



# Designing Things that Predict

Iskander Smit

**@iskandr** \_\_\_\_\_

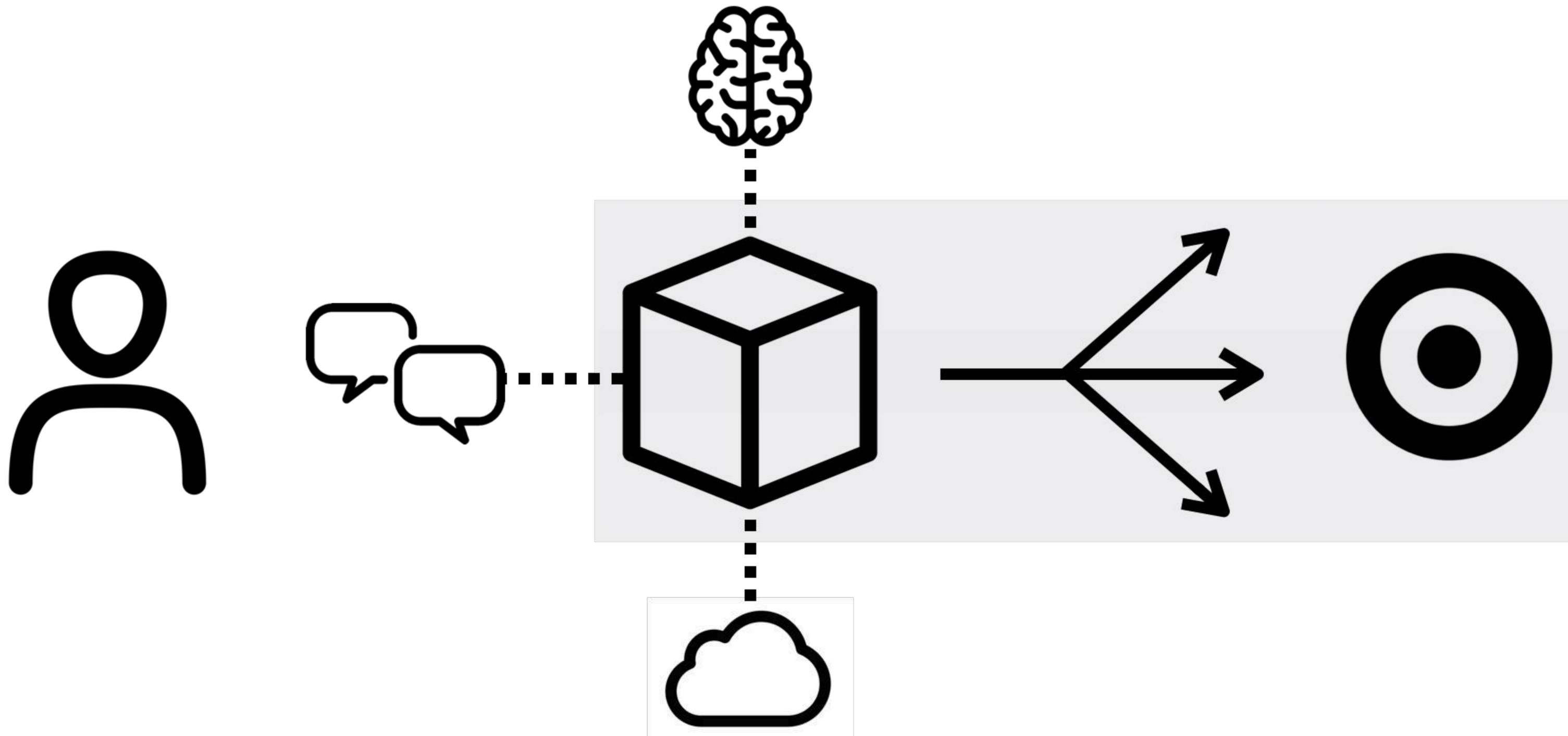
**innovation director, visiting professor, organizer**

**INFO**  
— labs



**BEHAVIOR  
DESIGN  
AMS**

Tech Solidarity NL



## Things with agency

Intelligent, fed by the cloud, in conversation with humans



# Cities of Things

With the rise of AI (artificial intelligence) combined with IoT (internet of things) the concept of what is a “design thing” shifts from passive artifact to active partner. Capable to perform tasks and make judgements next to us, Things increasingly “work with us” to produce positive change in everyday life. In Cities of Things, we focus on the role that such Things will play in our future cities “as citizens”, moving past the idea of the smart city and smart products as a dashboard and tools for easy living.

[about](#) →

Smart city  
paradigms

**#1 Data dashboard**

**#2 Adaptive infrastructure**

**#3 City of Things**

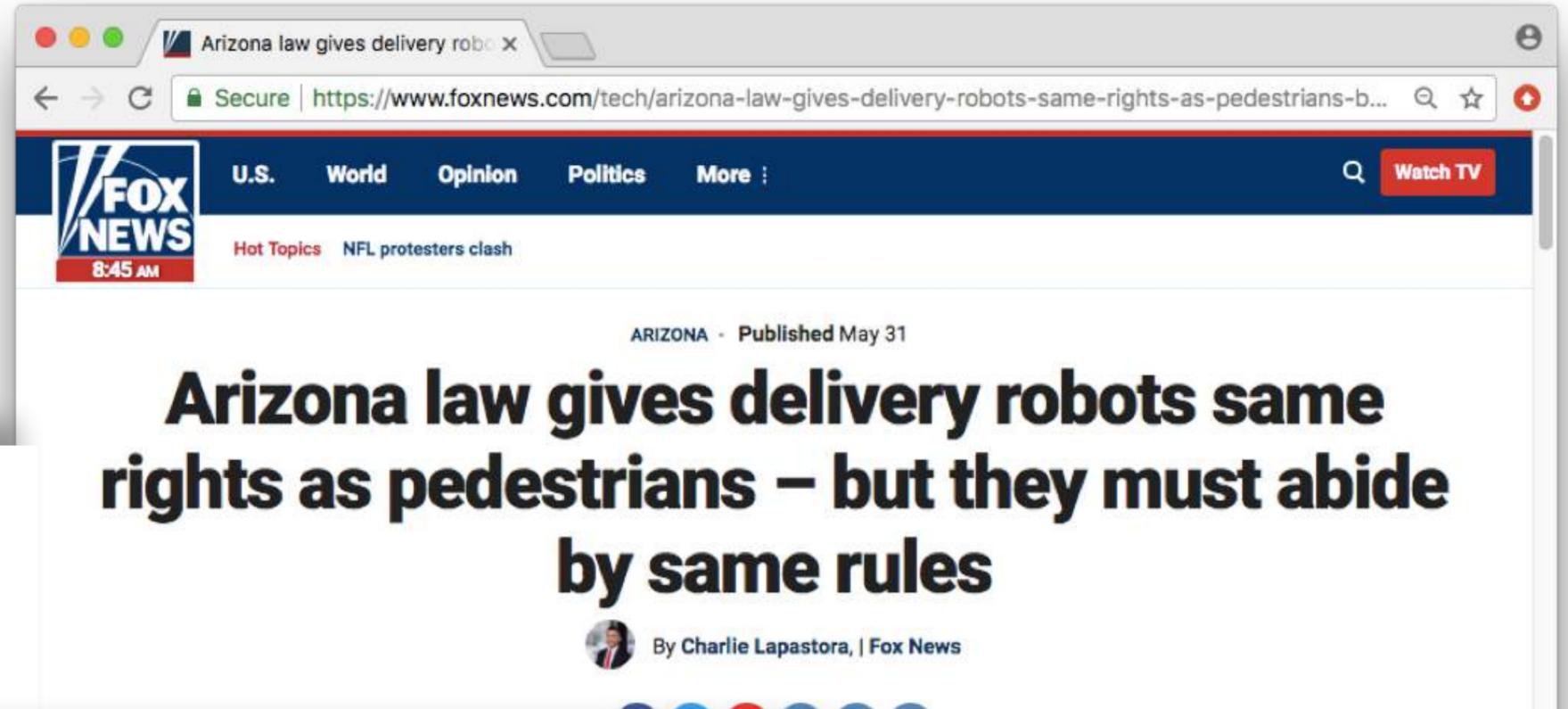
## Paradigm #3

# Cities of Things

- Things as social entities
- Cannot be controlled (like humans) but can be governed
- Need for social contracts (pacts, agreements)



