

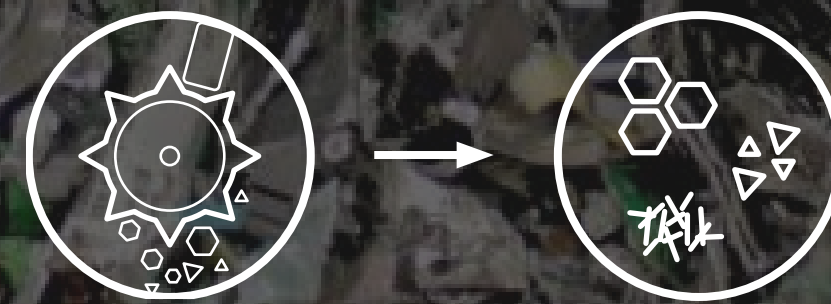


**revive**  
collaboratively repurposing e-waste

# ELECTRONIC WASTE

Focus area

"Between 20% and 35% of the material content of a phone is lost when the phone is shredded and melted down for recycling."

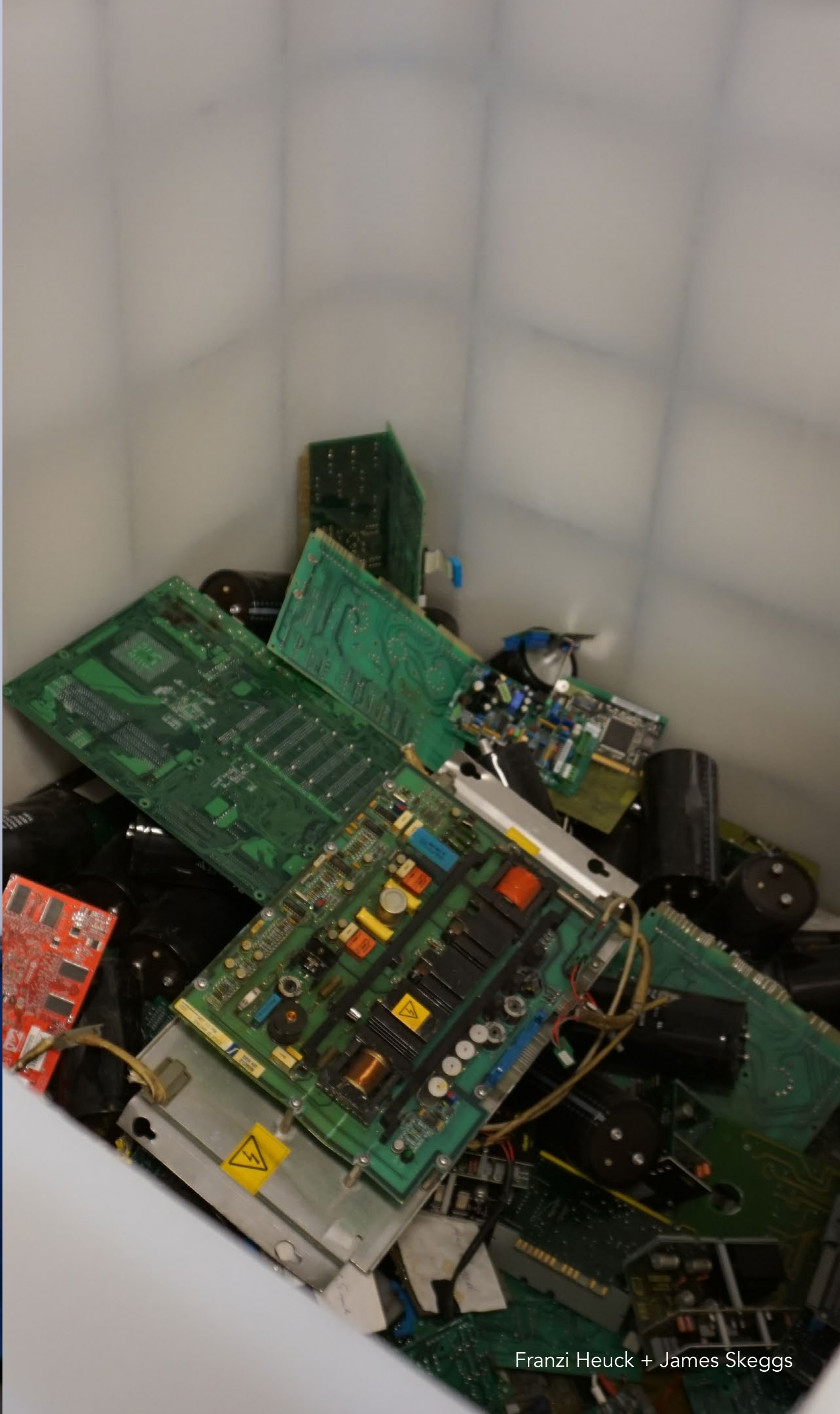






# RESEARCH

Recycling facilities





