

# DESIGNING FOR IOT AND CYBER-PHYSICAL SYSTEM





# INTERNET OF THINGS CYBER-PHYSICAL SYSTEM

- What are they?
- IoT: the network (Internet) of things embedded with electronics
- CPS: a system of collaborating computational elements controlling physical entities





THE CHANGE OF PARADIGM

PROGRAMMING/DESIGNING PIXELS ON A SCREEN  
VS.  
PROGRAMMING/DESIGNING FOR THE REAL WORLD



# DESIGN CHALLENGES

COMING SOON

- No predefined design pattern
- Interaction related to user activity
- Computer as embedded system
- Sensors and actuators

• **Impact on individuals: Social issues, privacy, machine's decision, security, laws, ...**

carbon footprint.

Using IOTA, I built a device that measures soil quality and emails me with any changes.

IOTA  
INTERNET OF THINGS ACADEMY  
CONNECT & COLLABORATE IN A NETWORKED WORLD

I helped make and program a device that can be used by farmers around the world to share data on the quality of their soil.



[HTTP://WWW.NABAZTAG.COM/](http://www.nabaztag.com/)

# NABAZTAG





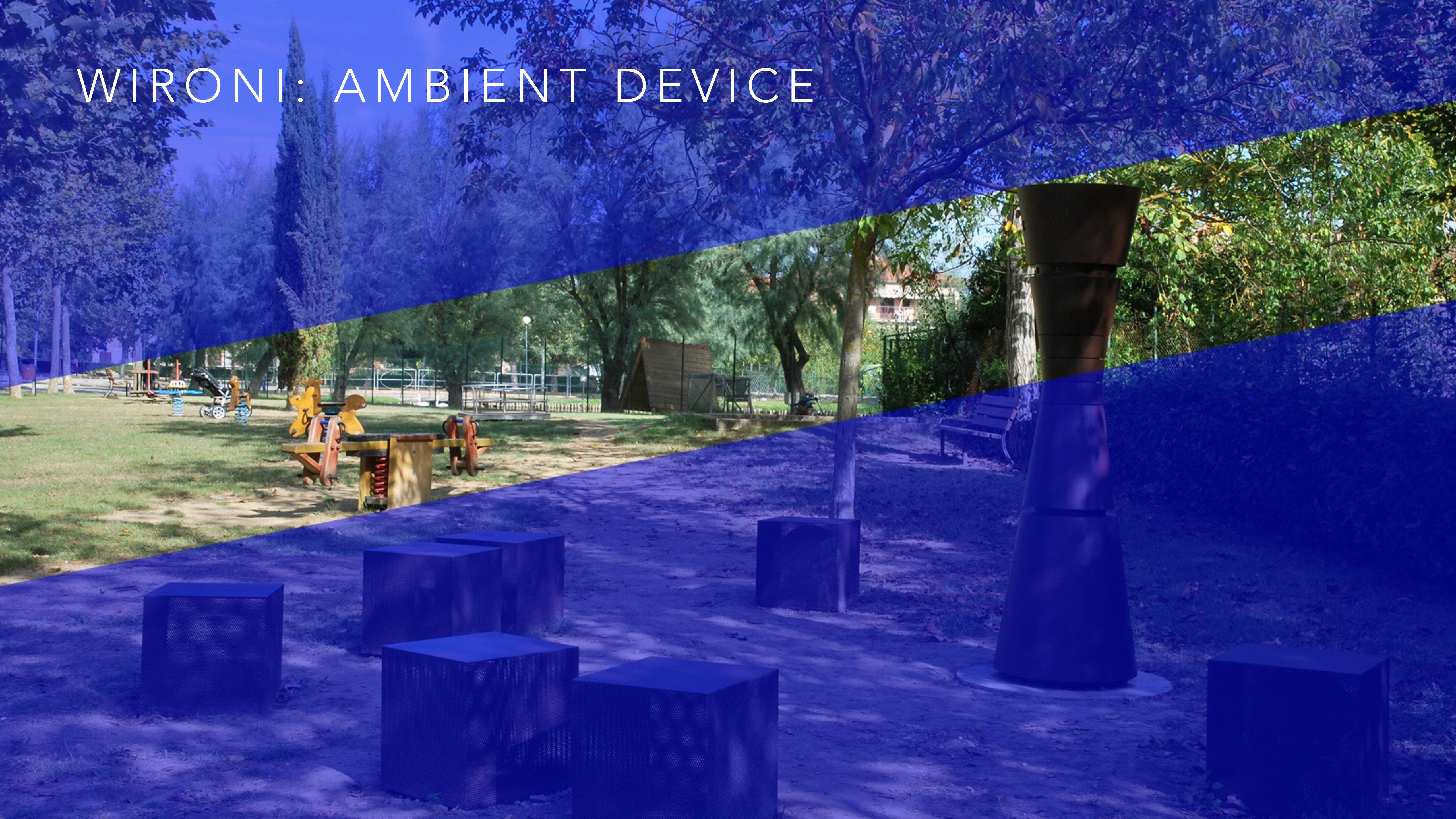
[HTTPS://WWW.CHUMBY.COM/](https://www.chumby.com/)

