Design Synthesis

Jon Kolko
Executive Director, Design Strategy

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0/ Today

What is Synthesis, and why is it important? (30 minutes)
As a group, we will examine a very large amount of theory pertaining to synthesis, and that data will be put in the context of information through examples and diagrams.

What are methods I can use? (180 minutes)
In groups, we will have the opportunity to apply methods to produce shared knowledge and to integrate these methods into existing working processes.

Let's try it: Method – **Process Flow Diagramming**
(45 minutes)

Let's try it: Method – **Concept Mapping**
(45 minutes)

(Break)

Let's try it: Method – **Insight Combination**
(45 minutes)

Let's try it: Method – **Reframing**
(45 minutes)

How can I use this in my life? (remaining time)
As a large group, we will discuss these methods and consider when these methods are most applicable and actionable in our respective jobs and lives.

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1/ Theory

Well-Structured Problems

Ill-Structured Problems

Wicked Problems

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Well-Structured Problems

Ill-Structured Problems

Wicked Problems

In a well structured problem, <u>all of these are true</u>:

We can test our solution.
We can identify problem, goal, and interim states.
We can identify solution steps.
We can identify domain knowledge.
We can solve the problem while obeying the laws of nature.
We can solve the problem using only practical levels of effort.

Herb Simon, 1973

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Well-Structured Problems

Ill-Structured Problems

Wicked Problems

In an ill-structured problem, <u>some of these are true</u>:

We cannot test our solution, or cannot test it easily.
We cannot easily identify problem, goal, or interim states.
We cannot identify all of the solution steps.
We cannot identify domain knowledge (it may be tacit).
We may be constrained by the laws of nature.
Solutioning may outweigh practical efforts.

Herb Simon, 1973

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Well-Structured Problems

Ill-Structured Problems

Wicked Problems

In a wicked problem, the following are true:

Wicked problems have no definitive formulation.
Wicked problems have no criteria upon which to determine "solving".
Solutions to wicked problems can only be good or bad.
There are no complete list of applicable "moves" for a solution.
There are always more than one explanation for a wicked problem.
Every wicked problem is a symptom of another problem.
No solution of a wicked problem has a definitive, scientific test.
Every wicked problem is unique.

Horst Rittel, 1973

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Well-Structured Problems

Ill-Structured Problems

Wicked Problems

Designers solve problems.
Design Synthesis is the formal approach we use.

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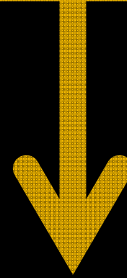
Ethnography

Synthesis

Prototyping

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Ethnography

Immersion – gathering data and understanding of a unique situation

Synthesis

Prototyping

Hypothesis validation through generative form giving

Synthesis is the process of making meaning through abductive sensemaking and reframing.

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Ethnography

Synthesis

Prototyping

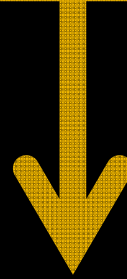Immersion – gathering data and understanding of a unique situation

Hypothesis validation through generative form giving

Synthesis is the process of making meaning through <u>abductive</u> sensemaking and reframing.

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deductive   inductive   abductive

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Jon is a Designer.

All Designers are Arrogant Bastards.

Therefore, Jon is an Arrogant Bastard.

deductive   inductive   abductive

The output is guaranteed to be true,
if the premise is true.

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All of the designers I've ever seen wear black t-shirts.

Therefore, the next designer I will see will be wearing a black t-shirt.

deductive

inductive

abductive

The output is guaranteed to be true, if the premise is true.

Gives good evidence that a conclusion is true.

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When a designer works on a project, they often draw diagrams of things. It seems to help them learn about a new topic.

I've seen grade school students struggle to learn complex topics of math or science.

I can abduct that students might be able to learn better by drawing diagrams in a classroom setting.

deductive

inductive

abductive

The output is guaranteed to be true, if the premise is true.

Gives good evidence that a conclusion is true.

The argument from best explanation, depending on circumstances and experience

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Ethnography

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Immersion – gathering data and understanding of a unique situation

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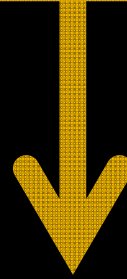Immersion – gathering data and understanding of a unique situation

Hypothesis validation through generative form giving

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David Snowden

Karl Weick

Robert Hoffman

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David Snowden

"We have found that [our sensemaking framework] helps people to break out of old ways of thinking and to consider intractable problems in new ways... it is designed to allow shared understandings to emerge through the multiple discourses of the decision-making group."

The use of narrative to describe what might be, by embracing a "what if" style thinking

A collaborative process, valuable for early stages of problem solving

Karl Weick

Robert Hoffman

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David Snowden

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Karl Weick

"Sensemaking is, importantly, an issue of language, talk, and communication. Situations, organizations, and environments are talked into existence... Sensemaking is about the interplay of action and interpretation rather than the influence of evaluation on choice."

The use of spoken language to describe what might be

A collaborative process that is effective for growth and planning

Robert Hoffman

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Robert Hoffman

"By sensemaking, modern researchers seem to mean something different from creativity, comprehension, curiosity, mental modeling, explanation, or situational awareness... Sensemaking is a motivated, continuous effort to understand connections (which can be among people, places, and events) in order to anticipate their trajectories and act effectively."

A process of connection making and socialization that occurs over an extended period of time.

Both a personal process and a shared process.

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Ethnography

Immersion – gathering data and understanding of a unique situation

Synthesis

Prototyping

Hypothesis validation through generative form giving

Synthesis is the process of making meaning through abductive <u>sensemaking</u> and reframing.

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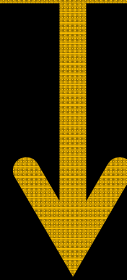
Ethnography

Synthesis
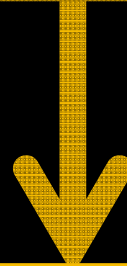
Prototyping

It's a process of <u>learning</u>.
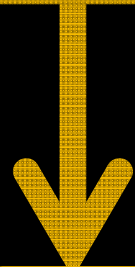
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Ethnography

Synthesis

Prototyping

Data

Information

Knowledge

Wisdom

? Making Meaning out of Data

? Experience Frameworking

? Gaining Empathy

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: (

"It's ... why can ... smaller?"

Data

Information

Knowledge

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25

Data

Information

Knowledge

Wisdom

Making Meaning
out of Data

Experience
Frameworking

Gaining
Empathy

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Data	Information	Knowledge	Wisdom

Making Meaning
out of Data

Experience
Frameworking

Gaining
Empathy

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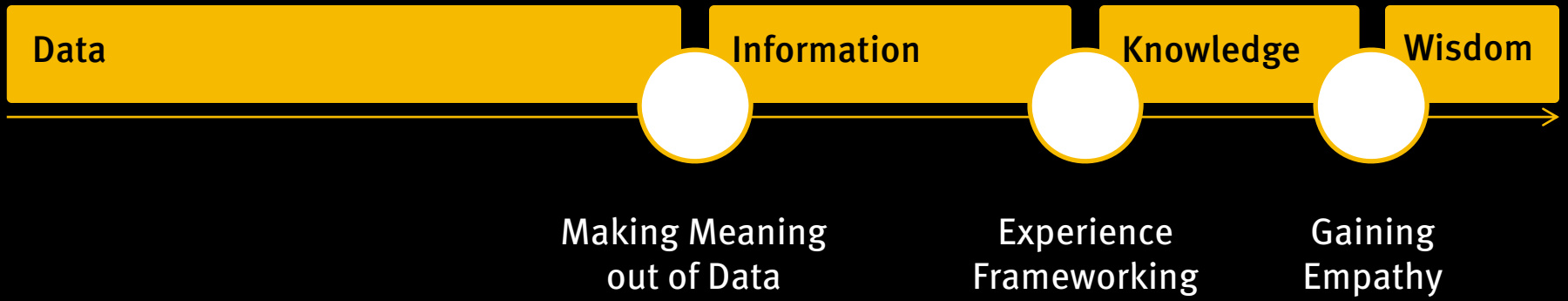
Data	Information	Knowledge	Wisdom

Making Meaning
out of Data

Experience
Frameworking

Gaining
Empathy

1.
Externalize the Process – Get out of your laptop.
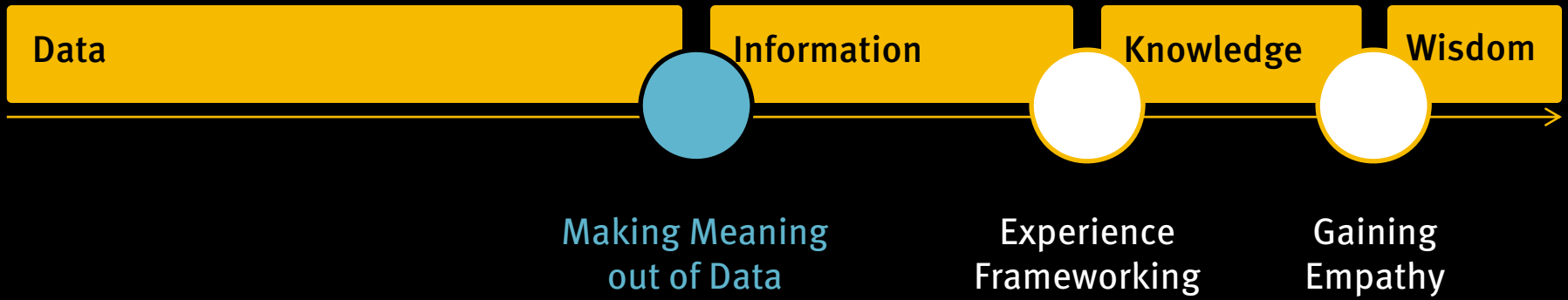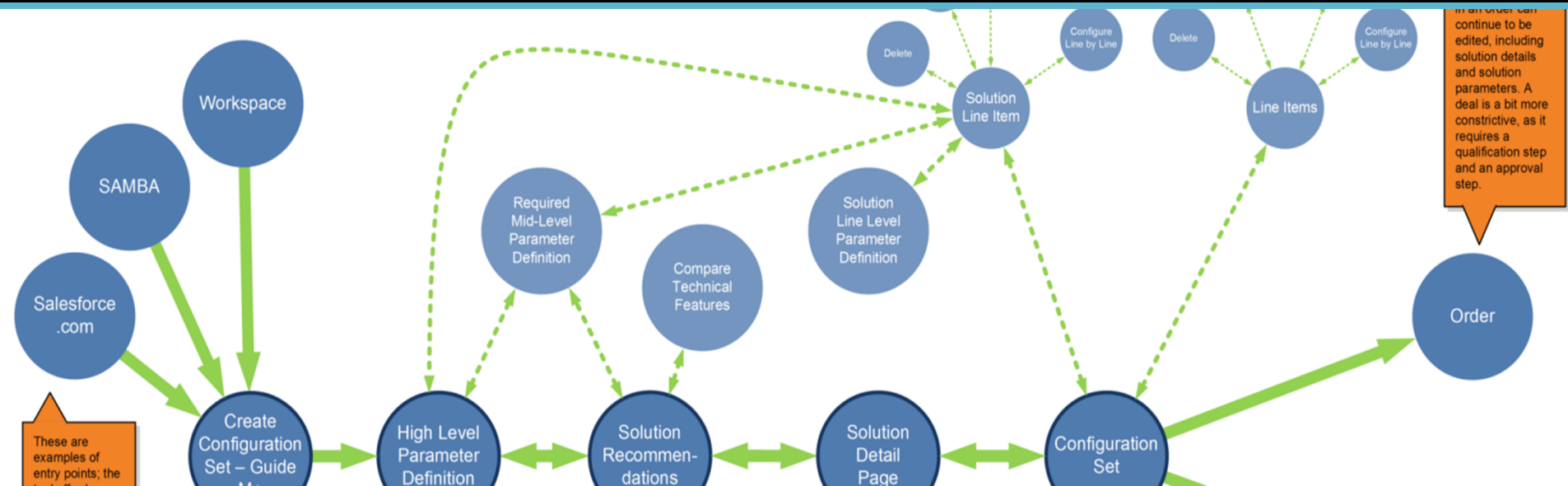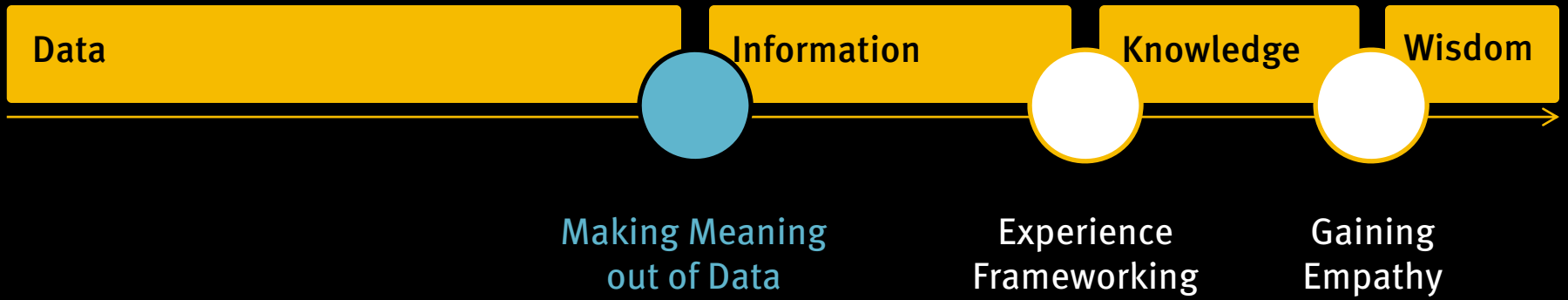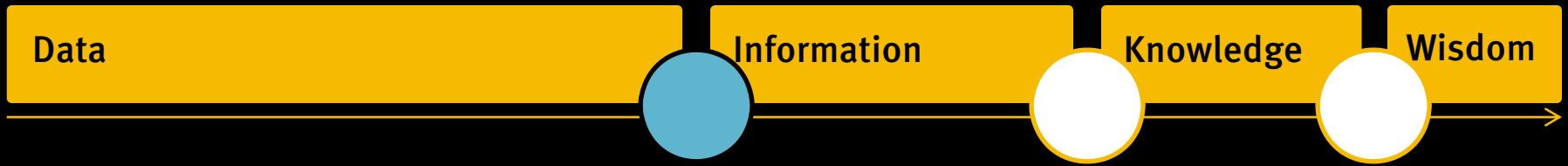
Data	Information	Knowledge	Wisdom

