Selah
A Smart Plant Care Assistant

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Research

Development

Solution

Different houseplants require varying care strategies and intervals. Most plant owners don't practice a successful or consistent care routine.

POLL RESULTS

94% of respondents reported difficulty diagnosing issues with their houseplants.

80% of respondents described the quality of their houseplant care as "poor" or "average" (20% chose "good" or "excellent").

Experienced plant owners seeking to ease and standardize care, beginners learning to care for their first few plants, and everyone in between.

MAYA
...is a 50-year old mom in a household of 5. Her house is full of plants, and she's fairly inexperienced when it comes to their care. Her routine consists of watering and fertilizing all her plants every week, which has caused several to die. She wishes she had an unobtrusive but effective way to monitor her plants' health and ease the care process.

LAYLA
...is a 22-year old environmental science student. She has many plants and knows a lot about them, so she's not as concerned about diagnosing issues. She doesn't, however, maintain a consistent care schedule and would appreciate a system that could help improve her routine and connect her with her plants.

A ANALOG MOISTURE METERS

Products in this category use analog meters to display current moisture level. They can be left in plants as monitors or used to test moisture as needed. They are generally inexpensive but not very useful.

B PRIMITIVE SELF-WATERING DEVICES

Products in this category automatically provide a continuous flow of water to plants. There are globes that are added to a planter as well as self-watering plant pots that function similarly. Inexpensive. Remedial or temporary options that provide poor care.

C DIGITAL IRRIGATION DEVICES

Products in this category automatically water one or multiple plants on a timer or when prompted by a cloud device. Not suitable for various types of plants with different needs. Proto-smart operation possible when paired with a smart moisture meter but difficult.

D DIGITAL MOISTURE METERS

Products in this category detect moisture levels (and sometimes other data) and connect to apps using either Bluetooth or WiFi. Expensive ($30+ each). Most do not have smart features and simply report data. Redundancies when using multiple.
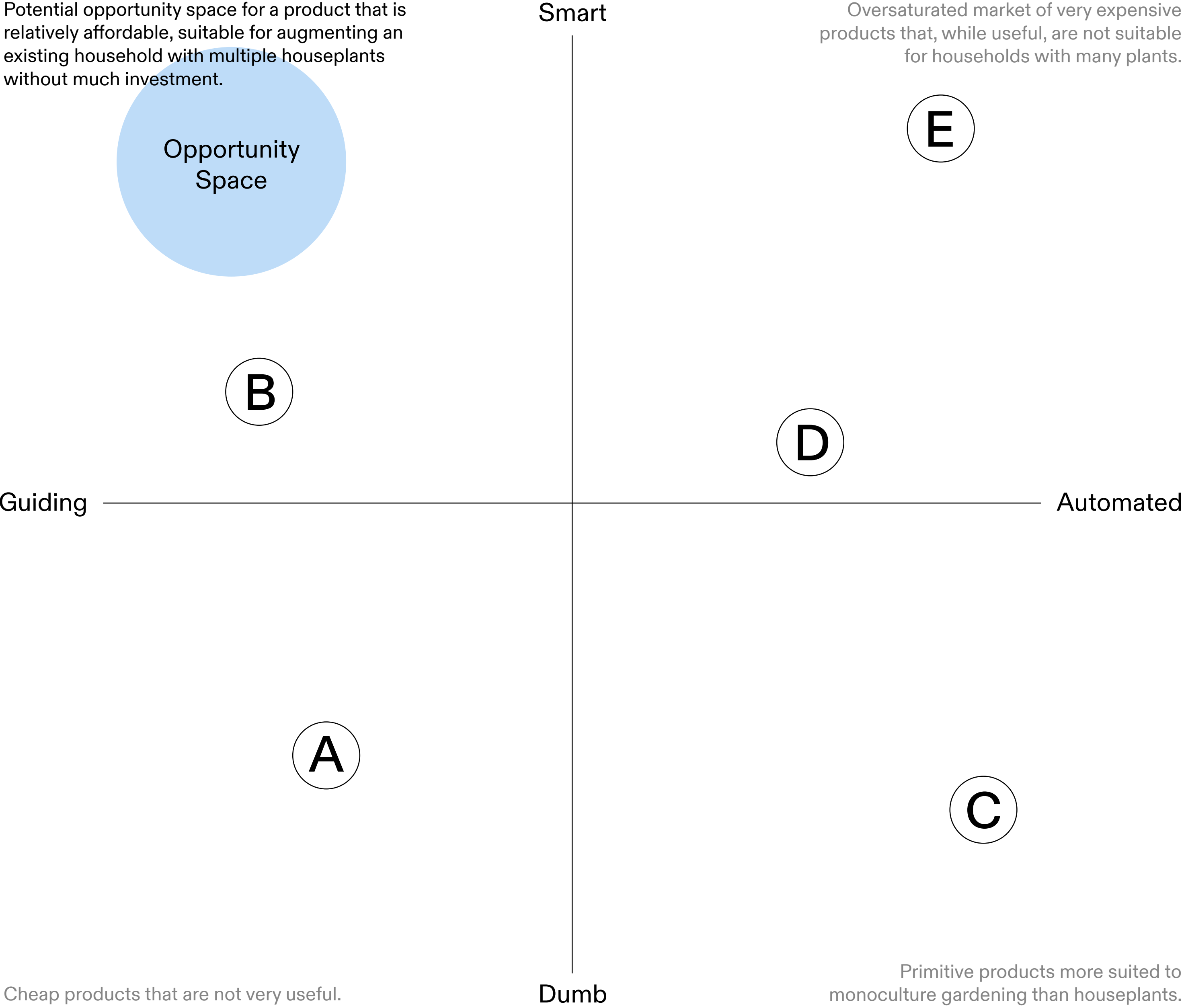

E FULLY AUTOMATIC PLANTERS

Products in this category are all-in one smart planters that sense and care for one or multiple plants. Very expensive ($200+). Generally oriented towards indoor gardens, not houseplants. Not suitable for multiple plants.

THE CURRENT MARKET

The market for plant care devices is broad. Some guide users through care, whereas some automate the care itself. Most do not have smart features, but some are more sophisticated.

Potential opportunity space for a product that is relatively affordable, suitable for augmenting an existing household with multiple houseplants without much investment.

Opportunity Space

Smart

E

B

D

Guiding ——————————————————— Automated

A

C

Dumb

TO REFRAME,

How might I create a scalable, data-driven, individualized product that guides users toward fulfilling their plant care goals?

GUIDING EFFECTIVE AND CONSISTENT CARE
The product should support users in sustaining an efficient and effective plant care routine by collecting plant data and optimizing active care time.

DIAGNOSING ISSUES
The product should reactively and proactively diagnose current and potential issues and guide users to solutions, minimizing alerts and interaction.

