

UX/UI DESIGN PART I

EGCO343 SOFTWARE DESIGN



KANAT POOLSAWASD
DEPARTMENT OF COMPUTER ENGINEERING
MAHIDOL UNIVERSITY

UX IS NOT UI (1)

- UX (User eXperience) design, is the process by which a **pain point or user need** is identified.
 - From there, a rough prototype is drawn which is later validated (or invalidated) through testing.
 - When both the business model and the value proposition have been validated the product is built.
- Although both UX and UI designers design interactions, you can think of UX designers as the architects of macro-interactions while UI designers, as the makers of micro-interactions, attend to the details.

UX IS NOT UI (2)

“The best products do two things well: **features and details**. Features are what draw people to your product. Details are what keep them there.”

[Nick Babich]

UX IS NOT UI (3)

UX makes interfaces useful

UI makes interfaces beautiful

UX helps users accomplish goals

UI makes emotional connections

UX design is done first

UI design is done second

(Sometime)

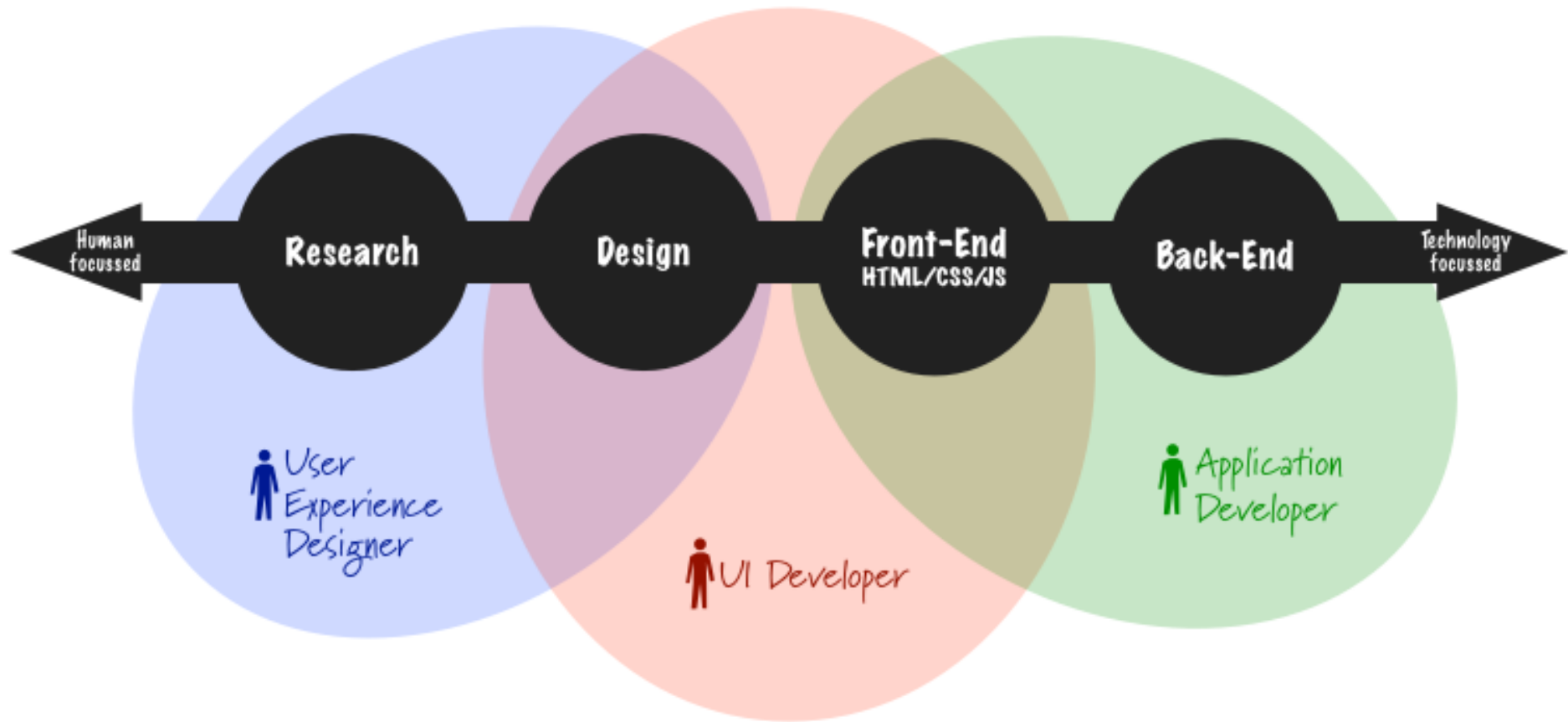
UX is employed across products,
interfaces and services

UI only pertains to interfaces

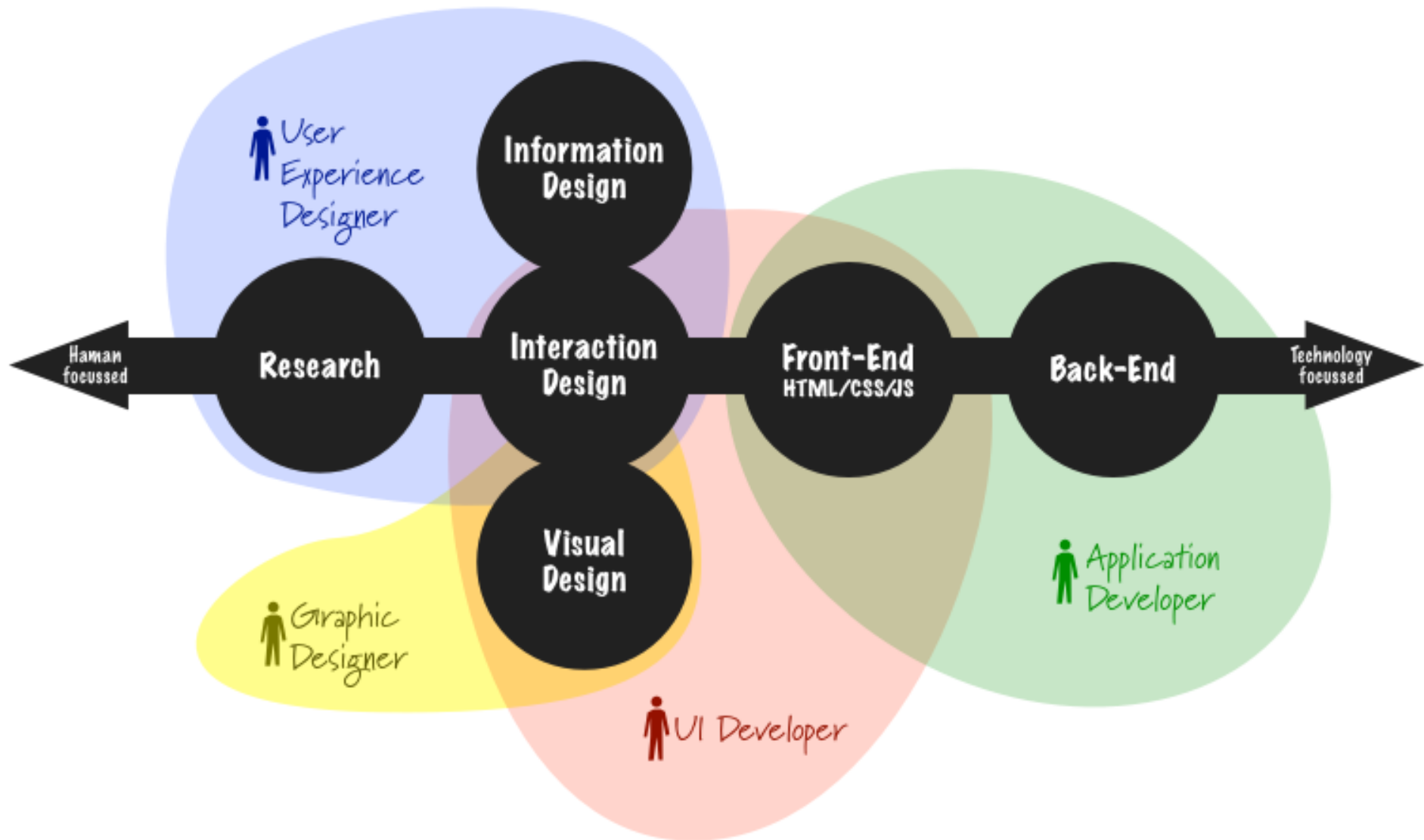
UX IS NOT UI (4)

- This as simply as I can describe the different skills required for each role:
 - User Experience (UX) Designer = Research + Design
 - UI Developer = Design + HTML/CSS/JS
 - Application Developer = Back-End coding + HTML/CSS/JS etc.

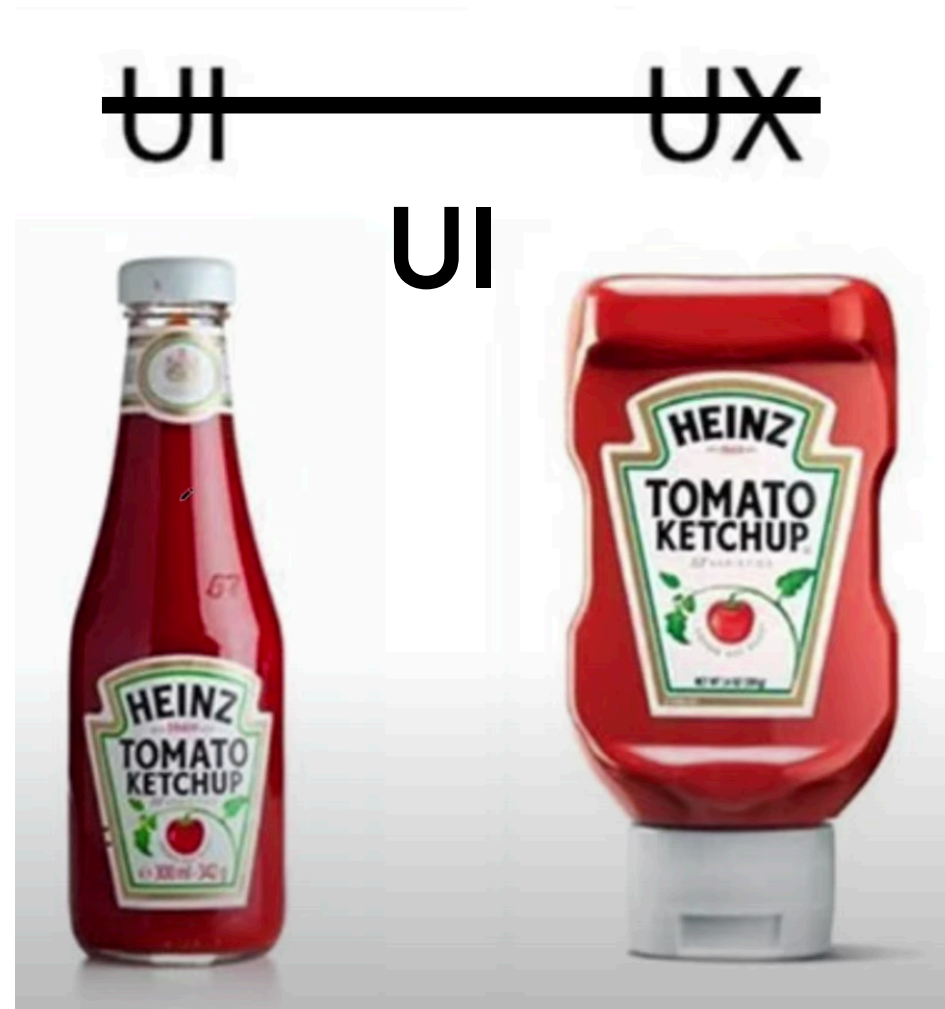
UX IS NOT UI (5)



UX IS NOT UI (6)



UX IS NOT UI (7)



Bad UX

Good UX

UX IS NOT UI (8)



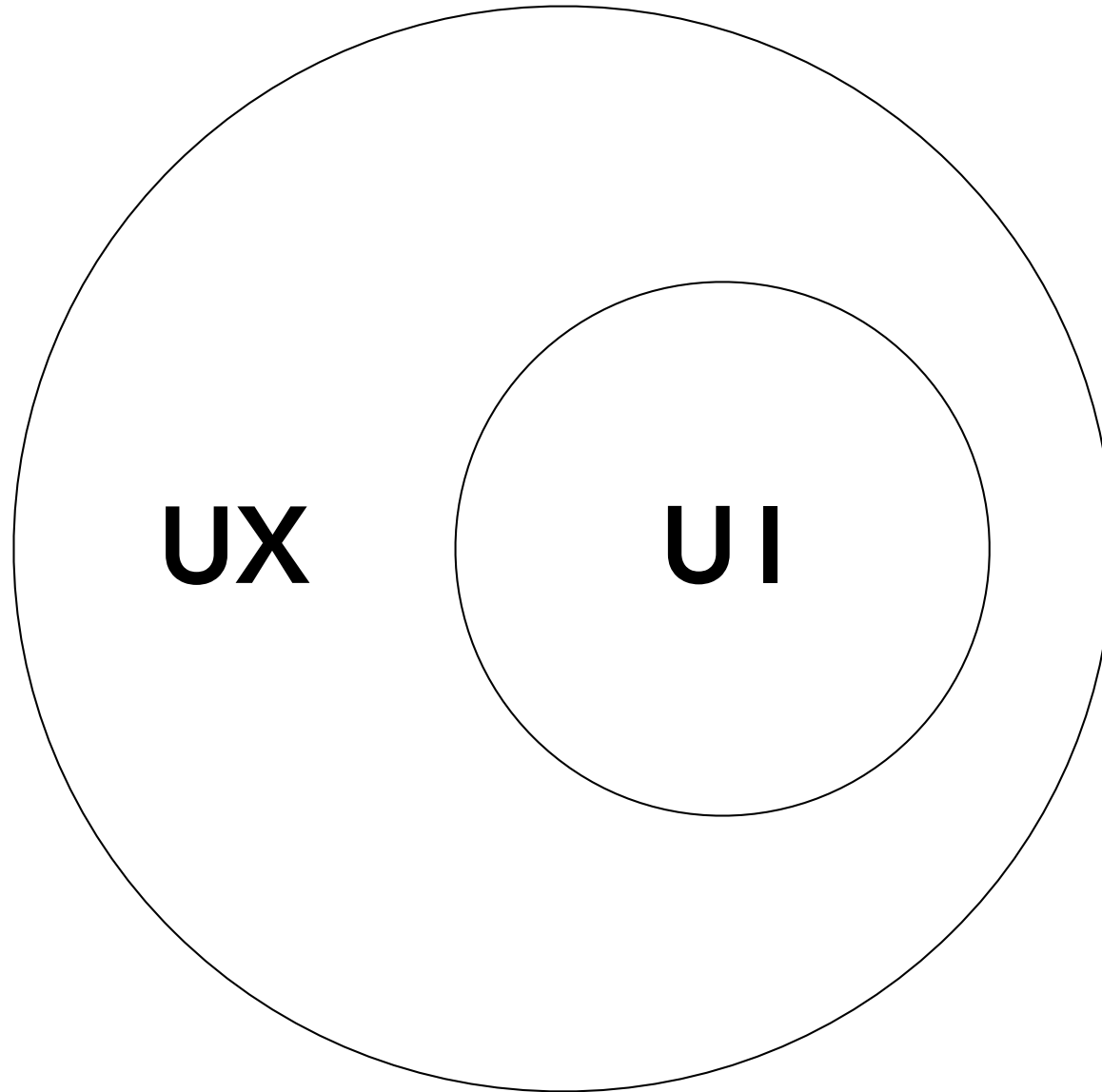
~~User Experience~~

User Behavior

~~Design~~

UI without Research

UX IS NOT UI (9)