# CONTEXT

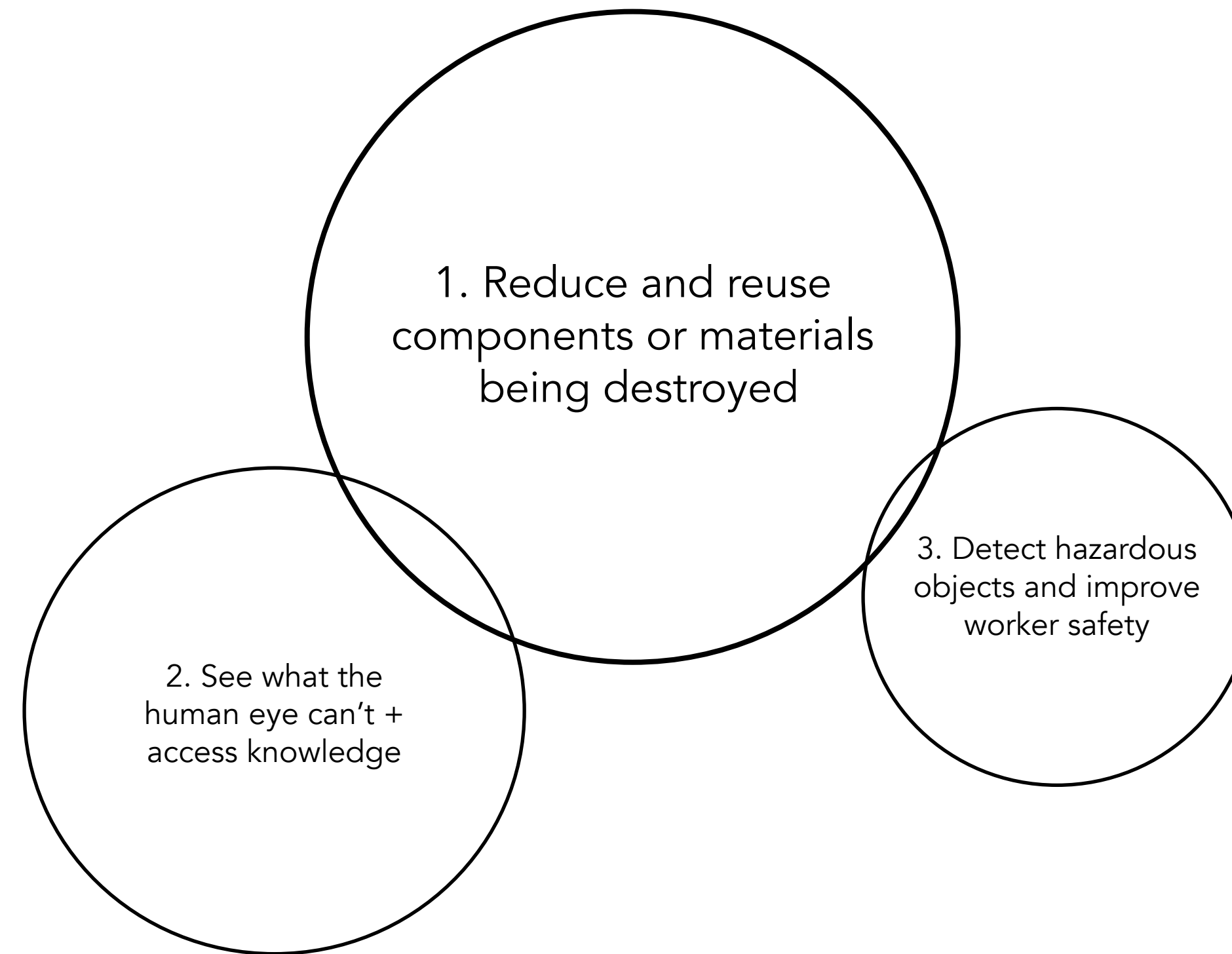
Recycling facilities

Assessment & repair rely on manual labour

Large variety of products dismantled



# DIRECTION







# IDEATION WORKSHOP

Picking our classmates brains



# 1. DISMANTLING

EVERY PIECE OF E-WASTE IS DIFFERENT,  
HOW CAN WE HELP WORKERS DISMANTLE SAFELY?