PROVIDING EDUCATION
To the level users desire, the product could educate users, teaching good habits and encouraging connection between users and plants.
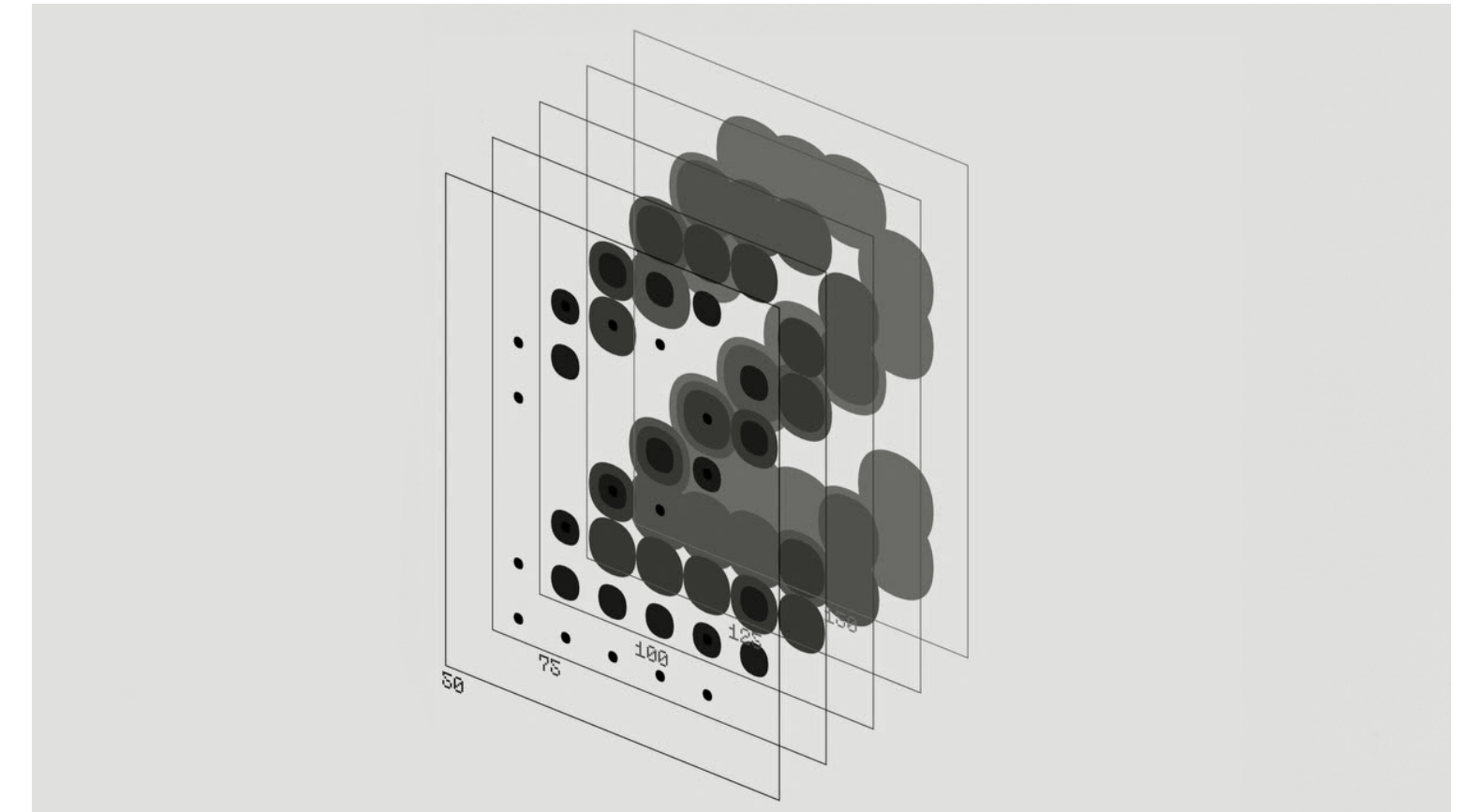
INSTINCTIVE

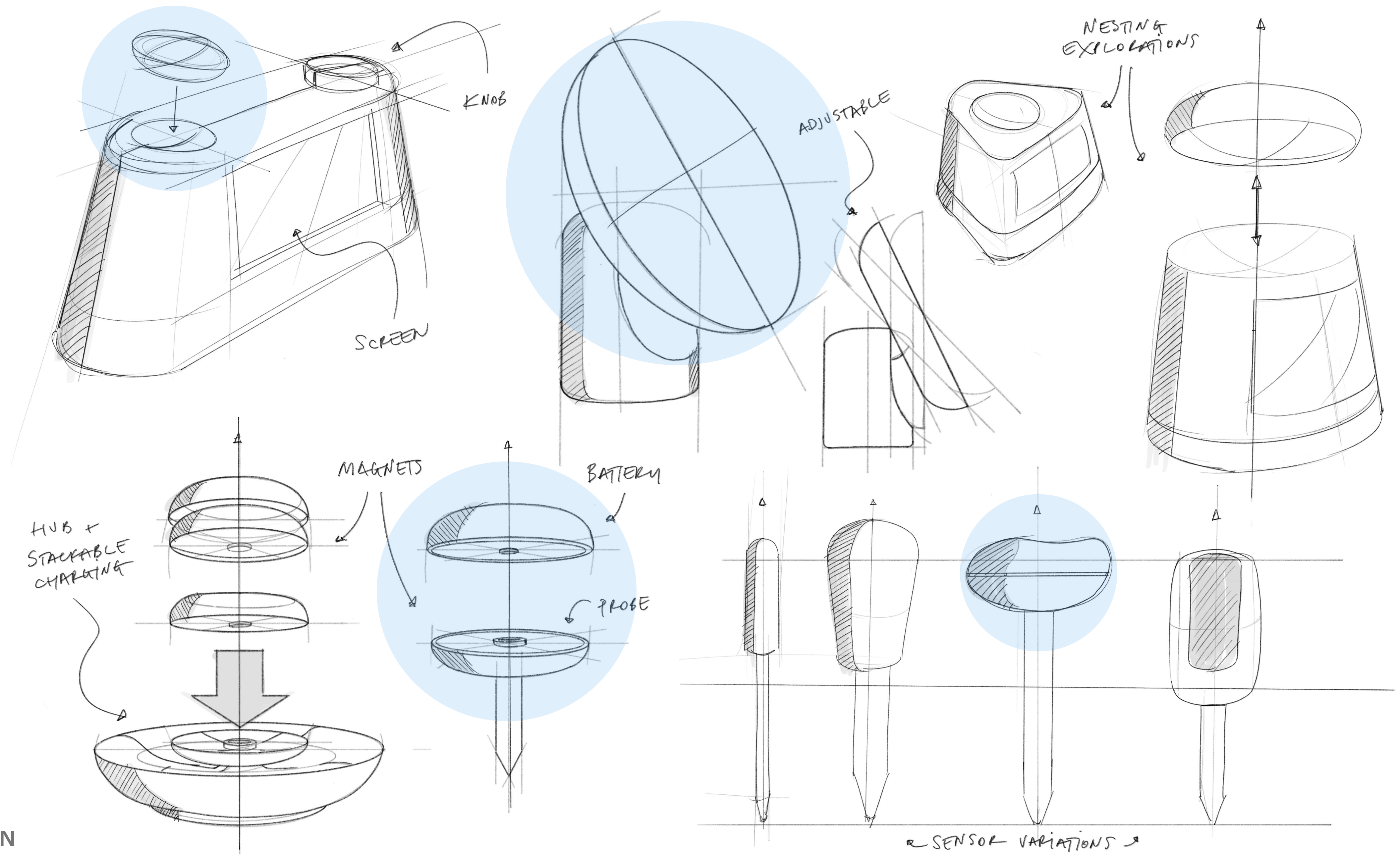Inherently clear, approachable form language and interaction.