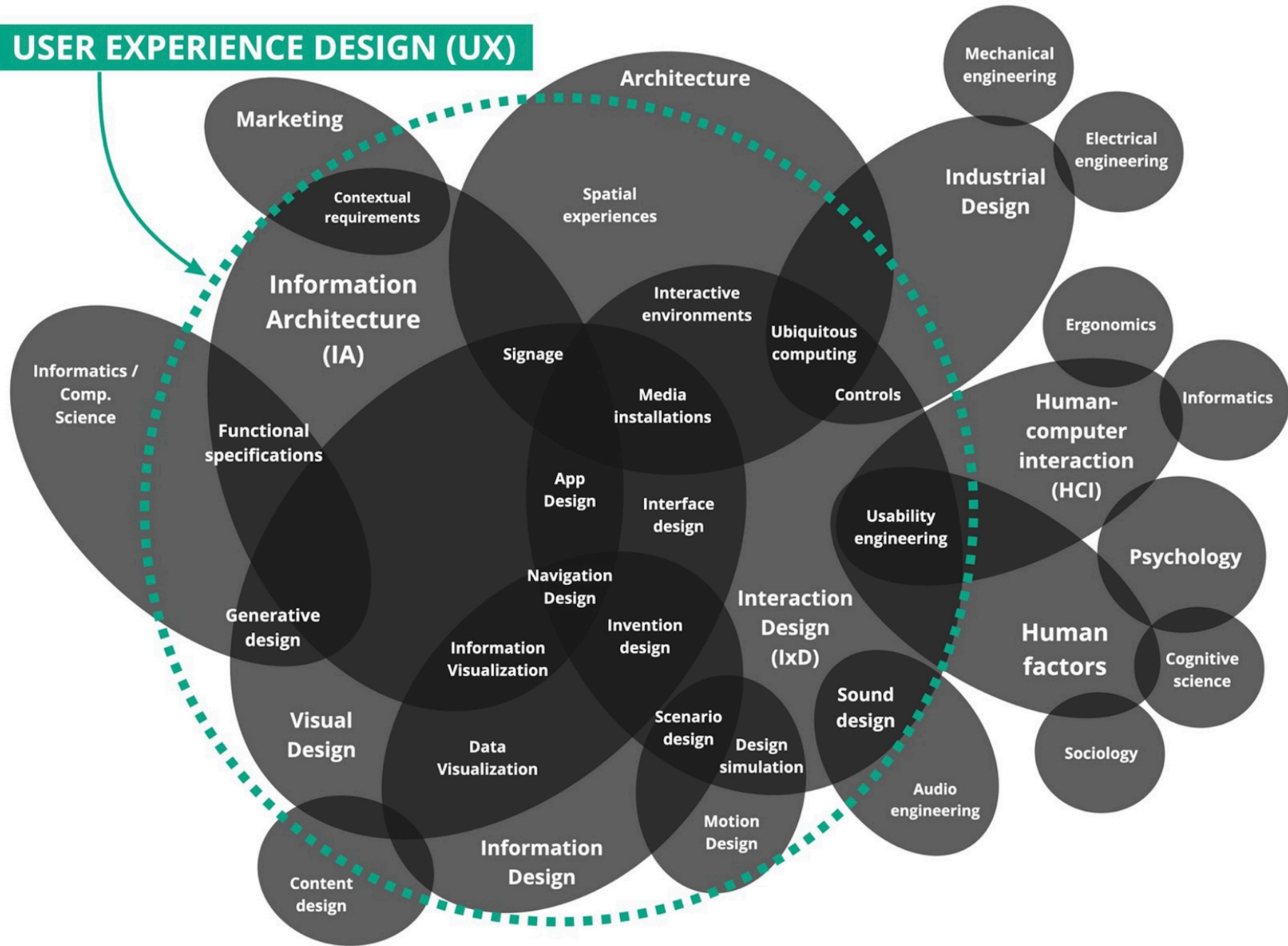




UX HONEYCOMB

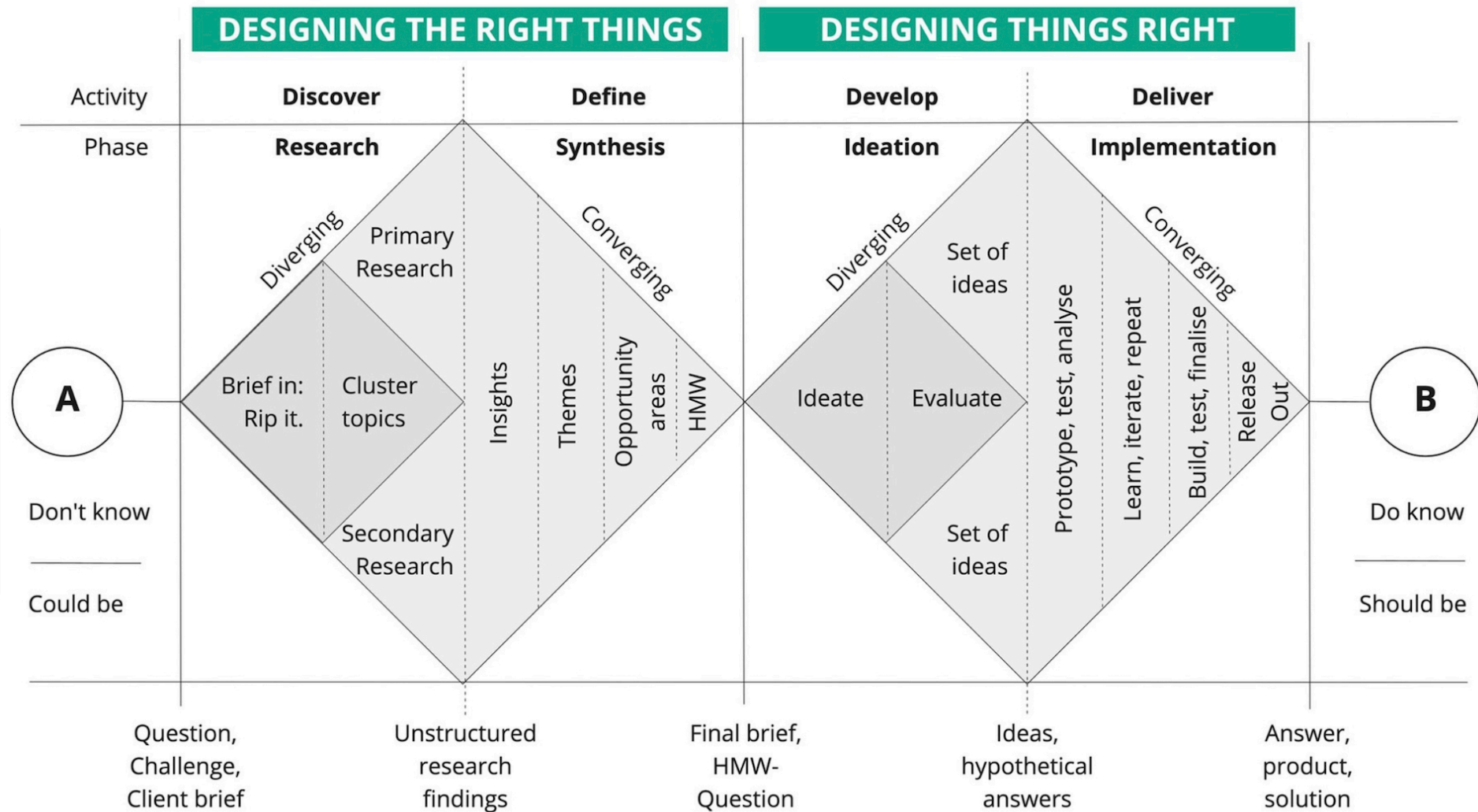
- The UX Honeycomb diagram, created by designer and information architect Peter Morville, defines “good” UX design.
 - Useful: Fulfills a user’s needs.
 - Usable: Easy to use and understand.
 - Desirable: Visually attractive and succinct.
 - Findable: easy to navigate and find information.
 - Accessible: Users with disabilities can use the product.
 - Credible: The product, company, and services are trustworthy.
 - Valuable: Delivers business value.

USER EXPERIENCE DESIGN (UX)



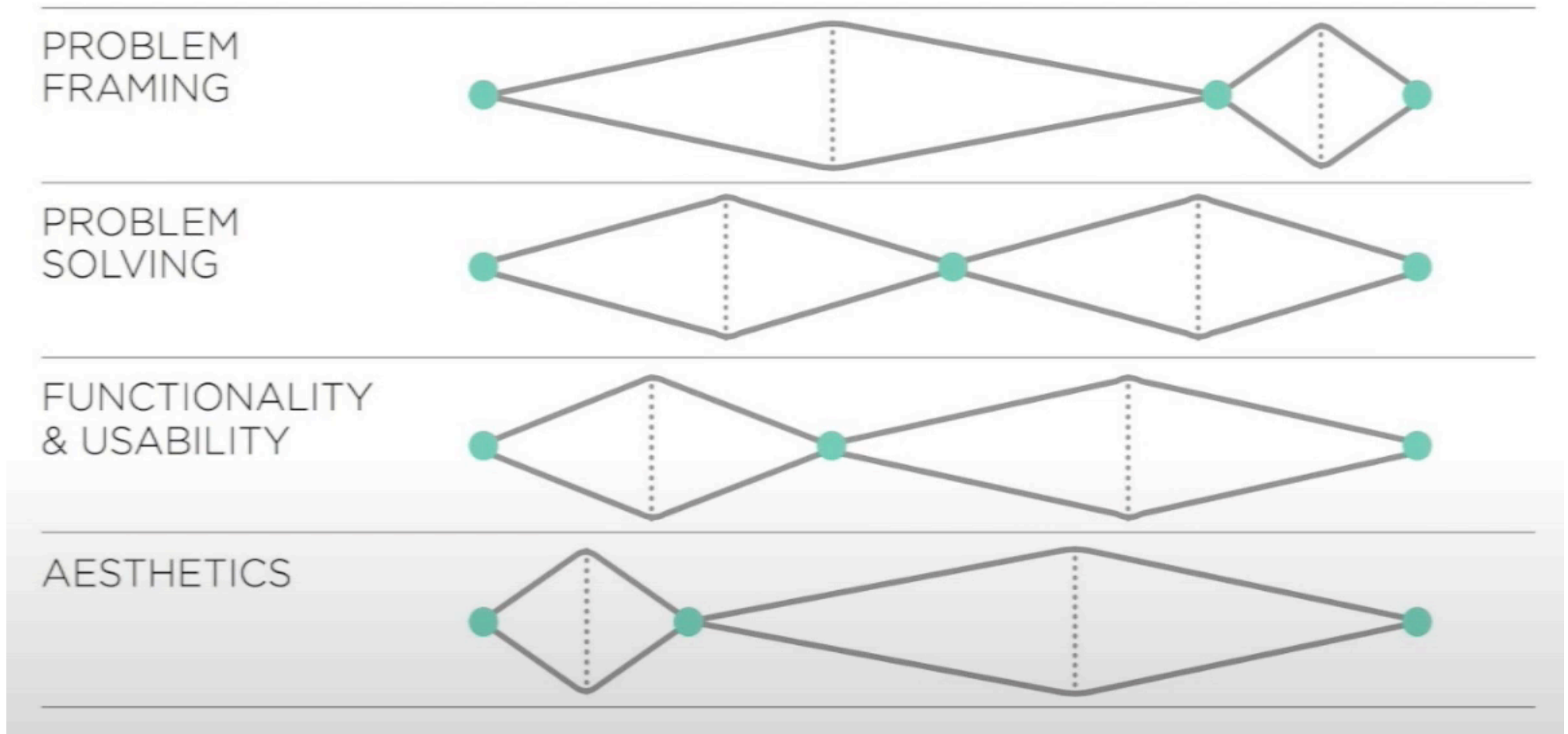
DOUBLE DIAMOND

DOUBLE DIAMOND (1)

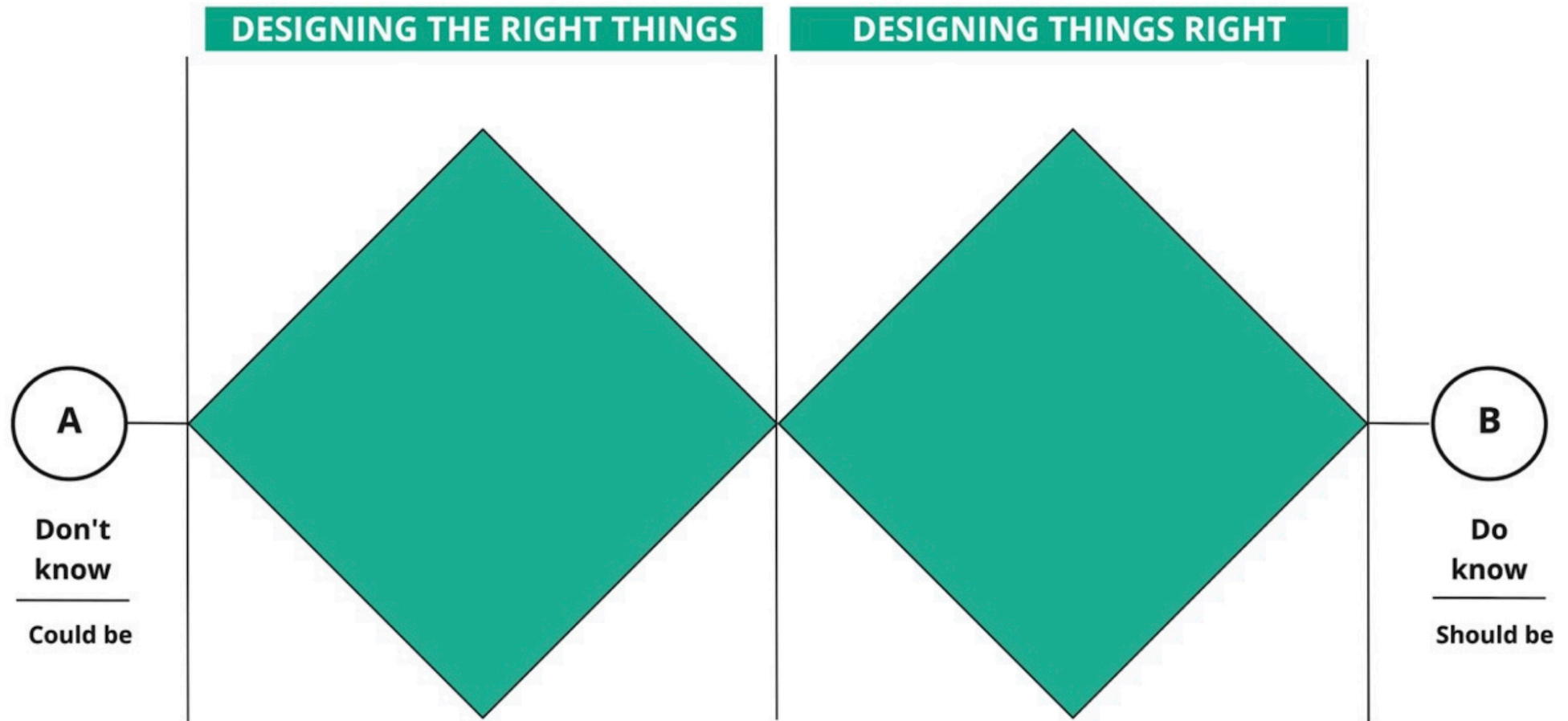


* Alechnavicius, V. Get Into UX: A Foolproof Guide to Getting Your First User Experience Job. Experience designed® 2021.