# Non-humans getting typically human statuses



# People kicking these food delivery robots is an early insight into how cruel humans could be to robots

Isobel Asher Hamilton   
Jun. 9, 2018, 9:00 AM  3,131

 FACEBOOK  LINKEDIN  TWITTER



# US lets autonomous vehicle bypass human-driver safety rules

By TOM KRISHER February 6, 2020



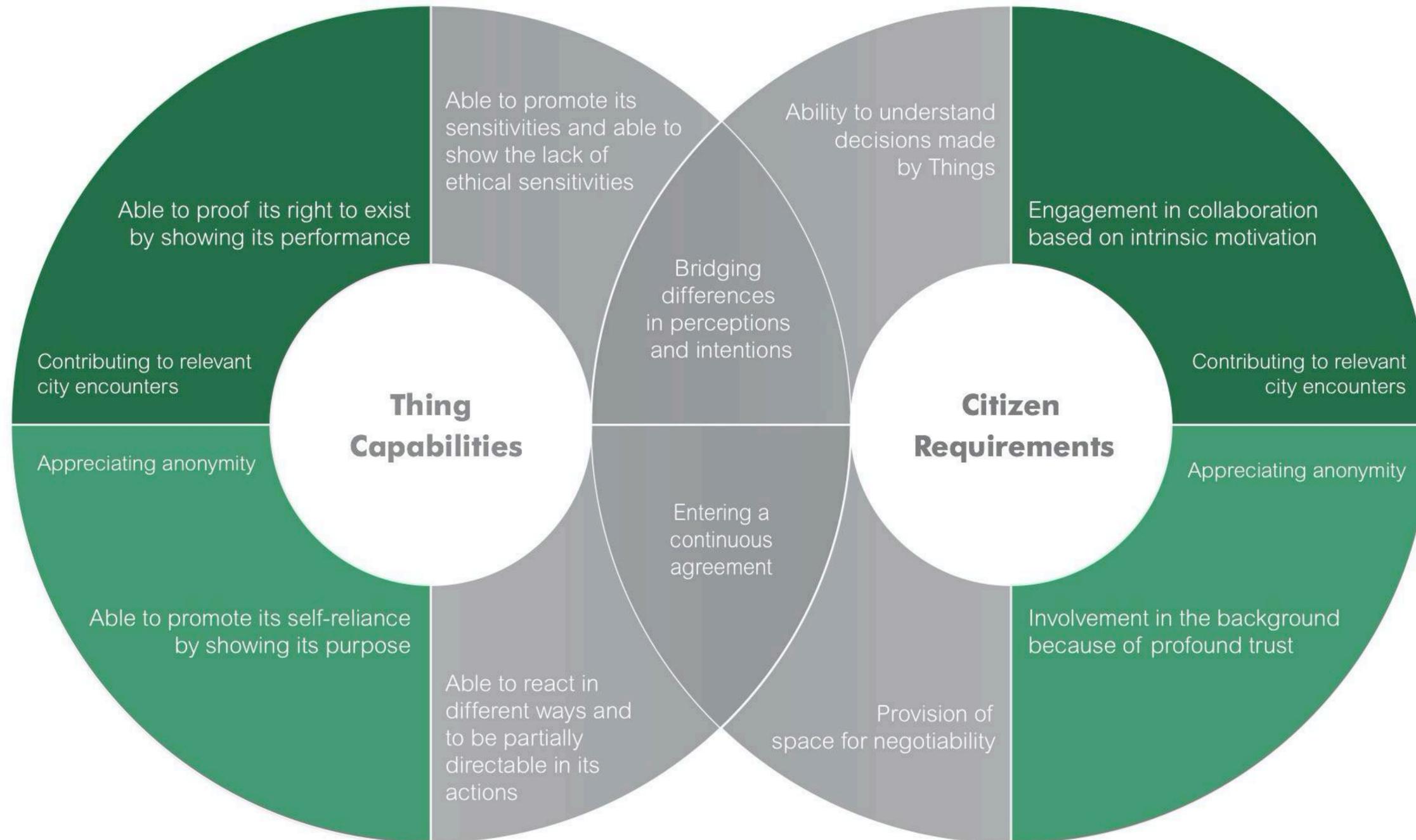


Rotterdam Centraal



Things as citizens as design inquiry  
Graduation research Louise Hugen, 2018

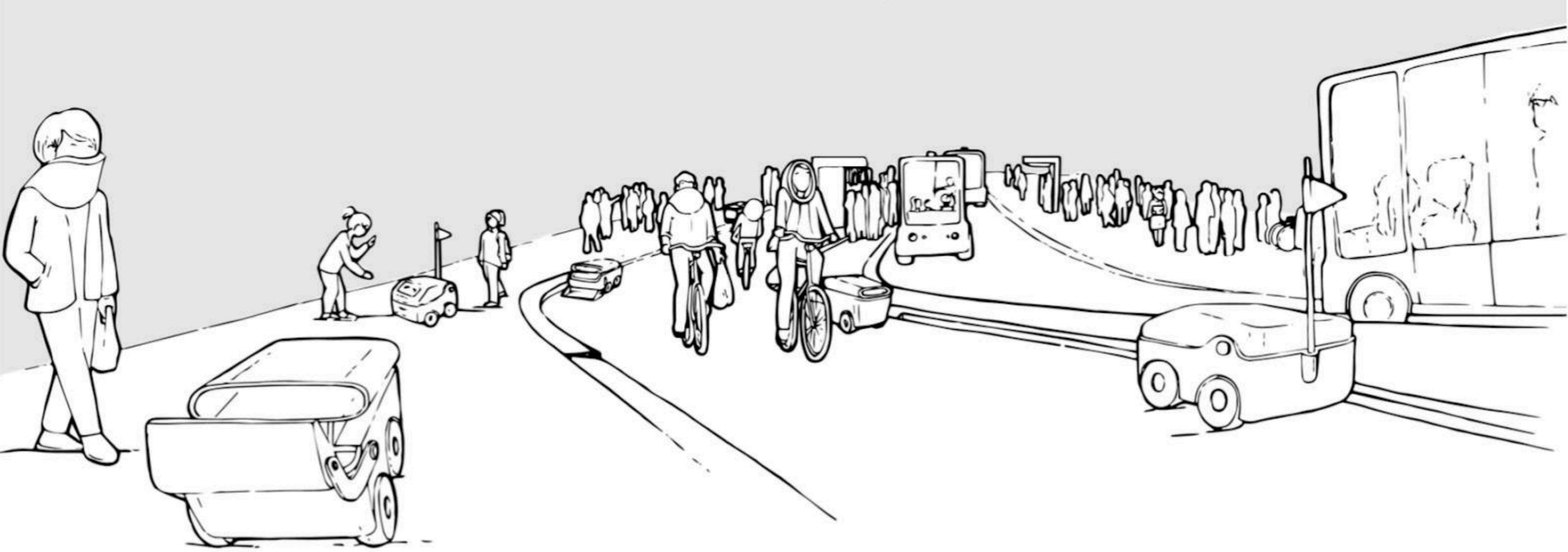
# THE DESIGN QUALITIES MODEL





# Mobi+punt

Jelmer Koedood, graduation 2020



## **Cities of Things**

How can things connect to existing data and cloud services in the smart city and act in concert with people?

Lupetti, M.L., Smit, I., Cila, N. (2018), Near Future Cities of Things: Addressing Dilemmas through Design Fiction



PACT

# Designing Predictive Relations

Iskander Smit



**What is the role of predictive relations in the design practice of the future connected product-service designer?**

Research question

**How will predictive relations shape our behavior?**

Specific for today



*Changing Things*



**The Helpful BBQ**  
*Sietse Taams*

labs.info.nl



Master of the party  
*occasionally*

INSPIRATION

PREPARATION

USE

THINGS



Kitchen Accessoires



Brush



Starter



Barbecue



Tongs



Cutlery



Spatula



Fork

Several kitchen accessories can be used for marinating, cutting and other food preparation purposes.

A steel brush can quickly get rid of the dirt that is sticking to the grill.

A starter is a nice way to evenly ignite the charcoal. It required less effort from the user as well.

The type of barbecue determines the length of the preparation phase. Charcoal takes more time than gas.

Barbecue tongs are a tool that allows picking up food without penetrating it.

Several food types require different kinds of cutlery. Also the plates are cleaned more often or even replaced.

A spatula is used to pick up fragile food types and is also a tool for scraping of grill residue.

For heavy pieces of food that can withstand penetration, a fork is used.

“ My grill is my castle ”

# BARBECUING

- A CUSTOMER JOURNEY -



Smell

The smell of the barbecue is typical and inviting. It can trigger people to barbecue.



Light & Temperature

Evenings are 'long', the temperatures are comfortable and the light is practical: summer is the most popular barbecue season.



Invite

Barbecuing is a social event organized together with family or friends.



Plan

Most people associate barbecuing with nice weather and will check the weather forecast in advance.



Shop

Depending on the amount of people and their wishes, the food and drinks have to be bought.



Prepare

Food that goes on the barbecue has to be seasoned or prepared in another way. Also side dishes are made.



Ignite

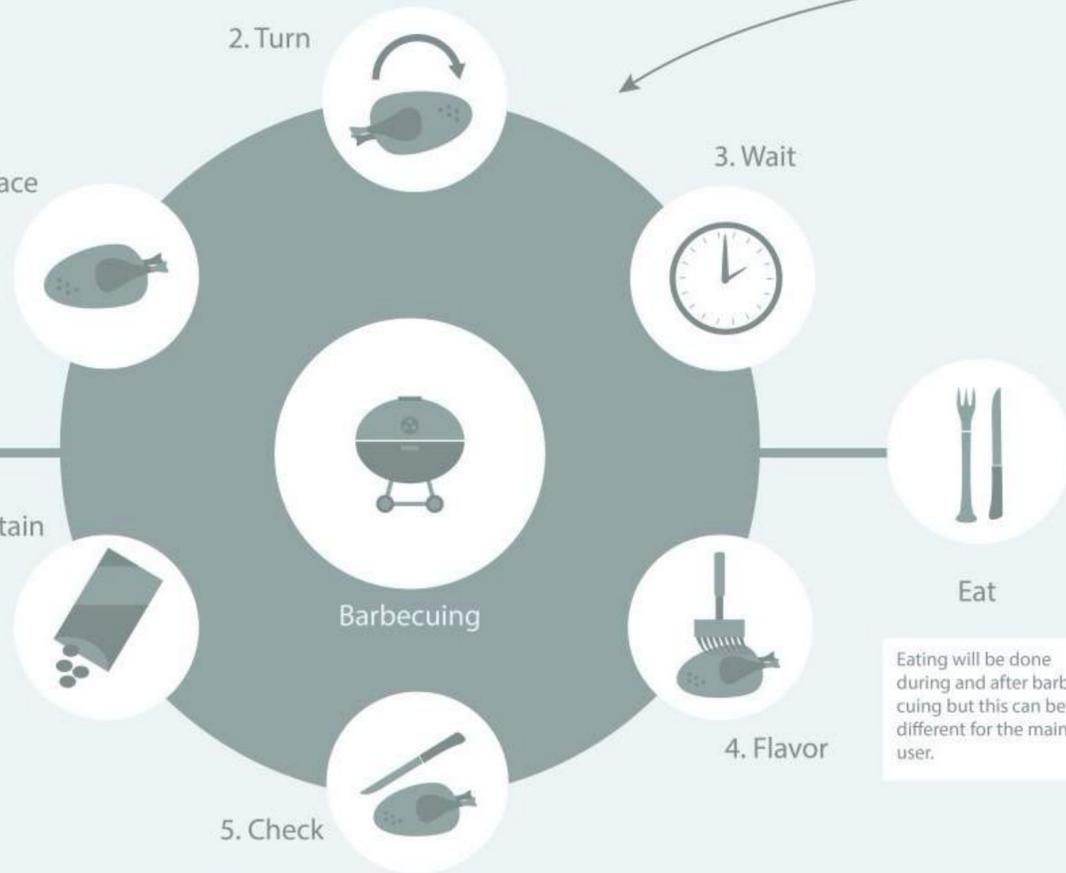
The charcoal has to be ignited and it requires time for it to be hot enough to start grilling.



Clean

Once the grill is hot, it can be cleaned more easily. Using cleaning agents should be avoided to prevent corrosion.

6. Maintain



Eating will be done during and after barbecuing but this can be different for the main user.

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2. Mo from shoul before before  
3. The given eathe rest.  
4. Ext add big p  
5. Ch can b its res ing te sight  
6. The also n siderer filled up ag

DATA



People

The amount of people and their food preferences are important.



Weather

Warm and dry weather is often preferred. Weather data is used.