EXPANDABLE

Atomized; distributed system architecture—easy, practical, and affordable to scale.
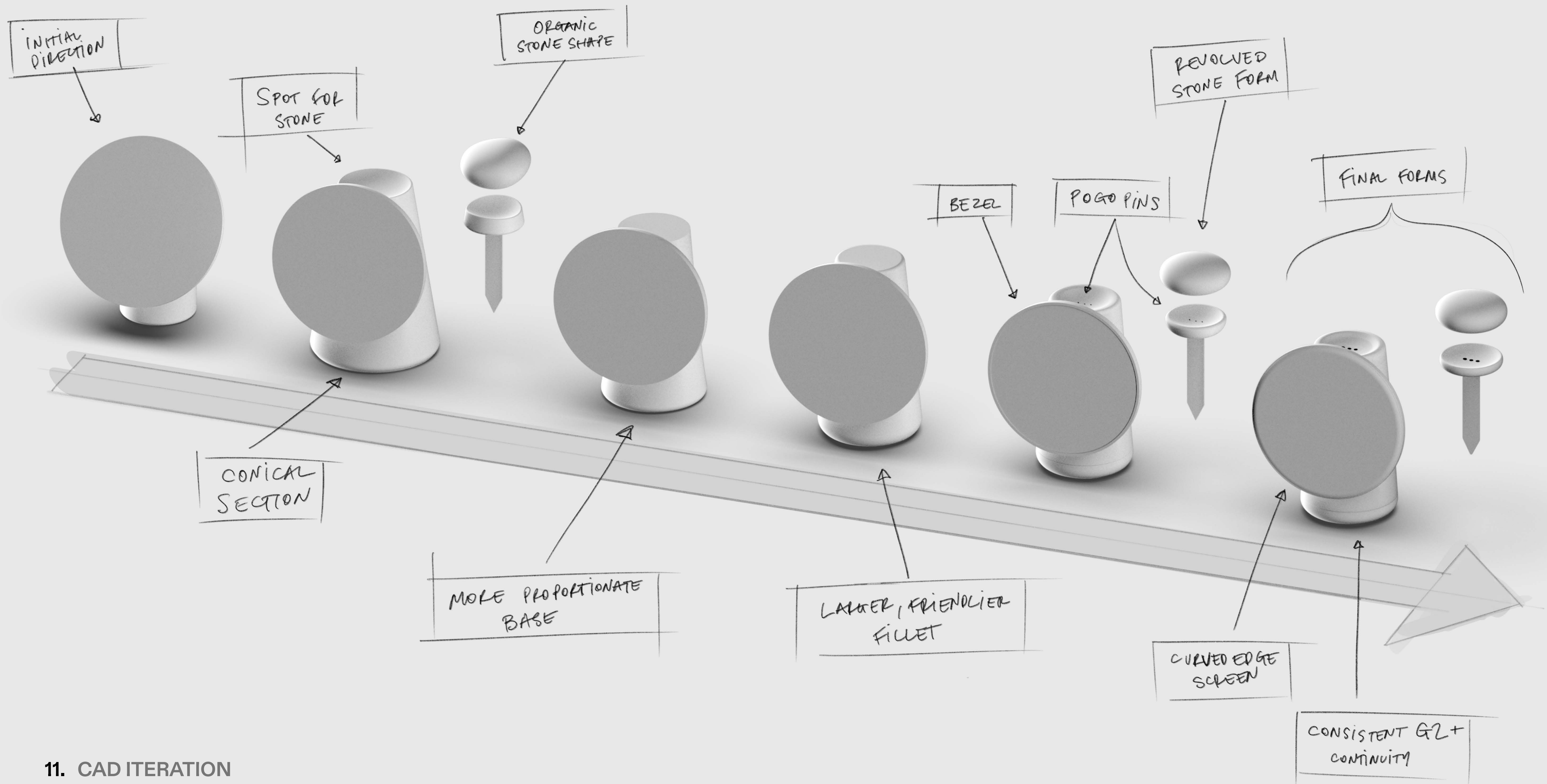
LAYERED

Interaction frequency and data depth at users' desired level— inviting, not bothering.
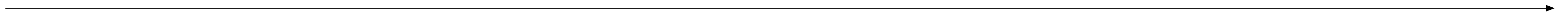
KNOB

SCREEN

NESTING EXPLORATIONS

ADJUSTABLE

HUB + STACKABLE CHARGING

MAGNETS

BATTERY

PROBE

SENSOR VARIATIONS

PERFORATIONS
FOR AMBIENT
SENSORS

SPHERE-SHAPED
STONE

CURVED
EDGE
SCREEN

ALTERNATIVE FORMS

INITIAL DIRECTION

SPOT FOR STONE

ORGANIC STONE SHAPE

REVOLVED STONE FORM

BEZEL

POGO PINS

FINAL FORMS

CONICAL SECTION

MORE PROPORTIONATE BASE

LARGER, FRIENDLIER FILLET

CURVED EDGE SCREEN

CONSISTENT G2+ CONTINUITY

Hub ——→
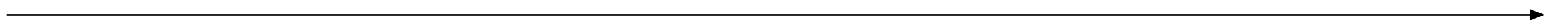
Stone ——→

Tap to see full list

Water plants with
blue-lit stones

Different plants have different care needs, making it hard to remember exactly what each requires. Selah eases the care process using sensors that monitor houseplants, leveraging the combined data to provide optimized guidance and precise, actionable insights. When plants need care, Selah lights up corresponding sensors to afford the necessary action.