Making Meaning
out of Data

Experience
Frameworking

Gaining
Empathy

2.
Make diagrams.

Data	Information	Knowledge	Wisdom

Making Meaning
out of Data

Experience
Frameworking

Gaining
Empathy

3.
Interpret. Heavily.

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Data	Information	Knowledge	Wisdom

Making Meaning
out of Data

Experience
Frameworking

Gaining
Empathy

Methods:

affinity diagramming
hierarchy creation
✓ flow diagramming
scenario development

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Data **Information** **Knowledge** **Wisdom**

Making Meaning
out of Data

Experience
Frameworking

Gaining
Empathy

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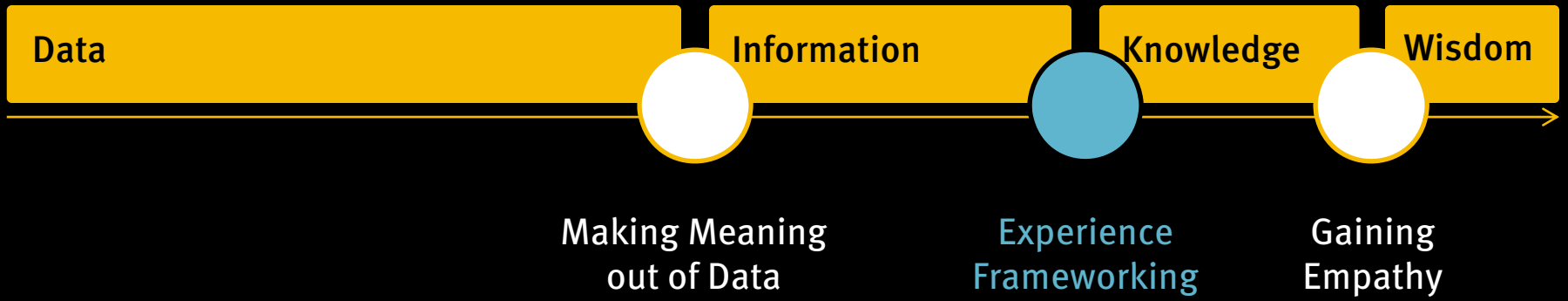
Data	Information	Knowledge	Wisdom

Making Meaning
out of Data

Experience
Frameworking

Gaining
Empathy

1.
Tell a story
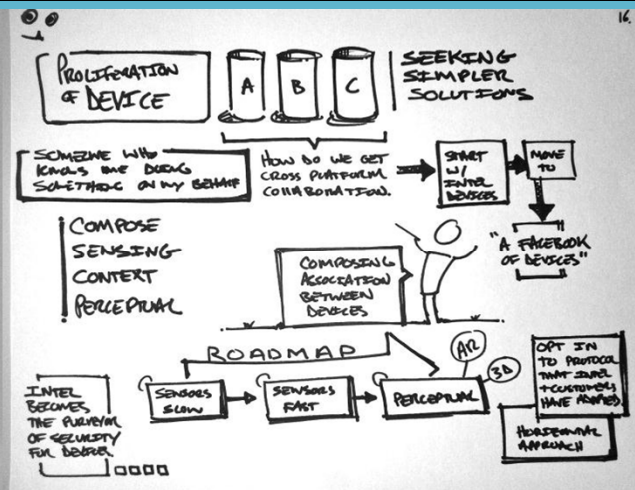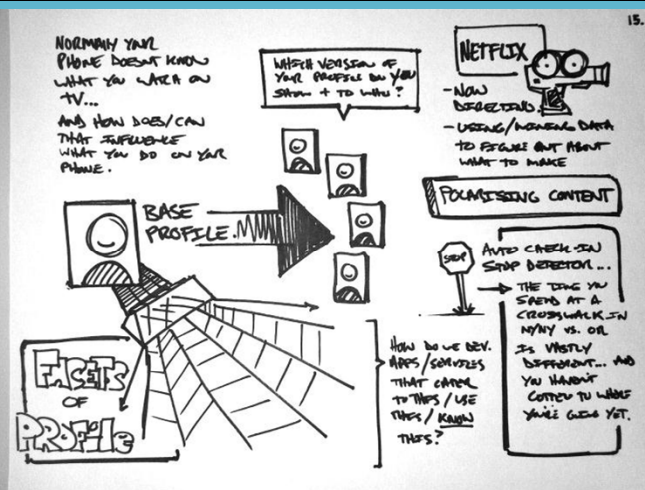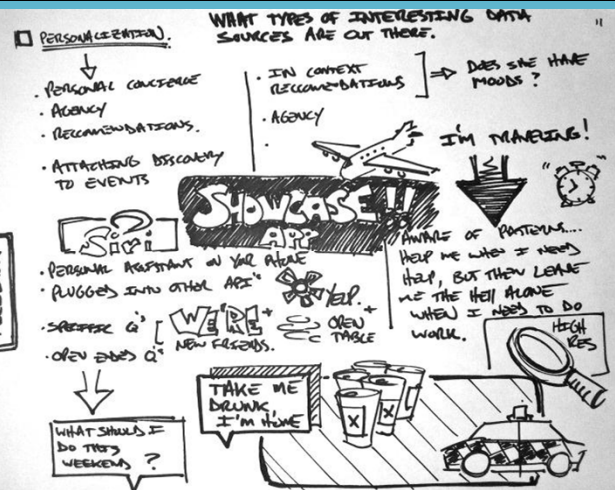
Data	Information	Knowledge	Wisdom

Making Meaning out of Data

Experience Frameworking

Gaining Empathy

Warmth

Multisensory

Atmosphere and Culture

Sitting on a Comfy Couch

Comfortable Living Room

A Cup of Coffee

Freshly Ground Coffee

Grinder

Roasted Coffee Beans

Green Coffee Beans

Coffee Tree

2.
Change your perspective

Data   Information   Knowledge   Wisdom

Making Meaning
out of Data

Experience
Frameworking

Gaining
Empathy

3.
Shift the context

A product,
becoming another product

A product,
not working as intended

A product,
being passed down to a new
generation

A product,
being upgraded

A product,
being assembled

A product,
being purchased

A product,
being unpacked
and set up

A product,
being used

A product,
becoming worn
and loved

A product,
becoming
obsolete

A product,
being discarded

A product
accessory

A product,
that was misplaced
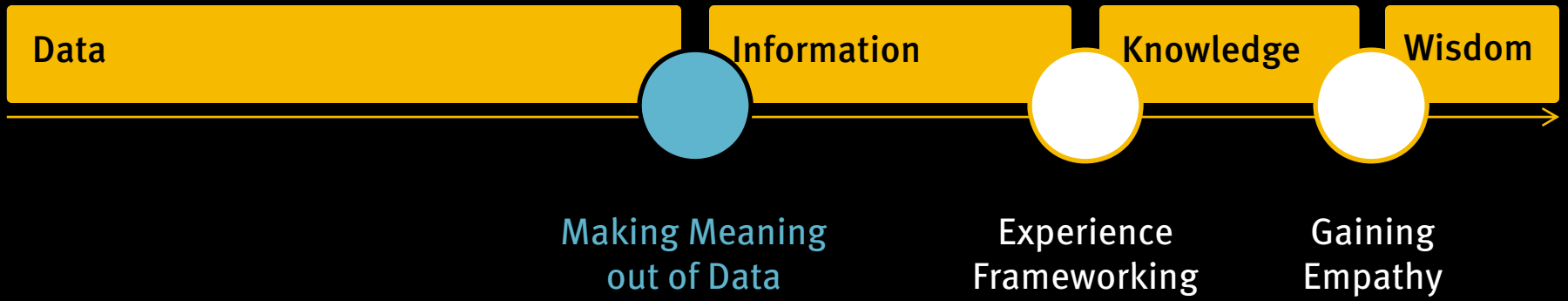
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| Data | Information | Knowledge | Wisdom |

Making Meaning
out of Data

Experience
Frameworking

Gaining
Empathy

Methods:

✓ concept mapping
temporal zoom
semantic zoom
storyboarding

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Data	Information	Knowledge	Wisdom

Making Meaning
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Experience
Frameworking