Agenda

In order to plan a date, people's agendas are consulted.



Prices

Food, especially meat can be expensive. Information about products and prices is required.



Food

The availability of certain food can vary. Also some food types go better with other food or drinks



Temperature

To start grilling, a certain temperature has to be reached.



Temperature

The temperatures on the grilling surface, inside the meat and around the meat determine the result.



Cooking time

There are different cooking times for different kinds of meat and personal preferences.



Humidity

Sometimes water is added because the humidity can influence the meat's succulence.



Feedback

The result is eaten by people who might have a different taste. Their feedback could be useful.

INSPIRATION

PREPARATION

USE

(ecosystem of) things

THINGS

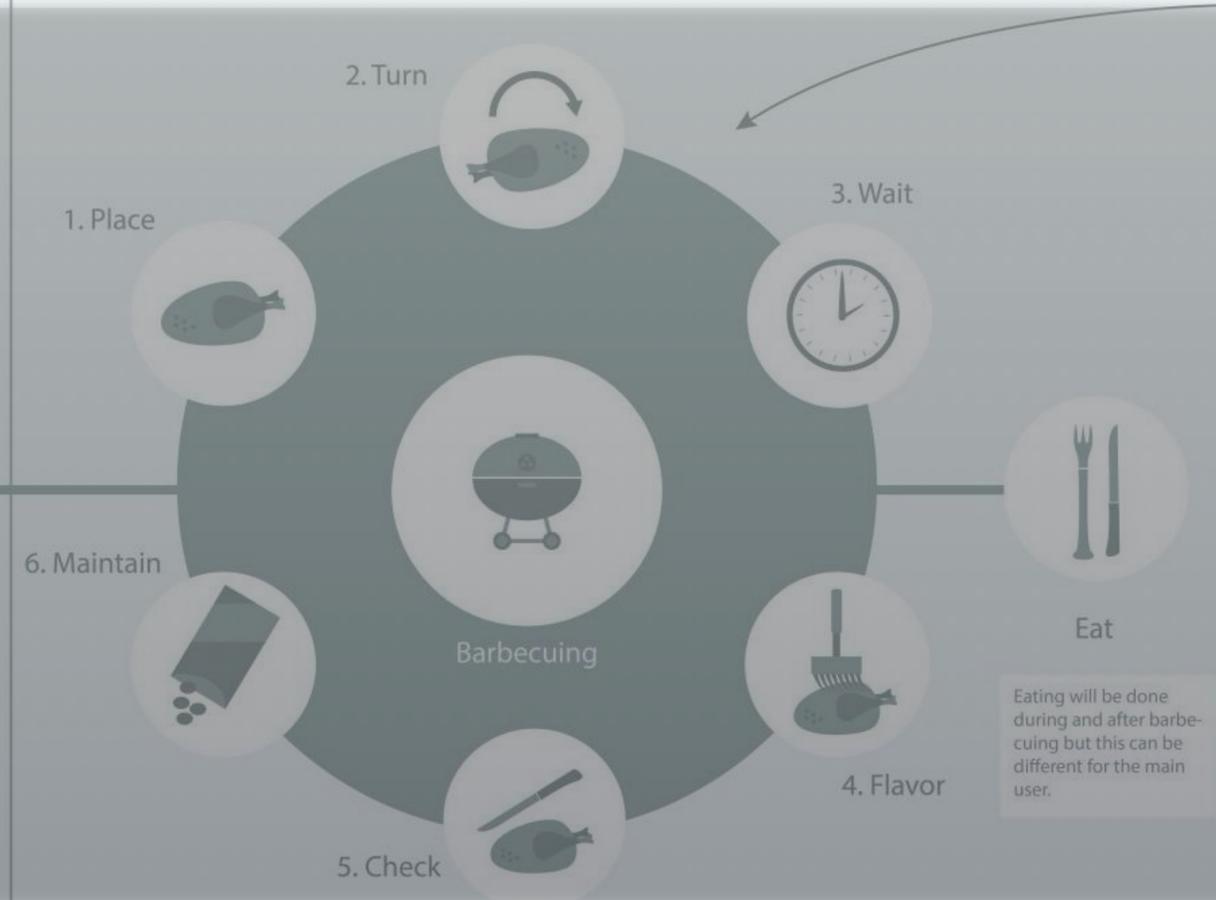


“ My grill is my castle ”

# BARBECUING

- A CUSTOMER JOURNEY -

activities while using



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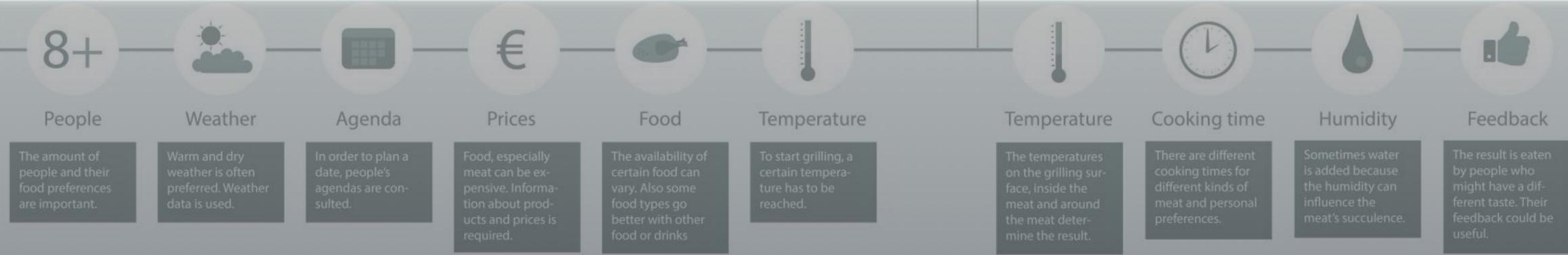
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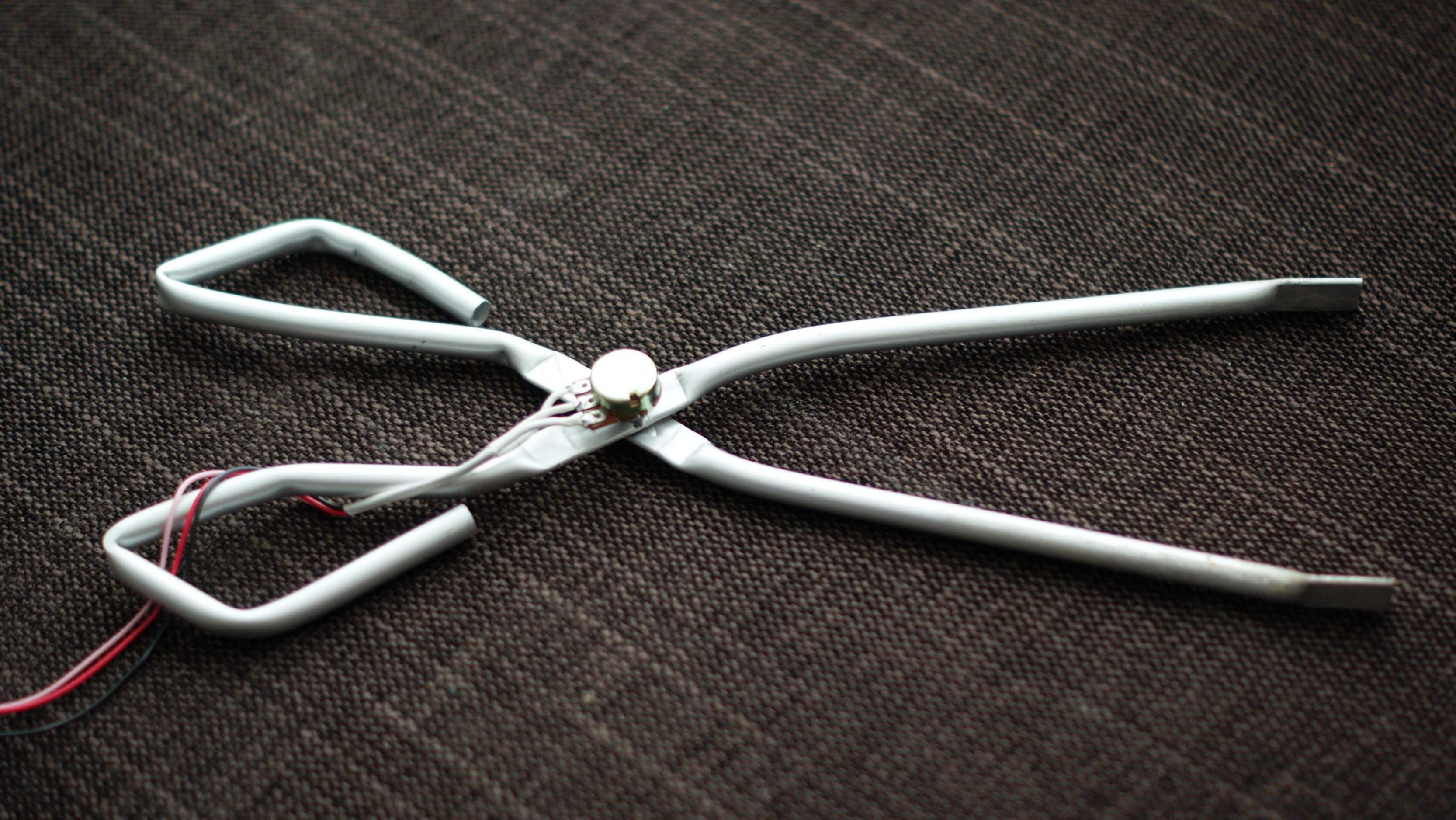
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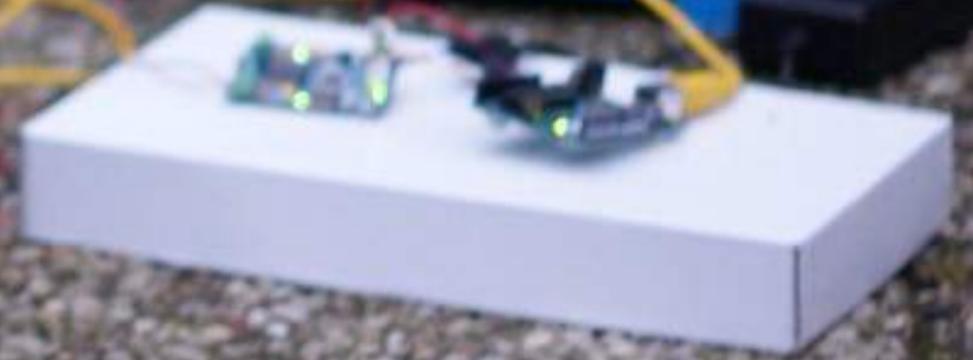
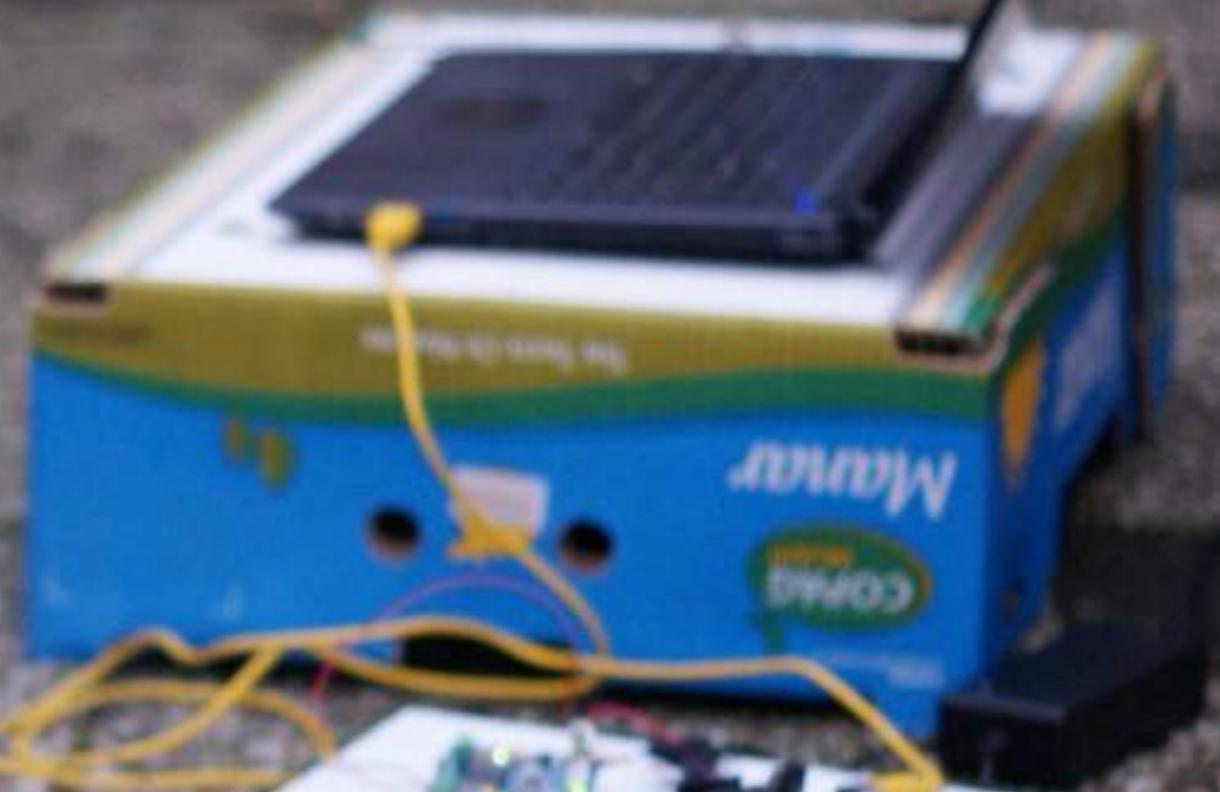
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DATA