DOUBLE DIAMOND (2)



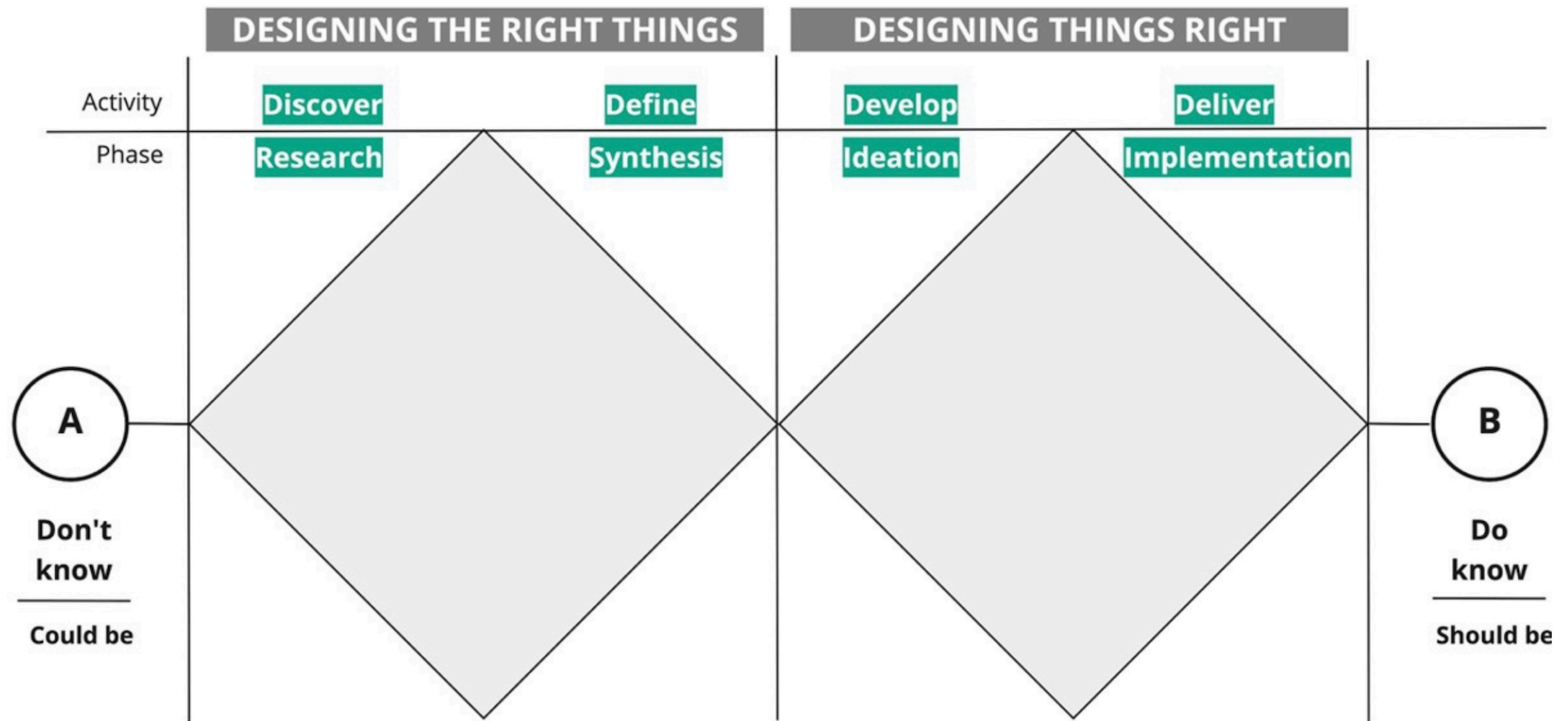
DOUBLE DIAMOND (3)



DOUBLE DIAMOND (4)

- **Design the right thing:** This means using ample quantitative insights, but more importantly qualitative insights, gathered from user research to determine what you need to design.
- **Design things right:** This means that the process will include collaboration, compromise, and finding overlap between what the users desire, what the business needs to achieve in terms of viability and what's feasible technology-wise.
- **Design the right things + Design things right = Quality user experiences.**

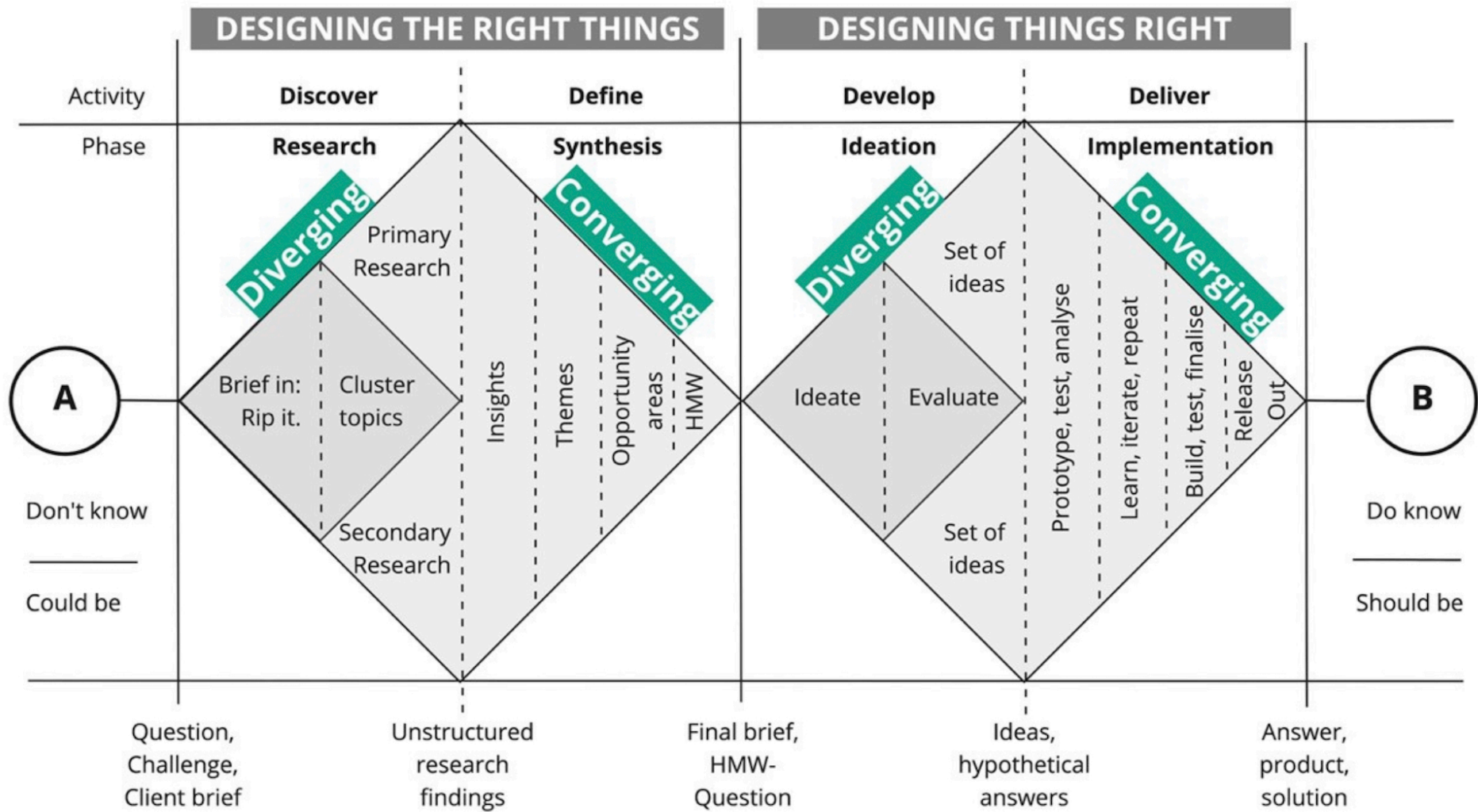
DOUBLE DIAMOND (5)



DOUBLE DIAMOND (6)

- **Discovery** - where you will run stakeholder workshops and user research activities
- **Definition** - where you will synthesize the research findings
- **Development** - where you will ideate, evaluate and prioritize what to deliver
- **Delivery** - where you will prototype your selected ideas, learn, iterate and hand the design over to engineering

DOUBLE DIAMOND (7)



* Alechnavicius, V. Get Into UX: A Foolproof Guide to Getting Your First User Experience Job. Experience designed® 2021.

DESIGN THINKING

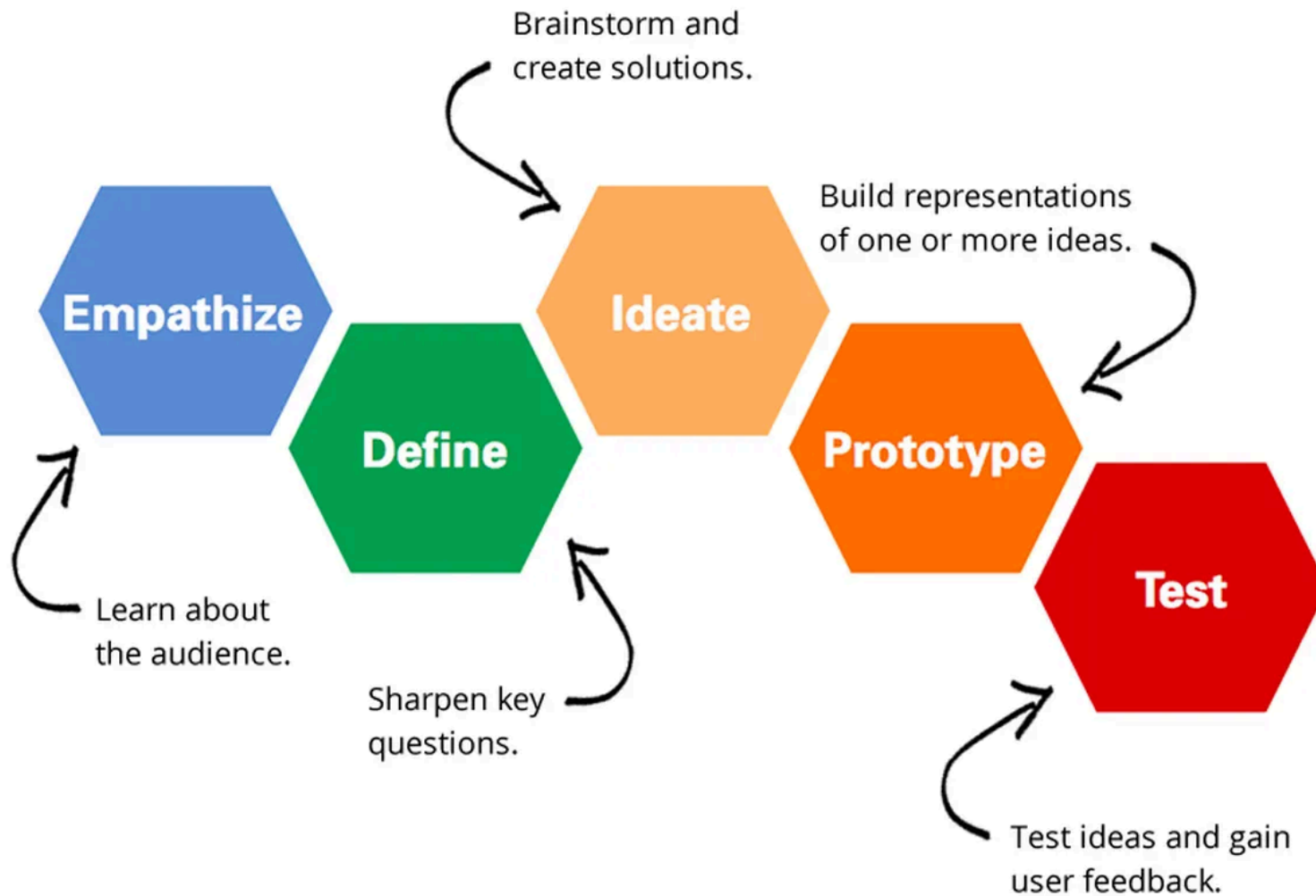
DESIGN THINKING (1)

- Design Thinking is a human-centered approach to problem-solving that emphasizes understanding users' needs, redefining problems, and creating innovative solutions through iterative prototyping and testing.
- It's widely used in UX design to ensure products are useful, usable, and desirable.