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Making Meaning
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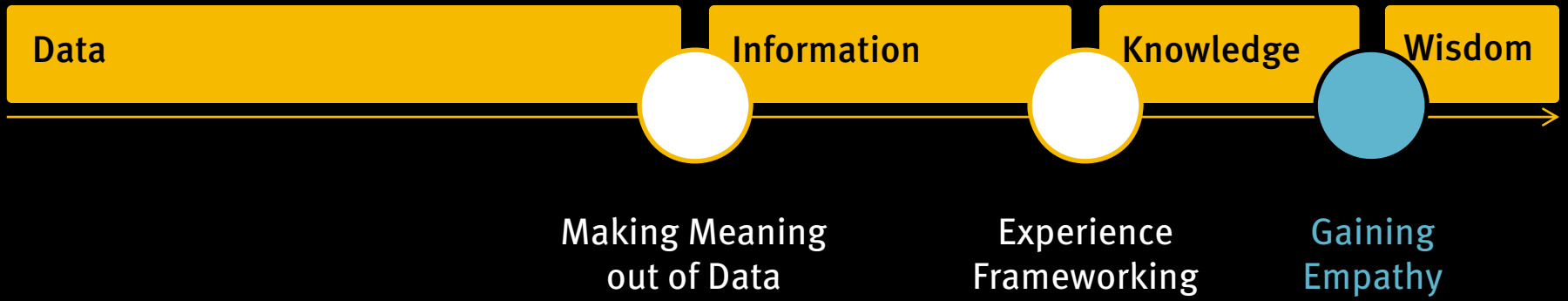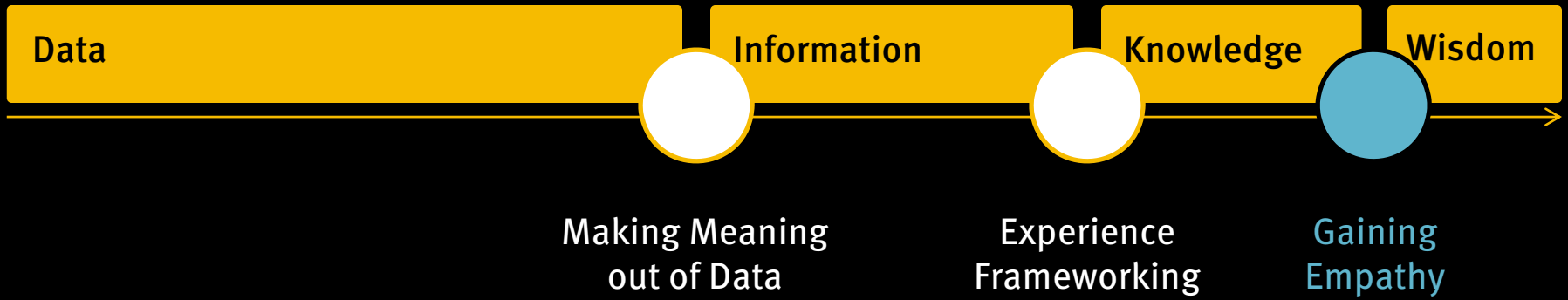
Gaining
Empathy

1.
Consider a provocation

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Data | Information | Knowledge | Wisdom

Making Meaning out of Data

Experience Frameworking
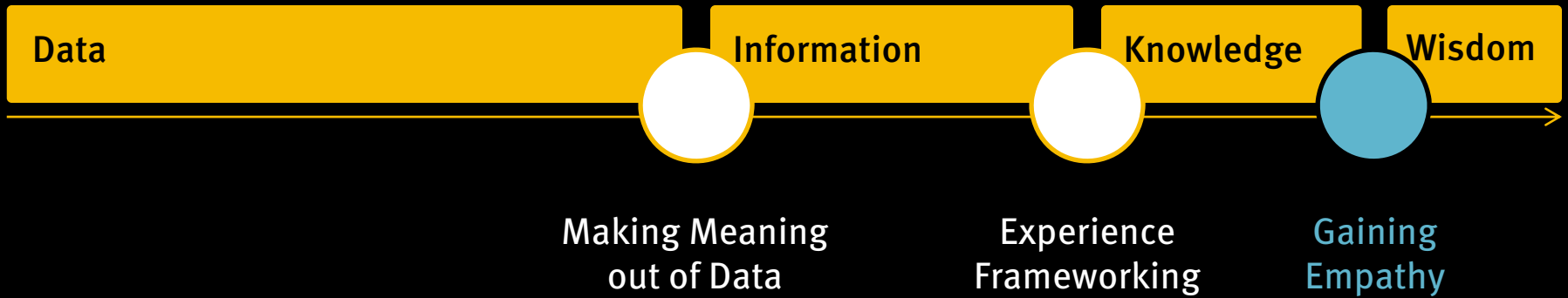
Gaining Empathy

2.
Force a constraint-shift
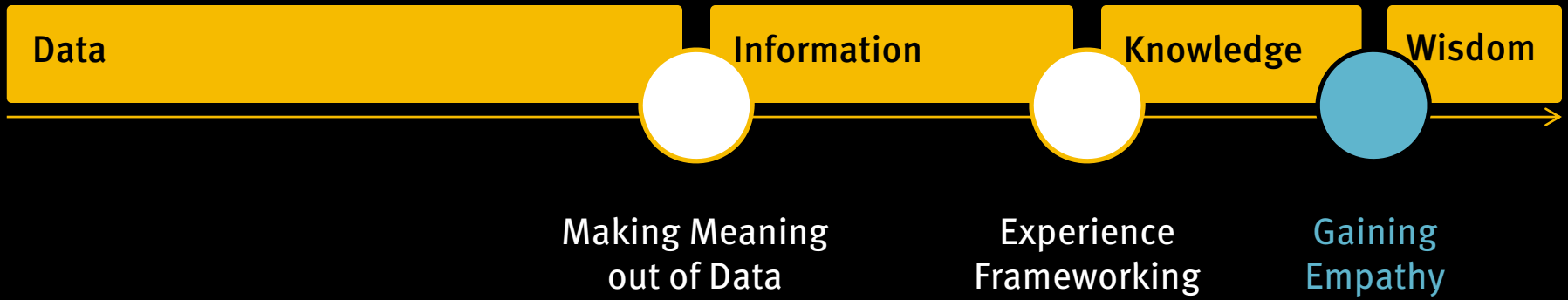
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Data	Information	Knowledge	Wisdom

Making Meaning
out of Data

Experience
Frameworking

Gaining
Empathy

3.
Make fun of everything

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Data	Information	Knowledge	Wisdom

Making Meaning
out of Data

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Frameworking

Gaining
Empathy

Methods:

✓ reframing
✓ insight combination
   participatory design

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2/ Methods

The Story So Far...

Your colleague, Melvin, has abruptly decided to go back to school to fulfill his lifelong dream of becoming a Taxidermist. Melvin had just finished the research phase of a project with a large client, and all of his work on the project – is gone. The only thing left are some insights he's extracted and a few of his notes, scribbled quickly.

You've been assigned to the project, but no one seems to have any background information about what he was doing; it's up to you to take what Melvin started and then move the project forward.

Process Flow Diagrams

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A <u>Process Flow</u> is...

A set of steps, and the sequencing of the steps,
intended to produce a desired result.

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A <u>Process Flow Diagram</u> visualizes behavior, in a representational format, <u>over time</u>.

An **informal** scenario flow diagram:

1. Indicates the relationship and order of actions
2. Shows major interface states
3. Helps to visualize the "whole", as well as proximity to the whole
4. Abstracts logical relationships in favor of linearity

A **formal** process or data flow diagram:

1. Indicates logical decision points
2. Articulates major data containers, and paths in and out of those containers
3. Can be used by engineers as an input into coding and architecture development

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An Informal Scenario-Flow Diagram describes progress, steps, relationships, and order.

1 (Phone Rings) → (User Answers) → (Phone Stops Ringing)

2 (Phone Rings) → (Voicemail Answers) → (Phone Stops Ringing)

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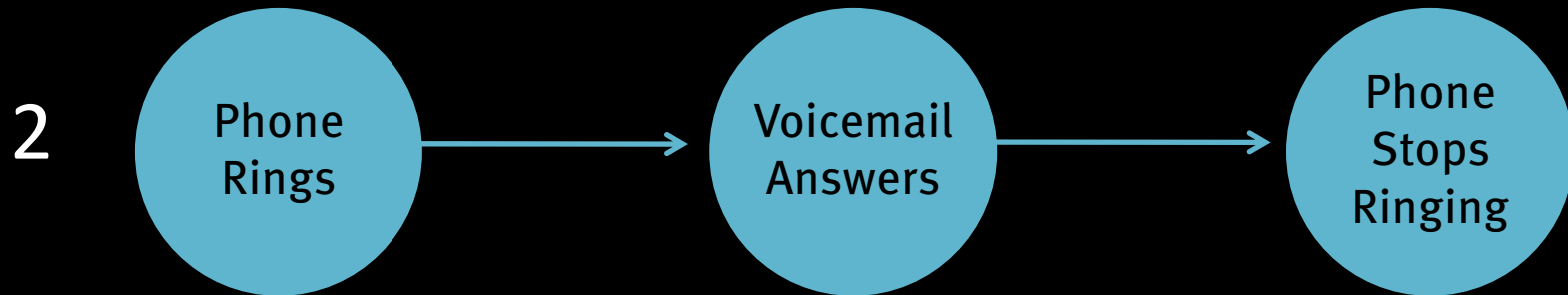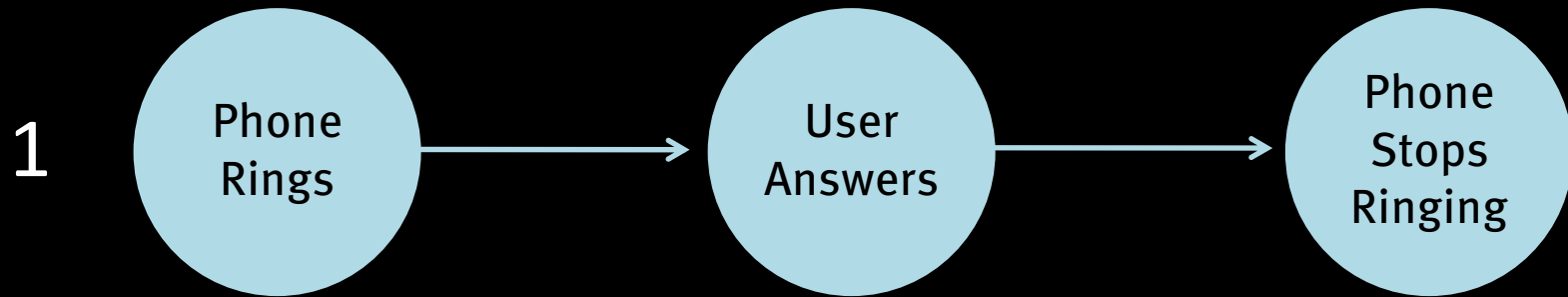
A formal Process Flow Diagram show logical decision points, accurate flow, and order.