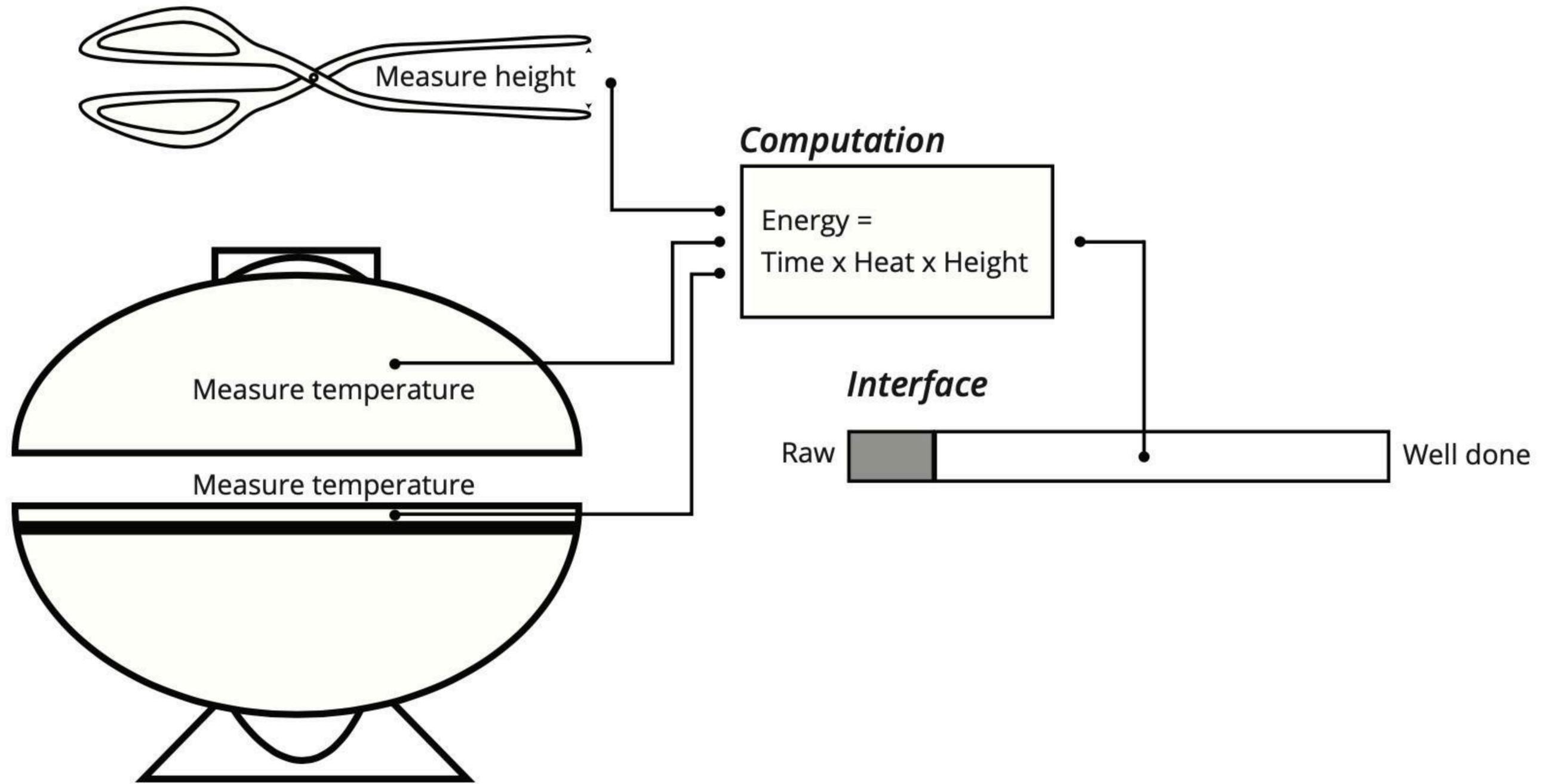
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EGGPLANT

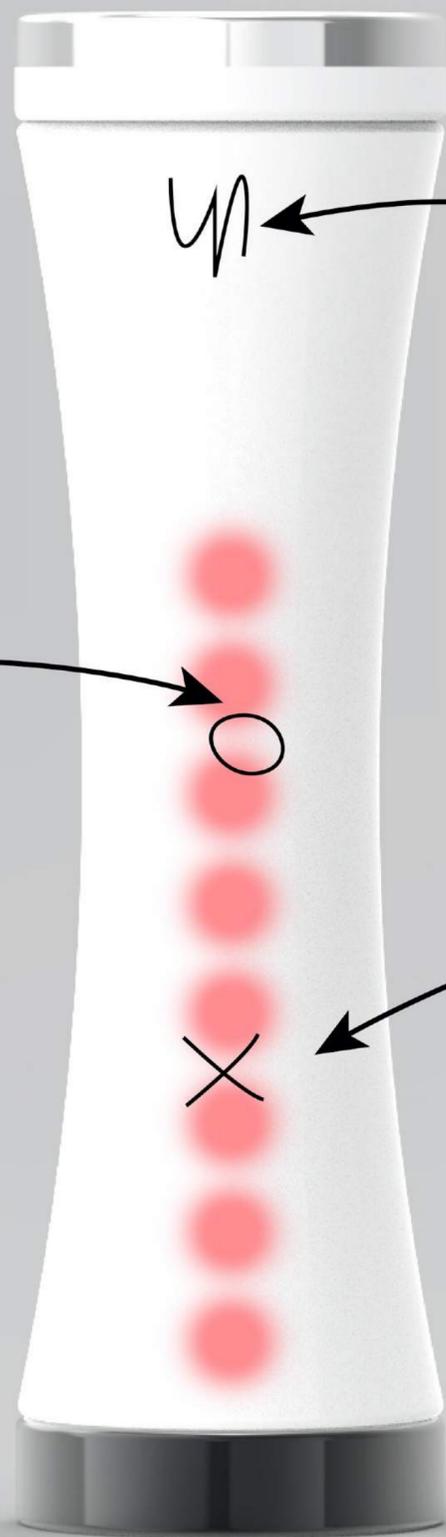
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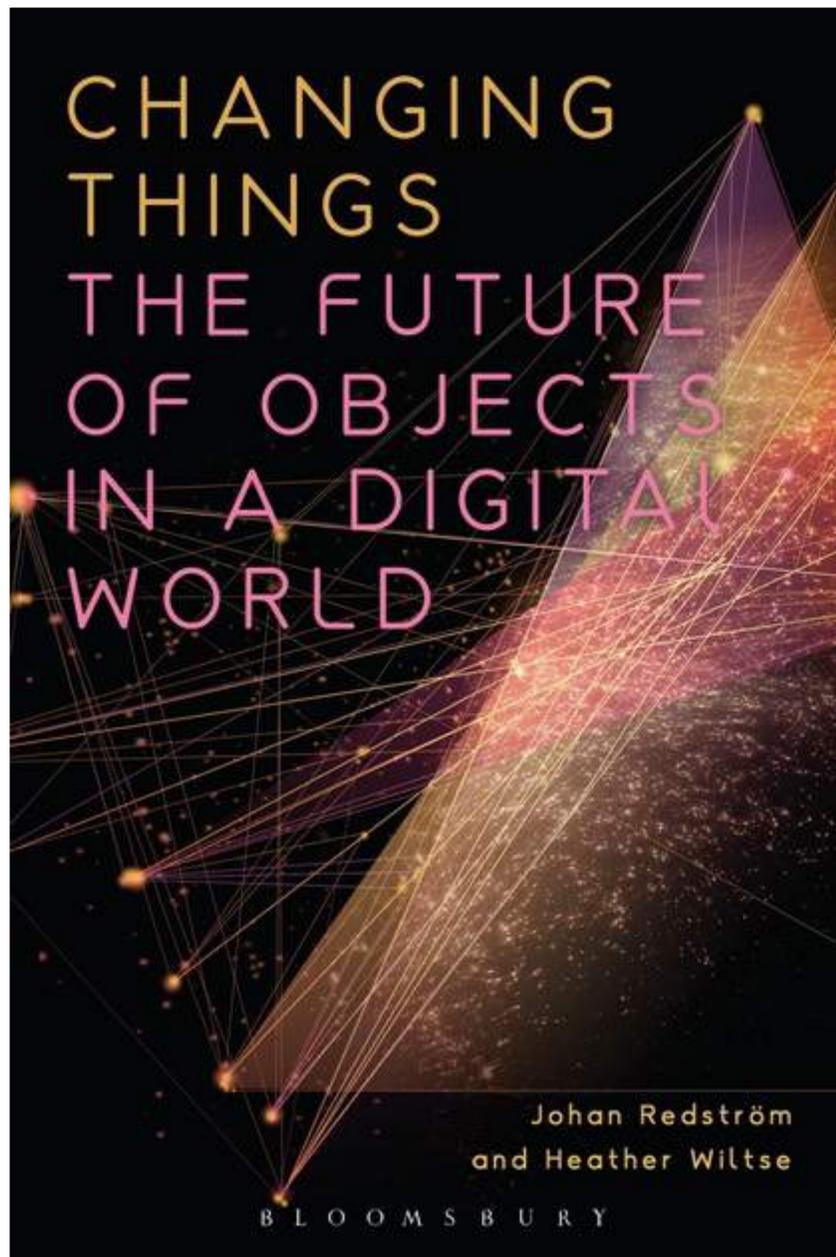
CHICKEN