DESIGN THINKING (2)

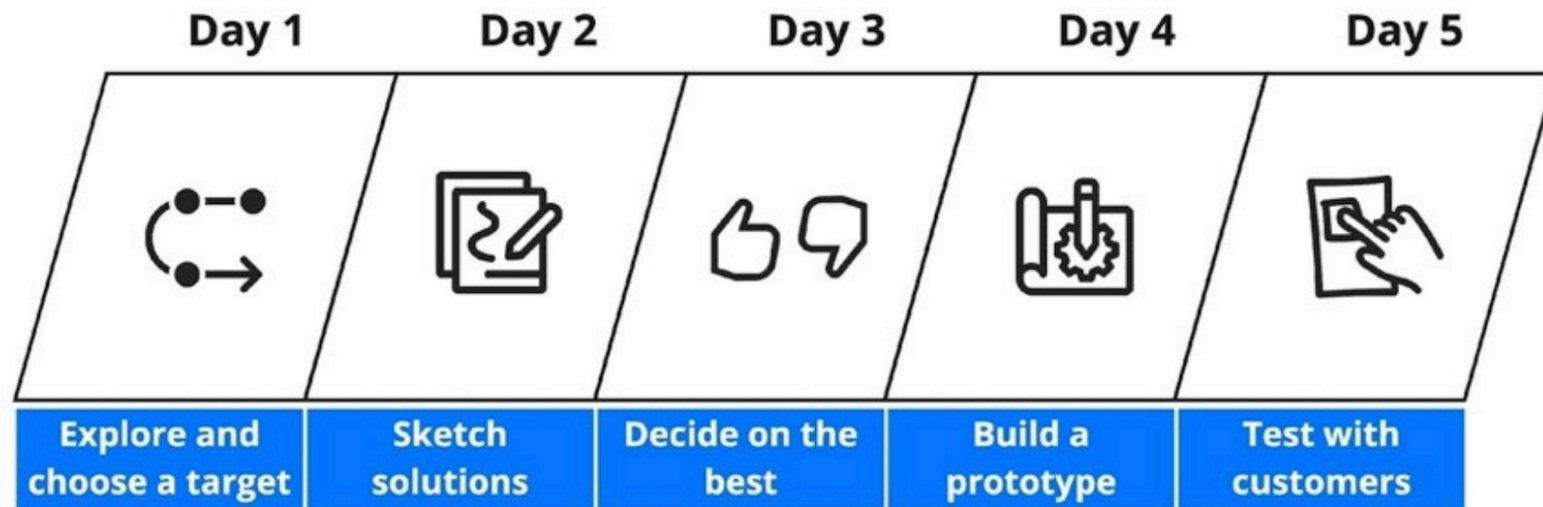
- Core Principles:
 - Human-Centered: Focus on the users' experiences, emotions, and needs.
 - Collaborative: Encourage multidisciplinary teamwork to generate diverse ideas.
 - Iterative: Solutions are refined through repeated prototyping and testing.
 - Experimental: Encourage creativity and learning through failure.

DESIGN THINKING PROCESS



GOOGLE DESIGN SPRINTS

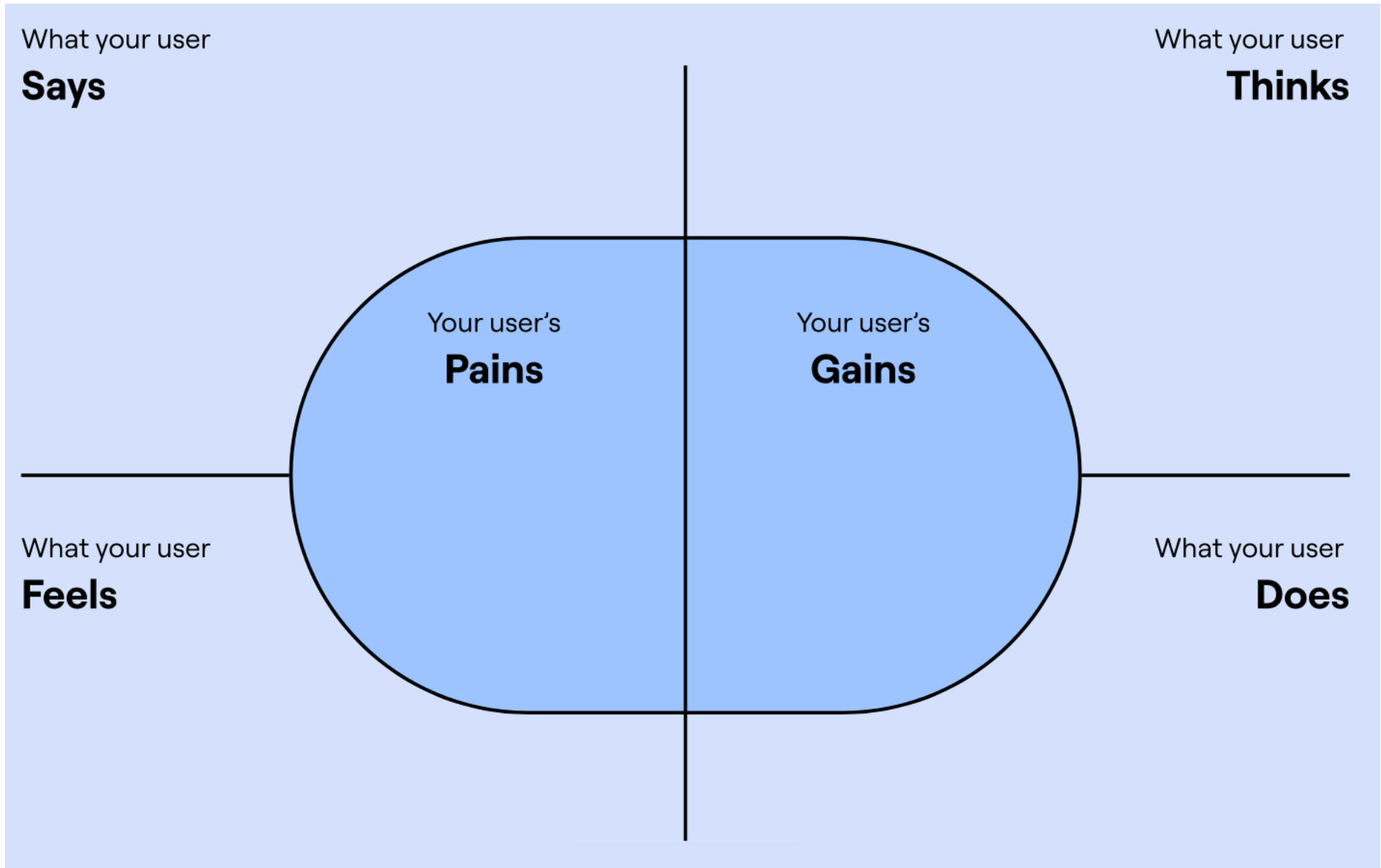
- Google's design sprint method can be good for a jam packed workshop that only allows a few days to outline and quickly test potential innovative solutions.



EMPATHY MAP (1)

- An Empathy Map is a collaborative tool used in UX design to gain deeper insight into users' thoughts, feelings, and behaviors.
- It helps teams understand the user's perspective and design solutions that truly meet their needs.
- Purpose:
 - Understand what users say, think, feel, and do.
 - Identify pain points and motivations.
 - Align the design team around a shared understanding of the user.

EMPATHY MAP (2)



CASE STUDY (1)

- Case Study: **Clinic Booking App**
- Context:
 - ทีม UX ได้รับโจทย์ให้ออกแบบ แอปพลิเคชันจองคิวคลินิก สำหรับผู้ใช้งานทั่วไป โดยพบปัญหาว่า ผู้ใช้จำนวนมาก ไม่พอใจระบบจองคิวเดิม เพราะ “ยุ่งยาก” และ “ไม่แน่ใจเวลาคิวจริง”
- Empathy Map:
 - Persona — คุณแอน อายุ 32 ปี พนักงานออฟฟิศในกรุงเทพฯ ต้องการไปคลินิกผิวหนังเดือนละครั้ง

CASE STUDY (2)

SAYS	THINKS
<p>“จอบคิวยากมาก โทรหลายครั้งถึงจะติด”</p> <p>“บางครั้งลืมเวลานัด ต้องโทรยืนยันอีกที”</p>	<p>“ทำไมไม่มีระบบที่ให้ดูคิวว่างแบบเรียลไทม์”</p> <p>“กลัวไปถึงแล้วรอนาน”</p>
FEELS	DOES
<p>“หงุดหงิดเมื่อต้องรอนาน”</p> <p>“ไม่พอใจเมื่อคิวคลาดเคลื่อน”</p> <p>“โล่งใจเมื่อได้คิวแน่นอน”</p>	<p>“พิมพ์บันทึกคิวใน NOTES ของมือถือ”</p> <p>“โทรเช็กคิวซ้ำก่อนเดินทาง”</p> <p>“แปะข้อมูลคลินิกให้เพื่อนผ่าน LINE”</p>

CASE STUDY (3)

- Pains:
 - ไม่มั่นใจเวลาคิวจริง
 - ระบบจองผ่านโทรศัพท์ไม่สะดวก
 - ไม่มีระบบแจ้งเตือนล่วงหน้า
- Gains:
 - จองคิวง่าย
 - ได้รับการแจ้งเตือนก่อนถึงวันนัด
 - ตรวจสอบเวลาคิวได้แบบเรียลไทม์

EMPATHY MAP (PRACTICE)

- Case Study: Room Reservation
- Empathy Map:
 - Persona – นักศึกษาภาควิชาวิศวกรรมคอมพิวเตอร์ต้องการจองห้องเพื่อใช้ทำกิจกรรมเปิดสายรหัส

HUMAN FACTORS

KNOW ABOUT US

- Our perception of the world around us is not a true depiction of what is actually there. We perceive, to a large extent, what we expect to perceive. Our expectations— and therefore our perceptions— are biased by three factors:
 - The past: our experience
 - The present: the current context
 - The future: our goals

PERCEPTION BIASED BY EXPERIENCE (1)

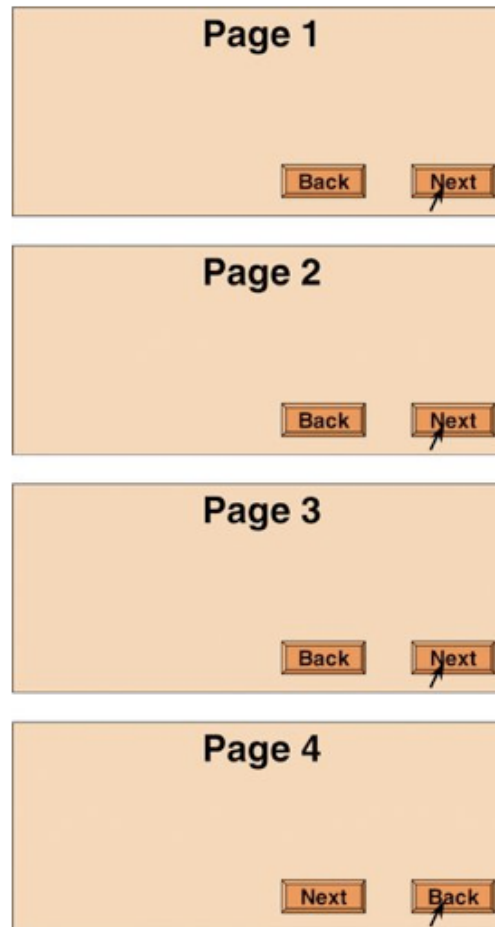


- Building map or word? What you see depends on what you were told to see.

PERCEPTION BIASED BY EXPERIENCE (2)



PERCEPTION BIASED BY EXPERIENCE (3)



PERCEPTION BIASED BY CURRENT CONTEXT

- The same phrase is perceived differently depending on the list it appears in.
- Fold napkins. Polish silverware. Wash dishes.
- French napkins. Polish silverware. German dishes.


PERCEPTION BIASED BY GOALS (1)



- Toolbox: Are there scissors here?

PERCEPTION BIASED BY GOALS (2)

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University of Canterbury
Te Whare Wānanga o Waitaha
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Welcome to the University of Canterbury
Nau Mai, Haere Mai ki te Whare Wānanga o Waitaha

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Announcements

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- [Proposed Merger between UC and CCE](#)
- [UCi3, ICT Innovation Institute](#)
- [Information Days 4 - 5 July 2006](#)

News


[Young UC researchers win prestigious science prizes \(8 June 2006\)](#)



UC research into replicating the spider web process to produce new fibres, generating power using wind at Scott Base and creating technologies to detect chemical weapon agents have been recognised at the annual MacDiarmid Young Scientists of the Year Awards.

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Tim Kerr

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Congratulations! You have been randomly chosen to receive 100 dollars. Claim at Bursars office.

HUMAN FACTOR

- The deepest challenges in human-computer interaction (HCI) lie in the human factor.
- Humans are complicated. Computers, by comparison, are simple.
- Computers are designed and built and they function in rather strict terms according to their programmed capabilities. There is no parallel with humans.
- The variability humans bring to the table means our work is never precise. It is always approximate.

VISION: FIXATIONS AND SACCADES (1)

- Vision is more than the human reception of electromagnetic waves having frequency and intensity.
- Through the eyes, humans look at and perceive the environment.
- In doing so, the eyes engage in two primitive actions: fixations and saccades.

VISION: FIXATIONS AND SACCADES (2)

- Yarbus' research on eye movements and vision



* Ilya Repin, *An Unexpected Visitor*, 1884.

VISION: FIXATIONS AND SACCADES (3)



Examine the painting freely

VISION: FIXATIONS AND SACCADES (4)



Assess the ages of the characters

VISION: FIXATIONS AND SACCADES (5)



Remember the characters' clothes

VISION: FIXATIONS AND SACCADES (6)

Peer Finder Sakai Installation : My Workspace : Home - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://up2uml.org/peerfinder/second_page.htm

Getting Started Latest Headlines Peer finder survey

Sakai Logout

My Workspace My Course

Home Profile Membership Schedule Resources Announcements Website Setup Preferences Account Help

Message of the Day

1. Course starts on Wednesday

2. If you have, scan and upload one or two flyers

My Workspace Information

Welcome!

The course is divided in two main parts, a theoretical and a practical one. During the first phase will learn about the main communication techniques used in an organization at the internal and external level, who could be your target group in external communication and also how to organize different types of communication campaigns (e.g. information, awareness).

During the second phase will have to form teams with 3 to 4 members and design a communication strategy for an organization at the internal and external level. The project will be evaluated and will count 20% from your final mark.

Calendar

Options

June 2008

Sun	Mon	Tue	Wed	Thu	Fri	Sat
15	16	17	18	19	20	21

Peer Finder

I am looking for someone who...

available for help

available in the course

on-line

introduction

criteria

User header

Knowledge

we all

Powered by Sakai

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FM Sakai Installation - dev - Sakai dev - Server localhost

Scan-path for a user locating content on a web page.