To check up on a plant, users simply place the corresponding stone on the hub. The display then shows a series of pages with insights, tips, and data while the stone simultaneously charges. This feature allows users to deeply engage with the process at their desired frequency and level, and fulfills a technical requirement (charging) that would otherwise be a pain point in the product experience.
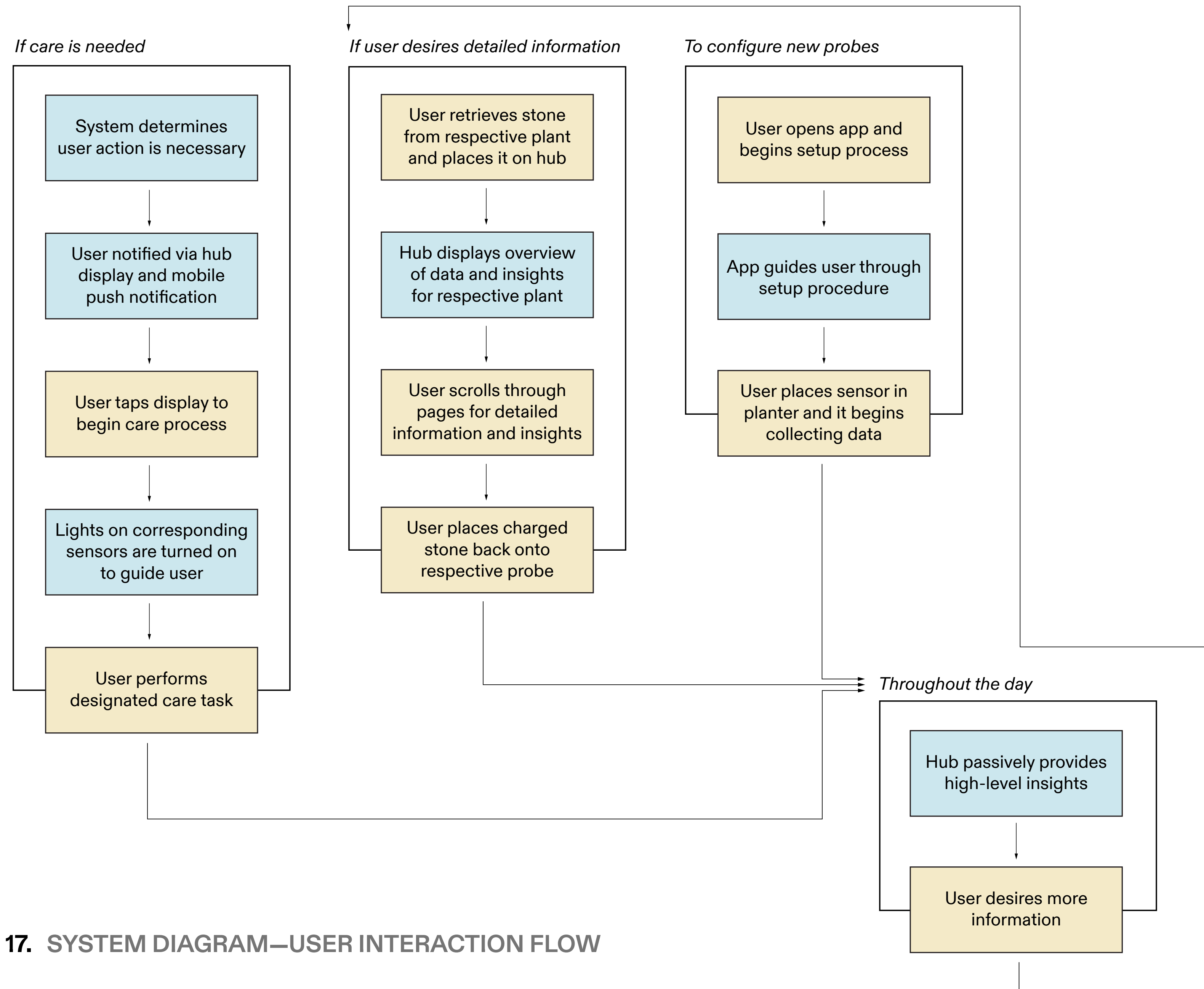
Selah's modular system is designed for multiple plants, making it easily and affordably scalable. Each plant is equipped with a sensor which monitors key metrics, and a "stone" that sits atop it, which powers the sensor and connects to the hub.
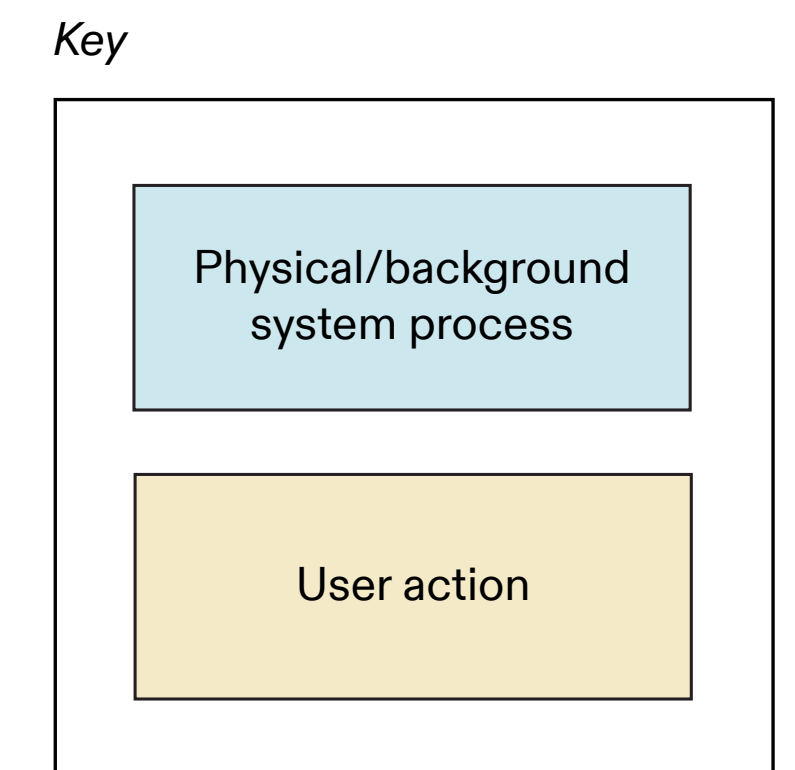
Concentric metal conductors on stones enable omnidirectional connection to the pogo pin connectors on sensors and the hub. Hidden magnets keep them together at just the right strength.
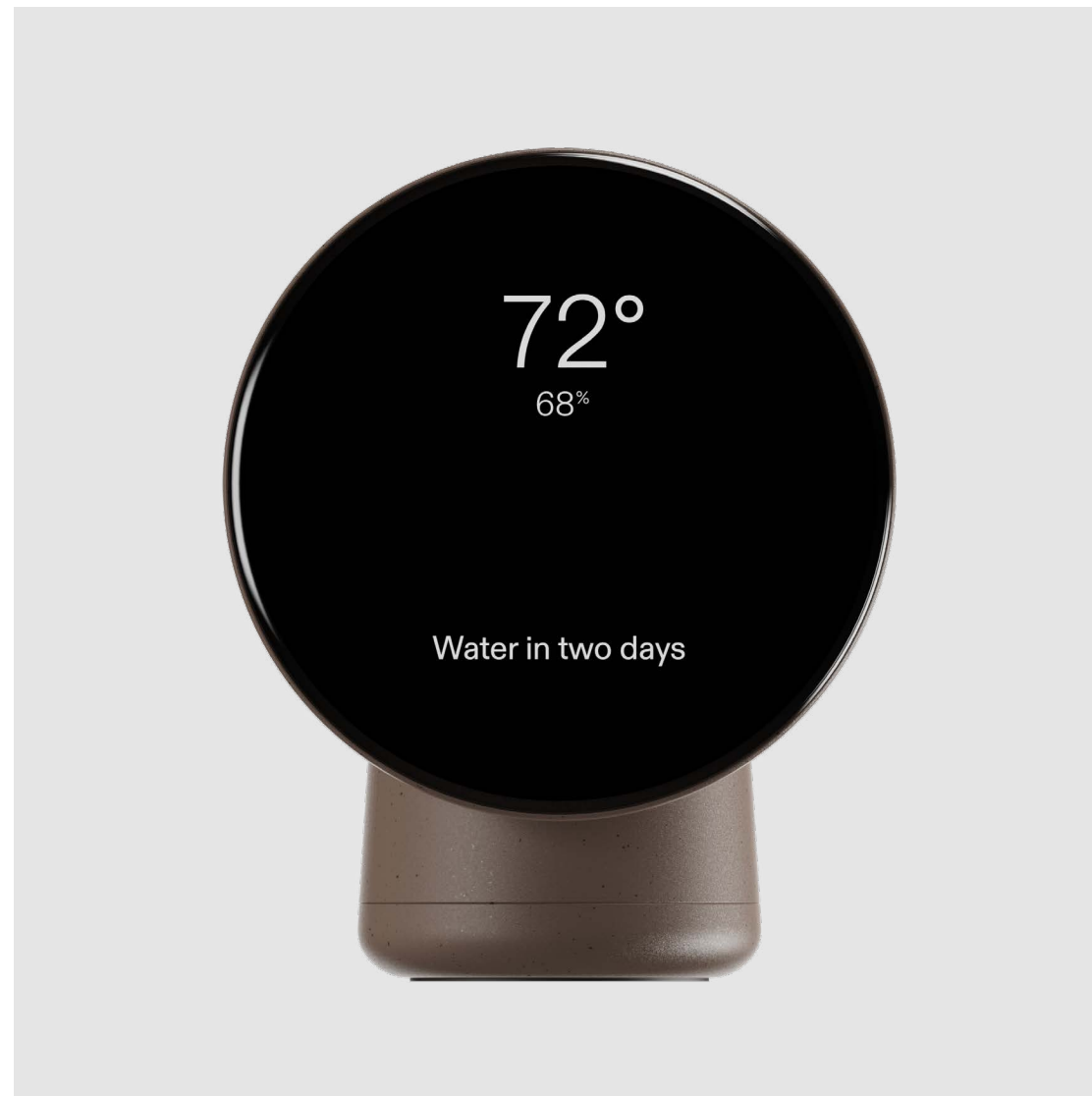
Sensors on the hub track ambient conditions including light levels, humidity, and temperature, giving smart functions more data to work with. The hub is powered by a USB type-C cable.
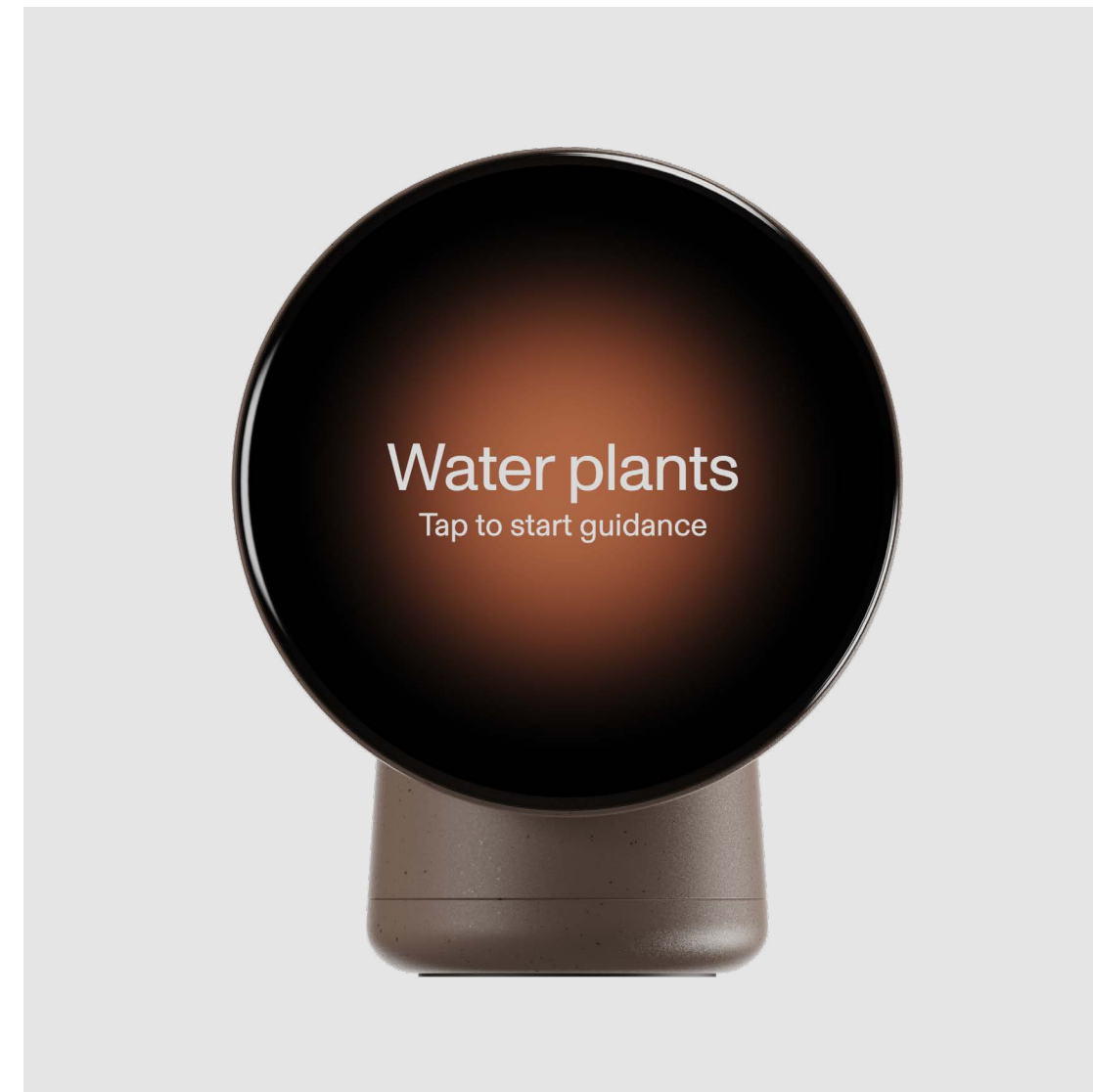
If care is needed