O

X

RIB EYE STEAK





Things are often now composed on the fly from a variety of networked resources, both physical and digital.

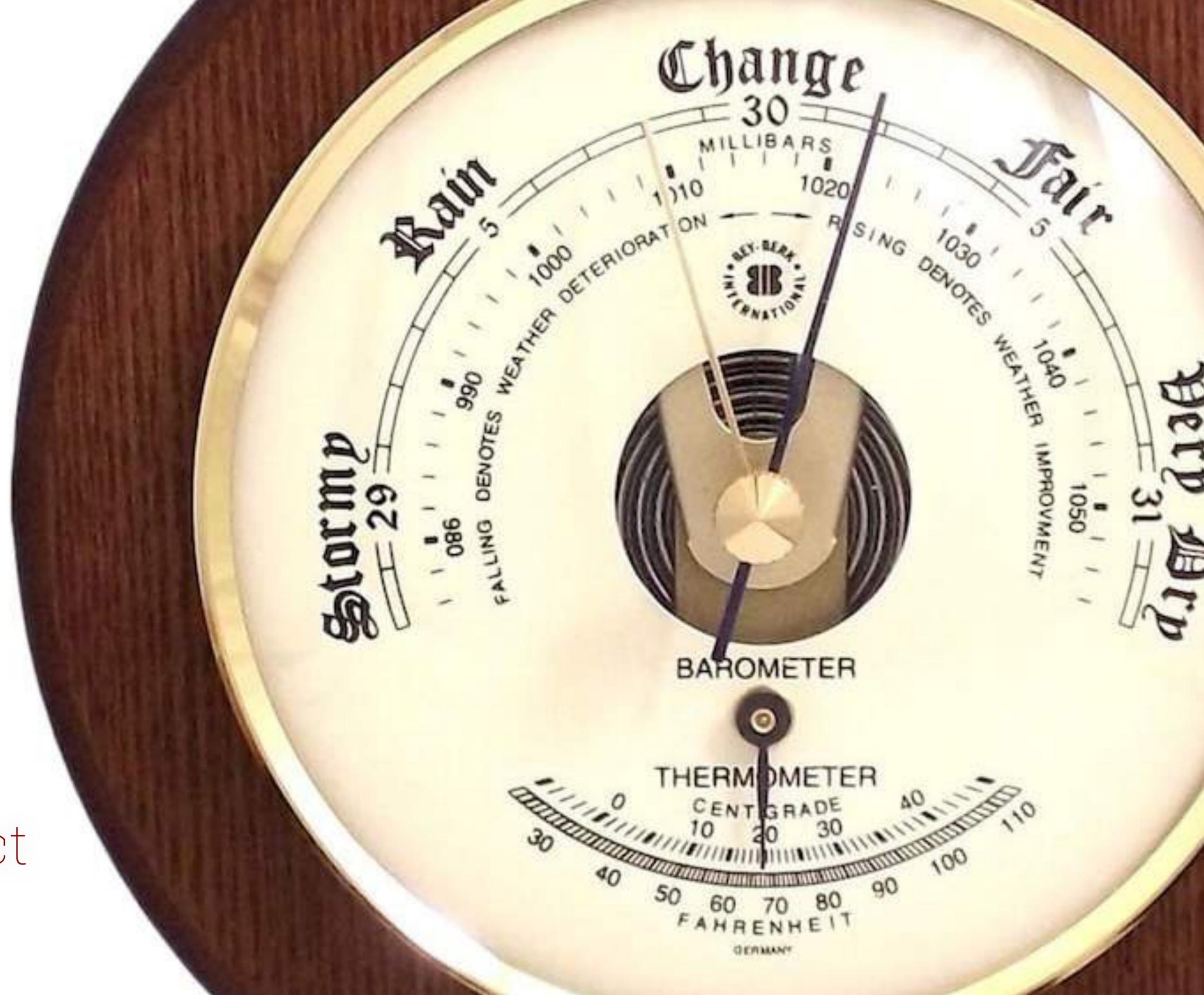
**Things as fluid assemblages.**

Not only intelligent and smart, but also unstable. The moment of use is a state in a continuous changing hybrid product-service-system.

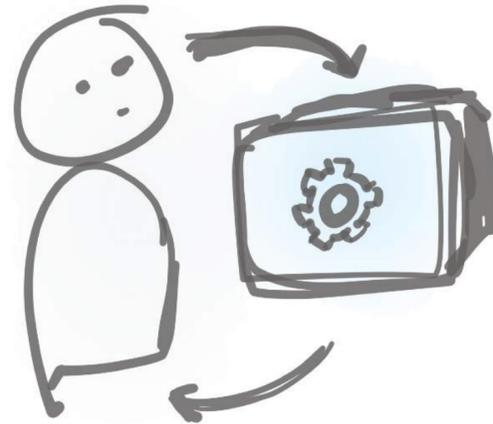
**With machine learning mechanisms the Changing Things will have knowledge on possible futures before the user have these**

