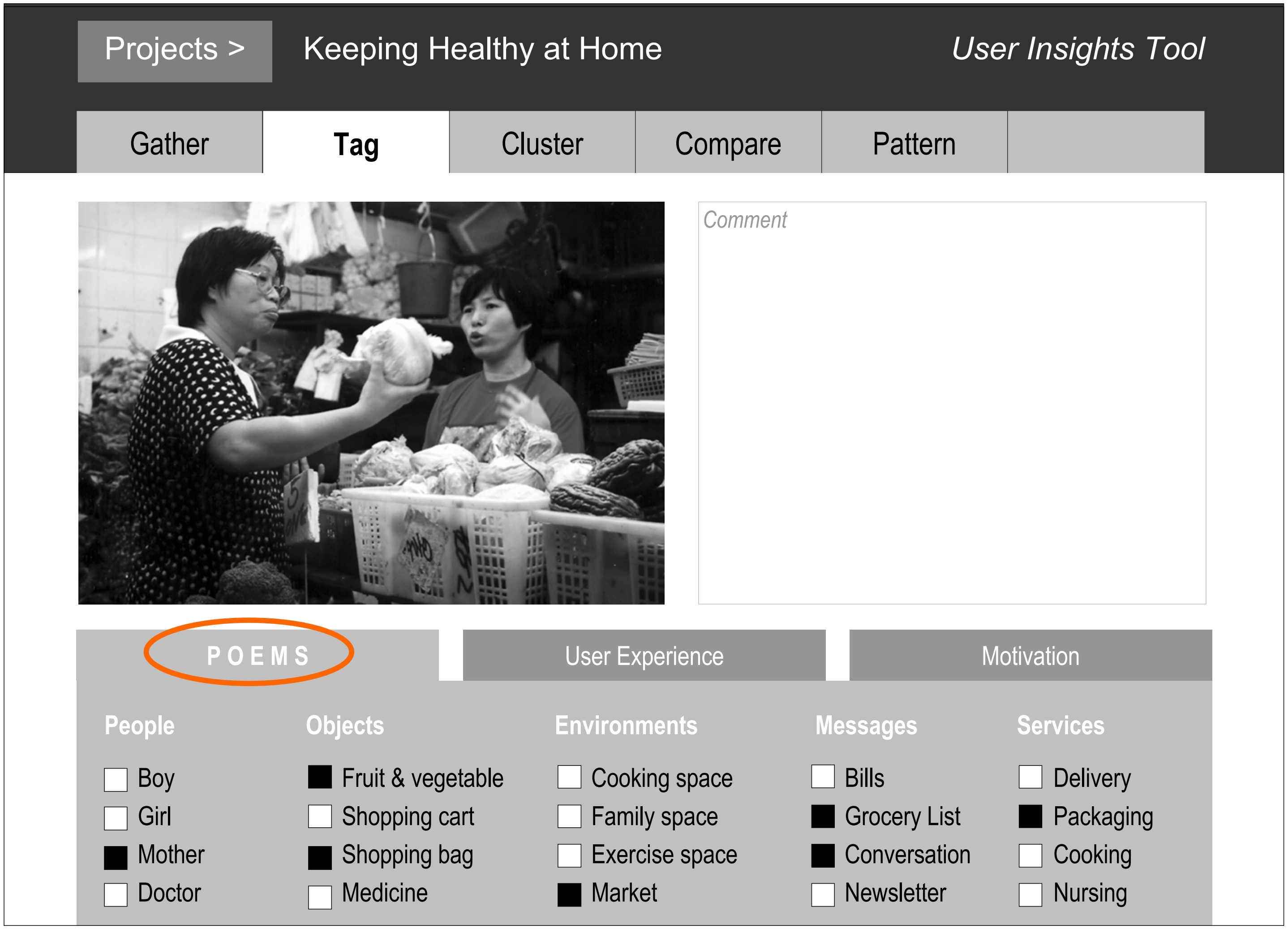
POEMS

People Objects Environments Messages Services

message & service

メッセージ ＆ サービス

User Insights Tool – POEMS Framework


Projects >
Keeping Healthy at Home
User Insights Tool
Gather
Tag
Cluster
Compare
Pattern
Comment
POEMS
User Experience
Motivation