Handwritten notes and diagrams for dismantling e-waste:

- DE-SOLDERING TO EXPOSE CONTACTS
- HEAT MELT PLASTIC AWAY
- VAPORATING MATERIALS = TOXIC FUMES
- SORTING AFTER DISMANTLING
- LASER CUT TO GET TO THE IMPORTANT PARTS
- PARALLEL / FUMES MONITORING TELLS WHEN IT IS HAZARDOUS
- MAKE WEATHERED PRODUCTS MORE VISIBLE
- EDUCATION IN A SPARE PARTS TO SHOW JUNK
- unconductive work station
- SHATTERED AND SHARP OBJECTS
- WEARABLE ROBOT ARM WITH TOOLS AND PROTECTION
- SHRINKING
- WATER-RESISTANT WITH SUPERIOR DENSITY ARE SHAPED BY LIQUID
- EXPERIMENTAL HAND DISMANTLING
- E-WASTE ROBOT PICKING PARTS
- COLLECT FUMES
- ACID COLLECT PARTS
- IS IT WORTH RECYCLE?
- explosive test
- DIAGRAMS: A person using a laser, a person using a robot arm, a person using a tool, a person using a robot arm.

# 2. COMMUNICATION

HOW MIGHT WE COMMUNICATE WITH  
A ROBOT WITHOUT WORDS?

Handwritten notes and diagrams for robot communication:

- MOVE IT'S ARMS
- GESTURES
- WHIZZLE
- GESTURE CONTROL
- MIND READING
- PHERAMONS
- BLINKING / FLIRTING
- ROBOT TALKING
- FUNNY FACE GESTURE
- CODE IT
- IT CAN LEARN YOUR HABITS AND ANTICIPATE THEM
- TEXT MESSAGE
- POINTING WITH POINTING TOOLS
- CLAP IN A RHYTHM
- MAGIC WAND
- BUTTONS CONTROLS
- JOYSTICK
- Screen command login
- EYEBROW AND EYE TRACKING
- TAP TO THE OBJECT
- SHINE A LIGHT
- AI VR AR
- MIXED AUGMENTED REALITY
- unhearable frequency sounds
- COLOR STICKERS
- LIGHT + FLASH
- SONIC SCANNING
- HAND-PUPPET MINI-ROBOT
- Draw the command
- DIAGRAMS: A hand holding a wand, a hand pointing, a hand clapping, a hand tapping, a hand shining a light, a hand holding a stick.

# 3. ENCOURAGE

HOW CAN WE ENCOURAGE PEOPLE TO  
RECYCLE THEIR OLD ELECTRONICS?

Handwritten notes and diagrams for encouraging recycling:

- GIVE THEM MONEY
- TAX REDUCTION
- MONEY (PANT)
- INFORM ON PURCHASE WHAT HAPPENS IF YOU DON'T
- MAKE IT EASY TO DECIDE
- AD COMPLAINT AWARD
- AD BONUS
- SKIP AND MILES
- REMAKE OF THE PRODUCT
- unused ones starts to annoy you.
- CONVENE TO CHARITY (DONATE PARTS TO CHARITY)
- PROVIDE RECYCLING SYSTEM TO THE HOME
- ONLY ALLOWED TO USE CERTAIN AMOUNT KILOS OF MATERIAL / PERSON
- PUT SCARY PICTURES ON THE DEVICES THAT SHOW WHAT HAPPENS IF YOU DON'T RECYCLE
- USE PARTS FOR UPCYCLING AND GIVE THEM THE ITEM
- Bin tells you where to throw it.
- TREE OF LIFE
- USE THE HIGHEST LIFECYCLES OF THE PRODUCT
- GIVE DISCOUNT FOR NEW PRODUCTS
- CREATE AWARENESS / REMINDERS THROUGH (SOCIAL) MEDIA
- MAKE PRODUCTS EASY TO DISMANTLE ON YOUR OWN
- MORE PARTS UNDERSTANDABLE produces no magic box
- PUT PANT ON THE DEVICES
- People have to keep their stuff until they do.
- LIMITED PLASTIC PER PERSON
- DIAGRAMS: A person holding a money bag, a person holding a tax form, a person holding a pant, a person holding a tree, a person holding a bin, a person holding a product, a person holding a social media post, a person holding a product.