Changing Things that can predict

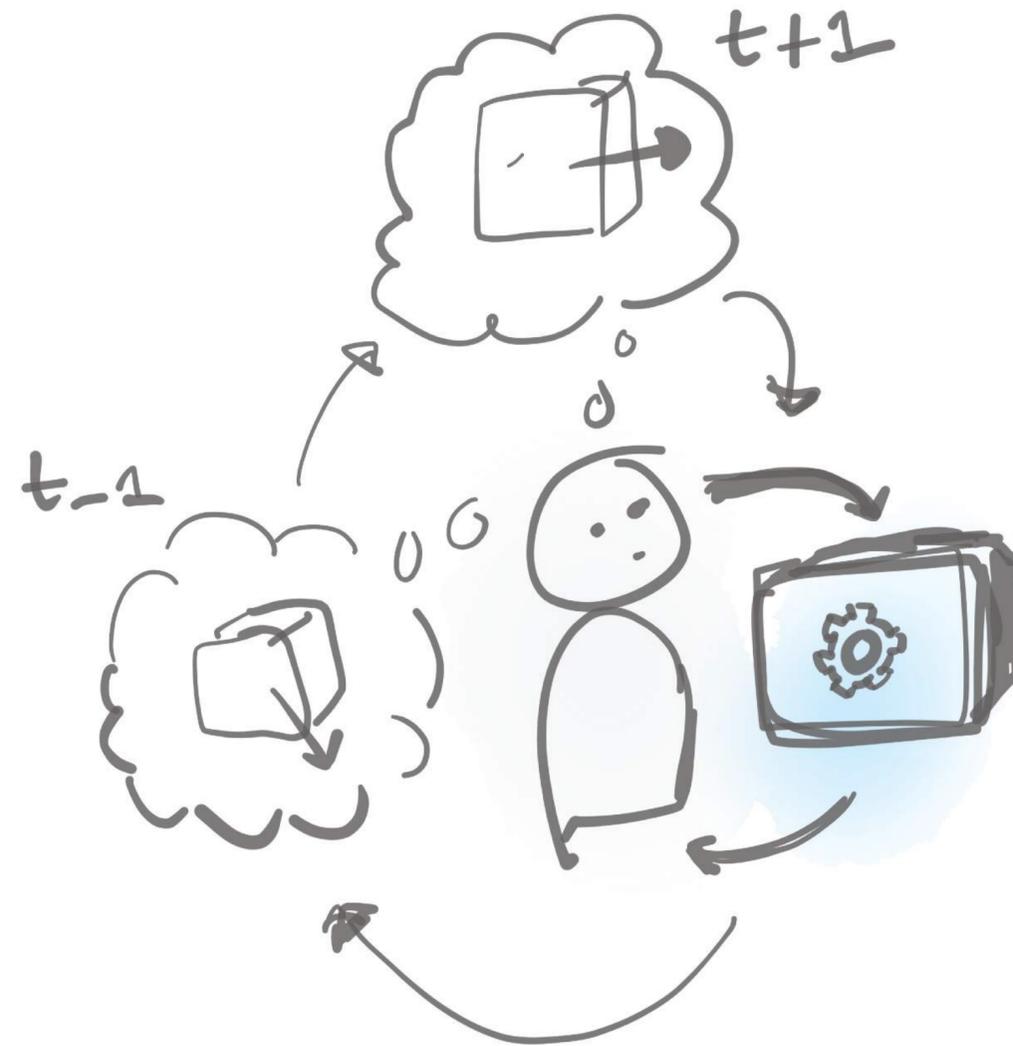
Things That Predict



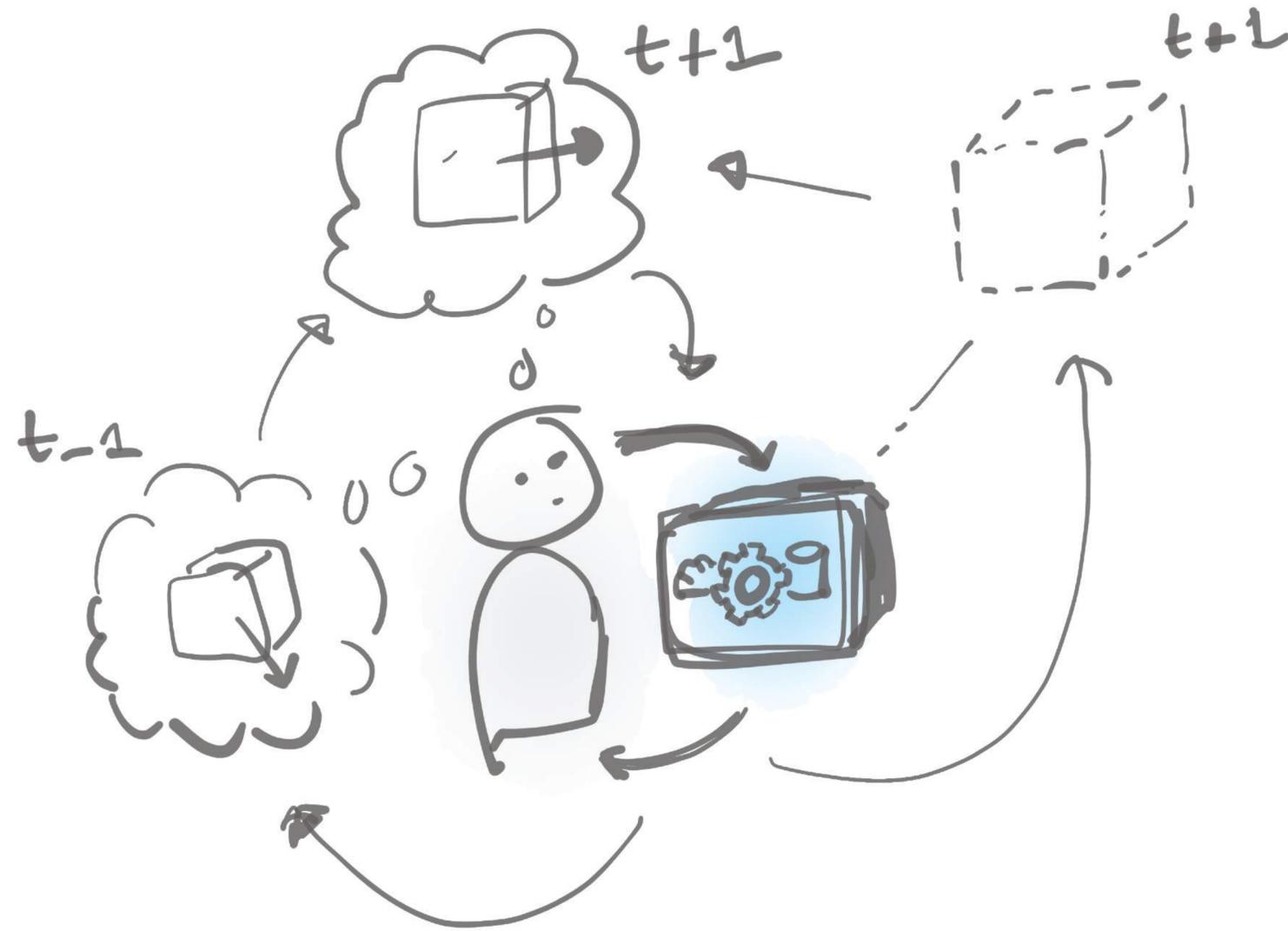
*When using a product/service, there will be a feedback loop while using validating anticipated behavior*



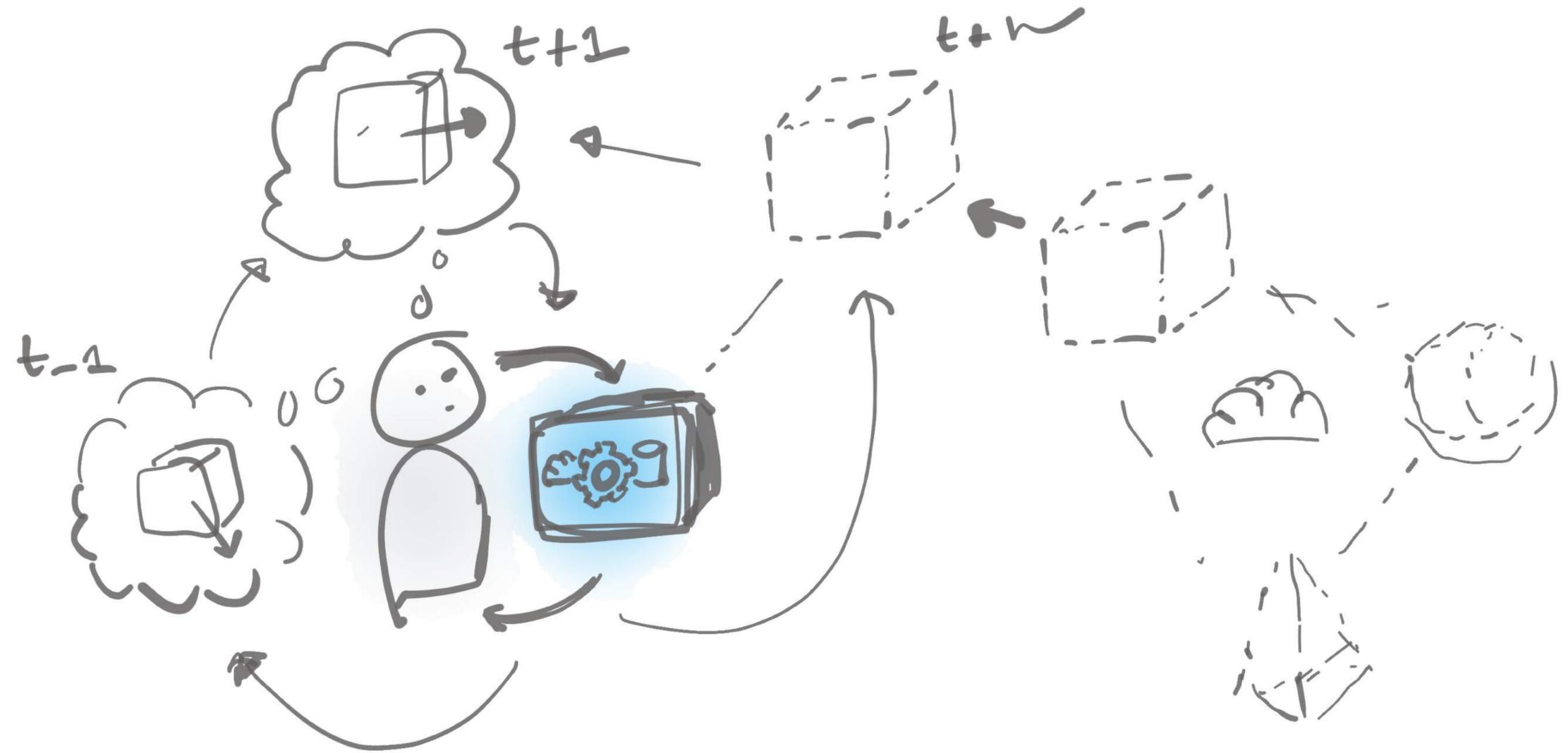
*The user anticipates on what will happen when forming a mental model ( $t+1$ ), based on experiences from the past ( $t-1$ )*



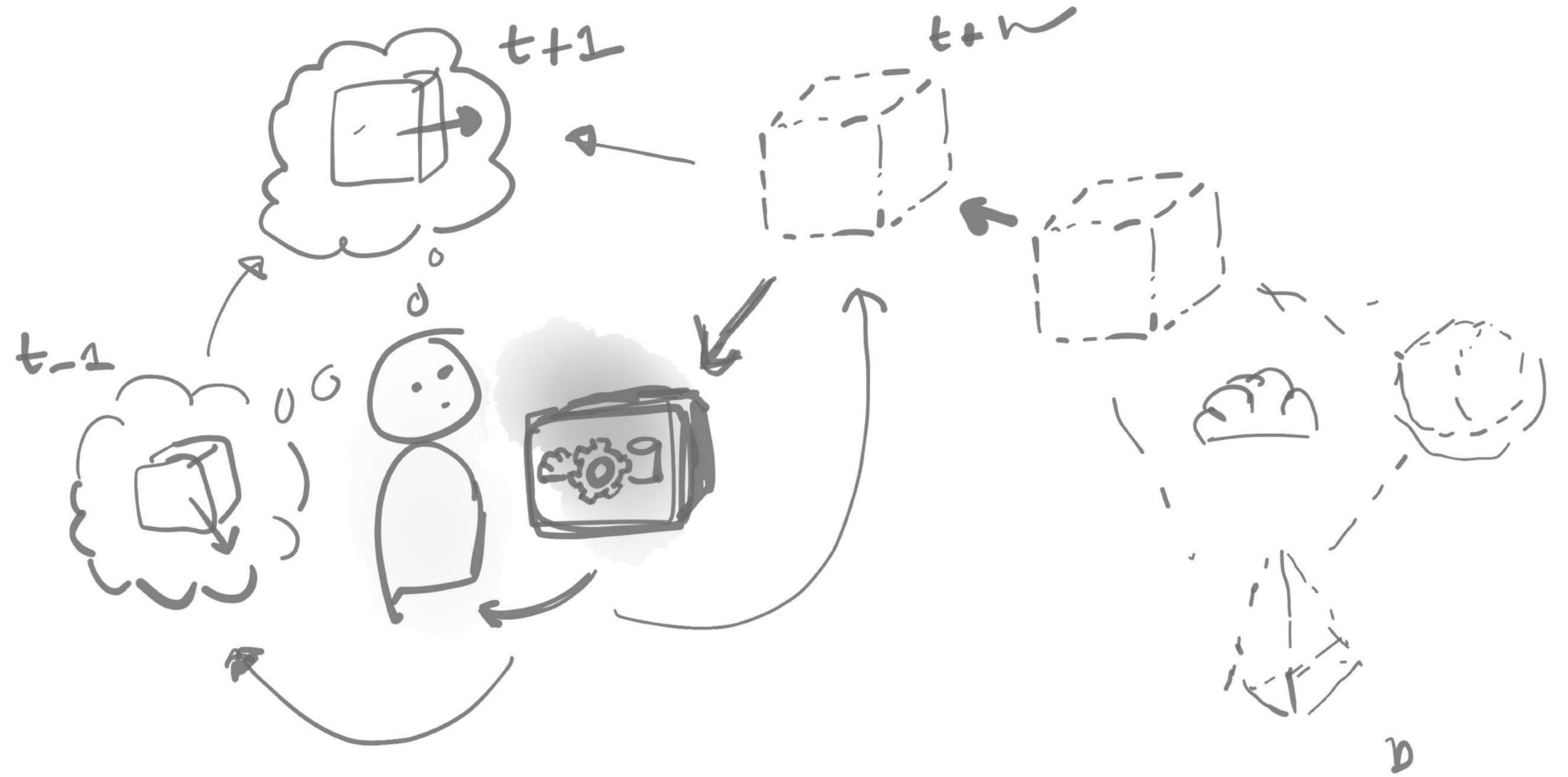
*With smart objects,  
the 'digital twin' might  
influence the mental  
model of the user.*