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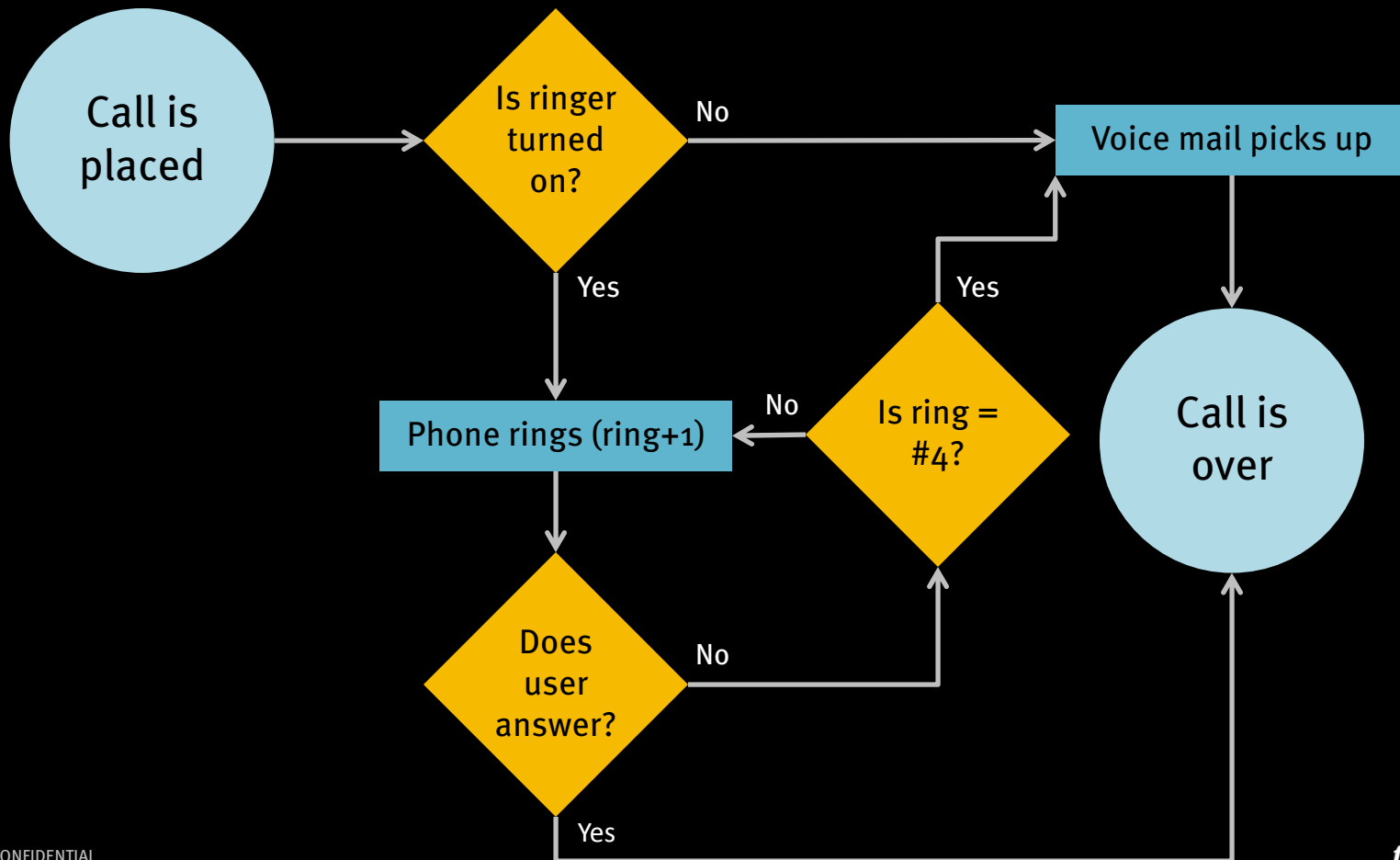
Creating a Process Flow Diagram is an f'in pain in the ass.

1. List entities (objects, people – the "nouns" of the system) and operators (actions – the "verbs" of the system) (2 hours)

2. Define things to be counted or incremented (1 hour)

3. Define boundary conditions (beginning and ending, as well as sub-flows or sub-processes) (1 hour)

4. List primary actions necessary to achieve boundary condition (3 hours)

5. Begin with a walkthrough, sketching each step in a high-level flow (10 hours)

6. Fill in the rest of the structure, revising the main flow as necessary (20 hours)

7. Reorganize, visually, to create a coherent overall structure   (20 hours)

8. Use visual design to clarify and make the content more accessible (10 hours)

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The Story So Far…

Your colleague, Melvin, has abruptly decided to go back to school to fulfill his lifelong dream of becoming a Taxidermist. Melvin had just finished the research phase of a project with a large client, and all of his work on the project – is gone. The only thing left are some insights he's extracted and a few of his notes, scribbled quickly.

You've been assigned to the project, but no one seems to have any background information about the project; it's up to you to take what Melvin started and then move the project forward.

Let's try it…

In groups, using Melvin's notes, create a formal process flow diagram of a piece of the task that Melvin was studying.

1. List entities (objects, people – the "nouns" of the system) and operators (actions – the "verbs" of the system)

2. Define things to be counted or incremented

3. Define boundary conditions (beginning and ending, as well as sub-flows or sub-processes)

4. List primary actions necessary to achieve boundary condition

5. Begin with a walkthrough, sketching each step in a high-level flow

6. Fill in the rest of the structure, revising the main flow as necessary

7. Reorganize, visually, to create a coherent overall structure

8. Use visual design to clarify and make the content more accessible

Concept Mapping

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A Map is…

A representation of a system,
intended to help someone find their way

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A Concept Map is a representation of a system. It sacrifices accuracy for comprehensibility.

1. Visualizes both the forest and the trees (breadth and depth)
2. Rarely has a "beginning" and "end"
3. Helps people find their way (it's a map, after all): provides direction and instruction
4. Forces selectivity, abstraction, prioritization and hierarchy

5. Is visual (a tool for perception)
6. Is semantic (a tool for cognition)
7. Frequently represents the user's mental model of a how a system might work
8. Can also represent the designer's manifest model of how a system might appear

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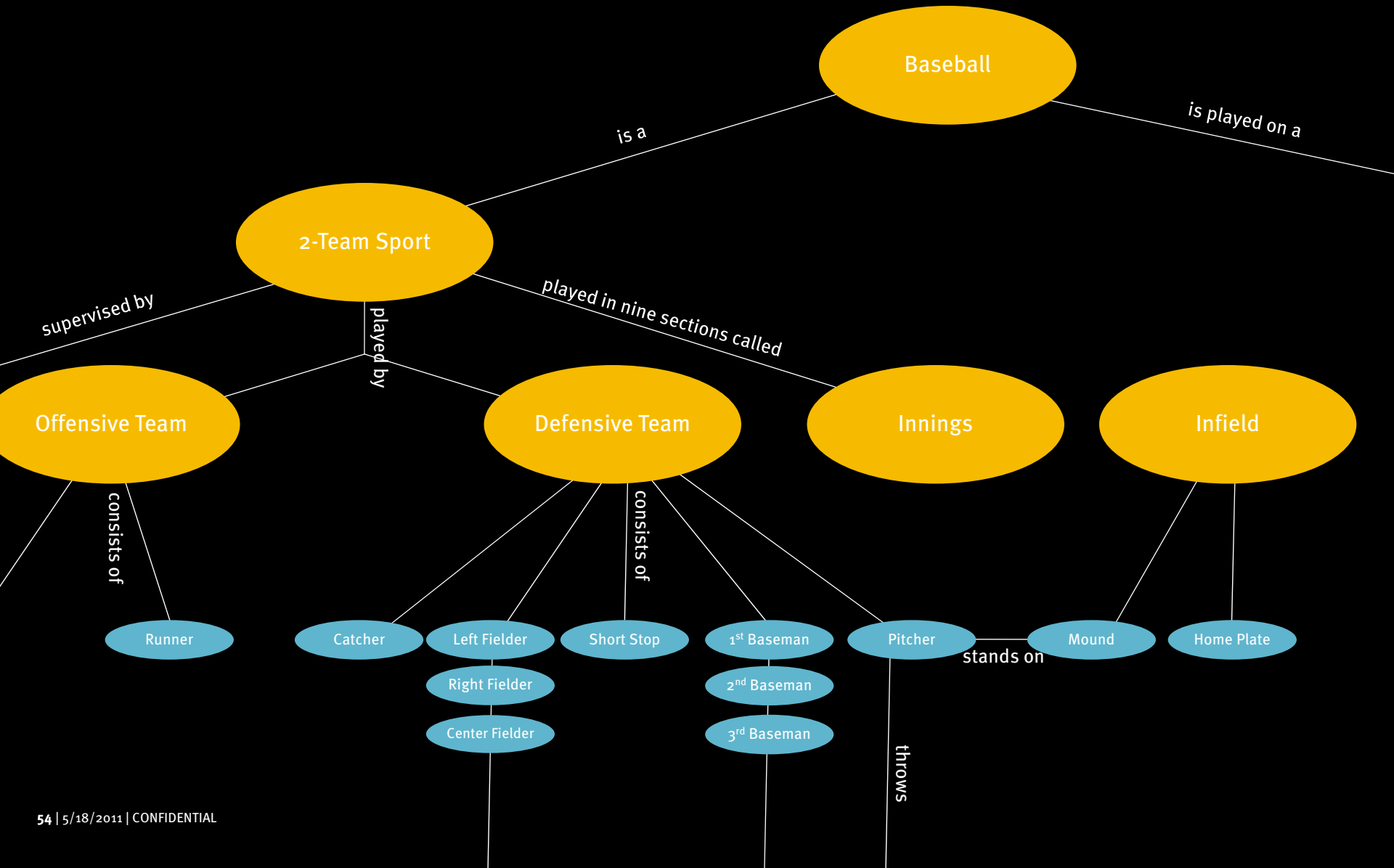
Nodes (nouns) are main branches

Baseball

- is a → **2-Team Sport**
- is played on a → (Infield)

2-Team Sport

- supervised by → **Offensive Team**
- played by → **Defensive Team**
- played in nine sections called → **Innings**

Offensive Team

- consists of → Runner

Defensive Team

- consists of → Catcher, Left Fielder, Short Stop, 1st Baseman, Pitcher
  - Left Fielder → Right Fielder → Center Fielder
  - 1st Baseman → 2nd Baseman → 3rd Baseman
  - Pitcher — stands on → Mound
  - Pitcher → throws