# PHONE DISASSEMBLY

Trying it ourselves

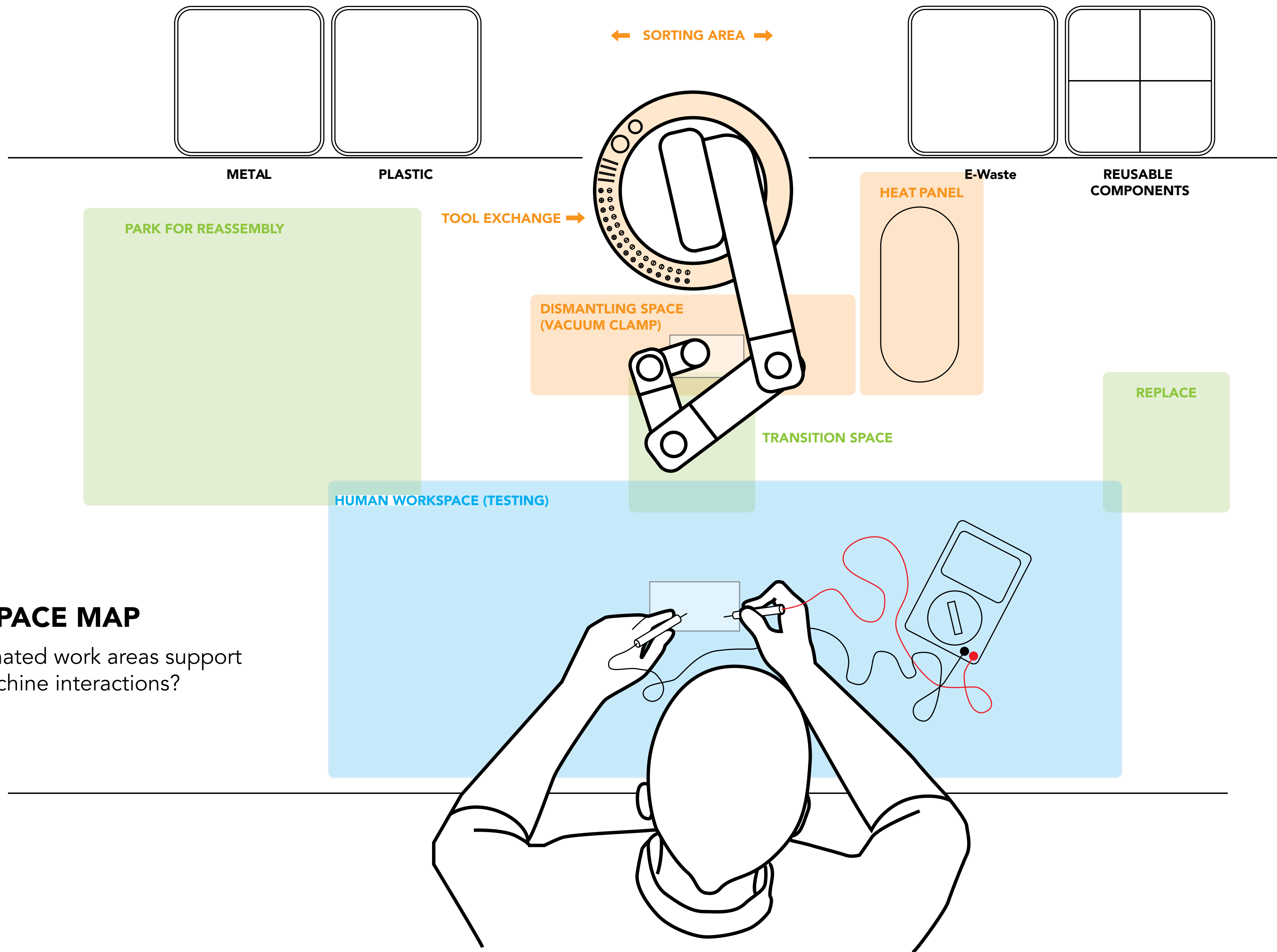


# ROLE-PLAY

Exploring the human-machine interaction step by step



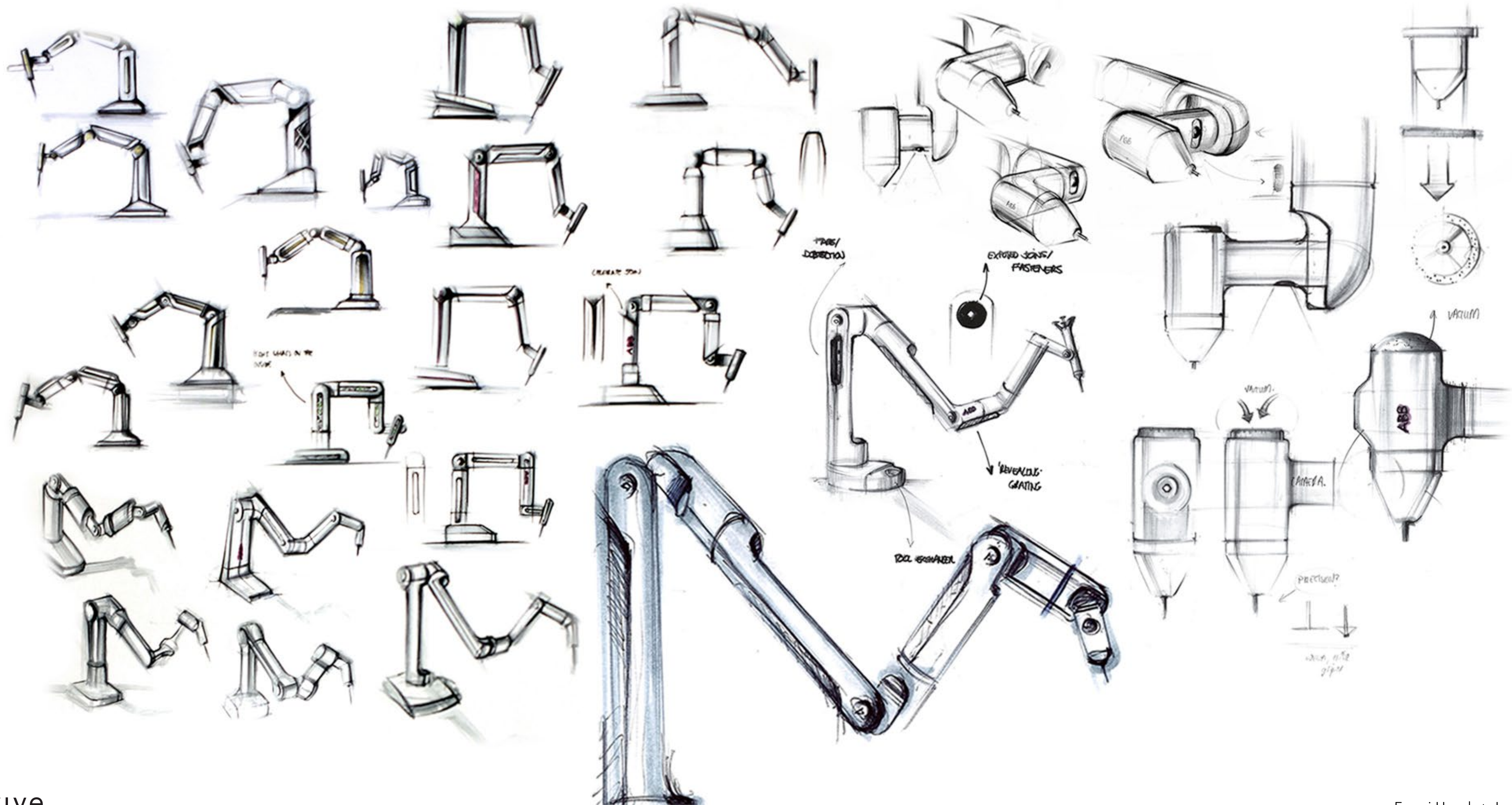




## WORKSPACE MAP

Can designated work areas support human-machine interactions?







**revive**  
collaboratively repurposing e-waste





Robotic Arm

**ARM**

Rail system



Shared Toolbox

Robot Work Area  
(Vacuum)

Heating Pad

**WORKSTATION**

Human Working Area  
(Interactive)



## **STRUCTURE**

Parts fit together to create an 'assembled' feeling

## **PRESENCE**

Small + compact size is approachable



## **FORM FACTOR**

Soft shapes are contrasted against sharp cutouts to create a sense of kindness, agility and performance





## FRIENDLY ACCENTS

Highlighted rings keep workers aware of Revives position and movement

## REVEALED ATTACHMENT POINTS

Accessible screws, exposed parts lines and celebrated pivot points allow for easy maintenance and end of life treatment.