# CHUMBY





# WIRONI: AMBIENT DEVICE





[HTTPS://WWW.AMAZON.COM/OC/DASH-BUTTON](https://www.amazon.com/oc/dash-button)

# AMAZON DASH BUTTON





[HTTP://WWW.PARROT.COM/USA/PRODUCTS/FLOWER-POWER/](http://www.parrot.com/usa/products/flower-power/)

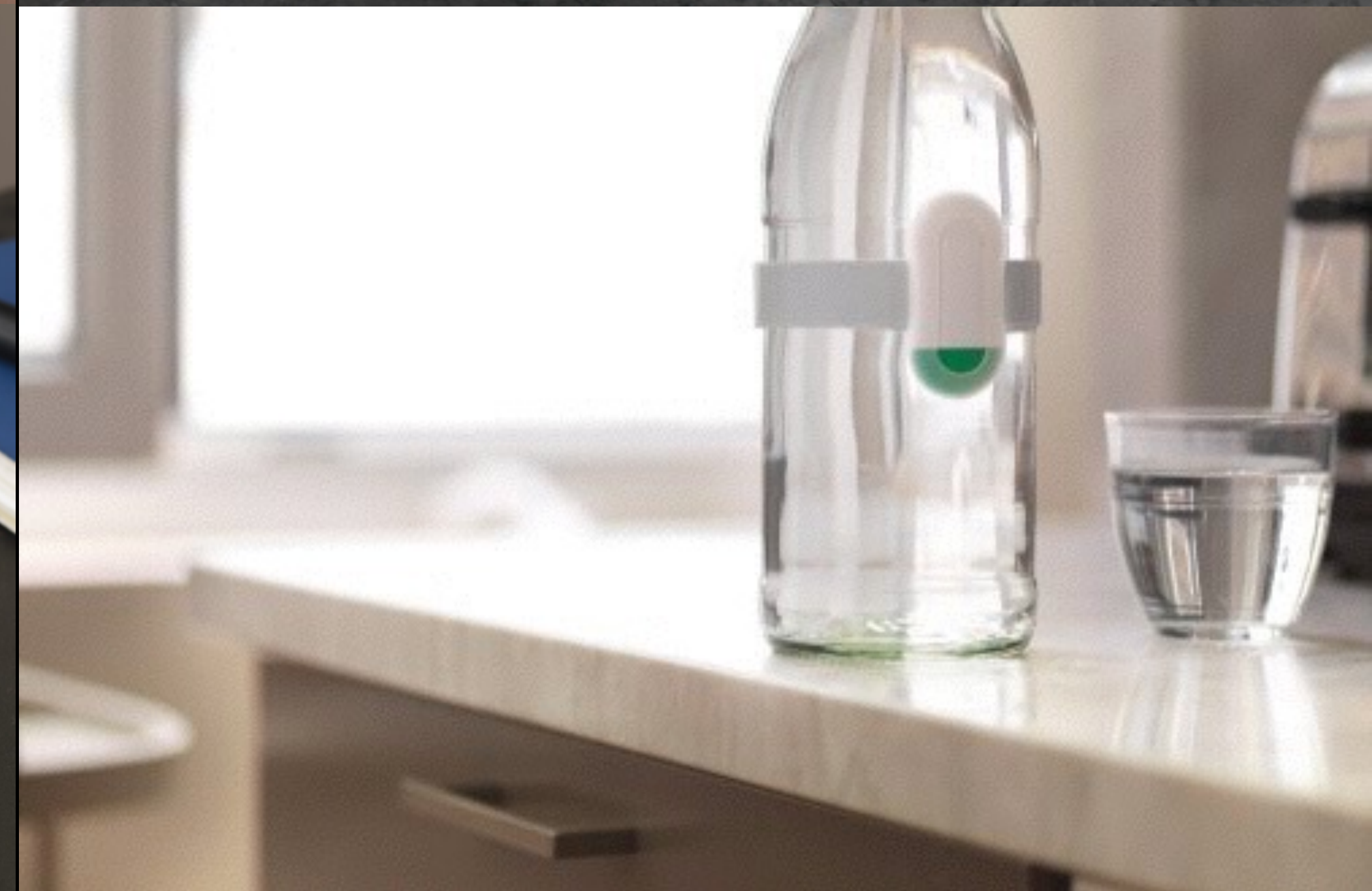
# PARROT FLOWER POWER





[HTTPS://SEN.SE/STORE/MOTHER/](https://sen.se/store/mother/)

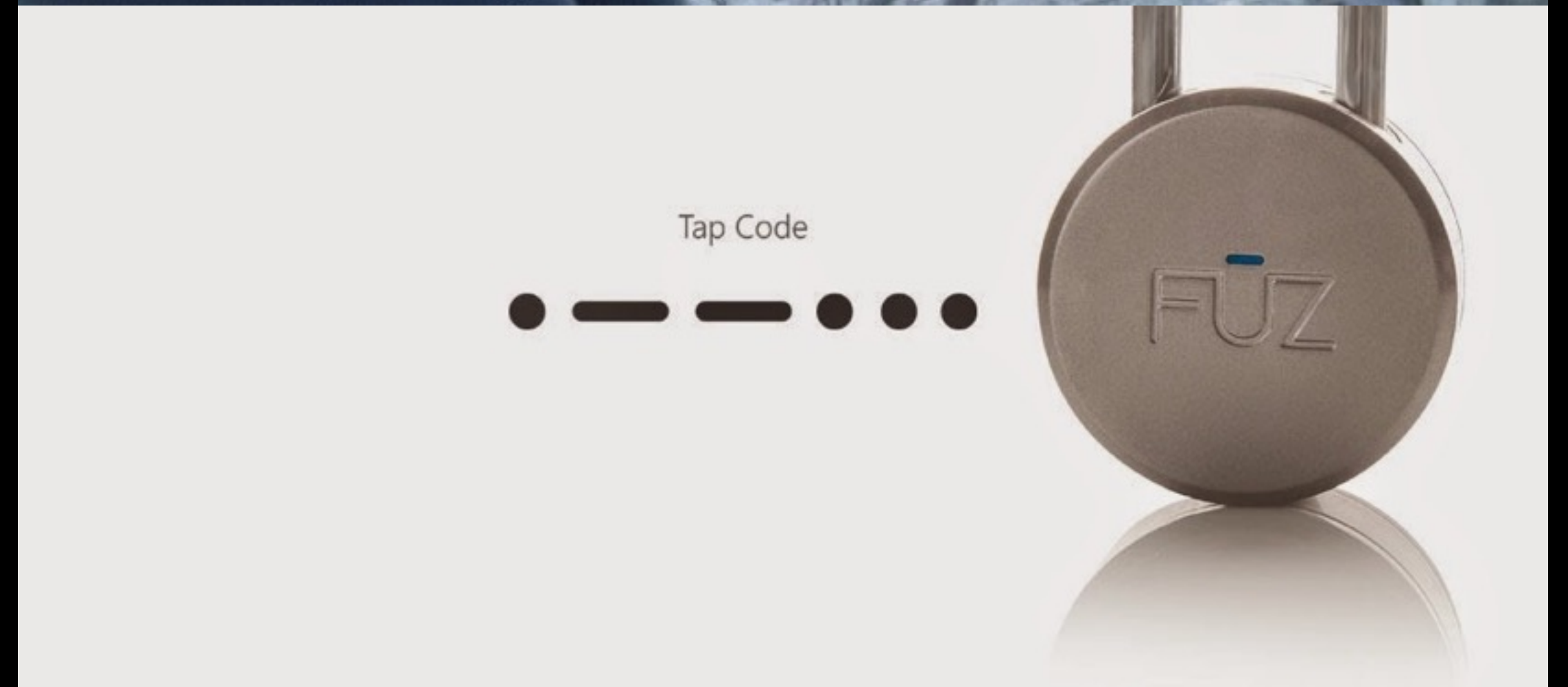
MOTHER





[HTTP://FUZDESIGNS.COM/PAGES/NOKE](http://FUZDESIGNS.COM/PAGES/NOKE)