SERVICE BLUEPRINT

SERVICE DESIGN

- Service design is a multidisciplinary approach to planning and organizing a company's resources (people, props, and processes) in order to improve the quality and interaction between the service provider and its customers.
- It focuses on creating sustainable and effective services that meet the needs and expectations of users.

CORE PRINCIPLES (1)

- **User-Centered (Human-Centered):** Puts the needs and experiences of the user at the forefront. It involves understanding user behaviors, needs, and motivations through methods such as personas, customer journey maps, and user research.
- **Co-Creation:** Engages stakeholders, including customers, employees, and partners, in the design process to ensure that the service meets the needs of all parties involved.
- **Sequencing (Orchestrated):** Breaks down the service into a series of interrelated actions and touchpoints that make up the service journey. This helps in identifying and improving each step of the service delivery.

CORE PRINCIPLES (2)

- **Evidencing (Tangible):** Makes intangible services tangible by creating physical or digital artifacts that represent different parts of the service. Examples include receipts, confirmation emails, or branded items.
- **Holistic Approach:** Considers the entire service ecosystem, including the physical environment, digital interfaces, and human interactions, to ensure a seamless and cohesive service experience.

TOOLS AND METHODS (1)

- **Service Blueprints:** Visual maps that detail the service delivery process, including frontstage and backstage actions.
- **Customer Journey Maps:** Diagrams that depict the customer's experience and interactions with the service across different touchpoints.
- **Personas:** Fictional characters that represent different user types to help designers understand and address various user needs.

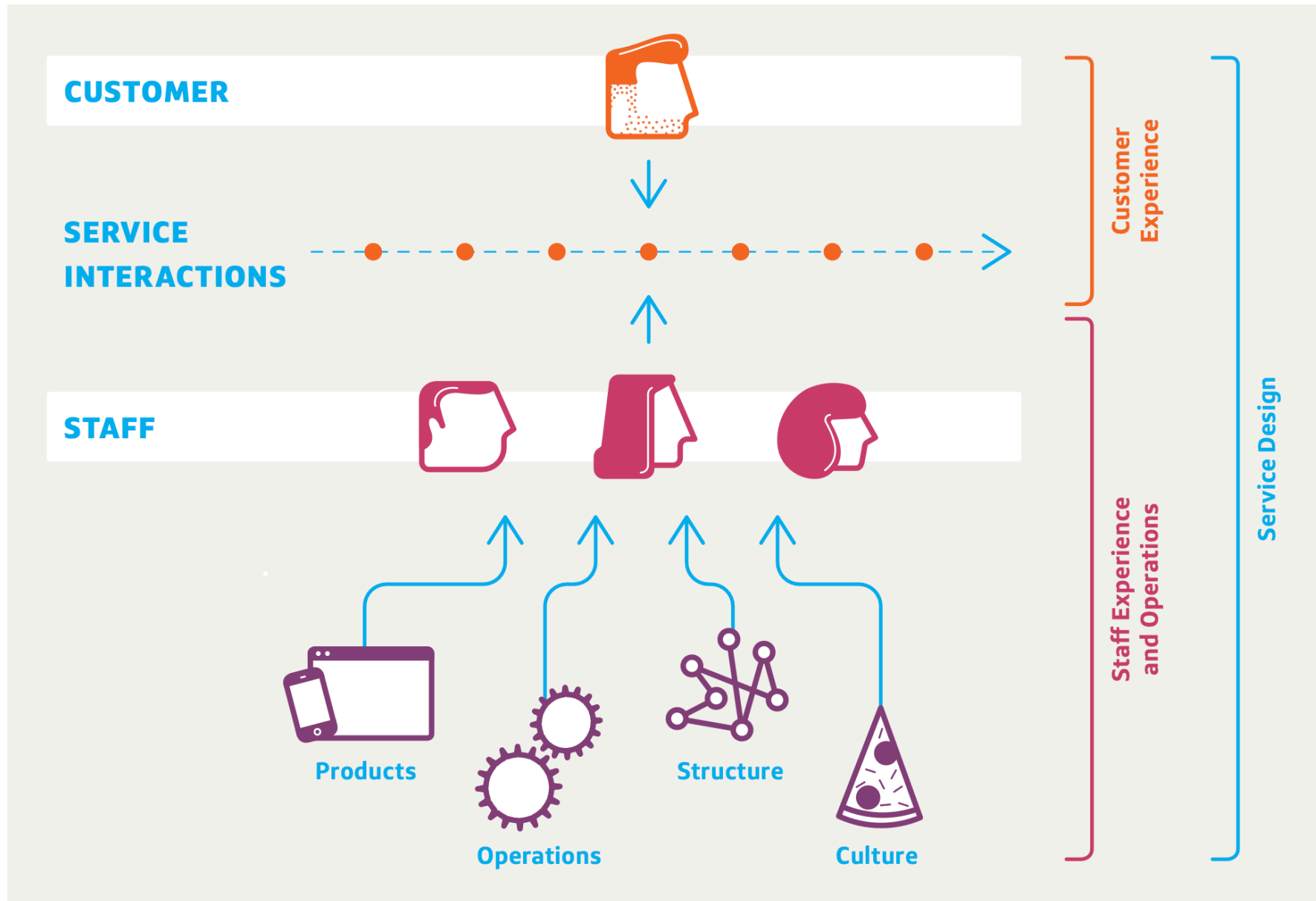
TOOLS AND METHODS (2)

- **Storyboard:** Visual narratives that illustrate the sequence of events in a user's experience with the service.
- **Workshops and Co-Creation Sessions:** Collaborative sessions with stakeholders to brainstorm and develop service concepts and solutions.

SERVICE BLUEPRINT (1)

- A service blueprint is a detailed visualization of a service delivery process.
- It maps out all the interactions between a customer and a service, highlighting the steps involved in the service process, the touchpoint, and the underlying systems and processes that support the service.

SERVICE BLUEPRINT (2)



SERVICE BLUEPRINT (3)

- Service blueprints are useful for several reasons:
 - *Improving Service Design*: By visualizing the service process, organizations can identify pain points, inefficiencies, and opportunities for improvement.
 - *Employee Training*: It provides a clear and detailed guide for employees on how to deliver the service.
 - *Consistency*: Ensures that the service is delivered consistently, meeting customer expectations.
 - *Communication*: Facilitates better communication and alignment within the organization regarding service delivery processes.

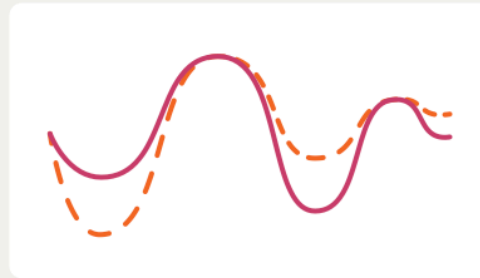
CURRENT-STATE BLUEPRINT



IDEATION



JOURNEY



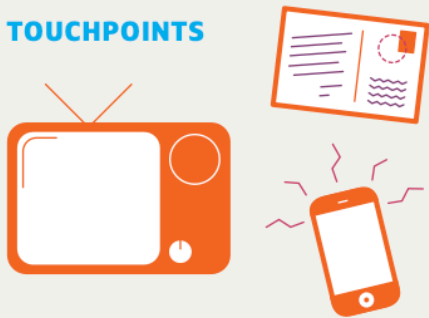
RESEARCH



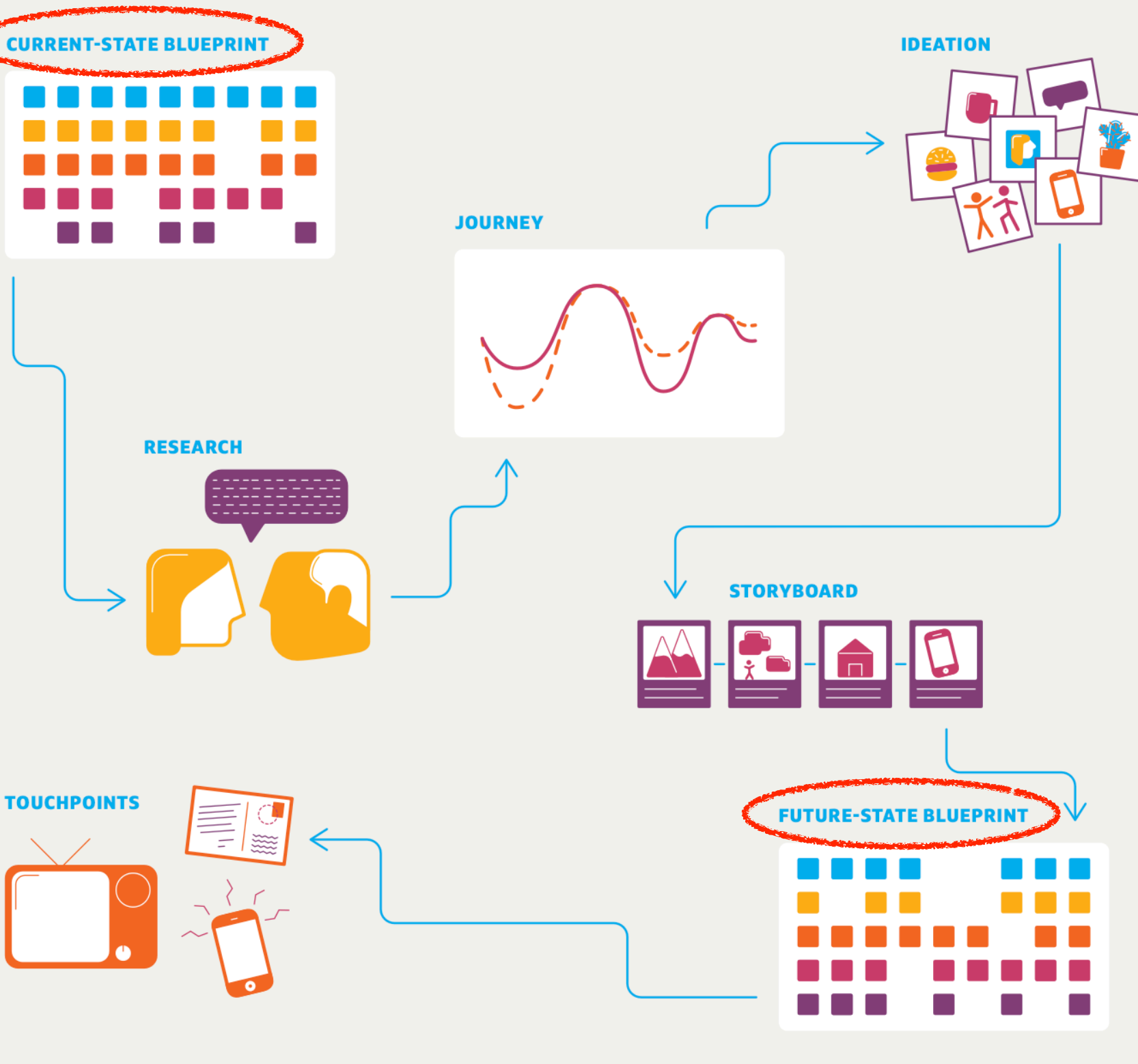
STORYBOARD

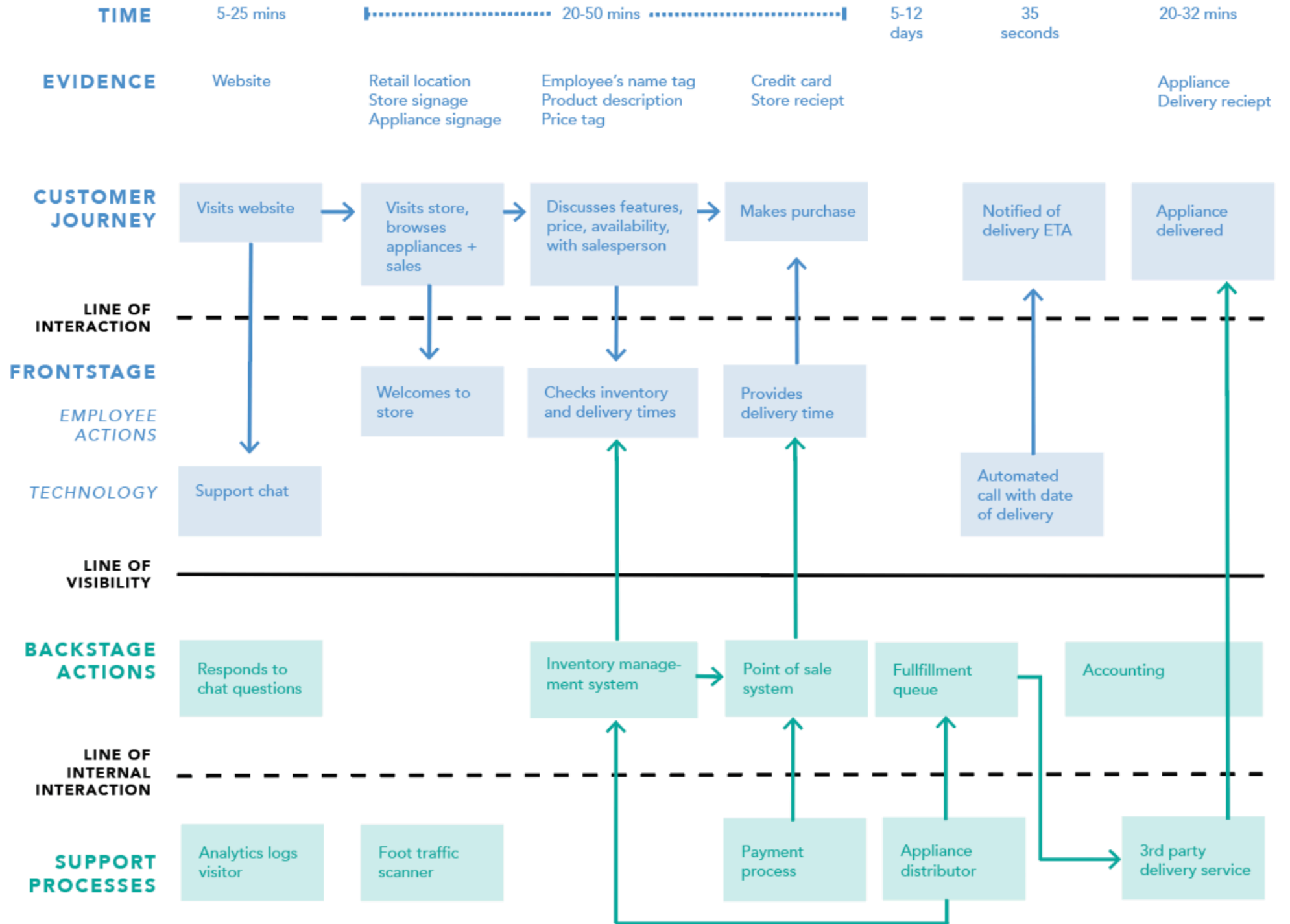


TOUCHPOINTS



FUTURE-STATE BLUEPRINT





KEY ELEMENTS (1)

- **Customer Actions:** Steps, choices, activities, and interactions that customer performs while interacting with a service to reach a particular goal. Customer actions are derived from research or a customer-journey map.
- **Frontstage actions (Visible Contact Employee Actions):** This section captures the actions of employees that are visible to the customer. It includes direct interactions between the customer and the service staff.