## DRILL BITS

Interchangeable drill bits are automatically switched to suit job

## VACUUM PAD

For lifting, stabilizing and sorting components

## CAMERA

Revive detects and analyses components while recognizing position of worker





## **MODULAR WORKSTATION**

Setup is adaptable to a variety of electronic waste



## 1 RECOGNITION

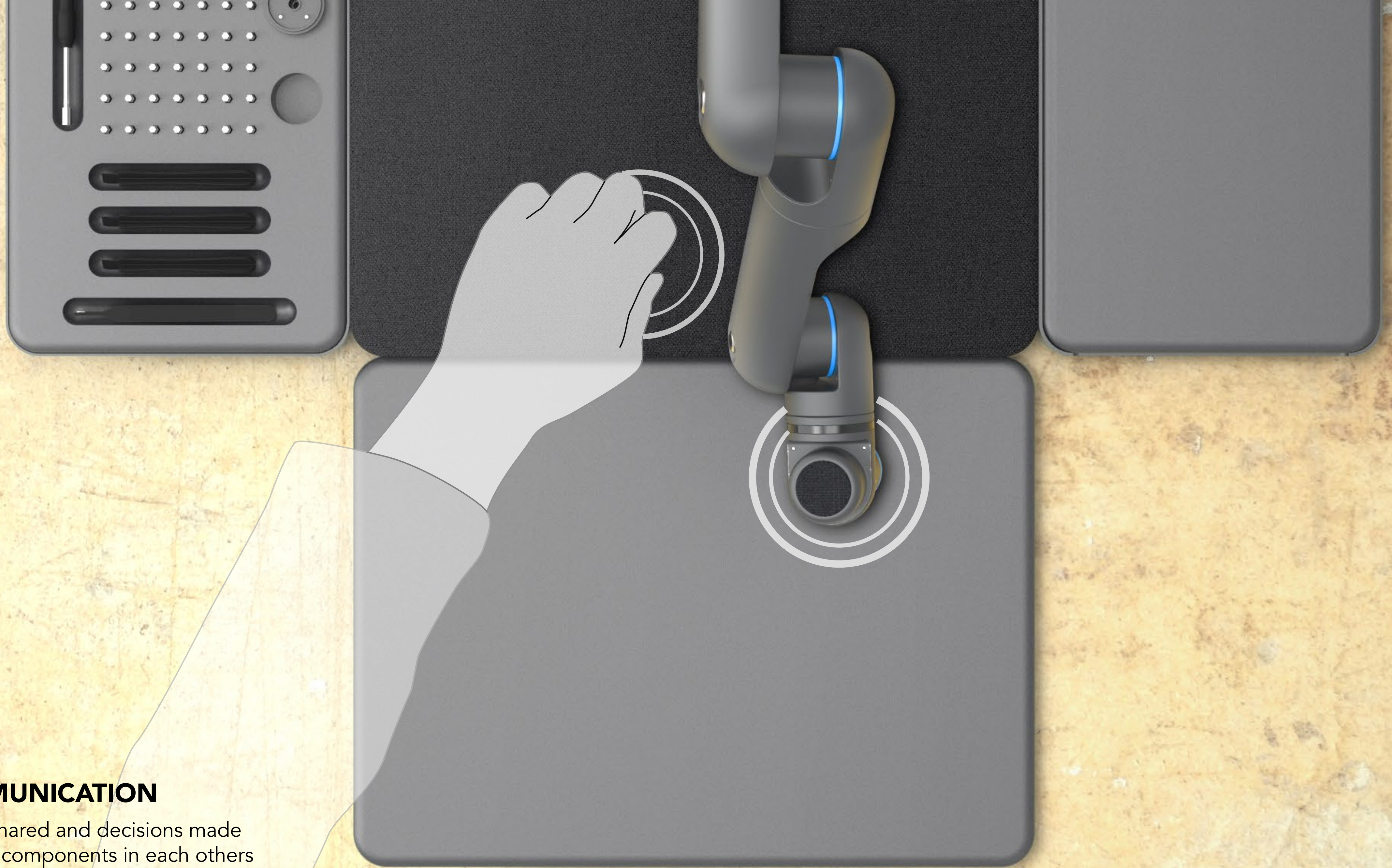
Access data surrounding product value,  
common faults and assembly





## 2 COMMUNICATION

Tasks are shared and decisions made by placing components in each others workspaces







○ model

## REAR CAMERA

5mp, 720p HD video

○ value

\$ 2

○ rating

## REUSABLE

application:  
new products, repair

company:  
smartsleep  
Shenzhen, China

order:  
900pcs/year

### 3 INFORMATION

Connect components to potential reuse scenarios and help determine if product is repaired or disassembled





**THANKS!**