Infield

- Mound
- Home Plate

Actions (verbs) link the nodes

Baseball

is played on a

is a

2-Team Sport

supervised by

played in nine sections called

played by

Offensive Team

Defensive Team

Innings

Infield

consists of

consists of

stands on

Runner

Catcher

Left Fielder

Short Stop

1st Baseman

Pitcher

Mound

Home Plate

Right Fielder

2nd Baseman

Center Fielder

3rd Baseman

throws
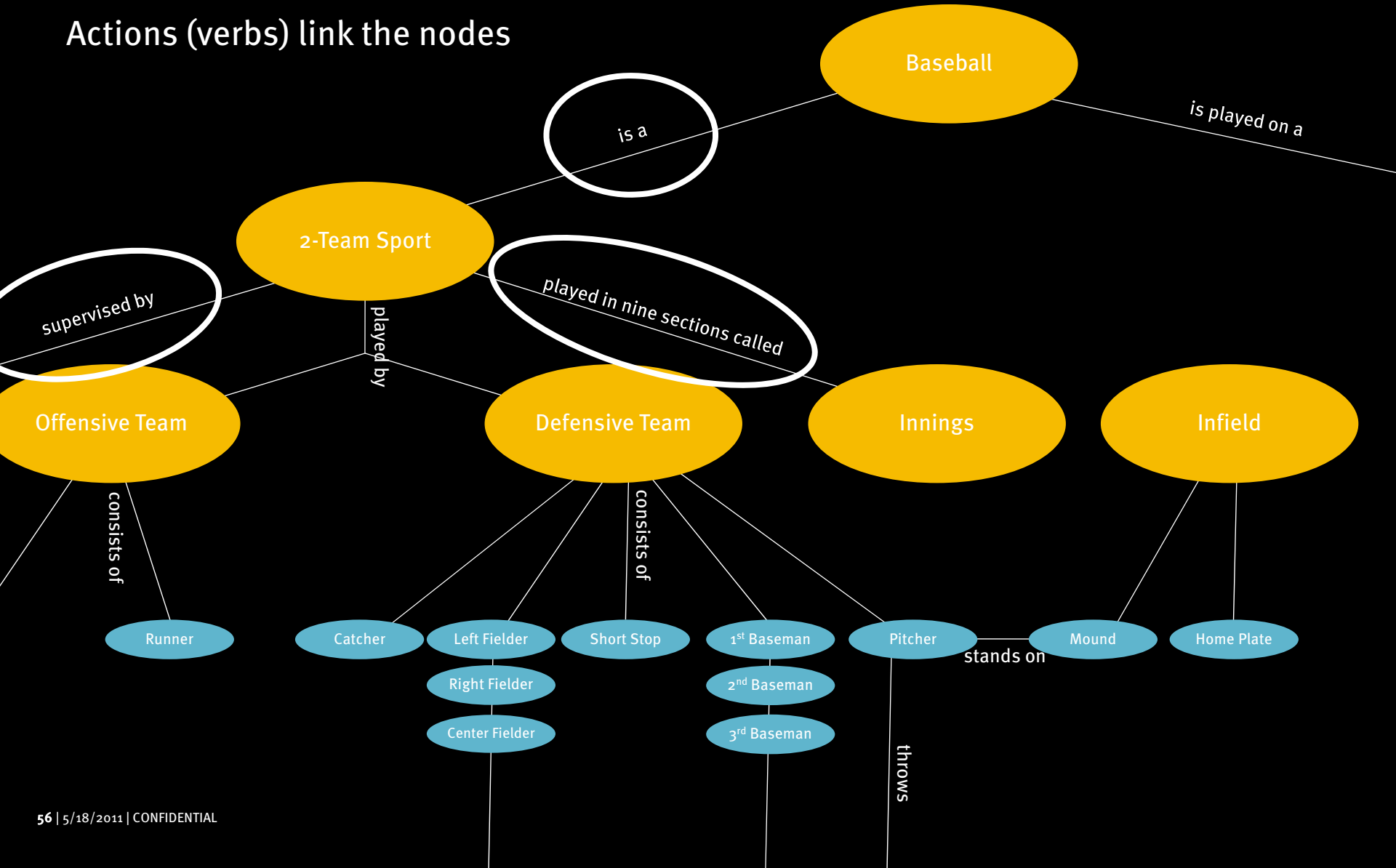
"Baseball Deconstructed"

Explaining the regulations, structure and intricate activities involved in a game of baseball to a novice

The objective for the **offensive** player is to score as many **runs** as possible during an **inning**. This can be accomplished by successful batting, **walking** and **stealing**. The idea is to run the **base circuit** starting from the batting position and then progressing on to first base, second base, third base and ultimately back to **home plate**. A **batting order** determines the sequence in which the offensive players will bat.

Offensive players — consisting of a — Batter — who swings a — Bat — at a thrown ball which he can

Hit — with a — full swing / bunt — into — Fair territory — to become a — Runner — and run to
- 1st Base = Single
- 2nd Base = Double
- 3rd Base = Triple
- Home Plate = Home Run — to ultimately score a — Run — for his/her — Team — the team with the most — Runs — at the end of — 9 Innings — wins the game

Foul territory — one time and receive — a — Strike — two times and receive another — Strike — three or more times — No strike

Miss — the ball a first time and receive a — Strike — the ball a second time and receive another — Strike — the ball a third time and receive an — Out — 1 — Out — requires the next batter in the — Batting order — to go up to — Bat

3 — Outs — means the — Defensive players — will switch positions with the — Offensive players — completing half of an — Inning — A total of — 9 Innings — will complete a — Game

BASEBALL — is a two — Team Sport — played by nine

Defensive players — who comprise

The Infielders — which include a
- 1st Baseman — who stands on — 1st Base
- 2nd Baseman — who stands on — 2nd Base
- Short Stop — who stands between — 2nd Base — and — 3rd Base
- 3rd Baseman — who stands on — 3rd Base

The Outfielders — which include a
- Left Fielder — who stands on the left side of the — Outfield
- Center Fielder — who stands in the center of the — Outfield
- Right Fielder — who stands on the right side of the — Outfield

The Battery — which include a

Catcher — who uses a — Catcher's mitt — to catch the balls thrown by the — Pitcher — complex set of — Signals — to communicate to the — Pitcher — which type of ball to — Pitch

Pitcher — who pitches a ball that will be
- Hit — by a — Batter
- In the strike-zone — adding to a batter's — Strike count — causing an — Out — with the accumulation of — 3 Strikes
- Outside the strike-zone — the first time / the second time / the third time — the — Umpire — will call — "Ball" — adding to the batter's — Ball count — the fourth time — the — Umpire — will call — Walk — which allows the batter to advance to — 1st Base
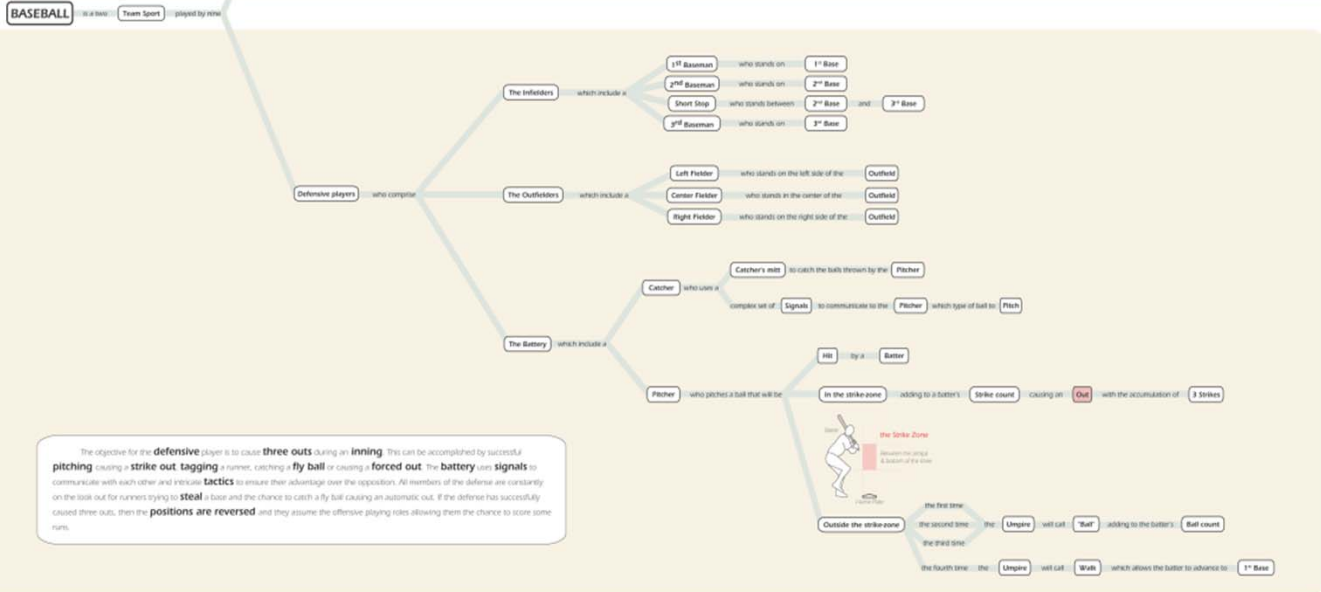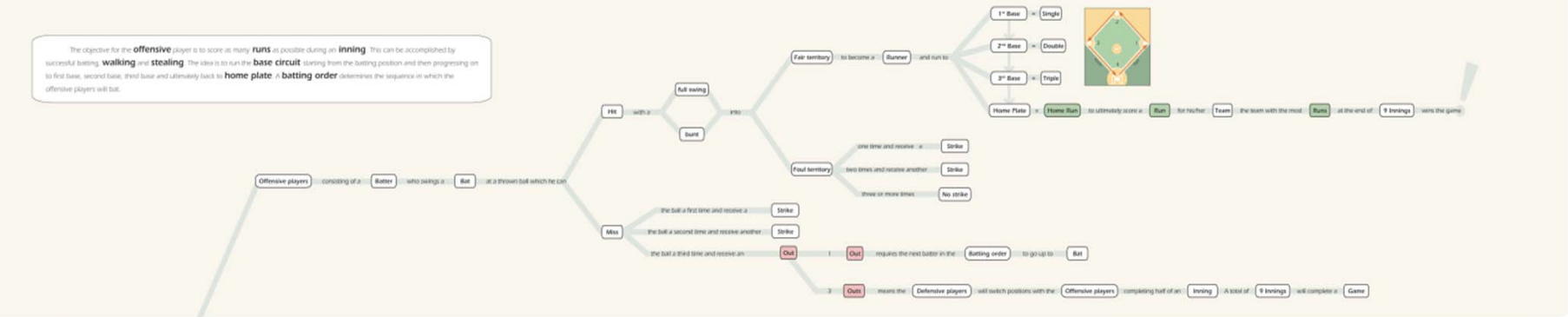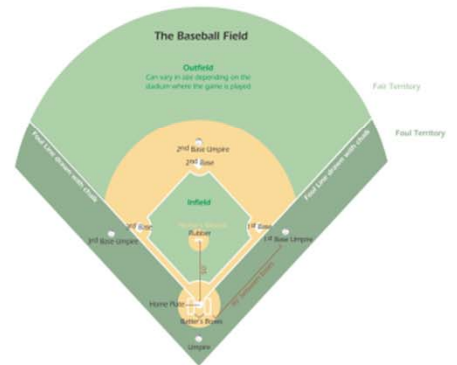
the Strike Zone

The objective for the **defensive** player is to cause **three outs** during an **inning**. This can be accomplished by successful **pitching** causing a **strike out**, **tagging** a runner, catching a **fly ball** or causing a **forced out**. The **battery** uses **signals** to communicate with each other and intricate **tactics** to ensure their advantage over the opposition. All members of the defense are constantly on the look out for runners trying to **steal** a base and the chance to catch a fly ball causing an automatic out. If the defense has successfully caused three outs, then the **positions are reversed** and they assume the offensive playing roles allowing them the chance to score some runs.