KEY ELEMENTS (2)

- **Backstage (Invisible Contact Employee Actions):**
These are the actions taken by employees that are not visible to the customer but are crucial for the service delivery.
- **Support Processes:** This layer includes all the internal processes, systems, and support functions necessary to deliver the service.
- **Physical Evidence:** This represents any tangible elements that the customer comes into contact with during the service process, such as receipts, brochures, or websites.

KEY ELEMENTS (3)

- **Processes:** Internal steps, and interactions that support the employees in delivering the service.
 - **Line of Interaction:** This line separates the customer actions from the frontstage employee actions. It indicates where direct interaction between the customer and the service provider occurs.
 - **Line of Visibility:** This line separates the frontstage actions from the backstage actions. It differentiates what the customer can see from what happens behind the scenes.
 - **Line of Internal Interaction:** This line separates the backstage actions from the support processes, highlighting the internal coordination required to support the service.

Frontstage

CUSTOMER ACTIONS
Customer asks question and places their order



TOUCHPOINTS
Conversation between customer and server



FRONTSTAGE STAFF
Server answers any questions regarding the menu and takes customer's order



BACKSTAGE STAFF
Server enters order into system



SUPPORT PROCESSES
Order system

Backstage

CUSTOMER ACTIONS

Customer actions are the physical or mental actions a customer performs during a service experience. Because services can have multiple customers, we highlight the customer name in each customer action element.

TOUCHPOINTS

Touchpoints are the medium of exchange between the customer and the service. Touchpoints can take many forms, ranging from technology to wayfinding to conversations with service staff. We encourage you to try to use only one touchpoint per service moment. This helps teams consider the micro-moments of a service and avoid hiding complexity.

STAFF ACTIONS

Staff actions are captured in both the frontstage and backstage staff swim lanes. Because most services involve multiple staff members, it's especially important to label each element with the actor performing the task (e.g., chef, server, hostess, etc.).

SUPPORT PROCESSES

Support processes are the tools and systems necessary to support the staff and the service moment. This can include physical tools like notebooks, software applications, internal processes, staff training, and technical systems. Depending on the context and complexity of your service, it may be helpful to split some of these into their own swim lanes.

OTHER ELEMENTS (1)

- **Arrow:** Arrows are a key element of service blueprinting. They indicate relationships, and more importantly, dependencies.
- **Time:** If time is a primary variable in your service, an estimated duration for each customer action should be represented in your blueprint.
- **Regulations or Policy:** Any given policies or regulations that dictate how a process is completed (food regulations, security policies, etc.) can be added to your blueprint. This information will allow us to understand what can and cannot be changed as we optimize.

OTHER ELEMENTS (2)

- **Emotion:** Similar to how a user's emotion is represented throughout a customer- journey map, employees' emotions can be represented in the blueprint.
- **Metrics:** Any success metric that can provide context to your blueprint is a benefit, especially if buy-in is the blueprint's goal. An example may be the time spent on various processes, or the financial costs associated with them.

METRICS

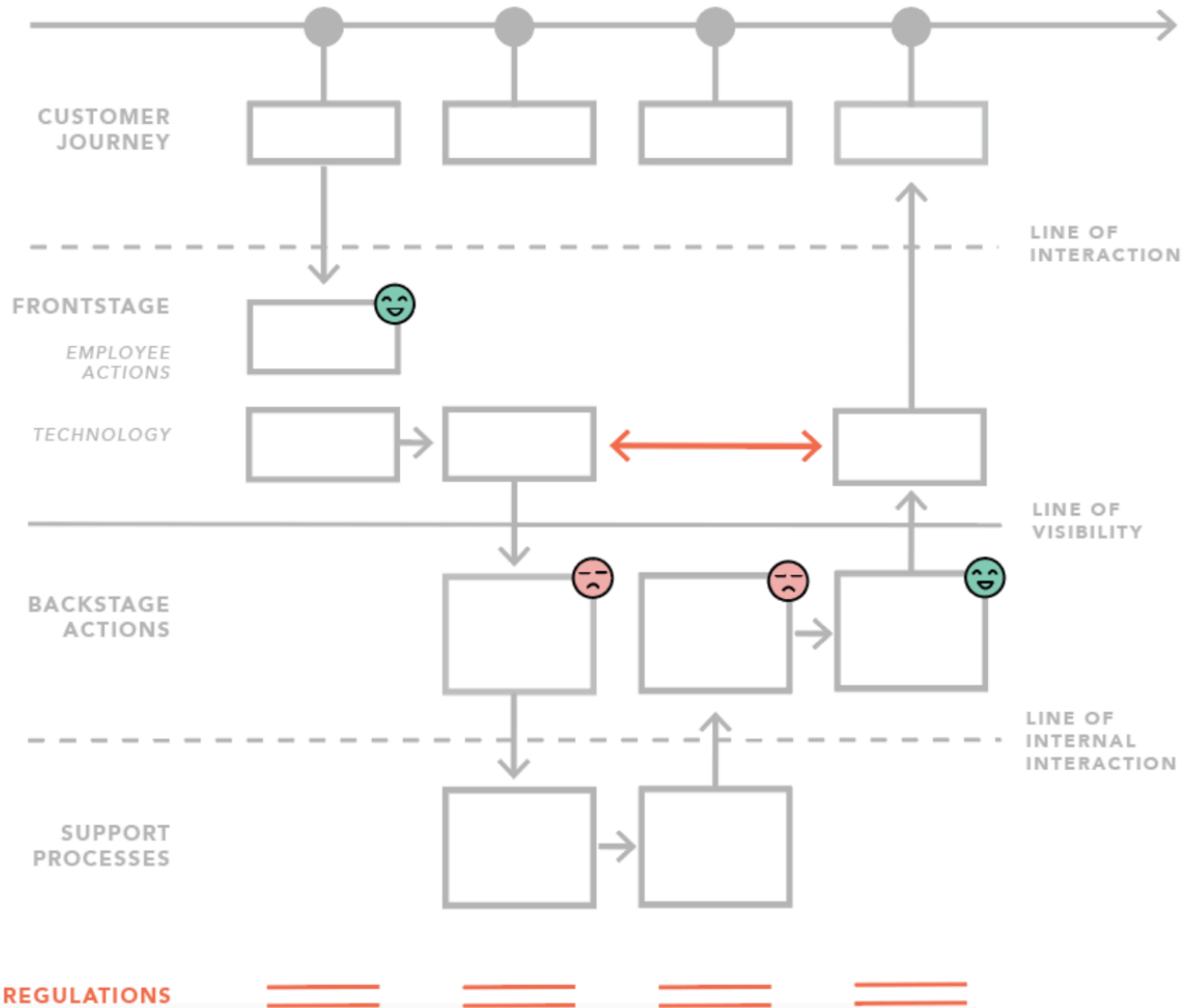


EVIDENCE



TIME

00:00:00 00:00:00 00:00:00 00:00:00



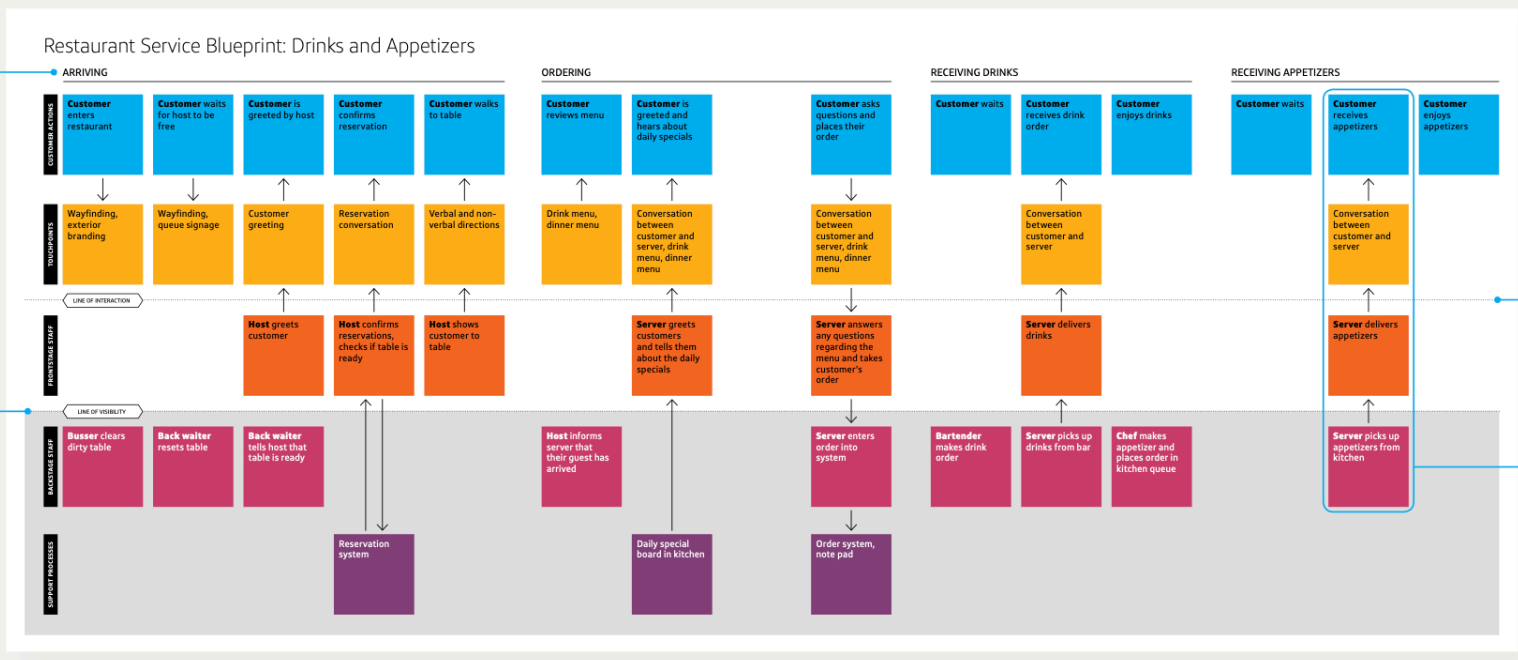
SERVICE BLUEPRINT STRUCTURE

TIME
Service blueprints read from left to right, unfolding over time. If your experience contains different time scales, things that take a week versus a minute, these differences in time should be marked. It's easy to lose a sense of time when looking at a blueprint.

EXPERIENCE STAGES
To help give your blueprint structure, stages are used to denote the different experience phases. These stages may connect to your journey map or other organizational knowledge of the end-to-end experience.

SWIM LANES
At the core of your service blueprint are your swim lanes. These horizontal rows capture and organize all the elements of your service experience.

THE LINE OF VISIBILITY
In service design and on a service blueprint, the division between frontstage and backstage is called the Line of Visibility. The elements you choose to show to your customer (and when) can have a profound impact on the experience.



THE LINE OF INTERACTION
Sometimes it's helpful to draw a line between what customers can and cannot directly interact with. This line is called the Line of Interaction. When blueprinting complex service exchanges with many touchpoints for customer and employee use, it can become difficult to determine which tools are for whom. The Line of Interaction clarifies these distinctions and illustrates this division on the blueprint.

SERVICE MOMENTS
The vertical columns, which represent service moments, encapsulate all service activities happening at a given moment in the service experience, both frontstage and backstage. It's important to map the backstage processes at the moment they start, even if they don't move above the Line of Visibility until later in the experience. For example, a server will be preparing your table before you arrive at a restaurant.

COLLABORATION



The Process of Building a Service Blueprint



1 PREPARE SUPPLIES

Gather and prepare the supplies you'll need, like felt tip markers, sticky notes, and butcher paper. These may also include operational insights and examples of touchpoints or future touchpoint concepts.



2 GATHER PARTNERS

Identify the people whose expertise you will need to populate your blueprint and get them together in the same room (physically or virtually).



3 TAKE A FIRST PASS

Working from the start of the service experience to the end, fill out the customer action swim lane first. This will form the backbone of the blueprint.



4 FILL IN

Working from the customer action swim lane, start working down the rows in each moment, then across, filling out all the elements of the blueprint.



5 DIRECT ATTENTION

Next add information like time; lines of interaction; flow between people, processes, and technology; and other insights you have into the quality of the service delivery.



6 SHARE IT

Once the guts of your blueprint have been filled in, it's time to refine it and share it with others involved in the creation of your service.

LEVEL OF FIDELITY

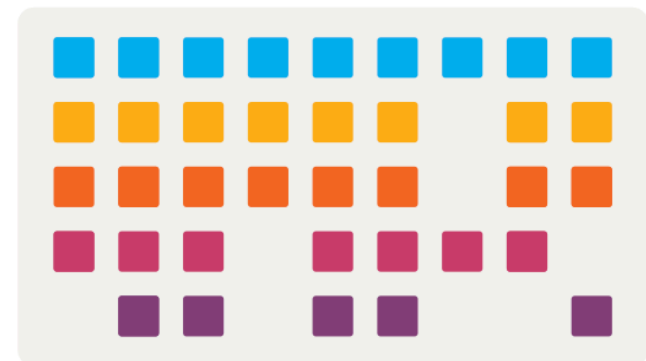
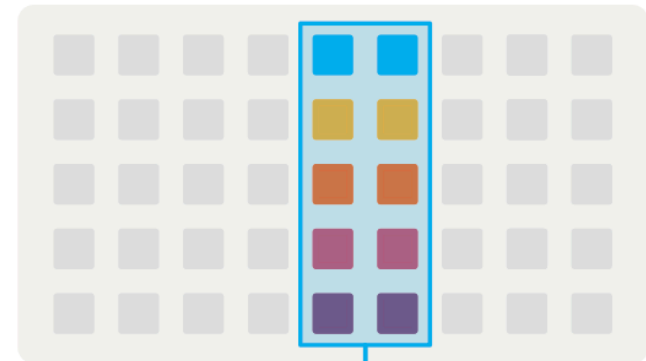
"The fidelity of your blueprint should match the fidelity of your understanding. As you collaborate with experts across your business, add detail accordingly."