People

☐ Boy
☐ Girl
☒ Mother
☐ Doctor

Objects

☒ Fruit & vegetable
☐ Shopping cart
☒ Shopping bag
☐ Medicine

Environments

☐ Cooking space
☐ Family space
☐ Exercise space
☒ Market

Messages

☐ Bills
☒ Grocery List
☒ Conversation
☐ Newsletter

Services

☐ Delivery
☒ Packaging
☐ Cooking
☐ Nursing

Source: Global Companies Local Markets, Institute of Design

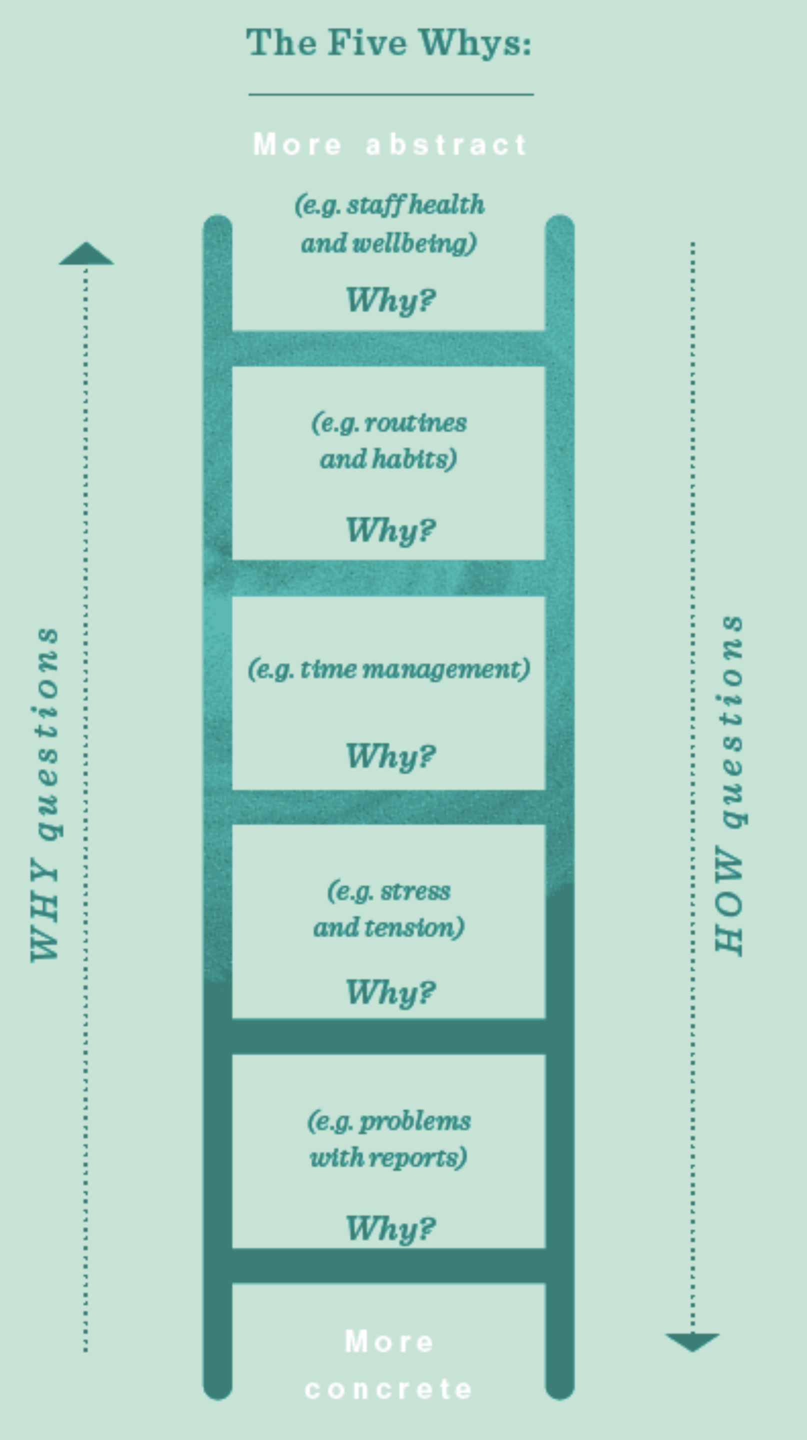
Qualitative Interviews

Jaehyun Park

Explain vs Explore Questions

What → Why & How Questions

* Two Type of Questions
(Explain vs. Explore)


The Five Whys:
More abstract
(e.g. staff health and wellbeing)
Why?
(e.g. routines and habits)
Why?
(e.g. time management)
Why?
(e.g. stress and tension)
Why?
(e.g. problems with reports)
Why?
More concrete
WHY questions
HOW questions

Exercise #1

"The Best / Worst Experience at the Last Week"

explain vs. explore questions

Powerful Questions ?