System determines user action is necessary

↓

User notified via hub display and mobile push notification

↓

User taps display to begin care process

↓

Lights on corresponding sensors are turned on to guide user

↓

User performs designated care task

If user desires detailed information

User retrieves stone from respective plant and places it on hub

↓

Hub displays overview of data and insights for respective plant

↓

User scrolls through pages for detailed information and insights

↓

User places charged stone back onto respective probe

To configure new probes

User opens app and begins setup process

↓

App guides user through setup procedure

↓

User places sensor in planter and it begins collecting data

Throughout the day

Hub passively provides high-level insights

↓

User desires more information

Key

Physical/background system process
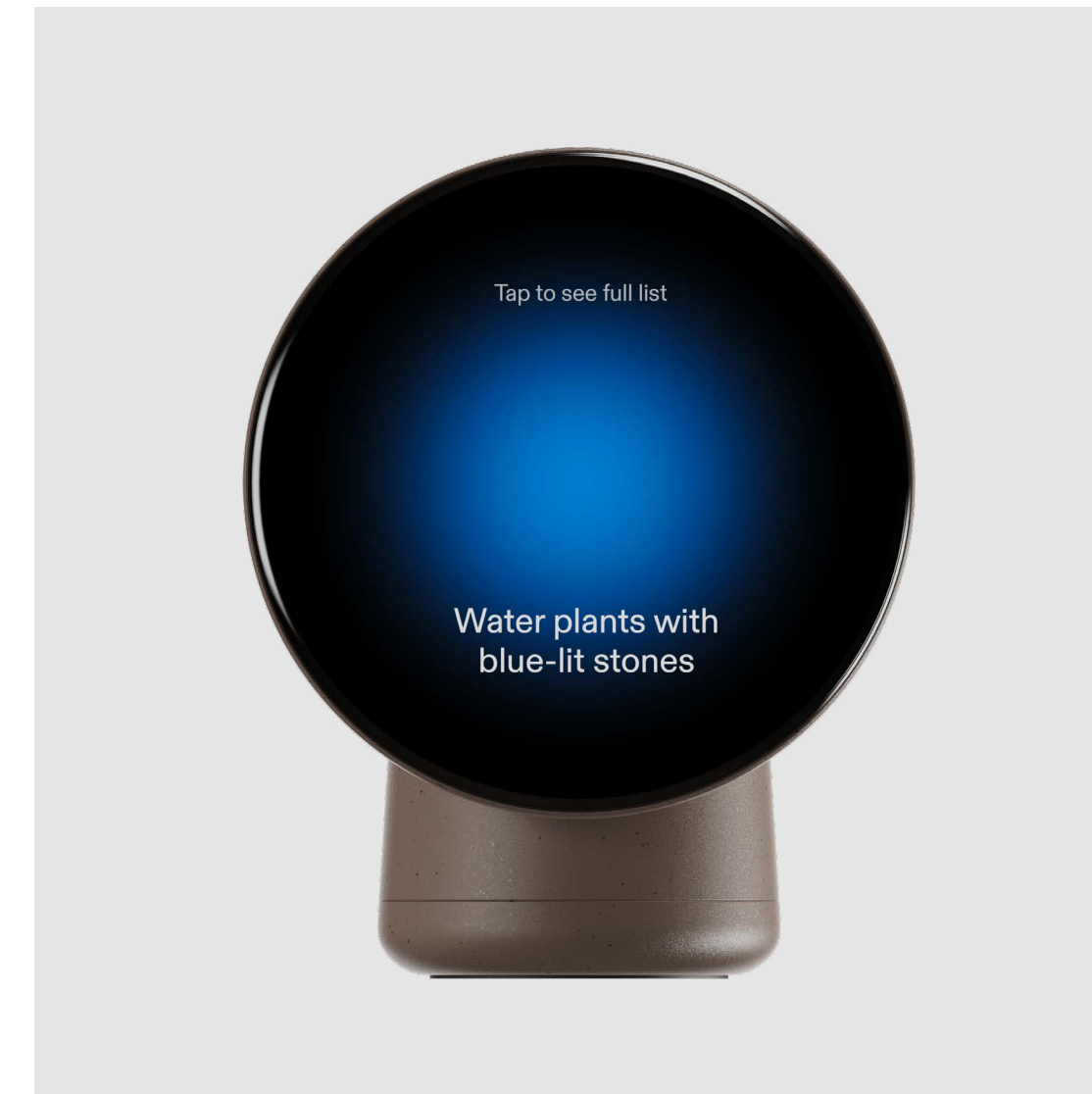
User action