*With a smart object fed with predictive intelligence, the digital twin will be formed by predicted futures.*



*Decision making might end up in the virtual space, leaving the user with passive use.*





Predictive relations with Things

# Things that predict

Predictive relations with things

# Things that predict

Predictive relations through things with 'the world'

**When things start to predict outcomes, it means that it will feed forward on situations we did not anticipate.**

→ Predictive relations

**In the future we will shift continuously between  
the simulated future and the now.**



MAX  
55

49

mph



SPEED  
LIMIT  
50



Avg. 414 Wh/mi  
Past 30 mi

198 mi

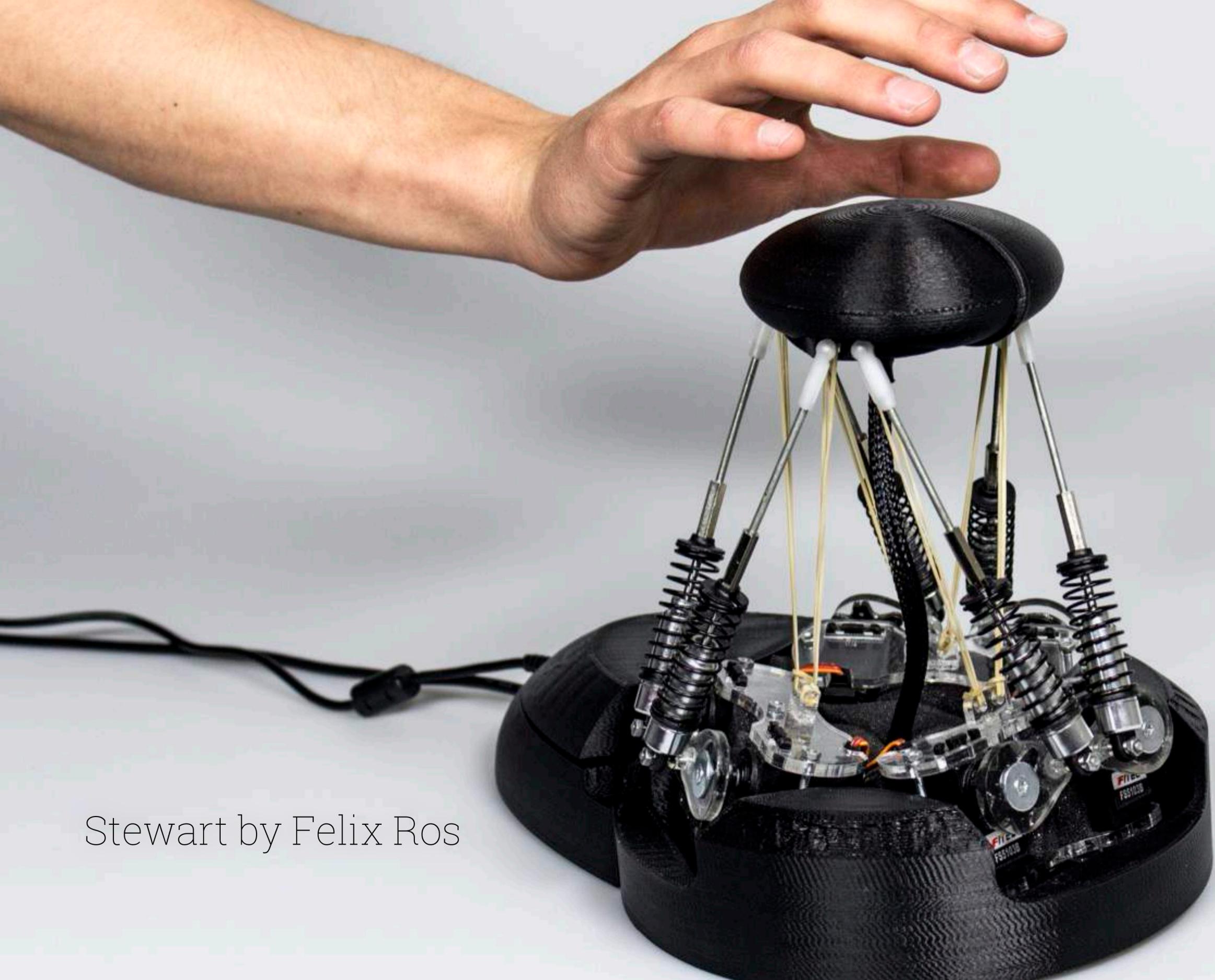
65°F

12:04



# A strategy for humans: teaming up with the Things

At the moment we have predictive relations with things, technology cannot be a 'background relation', we need to actively have a dialogue to understand what is now and what is future.

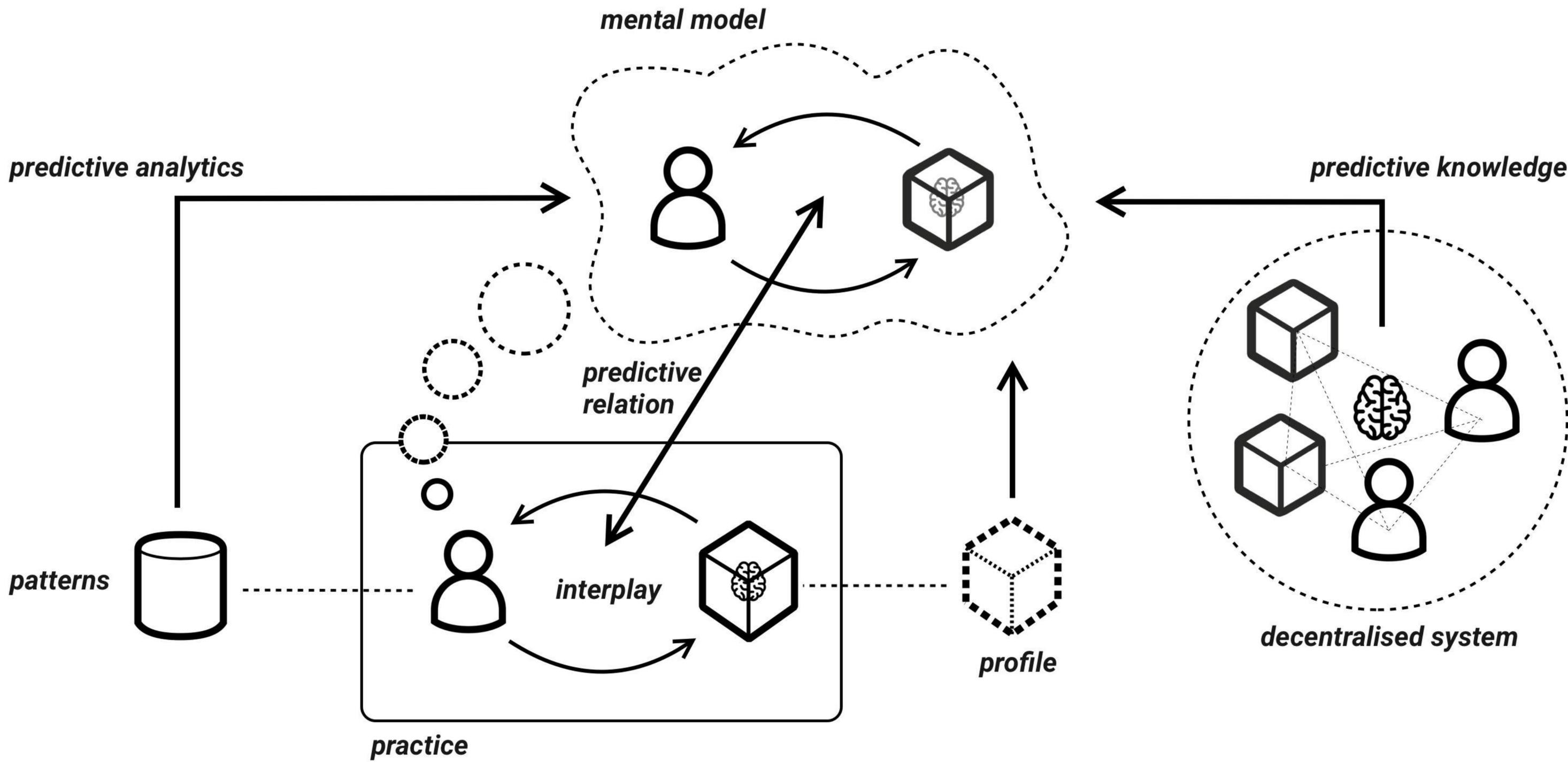


Stewart by Felix Ros

**The interaction of predictions and actions creates a complex interrelated design space.**

Predictive behavior shapes our mental model on the acting of Thing.

At the same time shape our actions the digital model of the Thing.