Playing Positions

Center Fielder
Left Fielder — Right Fielder
2nd Baseman
Short Stop
3rd Baseman — 1st Baseman
Pitcher
Batter
Catcher

Defensive Players play in the field positions

Offensive Players wait in the dugout until their turn to bat

The Baseball Field

Outfield Can vary in size depending on the stadium where the game is played

Fair Territory
Foul Territory
Foul Line (where a ball is fair)

2nd Base Umpire
2nd Base
Infield
3rd Base — 1st Base
3rd Base Umpire — 1st Base Umpire
Runner
Home Plate
Batter's Boxes
Umpire

Windup Extension Release

The **pitcher** takes signals from the catcher to help determine what kind of pitch he wants to deliver to the batter. A fast ball, curve ball, slider, and split finger are all examples of types of pitches the pitcher may elect to throw to the batter. Once the pitcher has decided upon a pitch, he moves to **set position** from which he must deliver the ball to the batter. Failure to deliver the ball to the batter after arriving at the set position will result in a **balk**. Once the pitcher is in set position his rear foot must always be in contact with the **pitcher's mound**. If the rear foot of the pitcher loses contact with the rubber plate it is also ruled a balk. When a balk occurs, each runner shall advance one base.
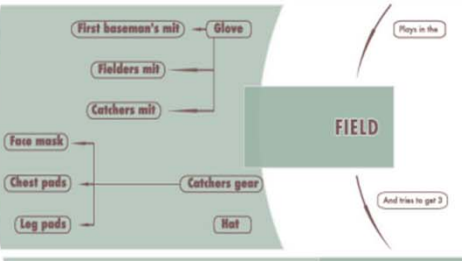
Center field
Left field · Right field
Shortstop · Second base
Third base · Pitcher · First base
Catcher

Release
Windup
Pivot foot
Check runners
Set position
Catcher signals
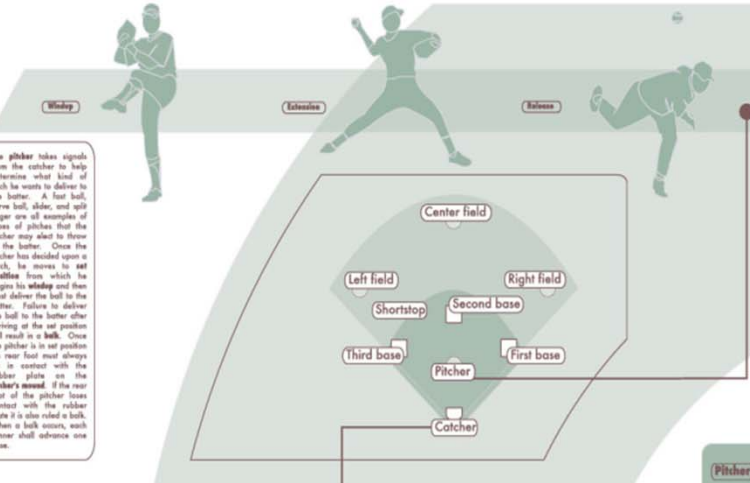
A **STRIKE** is a legal pitch when so called by the **UMPIRE**, which...

a. is struck at by the batter and is missed;
b. is not struck at, if any part of the ball passes through any part of the strike zone;
c. is fouled by the batter when he has less than two strikes;
d. is bunted out;
e. Touches the batter as he strikes it;
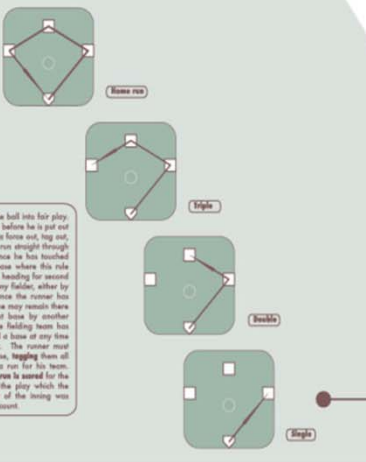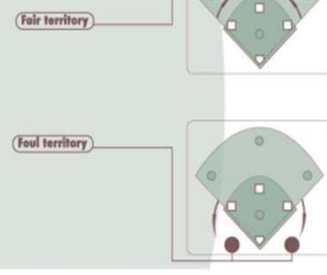f. Touches the batter in flight in the strike zone; or
g. Becomes a foul tip.

A **batter** becomes a **runner** when he hits the ball into fair play. The runner must then try to reach **first base** before he is put out by a member of the fielding team through a force out, tag out, or caught fly ball. The runner is aloud to run straight through first base without fear of being put out once he has touched and passed the base. This is the only base where this rule applies. Once the runner turns and begins heading for second base, he may be put out at any time, either by **force out, tag out, or caught fly ball**. Once the runner has stopped running and has claimed a base, he may remain there until he is forced to proceed to the next base by another runner, or until the inning is over and the fielding team has obtained three outs. The runner may **steal** a base at any time during fair play, at risk of being put out. The runner must proceed around the bases counter clockwise, **tagging** them all including home plate, in order to score a run for his team. Every time a runner crosses home plate, a **run is scored** for the batting, or offensive, team. Once a run has crossed home plate, the third out of the inning was scored. In that case only, the run does not count.

Home run
Triple
Double
Single

Pitcher — Let's play ball!

THE DEFENSE · SCORE · RUN · Batter

Counter clockwise around all the bases in order to

Home plate · Third base · Runner · Second base · First base · Run through

Plays in the · So that they can

FIELD · HIT

More runs than the opposing team, and therefore...

WIN

First baseman's mit → Glove
Fielders mit
Catchers mit
Face mask
Chest pads → Catchers gear
Leg pads → Hat

No contact → Ball → Walk
Strike
Contact

Fair territory
Foul territory

OUTS · OFFENSE

And tries to get 3
Where the goal is to get a
In order to get a chance to play

Into play

Fly ball
Bunt
Grounder
Line drive
Infield fly
Single
Double
Triple
Home run
Grand slam

Batter · Hit → Ball · Bat · Swings
Lineup
On deck
Lead off

Swing and miss → 3 strikes → Strike out
Strike zone
Foul tip
In the air → Catching
Off of a bounce
Force out
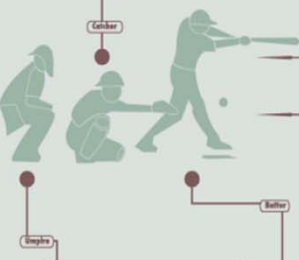Tag out

The **strike zone** is that area over home plate the upper limit of which is a horizontal line at the midpoint between the top of the shoulders and the top of the uniform pants, and the lower level is a line at the hollow beneath the knee cap. The **strike zone** shall be determined from the batters stance as the batter is prepared to swing at a pitched ball.

The inner circle describes the basic concepts involved in the game of baseball.

The secondary circle is intended to show and explore the relationships between different terms used to describe and play the game of baseball.

The outermost circle is meant to show and describe some of the more difficult elements of baseball. It includes some direct quotes from the Official Rules of the Major League Baseball Association.
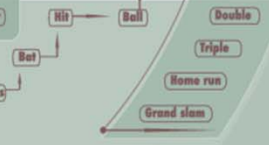
The **umpire** shall be **responsible** for the conduct of the game in accordance with the official rules and for maintaining discipline and order on the playing field during the game. Any umpire's decision which involves judgment, such as, but not limited to, whether a batted ball is fair or foul, whether a pitch is a strike or a ball, or whether a runner is safe or out, **is final**. No player, manager, coach or substitute shall object to any such decisions. If there is only one umpire, he shall have **complete jurisdiction** in administering the rules. He may take any position on the playing field which will enable him to discharge his duties (usually) behind the catcher, but sometimes behind the pitcher if there are runners. If there are two or more umpires, one shall be designated umpire in chief and the others field umpires.

Each player of the offensive team shall bat in the order that his name appears in his team's batting order. The batter shall take his position in the **batter's box** promptly when it is his time at bat. The batter shall not leave his position in the batter's box after the pitcher comes to **Set Position**, or starts his windup. The batter's legal position shall be with both feet in the batter's box. The lines defining the box are within the batters box.

Home plate · Batter's box

Once the batter hits the ball with the bat and the ball is sent into fair territory, the batter becomes the runner and sprints towards first base.

Umpire · Batter · Catcher

Creating a Concept Map should be rigorous – after all, you are taming complexity!

1. Create a matrix showing the relations of terms: (10 hours)

   - List terms. Identify the main elements that make up the system; lean on your contextual research to understand the words that matter to the users the most.
   - Create empty matrix, plotting the words against themselves.
   - Identify relationships; these are qualitative and require interpretation.

2. Decide on main branches of the map, based on frequency of connections as well as common sense (2 hours)

3. Fill in the rest of the structure, in order to represent all of the elements in the system (5 hours)

4. Use visual design to clarify and make the content more accessible (10 hours)

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For example...
Making a concept map of Thinktiv.

Infinity	Sharespost	Friday Beers	Project Management
Big Geek	Technologist	Roadmaps	Strategist
Redlines	Team Lunches	Sarcasm	Visual Design
Creativity	Clients	Steve Waters	Photoshop
Billable	Happy Hours	Whiteboards	Mobile

thinktiv.

	Infinity	Sharespost	Friday Beers	Project Management	Big Geek	Technologist	Roadmaps	Strategist	Redlines	Team Lunches	Sarcasm	Visual Design	Creativity	Clients	Steve Waters	Photoshop	Billable	Happy Hours	Whiteboards	Mobile
Infinity																				
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	Infinity	Sharespost	Friday Beers	Project Management	Big Geek	Technologist	Roadmaps	Strategist	Redlines	Team Lunches	Sarcasm	Visual Design	Creativity	Clients	Steve Waters	Photoshop	Billable	Happy Hours	Whiteboards	Mobile
Infinity	■																			
Sharespost		■																		
Friday Beers			■																	
Project Management		●		■																
Big Geek					■															
Technologist		●		●		■														
Roadmaps		●				●	■													
Strategist		●		●		●	●	■												
Redlines		●							■											
Team Lunches	●		●					●		■										
Sarcasm						●		●			■									
Visual Design				●		●		●	●			■								
Creativity	●					●	●	●				●	■							
Clients		●		●							●			■						
Steve Waters						●	●			●	●	●	●		■					
Photoshop								●	●			●	●			■				
Billable		●		●		●		●				●	●	●			■			
Happy Hours	●		●										●					■		
Whiteboards				●	●	●	●	●					●				●		■	
Mobile						●	●	●				●	●							■

	Infinity	Sharespost	Friday Beers	Project Management	Big Geek	Technologist	Roadmaps	Strategist	Redlines	Team Lunches	Sarcasm	Visual Design	Creativity	Clients	Steve Waters	Photoshop	Billable	Happy Hours	Whiteboards	Mobile
Infinity	■									●			●					●		
Sharespost		■		●		●	●	●	●					●			●			
Friday Beers			■							●								●		
Project Management	●			■		●		●				●		●			●		●	
Big Geek					■														●	
Technologist		●		●		■	●	●				●	●	●			●		●	●
Roadmaps		●				●	■	●					●		●				●	●
Strategist		●		●		●	●	■		●	●	●	●	●	●	●	●		●	●
Redlines		●							■			●				●				
Team Lunches	●		●					●		■		●								
Sarcasm						●		●			■		●	●						
Visual Design				●		●		●	●			■	●				●	●		●
Creativity	●					●	●	●				●	■	●	●	●	●	●	●	●
Clients		●		●							●		●	■	●		●			
Steve Waters						●	●	●			●	●	●	●	■		●			
Photoshop						●		●				●	●		●	■				
Billable		●		●		●		●				●	●	●	●		■	●		
Happy Hours	●		●										●					■		
Whiteboards				●	●	●	●	●					●				●		■	
Mobile						●	●	●				●	●							■

Thinktiv

is made up of

employees

with titles like

roadmaps

creates

Strategist   Technologist   Visual Designer

creates

who may be named   who get paid for their   who need to remain

Steve Waters   creativity   billable   redlines

who has an abundance of

sarcasm

thinktiv.

thinktiv.

The Story So Far...

Your colleague, Melvin, has abruptly decided to go back to school to fulfill his lifelong dream of becoming a Taxidermist. Melvin had just finished the research phase of a project with a large client, and all of his work on the project – is gone. The only thing left are some insights he's extracted and a few of his notes, scribbled quickly.

You've been assigned to the project, but no one seems to have any background information about the project; it's up to you to take what Melvin started and then move the project forward.