17. SYSTEM DIAGRAM—USER INTERACTION FLOW
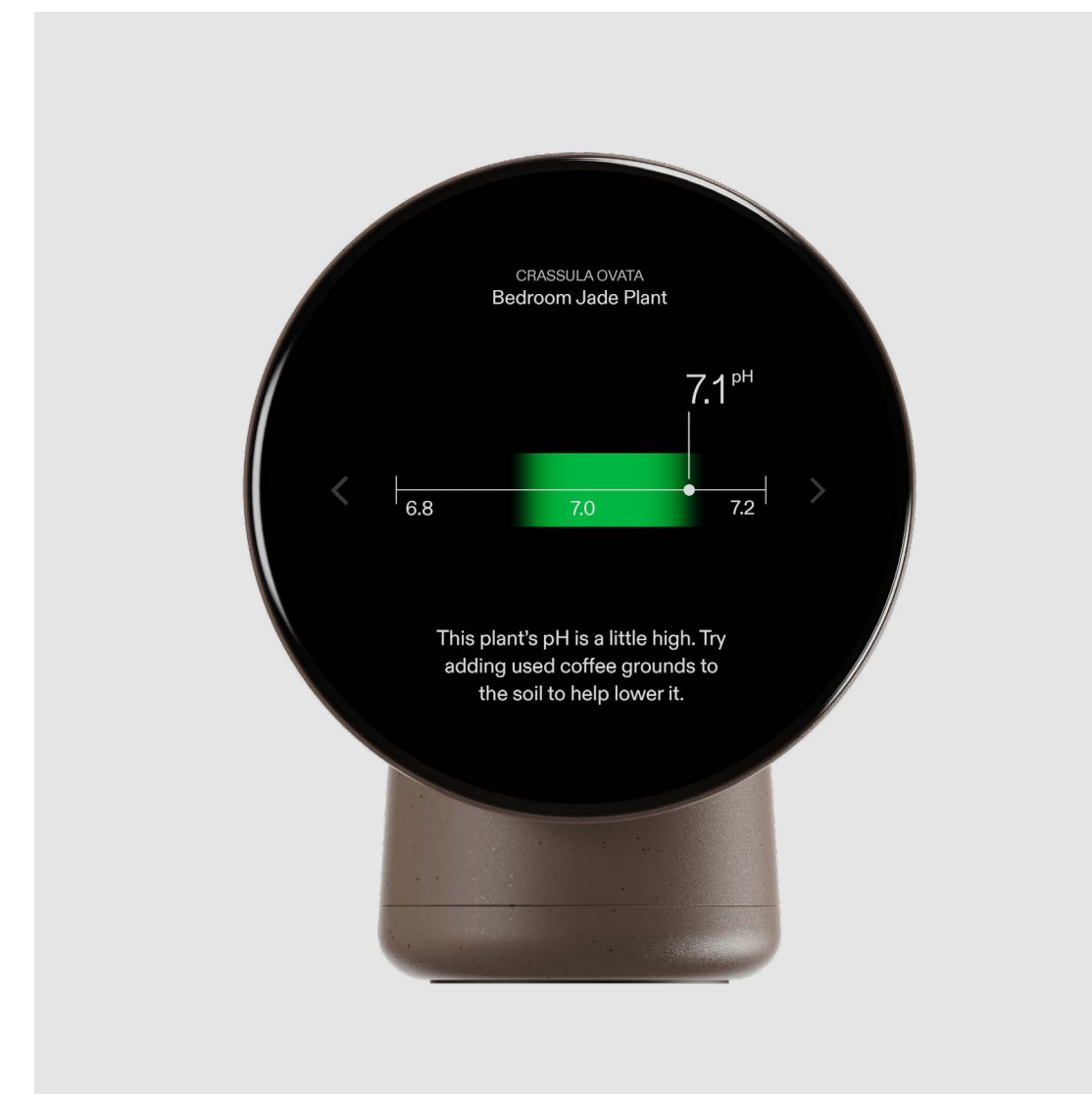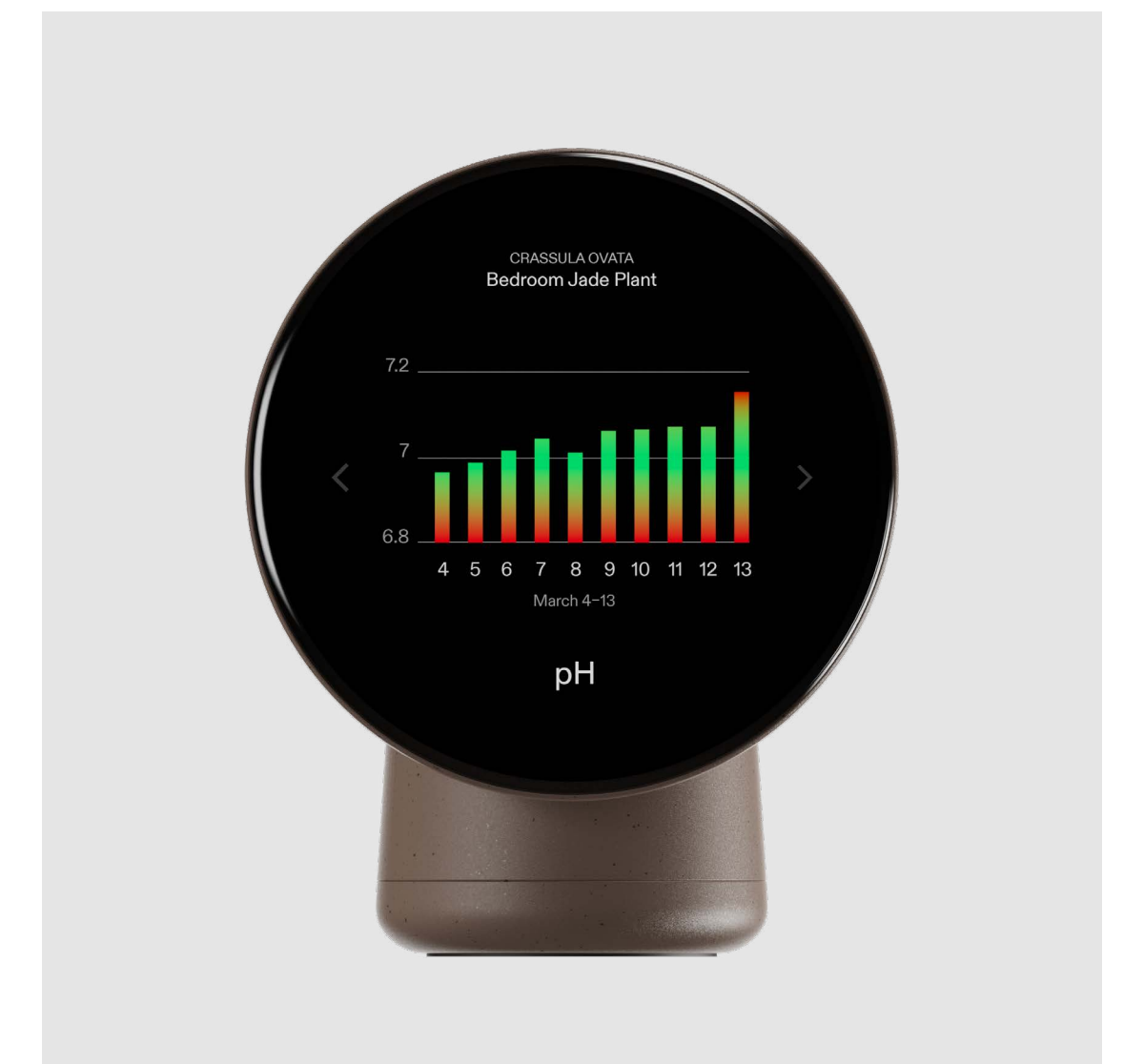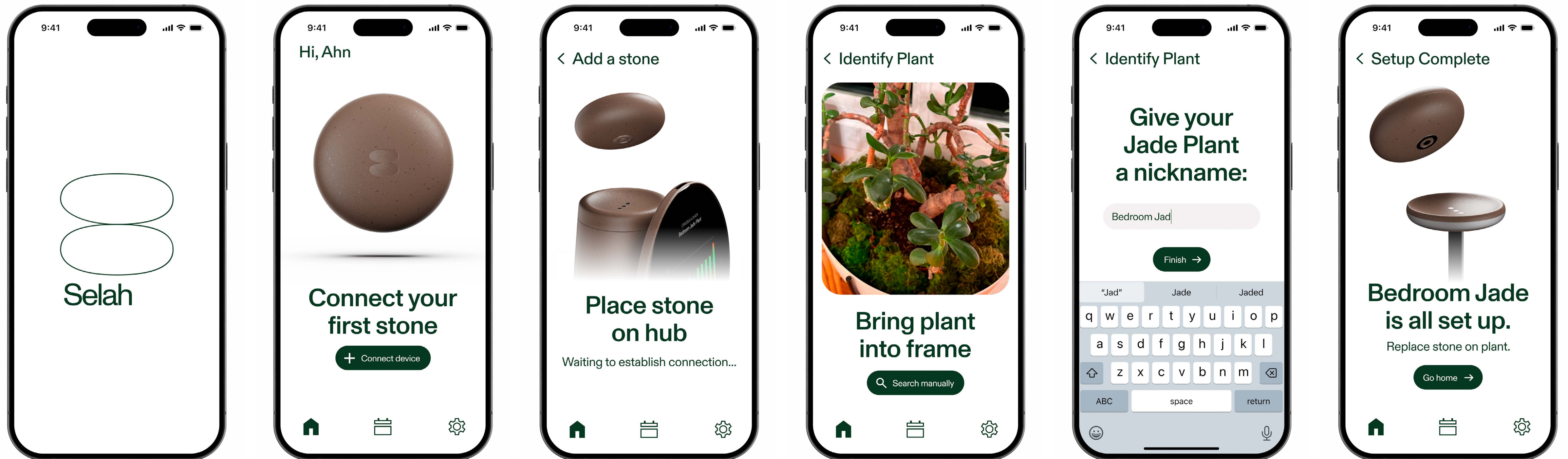
Passive state