**So how are we going to design for the  
unknown knowns?**

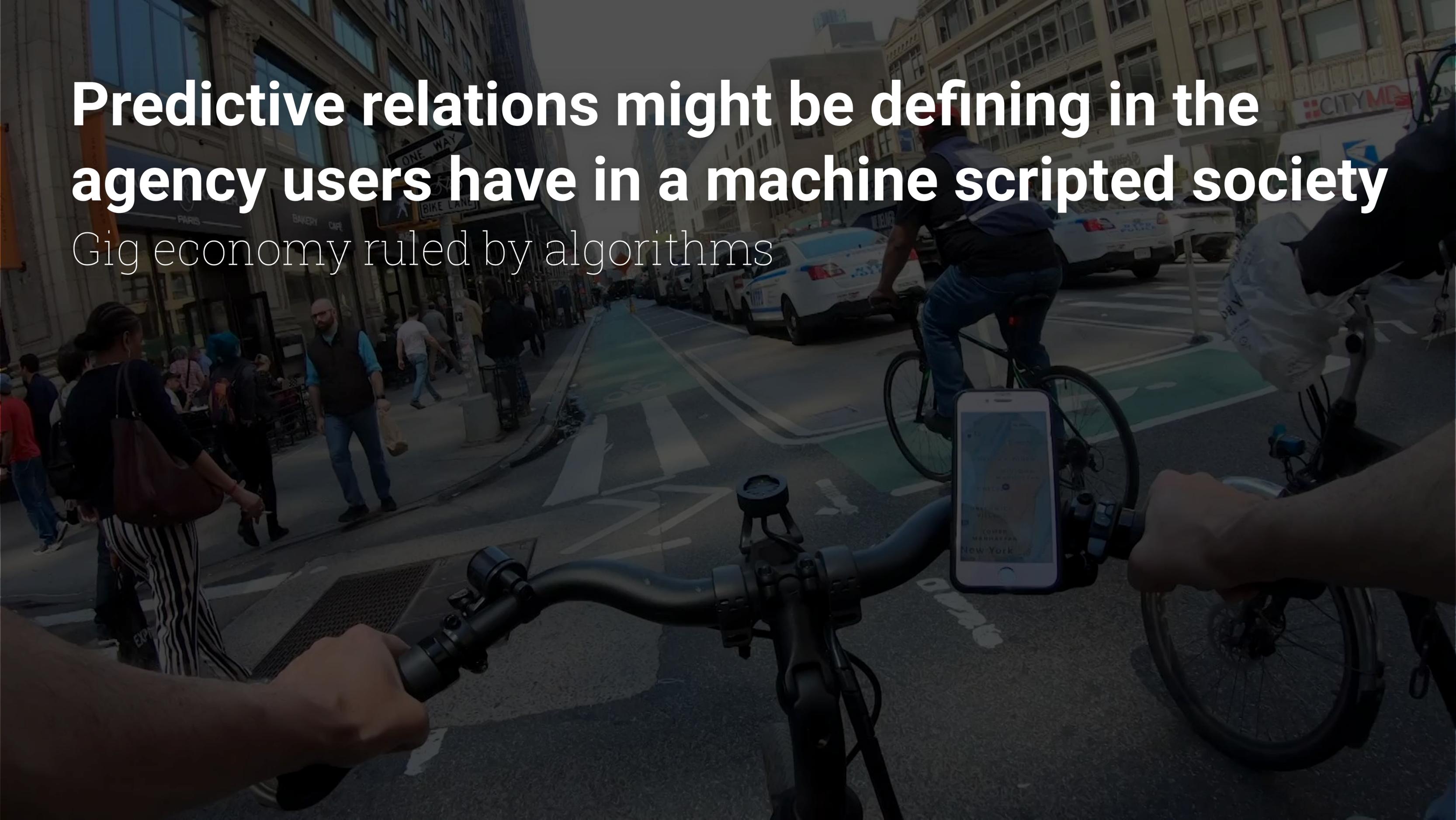
As Things become complex systems, predictions will give us **capabilities to control** the working of Things.

And/or...

As Things become complex systems, predictions will **reduce the agency** we will have over our own behavior.

# Predictive relations might be defining in the agency users have in a machine scripted society

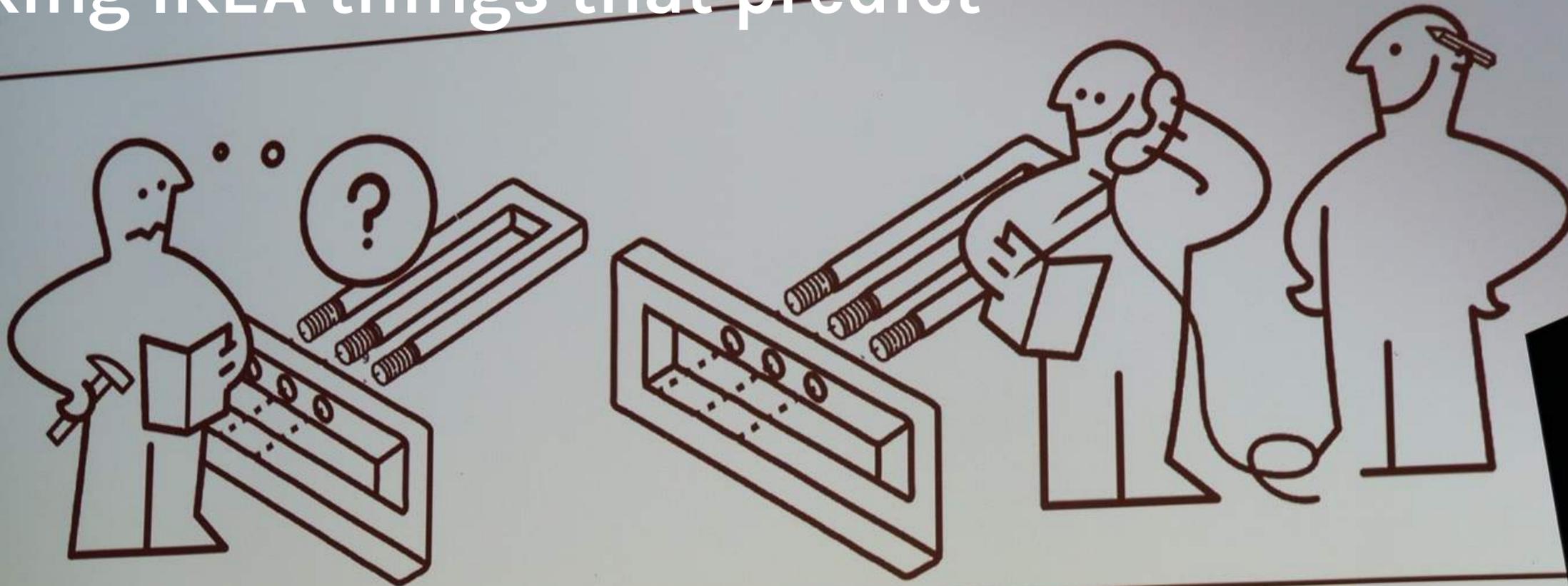
Gig economy ruled by algorithms



A man with a beard, wearing a purple t-shirt and a blue and white striped apron, is grilling food on a black charcoal grill. He is holding a glass of beer in his left hand and using tongs in his right hand. In the background, a group of people are gathered on a grassy area, some holding drinks and talking. The scene is outdoors with trees and a bright, sunny atmosphere.

So who will be  
*The master of the barbeque?*

# Hacking IKEA things that predict



<https://trmm.net/Ikea>





## **Korpoen home smart barbeque**

*become the master of your bbq*

Barbeque comes with sensors for temperature of the coals and grill. It measures the weight on the grill.

The bbq is connected to the home smart network or via bluetooth with your phone.





• > ? >>

Iohanna Nicenboim, Elisa Giaccardi, 2017

## Assignment

**Think of one scenario where the thing predicts (prescribes) your life**

Context: consider the thing as a networked product. The network can create connection inside the home or outside with other things

Format: make an add selling that scenario. No need for explanation text, just a drawing and tagline.



It is not about the best idea now

Think on predictive knowledge driving the behavior of the object rather than sending 'just' information.

Spend time discussing how to present to the consumer.

And make a nice basic sketch.



Let's go!



# Student opportunities Cities of Things Lab

The Cities of Things Lab currently has student opportunities available. We like to build on the knowledge of earlier graduation projects. We have opportunities to take these projects as starting point for a new project.



Cities of Things 

Hacking smart object into thing that predict



Cities of Things 

Design of the Mobipunt as a Service



Cities of Things 

Design the on- and off-boarding of autonomous sailing SeaBubbles.



Cities of Things 

Advier  
Design machine supported autonomous docking of SeaBubbles

load more 

## **Borstad broom home smart edition**

*log your cleaning and get tips for best wiping skills*

Has sensors for measuring wiping behaviour, local storage and a bluetooth connection to off-load data to a phone.



## Assignment

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## **Hektar home smart lamp with 3 Tradfri bulbs**

*personalize your lighting plan*

Can change lights with the remote, the app or via learning and improving profiles. The lamp pole has sensors for sound and nearness.



## Assignment

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## **Ribba home smart picture frame**

*all the artwork of the world on one frame*

Has a razor sharp LED-screen and is connected via wifi to be able to show personal or random pictures.



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## **Moppa home smart jug**

*be healthy and optimize your liquid consumption*

Jug has sensors for water quality and temperature, and can share its data with the network and other home smart objects.



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## **Metallisk home smart espresso maker**

*discover how to create the best espresso*

Metallisk has sensors for temperature, pressure and weight and is connected to the home smart network to help you learn to make the ideal espresso.



## Assignment

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## **Borstad home smart laundry basket**

*never too late to wash your dirty laundry*

Basket can sense smell and weight and is connected to the home smart network.



## Assignment

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Format: make an add selling that scenario. No need for explanation text, just a drawing and tagline.

## **Kandrij home smart blinds**

*easy up and down, wake up with sunlight*

Blinds are automated and can be opened and closed with the remote. The blinds are connected to the homesmart network.



## Assignment

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Context: consider the thing as a networked product. The network can create connection inside the home or outside with other things

Format: make an add selling that scenario. No need for explanation text, just a drawing and tagline.

## **Starttid home smart cabin bag**

*easy going logging your vacation memories*

Bag has power wheels to help you in case of heavy load. It has sensors for weight, temperature, sunlight and is connected via bluetooth with your phone.



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## **Ekoln home smart soap dispenser**

*optimize your hand cleaning*

Dispenser measures presses, knows how much soap is in the container, and is connected to the home smart network.



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## **Korpoen home smart barbeque**

*become the master of your bbq*

Barbeque comes with sensors for temperature of the coals and grill. It measures the weight on the grill.

The bbq is connected to the home smart network or via bluetooth with your phone.



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## **Vasen home smart edition**

*the vase that make you connect with your flowers*

Vase senses water temperature and log the air quality around the vase. Connected to the home smart network for export of data.



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## **Frekvens Cajón Drum home smart edition**

*make your own beats and join the party*

Tap the box to create a beat with special sound effects. Mix with music from the cloud via connection to home smart network. Stores your taps and sounds.



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