Let's try it...

Using the words from Melvin's notes, and your process diagrams, construct a matrix of terms, and produce a concept map that illustrates the system-view of Melvin's work.

1. Create a matrix showing the relations of terms:

   - List terms. Identify the main elements that make up the system; lean on your contextual research to understand the words that matter to the users the most.
   - Create empty matrix, plotting the words against themselves.
   - Identify relationships; these are qualitative and require interpretation.

2. Decide on main branches of the map, based on frequency of connections as well as common sense

3. Fill in the rest of the structure, in order to represent all of the elements in the system

4. Use visual design to clarify and make the content more accessible

Insight Combination

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Design patterns describe…

"possible good solutions to a common design problem
within a certain context, by describing the invariant qualities
of all those solutions"

Tidwell

thinktiv.

Insight Combination is a method of building on established design patterns in order to create initial design ideas.

1. Forces a detailed examination, and organization, of each individual insight
2. Is divergent, in that it actively produces new ideas and expands the entire set of insights
3. Pushes ideas forward in a nonlinear fashion, jumping over the expected to arrive at the unexpected

4. Allows for the combination of existing paradigms with new and novel ideas (it's a generative design activity)
5. Takes advantage of the personal experiences of the designers and investigators
6. Takes advantage of established design patterns

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I saw this + I know this = Insight

thinktiv.

I saw this + I know this = Insight

Data gathered through
ethnography, contextual
inquiry, questionnaires,
and interviews

thinktiv.

I saw this + I know this = Insight

I saw this
Data gathered through ethnography, contextual inquiry, questionnaires, and interviews

I know this
Guided by ethics & morals, intellectual prowess, and the accumulation of world view and breadth of experience

thinktiv.

I saw this + I know this = Insight

| Data gathered through ethnography, contextual inquiry, questionnaires, and interviews | Guided by ethics & morals, intellectual prowess, and the accumulation of world view and breadth of experience | Clear, deep, meaningful perception into a particular design context |

thinktiv.

I saw this + I know this = Insight + Design Pattern = Design Idea

Data gathered through ethnography, contextual inquiry, questionnaires, and interviews

Guided by ethics & morals, intellectual prowess, and the accumulation of world view and breadth of experience

Clear, deep, meaningful perception into a particular design context

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Guided by ethics & morals, intellectual prowess, and the accumulation of world view and breadth of experience

Clear, deep, meaningful perception into a particular design context

A trending paradigm that describes invariant qualities, referencing history and similar solutions

thinktiv.

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Clear, deep, meaningful perception into a particular design context

A trending paradigm that describes invariant qualities, referencing history and similar solutions

A new, creative concept, somewhat facilitated by existing design paradigms

thinktiv.

Insight Combination...

... with boring old enterprise configuration software ...

thinktiv.

only when

ple avoided talking
til it was absolutely
ool should allow for
aterials where
dded or removed

, 199)

Support the increasingly detailed
nature of a configuration.

As a configuration moves through
the sales cycle, it will become
increasingly detailed and
complicated. The tool should afford
all levels of detail in the
configuration process. (#14, 15)

22

Allow for an iterative configuration
process.

Even a simple configuration will
exist in multiple states throughout
the configuration process, and the
user will try several variations
before identifying an ideal and final
solution. The configuration tool
should support this. (#44, 123)

17

Provide both offline and online
access.

Salespeople work in disconnected
environments – like airplanes – and
the tool should work in those
environments too. (#98, 99)

87

an "invalid"

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port this.

Allow users to create multiple "what
if" scenarios.

Salespeople frequently work
through multiple configurations in
parallel, in an attempt to
understand all of the possible
solutions to their problems.

(#123-144)

Allow for a visual configuration.

Salespeople frequently sketch out a
configuration on a whiteboard or a
piece of paper during the sales
cycle; allow the tool to help them
work in a visual manner.

(#123-144)

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As a configuration moves through the sales cycle, it will become increasingly detailed and complicated. The tool should afford all levels of detail in the configuration process. (#14, 15)

22

Direct manipulation, drag and drop tools on the web are increasingly prevalent.

R

More and more portable devices allow file management and employ some sort of data-synching.

G

Allow for an iterative configuration process.

Even a simple configuration will exist in multiple states throughout the configuration process, and the user will try several variations before identifying an ideal and final solution. The configuration tool should support this. (#44, 123)

17

Provide both offline and online access.

Salespeople work in disconnected environments – like airplanes – and the tool should work in those environments too. (#98, 99)

87

There seems to be a push towards online backup and recovery tools for large datasets.

D

Progressive disclosure with AJAX is an effective way to provide increasingly more granular levels of detail.

A

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an "invalid"

ed engineers
igurations they
ith a work-
port this.

Allow users to create multiple "what if" scenarios.

Salespeople frequently work through multiple configurations in parallel, in an attempt to understand all of the possible solutions to their problems.

(#123-144)

Allow for a visual configuration.

Salespeople frequently sketch out a configuration on a whiteboard or a piece of paper during the sales cycle; allow the tool to help them work in a visual manner.

(#123-144)

People are increasingly familiar with visual and playful configuration tools that allow for side by side comparison of similar items.

F

Small screen
used in tand
broad opera

P

Provide both offline and online access.

Salespeople work in disconnected environments – like airplanes – and the tool should work in those environments too. (#98, 99)

87

Direct manipulation, drag and drop tools on the web are increasingly prevalent.

R

More and more portable devices allow file management and employ some sort of data-synching.

G

Provide an HTML drag and drop tool that looks like an application.

Allow it to run when disconnected from the server, and provide a clear and cohesive mechanism for synching (and for displaying when things are out of synch).

87-R-G-1

I saw this + I know this = Insight + Design Pattern = Design Idea

Data gathered through ethnography, contextual inquiry, questionnaires, and interviews

Guided by ethics & morals, intellectual prowess, and the accumulation of world view and breadth of experience

Clear, deep, meaningful perception into a particular design context

A trending paradigm that describes invariant qualities, referencing history and similar solutions

A new, creative concept, somewhat facilitated by existing design paradigms

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This method takes time, and more importantly, takes emotional energy and focus.

1. Begin to identify insights in the data you've gathered by combining an observation (I saw this) with your knowledge (I know this); write the insights on yellow post-it notes. Reference the line numbers from any applicable transcripts, and give each yellow post-it note a unique numeric ID. (10+ hours)

2. Identify design patterns that are relevant to the discipline you are designing for. Ideally, you begin to keep a design pattern library. Write the patterns on blue post-it notes. Give each blue post-it note a unique letter ID. (2+ hours)

3. Start to combine insights and design patterns to create design ideas by mingling the blue and yellow post-its, moving them around physically, and actively reflecting on potential combinations. When a combination makes sense and generates a design idea, write it in a green post-it note. Give each green post-it note a unique design idea ID (referencing both the yellow and blue notes above). (40+ hours)

4. Once you are almost "done" (usually when you've nearly run out of time and money), log the entire set into a spreadsheet. (3 hours)

5. Finally, pick the top ideas and start to sketch them. (3 hours)

Now, you can always trace any design idea back to an insight, and ultimately, back to a nugget of user data.

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The Story So Far...

Your colleague, Melvin, has abruptly decided to go back to school to fulfill his lifelong dream of becoming a Taxidermist. Melvin had just finished the research phase of a project with a large client, and all of his work on the project – is gone. The only thing left are some insights he's extracted and a few of his notes, scribbled quickly.

You've been assigned to the project, but no one seems to have any background information about the project; it's up to you to take what Melvin started and then move the project forward.

Let's try it...

In groups, combine insights with design patterns to produce design ideas.

1. Begin to identify insights in the data Melvin has gathered by combining an observation (I saw this) with your knowledge (I know this); write the insights on yellow post-it notes. Reference the line numbers from any applicable transcripts, and give each yellow post-it note a unique numeric ID.

2. Identify design patterns that may or may not be relevant to the discipline Melvin was designing for. Ideally, you begin to keep a design pattern library. Write the patterns on blue post-it notes. Give each blue post-it note a unique letter ID.

3. Start to combine insights and design patterns to create design ideas by mingling the blue and yellow post-its, moving them around physically, and actively reflecting on potential combinations. When a combination makes sense and generates a design idea, write it in a green post-it note. Give each green post-it note a unique design idea ID (referencing both the yellow and blue notes above).

Reframing

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A frame is a perspective or viewpoint:

"Even though frames define what count as data,
they themselves actually shape the data
(for example, a house fire will be perceived differently
by the homeowner, the fire fighters,
and the arson investigator)."

Klein, Moon & Hoffman

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Reframing is a method of <u>shifting semantic perspective</u> in order to see things in a new way.

1. "Re-embeds" a product, system or service in a new (and not necessarily logical) context

2. Explores associations and hidden links to and from the center of focus

3. Posits a "what if" scenario implicitly

4. Is primarily semantic (a tool for cognition)

5. Encourages empathy

6. Forces understanding of the various touchpoints

7. Identifies implications and insights

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Consider a toothbrush ...
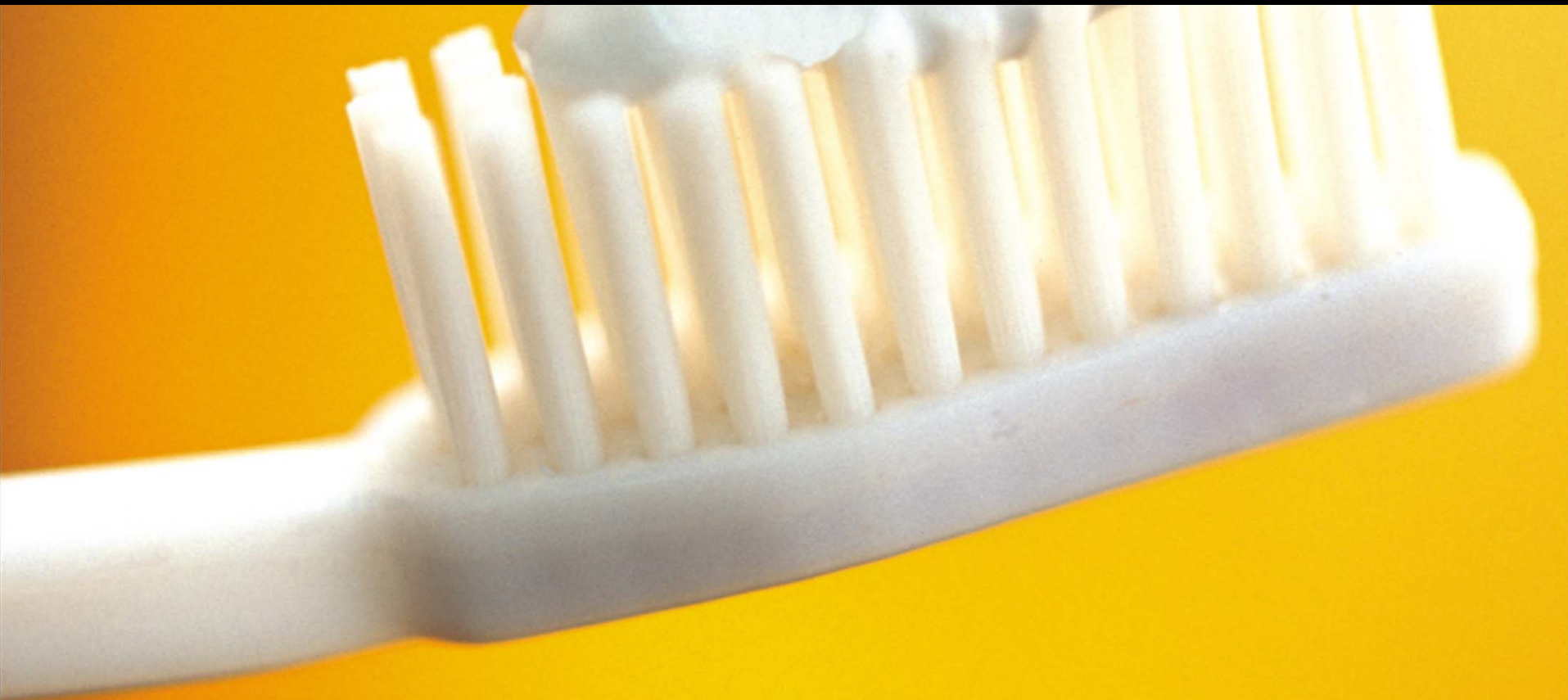
environment