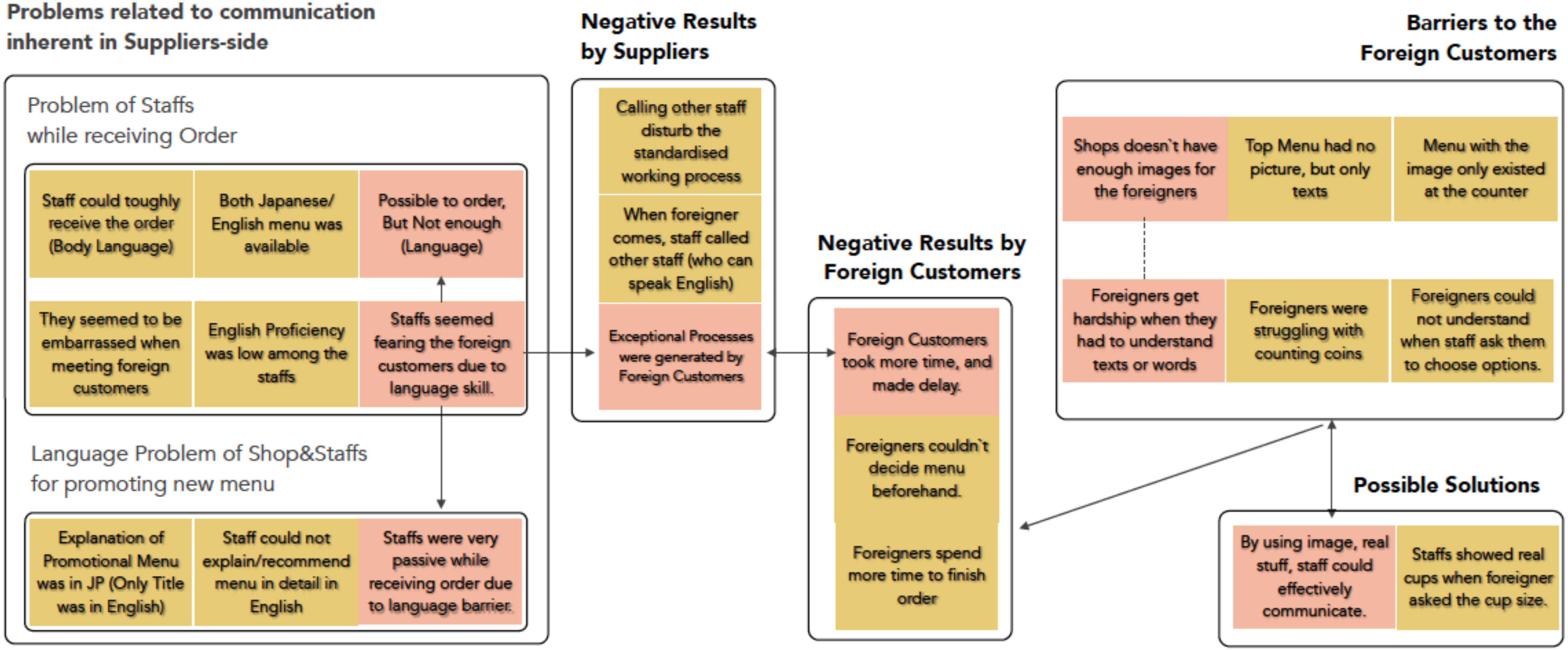
Use Post-it Analysis

The Emotions

customers
many different customers
many (children) - bringing customers
shop environment
Lack of Electricity Supply.
Some Customers want to Concentrate
Computer-Using Customers
Some Customer Come to Studying
Passive Promotional Action
Standard working
staff behaviour
very short time per order
small amount of conversation among staff
use computer screens/system to receive orders
standardized working process
very friendly and smiling staff
Type of Seats
Lack of Information about Seat Availability
Consideration to Foreign Customers
Sales to English-using Customers
bilingual menu was existing.
Some Customers stay longer than usual
Consumers behavior that makes others uncomfortable.
Single Customer is occupying 2 Seats
Customers occupy Seat before order
Situation that Customer felt inconvenient
Small and busy Shop

PROJECT INFO

Learning from field Study : KJ Method



Problems related to communication inherent in Suppliers-side

Problem of Staffs while receiving Order

- Staff could toughly receive the order (Body Language)
- Both Japanese/ English menu was available
- Possible to order, But Not enough (Language)
- They seemed to be embarrassed when meeting foreign customers
- English Proficiency was low among the staffs
- Staffs seemed fearing the foreign customers due to language skill.

Language Problem of Shop&Staffs for promoting new menu

- Explanation of Promotional Menu was in JP (Only Title was in English)
- Staff could not explain/recommend menu in detail in English
- Staffs were very passive while receiving order due to language barrier.

Negative Results by Suppliers

- Calling other staff disturb the standardised working process
- When foreigner comes, staff called other staff (who can speak English)
- Exceptional Processes were generated by Foreign Customers

Negative Results by Foreign Customers

- Foreign Customers took more time, and made delay.
- Foreigners couldn`t decide menu beforehand.
- Foreigners spend more time to finish order

Barriers to the Foreign Customers

- Shops doesn`t have enough images for the foreigners
- Top Menu had no picture, but only texts
- Menu with the image only existed at the counter
- Foreigners get hardship when they had to understand texts or words
- Foreigners were struggling with counting coins
- Foreigners could not understand when staff ask them to choose options.

Possible Solutions

- By using image, real stuff, staff could effectively communicate.
- Staffs showed real cups when foreigner asked the cup size.