Care required

Care in progress

Detail mode—overview

Detail mode—current pH

Detail mode—pH stats

Selah

Hi, Ahn

Connect your first stone

[+ Connect device]

‹ Add a stone

Place stone on hub

Waiting to establish connection...

‹ Identify Plant

Bring plant into frame

[🔍 Search manually]

‹ Identify Plant

Give your Jade Plant a nickname:

Bedroom Jad

[Finish →]

"Jad"   Jade   Jaded

q w e r t y u i o p
a s d f g h j k l
⇧ z x c v b n m ⌫
ABC   space   return

‹ Setup Complete

Bedroom Jade is all set up.

Replace stone on plant.

[Go home →]

19. APP UI + SETUP FLOW

1. Light sensor cover—polycarbonate
2. Light sensor
3. Aluminosilicate cover glass
4. 4" OLED touchscreen display
5. Display PCB
6. Display shell—ABS
7. Ball joint—stainless steel
8. Top shell—ABS
9. Pogo pin connector
10. Magnet
11. Top frame—PPE
12. Outer shell—ABS
13. Primary PCB—WiFi/BLE chipset, processor, display controller
14. Internal frame—PPE
15. Secondary PCB—sensor, power management
16. Temp/humidity sensor
17. Weight—cast iron
18. Bottom shell—ABS
19. Screws—stainless steel
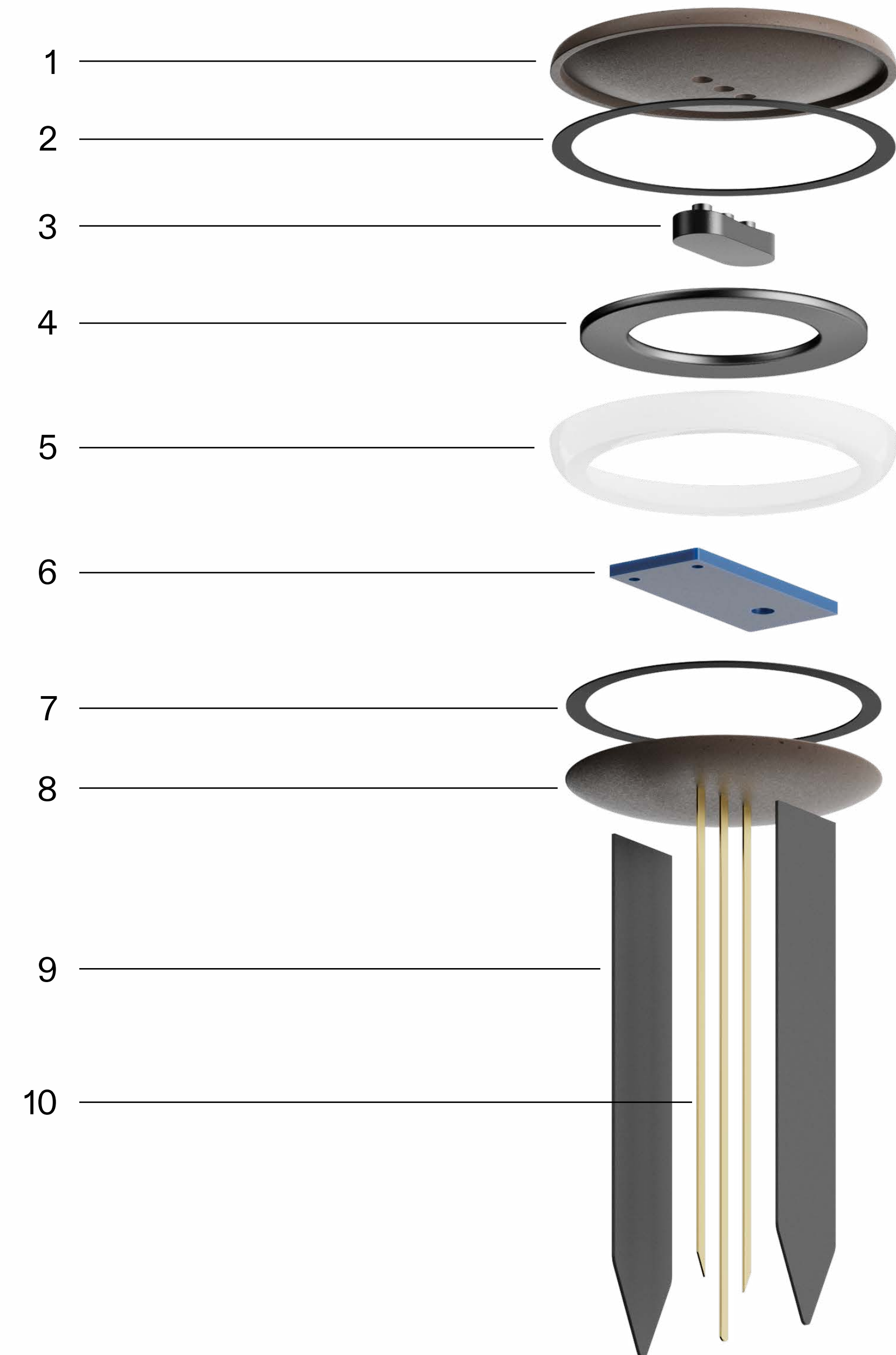20. Rubber foot—TPU
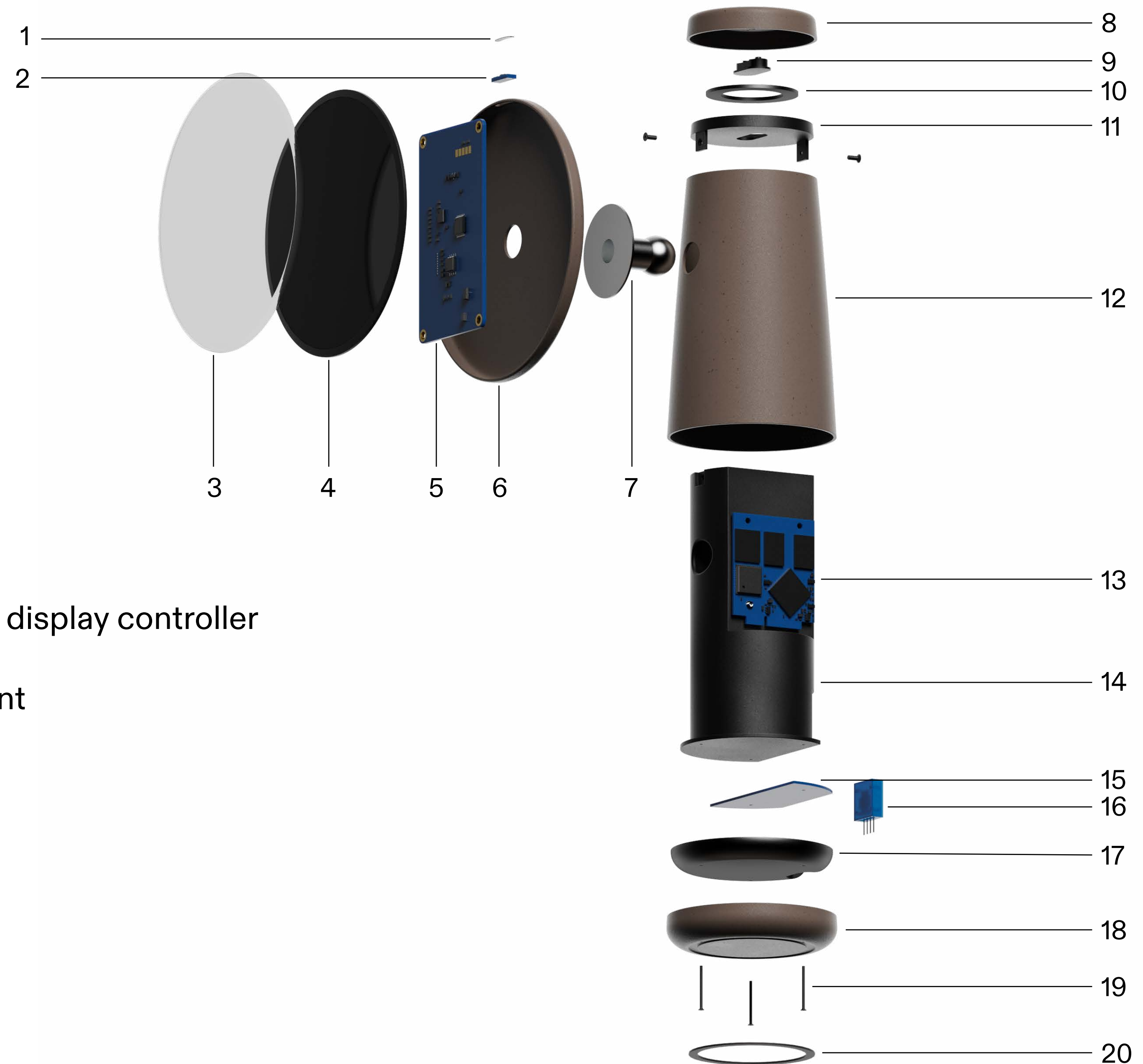
20. COMPONENT BREAKDOWN I—THE HUB