perspective

embodiment

in the bathroom

consumer

object

thinktiv.
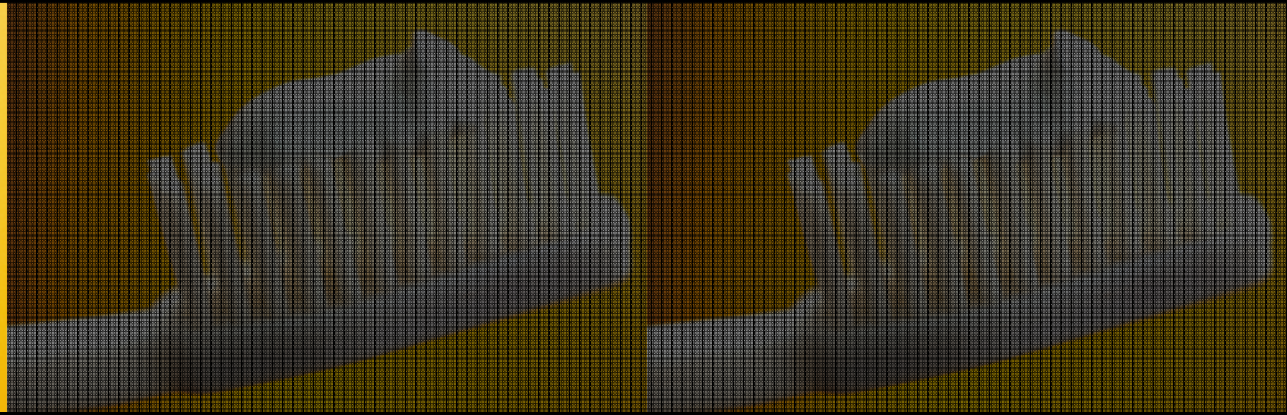
environment   perspective   embodiment

in the bathroom   consumer   object

---

reframed in a new environment:

| In the kitchen |
| In an airplane |
| At a conference |

primary user goal:

| Remove food |
| Remove smells |
| Remove lettuce before giving a talk |

implications and insights:

Teeth cleaning should allow for a way to quickly get pieces out of hard to reach places, and shouldn't require a mirror

Provide a way to quickly and nonchalantly freshen breath in close quarters and without being offensive to other passengers

Teeth cleaning should include some form of sharp picking object, and should clearly indicate when you missed a chunk
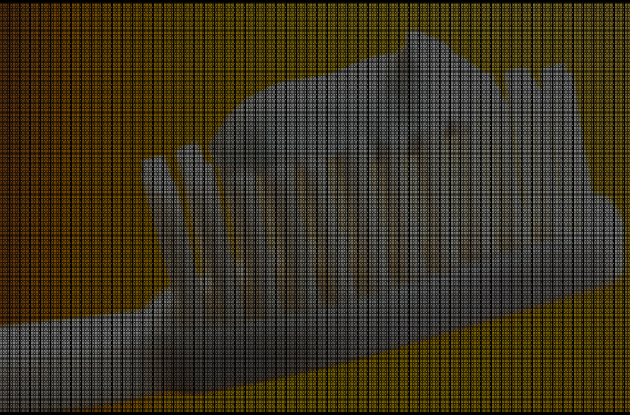
environment

perspective

embodiment

in the bathroom

consumer
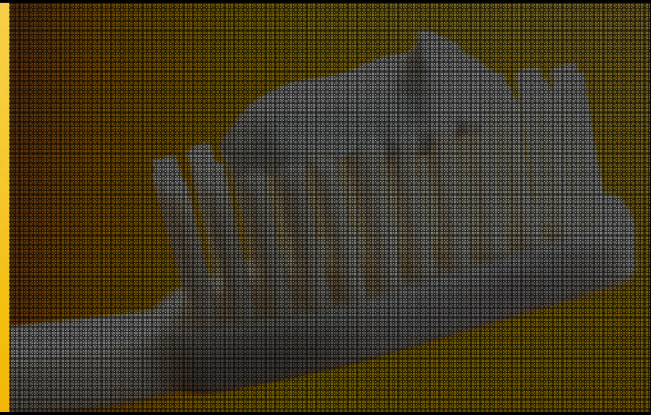
object

---

reframed from a new perspective:

| Dentist |
| Hotel Housekeeper |
| Blind Date |

primary user goal:

| Effectively clean teeth and prevent future problems |
| Clean the hotel room |
| Avoid looking at spinach-in-teeth all night |

implications and insights:

| Teeth cleaning should be as rigorous as possible, and should be "future proof" for some period of time |
| Teeth cleaning should have as small a disposal footprint as possible, and shouldn't generate any extra work, trash, or waste |
| There should be a way to casually alert the date that they have something nasty in their teeth. |
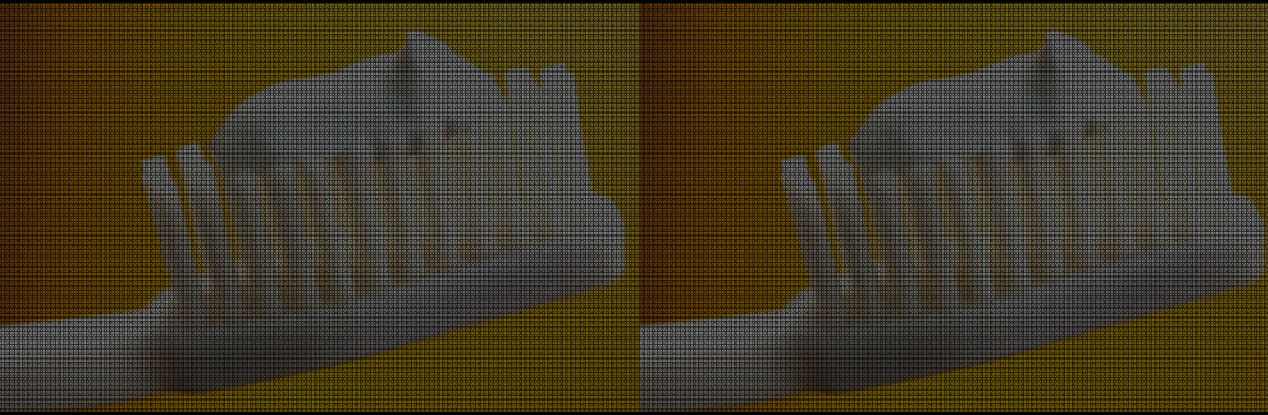
environment

perspective

embodiment

in the bathroom

consumer

object

---

reframed as a new embodiment:

A Plant

A Spray

A Service

primary user goal:

Clean teeth while feeling closer to nature

Clean teeth quickly without friction

Gain "dentist visit" cleanliness in between visits

implications and insights:

There should be a plant with teeth cleaning properties, that can live peacefully in one of the aforementioned environments

A portable spray should freshen breath but should also clean teeth; instant or quick acting timeframe, through a fine mist.

Provide a quick-stop for interim dentist appointments – at the mall. Should be trustworthy and clean; legal implications…

Reframing is easy, and easier in teams – but requires that you perform an abduction

1. Identify the product, service or system that is being reframed. It's not always what your client asked for. (1+ hour)

2. Create blank reframing charts on paper, one each for environments, users, and embodiments. (5 minutes)

3. Free associate new items for the left column of each chart; work on all three charts at once. There are no bad ideas: criticism is completely suspended. (1+ hour)

4. Begin to fill in Primary Goal for all items in all charts. Try to paint a picture of a credible story; judge responses and add criticism as appropriate, but only in relationship to the primary goal column. (2 hours)

5. Begin to fill in the Implications and Insights column in all charts. There are no bad ideas; criticism is completely suspended. An item can generate more than one implication or insight; if it does, create a new row to capture it. Try to generate thirty-fifty items for each list. (4 hours)

6. Extract implications and insights that are relevant based on the specific constraints of your project, and list them: these can then be integrated with the rest of your design criteria. (1 hour)

7. Select the best ideas, and sketch them. (3 hours)

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The Story So Far…

Your colleague, Melvin, has abruptly decided to go back to school to fulfill his lifelong dream of becoming a Taxidermist. Melvin had just finished the research phase of a project with a large client, and all of his work on the project – is gone. The only thing left are some insights he's extracted and a few of his notes, scribbled quickly.

You've been assigned to the project, but no one seems to have any background information about the project; it's up to you to take what Melvin started and then move the project forward.

Let's try it…

In groups, reframe the core idea in terms of environment, users, and embodiments.

1. Identify the product, service or system that is being reframed. It's not always obvious.

2. Create blank reframing charts on paper, one each for environments, users, and embodiments.

3. Free associate new items for the left column of each chart; work on all three charts at once. There are no bad ideas: criticism is completely suspended.

4. Begin to fill in Primary Goal for all items in all charts. Try to paint a picture of a credible story; judge responses and add criticism as appropriate, but only in relationship to the primary goal column.

5. Begin to fill in the Implications and Insights column in all charts. There are no bad ideas; criticism is completely suspended. An item can generate more than one implication or insight; if it does, create a new row to capture it. Try to generate thirty-fifty items for each list.

6. Extract implications and insights that are relevant based on the specific constraints of your project, and list them: these can then be integrated with the rest of your design criteria.
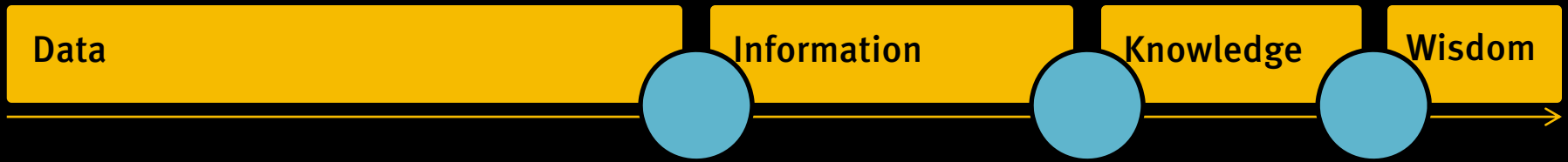
5/ Summary

Ethnography	Synthesis	Prototyping

Synthesis is the process of making meaning through abductive sensemaking and reframing.

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Data	Information	Knowledge	Wisdom

Making Meaning out of Data

Experience Frameworking

Gaining Empathy

Methods:

affinity diagramming
hierarchy creation
flow diagramming
scenario development

Methods:

concept mapping
temporal zoom
semantic zoom
storyboarding

Methods:

reframing
insight combination
participatory design

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