— Kendra L. Shimmell —

DETERMINING THE LEVEL OF ZOOM

- Determine your level of zoom by project context and stage of development. “Zoomed out” covers a large amount of the experience at a low level of detail. “Zoomed in” covers a small part of the experience at a high level of detail.

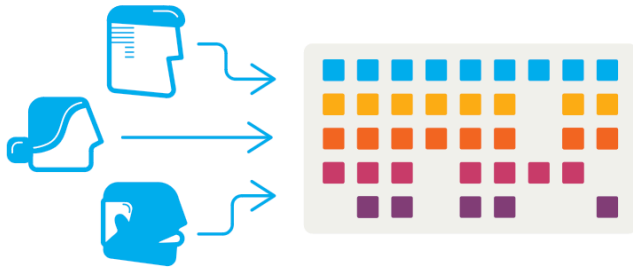
END-TO-END EXPERIENCE



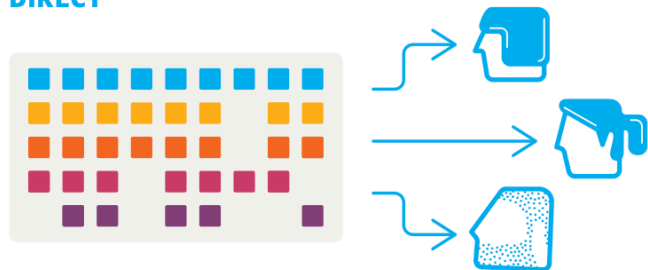
SERVICE ENCOUNTER

BLUEPRINT AS PROTOTYPE

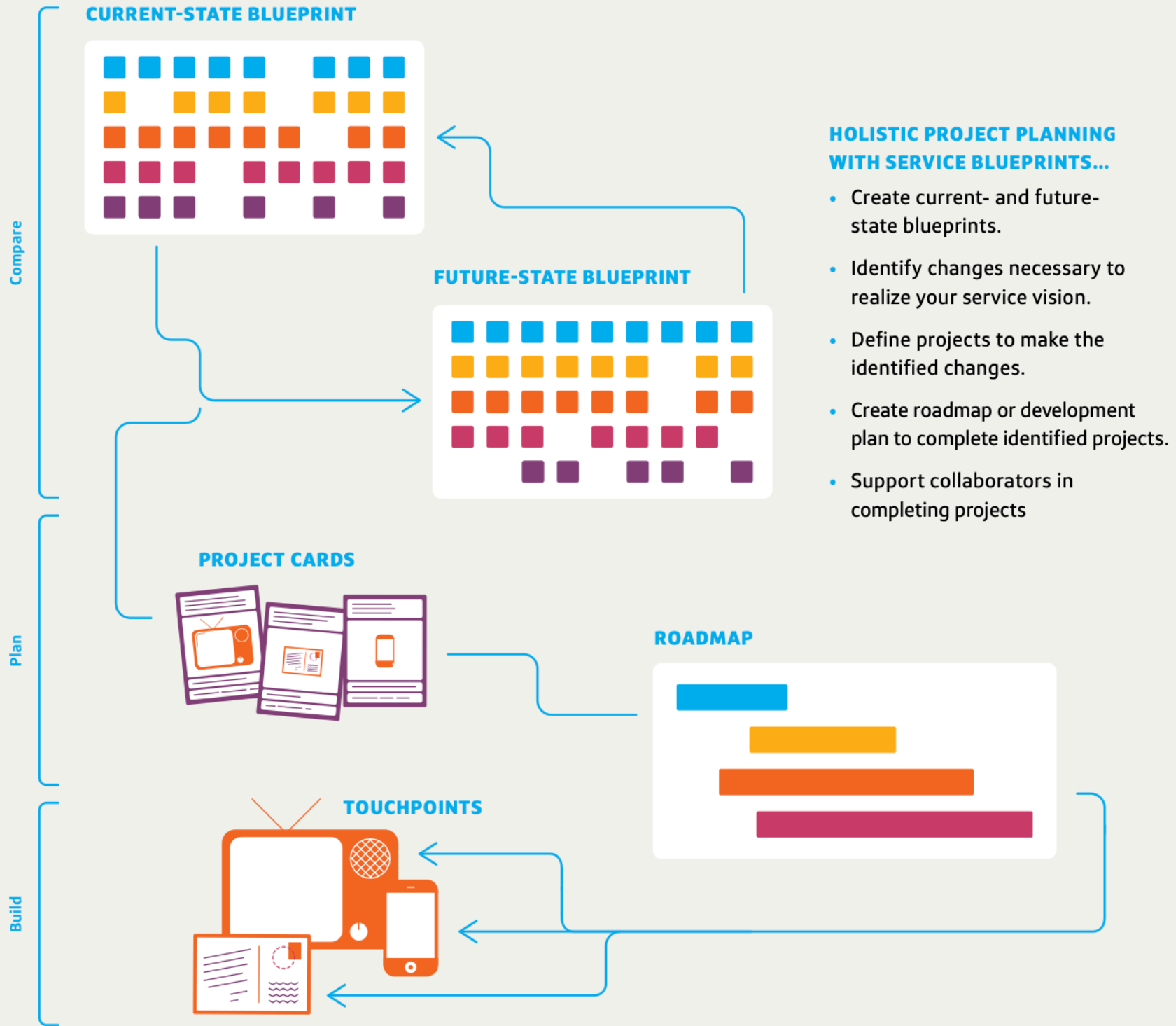
CAPTURE



DIRECT



- It's always hard to know how something will work until it's built. Services are no different.
- Once you make a future-state blueprint, you've already made a paper prototype of your service, albeit in a low-fidelity manner.
- Without an expensive build-out, you can use your service blueprint to enact sections of the experience or conduct flow walkthroughs (known as service storming) to spot problems early and make adjustments quickly on paper.



CONCLUSION

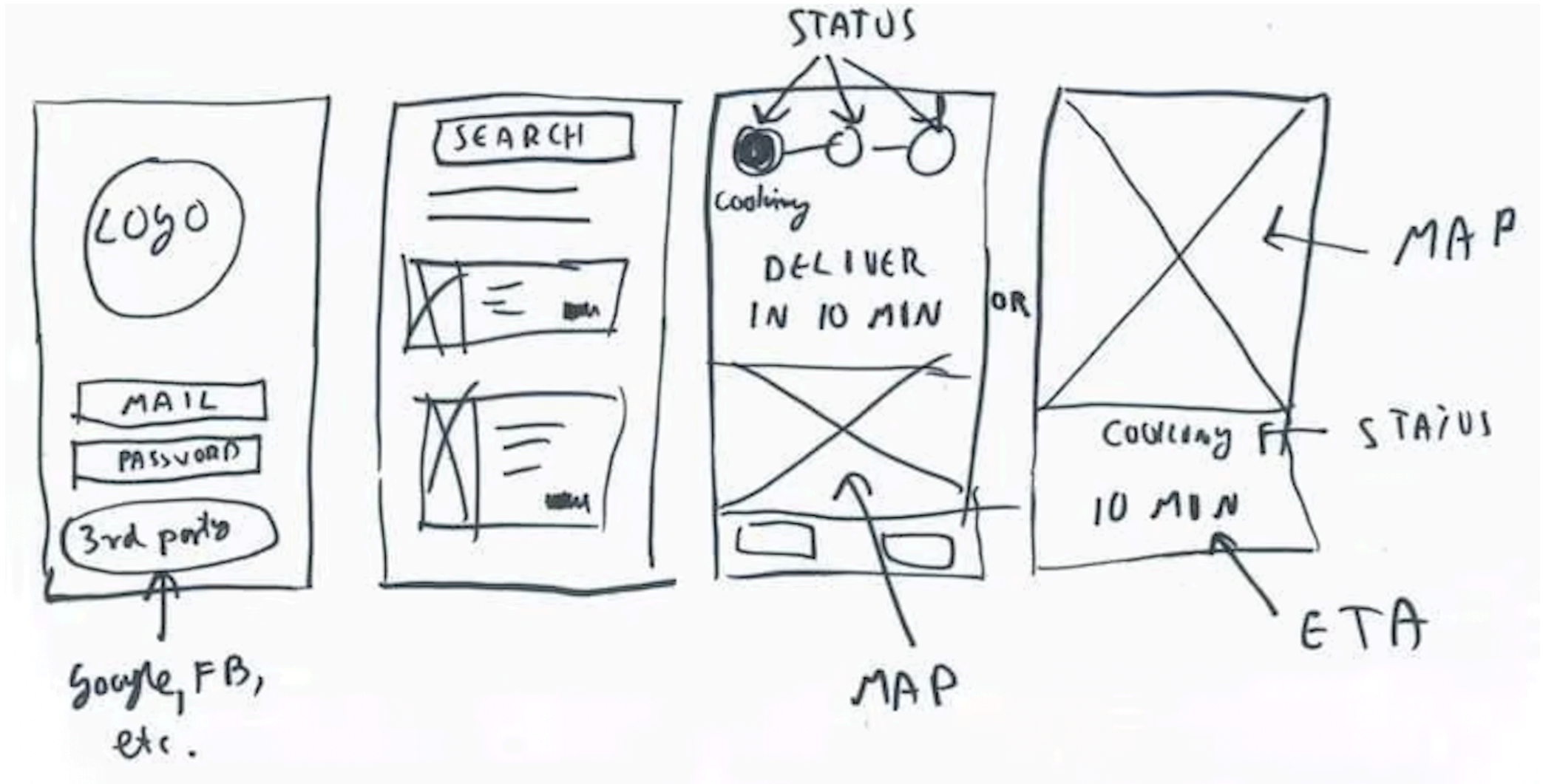
- Service blueprints are companions to customer-journey maps: they help organizations see the big picture of how a service is implemented by the company and used by the customers.
- They pinpoint dependencies between employee-facing and customer-facing processes in the same visualization and are instrumental in identifying pain points, optimizing complex interactions, and ultimately saving money for the organization and improving the experience for its customers.

UX PROCESS

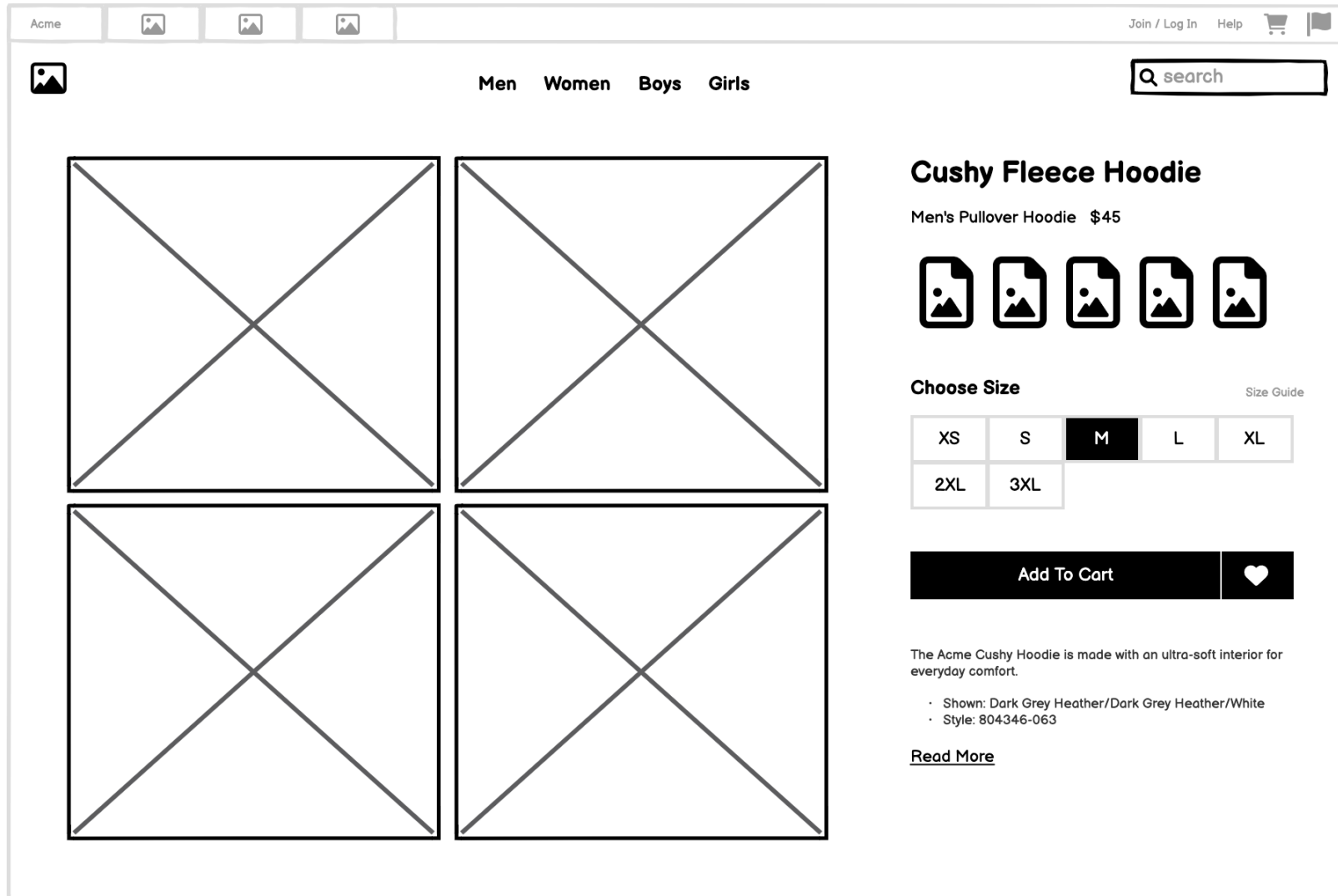
UX PROCESS

- Every product first lives on paper or directly on the screen before they come burst to life.
- The definition of design should be simple, but today's world demands a list of considerations in order to produce a functional product.
 - Did it help? Easy to use? Does it feel a bit familiar after your first encounter?
- Designers have a solemn responsibility since customers have problems, and the product needs to give them a sense of ease and well-being.
- The product is simply a vehicle for conveying an incredible experience.