1. Top shell — ABS
2. Li-ion battery
3. PCB—BLE chipset
4. Magnet
5. O-ring
6. Bottom shell—ABS
7. Pogo pin connector + housing

1
2
3
4
5
6
7
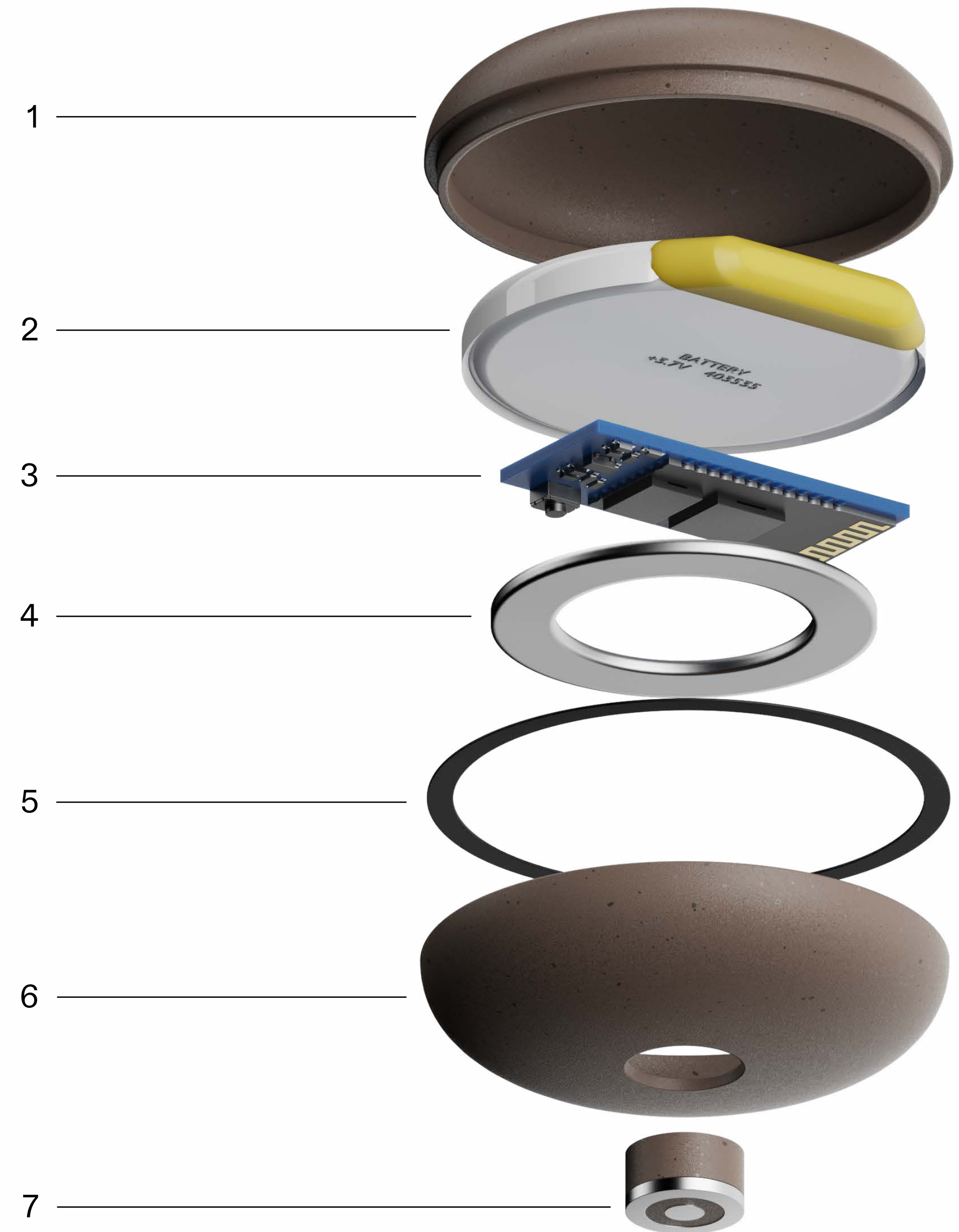
1. Top shell — ABS
2. Silicone o-ring
3. Pogo pin connector
4. Magnet
5. Diffusive polycarbonate
6. PCB with LEDs, sensors—capacitive   moisture,
7. temperature, pH
8. Silicone o-ring
9. Bottom shell—ABS
10. Outer probe
11. Sensor probes

72°
68%

Water in two days

1.75"

4.5"

5"

3.125"

2"

1.5"

2.35"

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https://www.thespruceeats.com/best-ways-to-save-dead-herbs-1763018

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