ROUGH SKETCHING

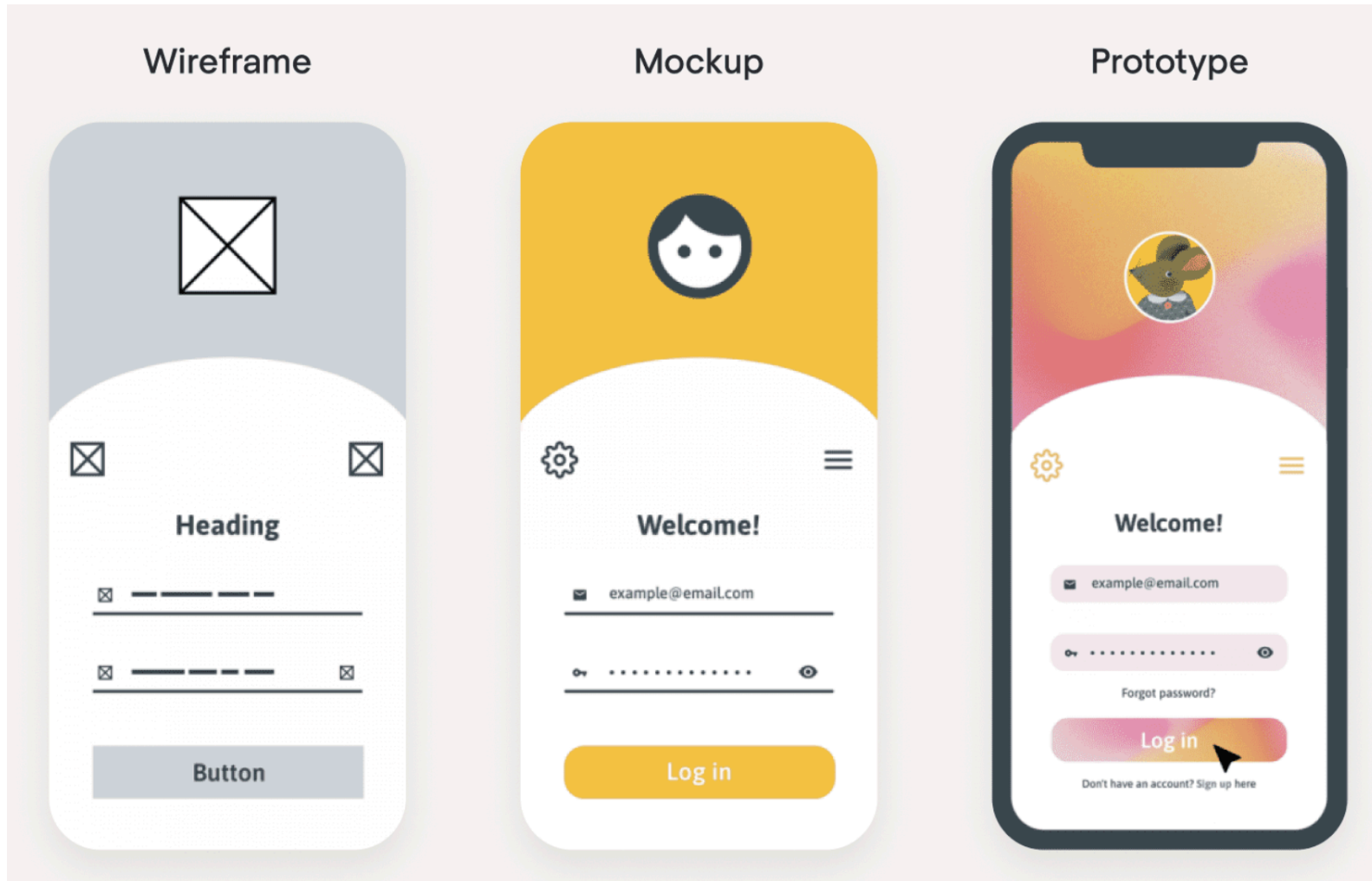


WIREFRAMING



* What are Wireframes? (<https://balsamiq.com/learn/articles/what-are-wireframes/>)

DETAILED MOCK-UPS



* The Difference Between Wireframe Mockup and Prototype and Their Roles in the Design Process
(<https://www.eleken.co/blog-posts/the-difference-between-wireframe-mockup-and-prototype-and-their-roles-in-the-design-process>)

USER FLOW DIAGRAM (1)

- User flows, also known as journeys, map the entire realm of circumstances and decisions that influences how someone achieves their goal.
- This is an exhaustive list and includes the moment the idea forms in the user's head until the goal is attained.

USER FLOW DIAGRAM (2)

- For example, two people seeking to purchase a smart watch online may have vastly different experiences.
- One might enter Shopee.com using the address bar, search for a catalog with intent to buy, and add to the cart, while another might search on Google, click the first result, reviews online, compare reviews, and dive deeper into detail before getting into the buying funnel.

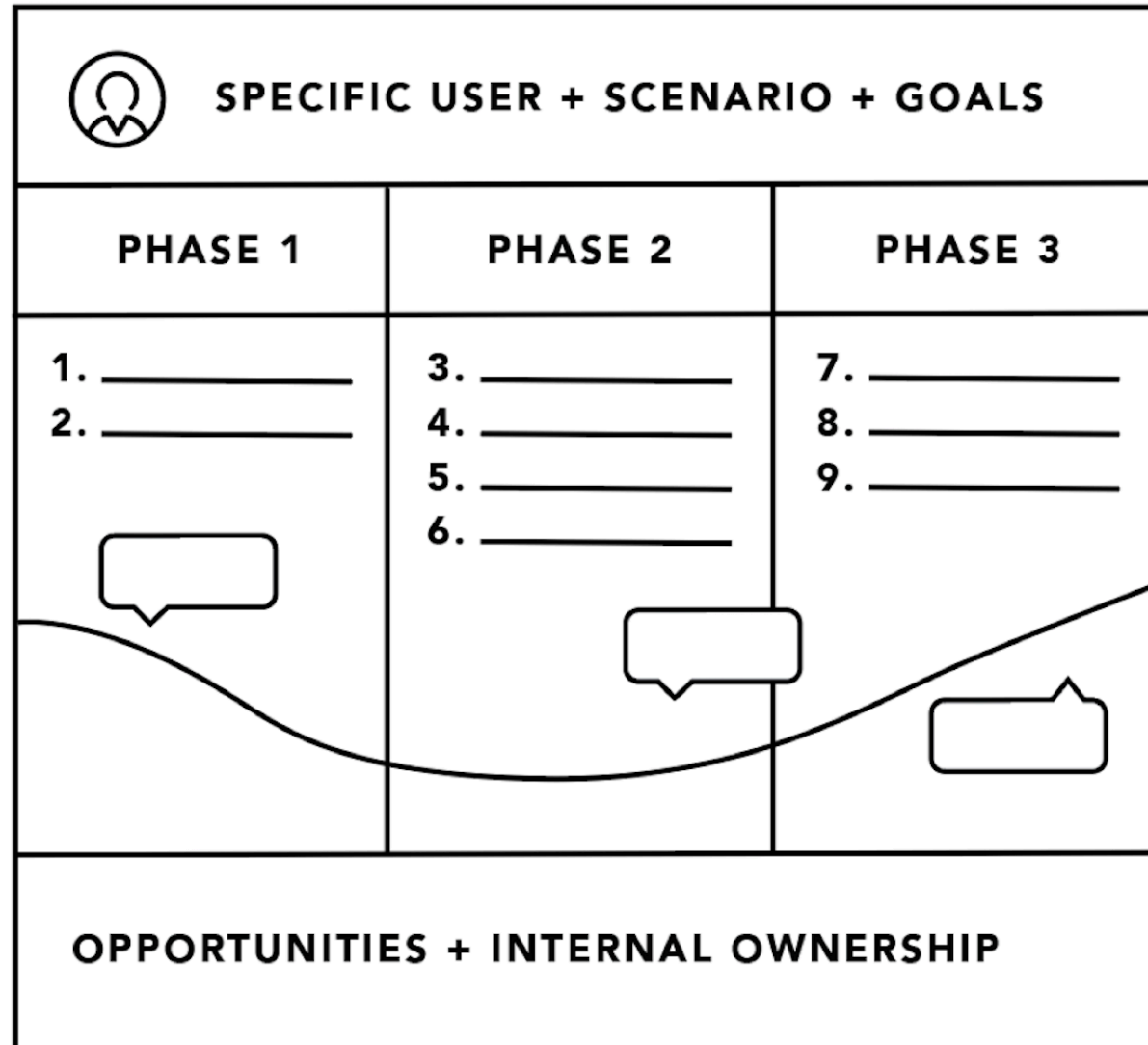
USER JOURNEY MAP

- A journey map is a visualization of the process that a person goes through in order to accomplish a goal.
- In its most basic form, journey mapping starts by compiling a series of user actions into a timeline. Next, the timeline is fleshed out with user thoughts and emotions in order to create a narrative. This narrative is condensed and polished, ultimately leading to a visualization.

EMPATHY MAP VS USER JOURNEY

Aspect	Empathy Map	User Journey
Definition	understanding users' mindset.	visual timeline of the user's experience.
Focus	Internal world of the user — emotions, thoughts, motivations.	External process — steps, touchpoints, pain points, and emotions over time.
Goal	Build empathy and understand the user's perspective.	Improve experience flow and identify opportunities for design improvement.
When to use	Early in design — during user research & persona development.	Later — during experience mapping, ideation, and service design.
Output	Qualitative insight model.	Sequential narrative or timeline.

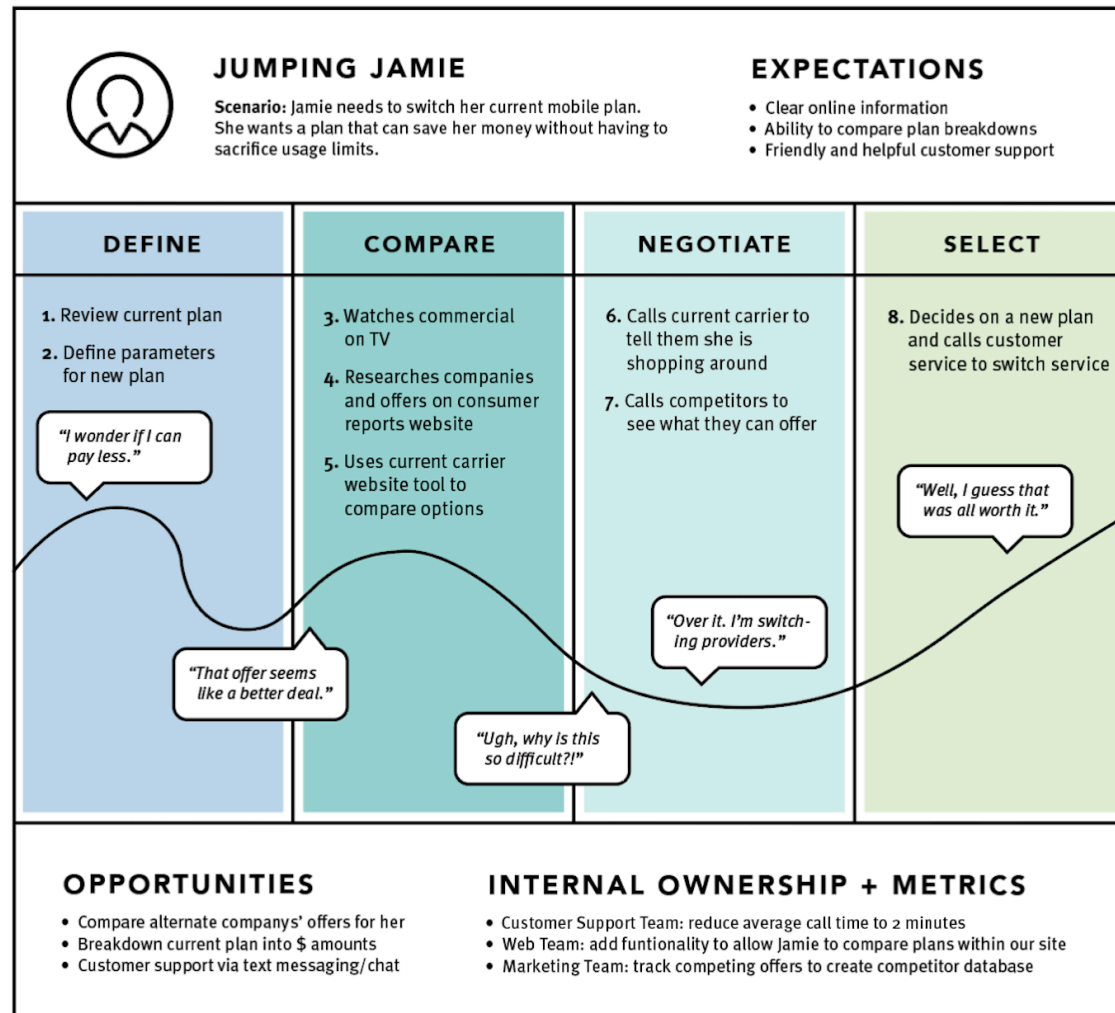
USER JOURNEY MAP (1)



USER JOURNEY MAP (2)

- Journey maps come in all shapes and sizes. Regardless of how they look, journey maps have the following 5 key elements in common:
 - Actor
 - Scenario + Expectations
 - Journey Phases
 - Actions, Mindsets, and Emotions
 - Opportunities

USER JOURNEY MAP (3)



* 7 Ways to Analyze a Customer-Journey Map (<https://www.nngroup.com/articles/analyze-customer-journey-map/>)

USER JOURNEY MAP (4)

Product X User Journey Map—Social Acquisitions



USER JOURNEY MAP EXAMPLE (1)

- **Awareness:** The user sees a video on social media with a link to your product website. They're intrigued — a positive experience.
- **Consideration:** The user visits your product website to preview your app. If they can't find a video preview easily, this could be a neutral or negative experience.
- **Decision:** The user clicks on a link to the app store and reads reviews of your app and compares it to others. They might think your app reviews are good, but your price is high — a negative or neutral experience.

USER JOURNEY MAP EXAMPLE (2)

- **Purchase:** The user buys your app and completes the onboarding process. If this process is smooth, it's a positive experience. If not, the customer experience could turn negative at this point.
- **Retention:** The user receives follow-up emails featuring premium services or special offers. Depending on their perception of these emails, the experience can range from good (helpful support) to bad (too much spam).

TASK FLOW DIAGRAM

- If user flows are holistic by design, then task flows are microscopic in execution.
- Task flows describe a specific and repeatable series of actions such as setting the time on an alarm clock app.
- Task flowcharts are less visually appealing than user flows since they describe almost algorithmic processes. But they are needed in helping you streamline the steps that must be taken to accomplish everything your product promises.

TEST ON REAL USERS

- Finally, designers should test their designs on the intended user population to be confident that the users can read all essential text quickly and effortlessly.
- Some testing can be done early, using prototypes and partial implementations, but it should also be done just before release.

ASSIGNMENT 8

- Case Study: Room Reservation
- User Journey:
 - Persona – นักศึกษาภาควิชาวิศวกรรมคอมพิวเตอร์ต้องการจองห้องเพื่อใช้ทำกิจกรรมเปิดสายรหัส