# SMART LOCKER





[HTTP://WWW.FIZZ.LY/](http://www.fizz.ly/)

# FIZZLY SMART TAG





[HTTPS://NEST.COM/](https://nest.com/)

# NEST: SMART HOME





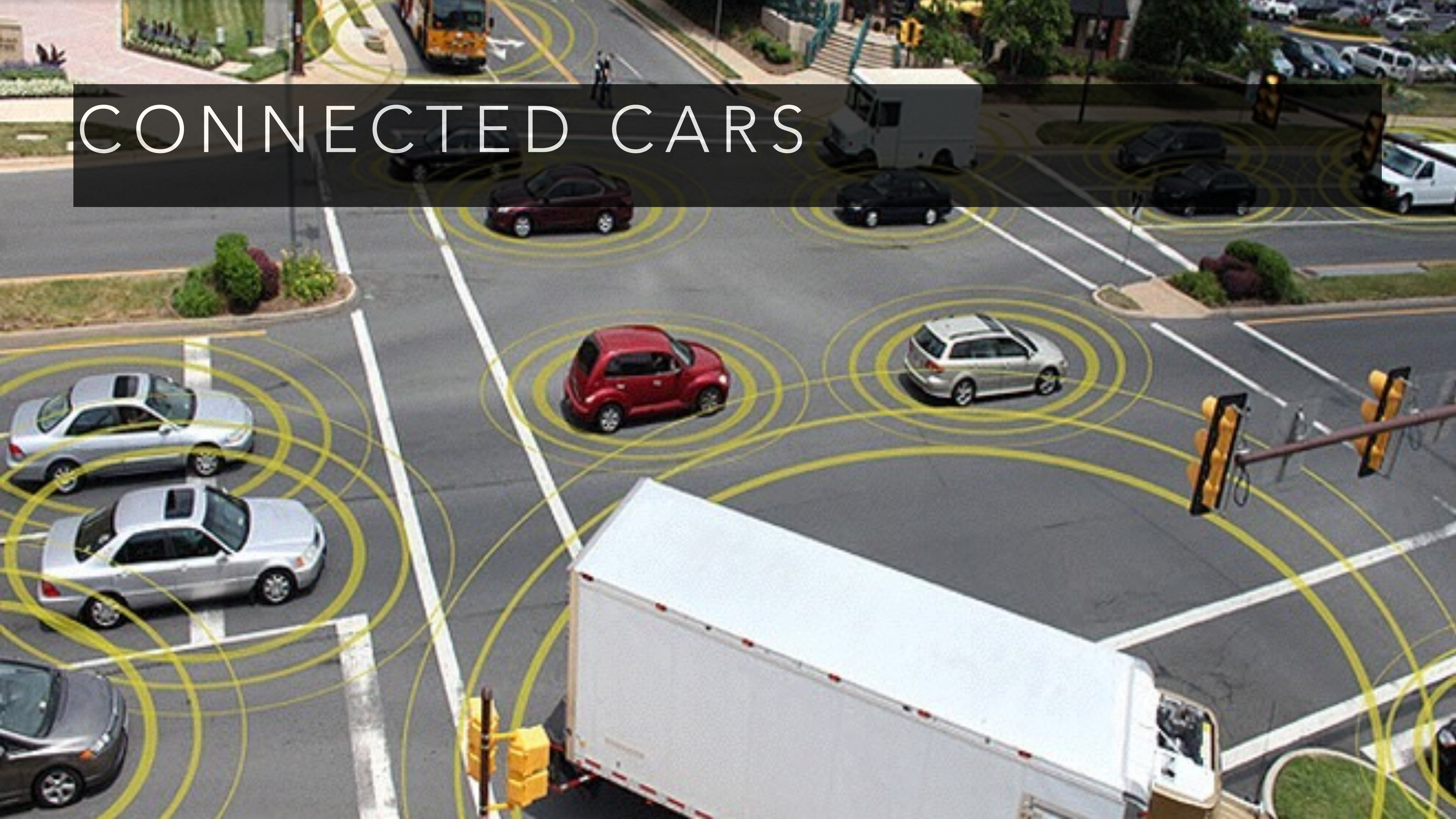
# AMAZON WAREHOUSE MANAGEMENT SYSTEM

**KIVA PICKING**





# CONNECTED CARS





# SELF DRIVING CARS



"Automatic Cars Or Distracted Drivers: We Need Automation Sooner, Not Later" Don Norman

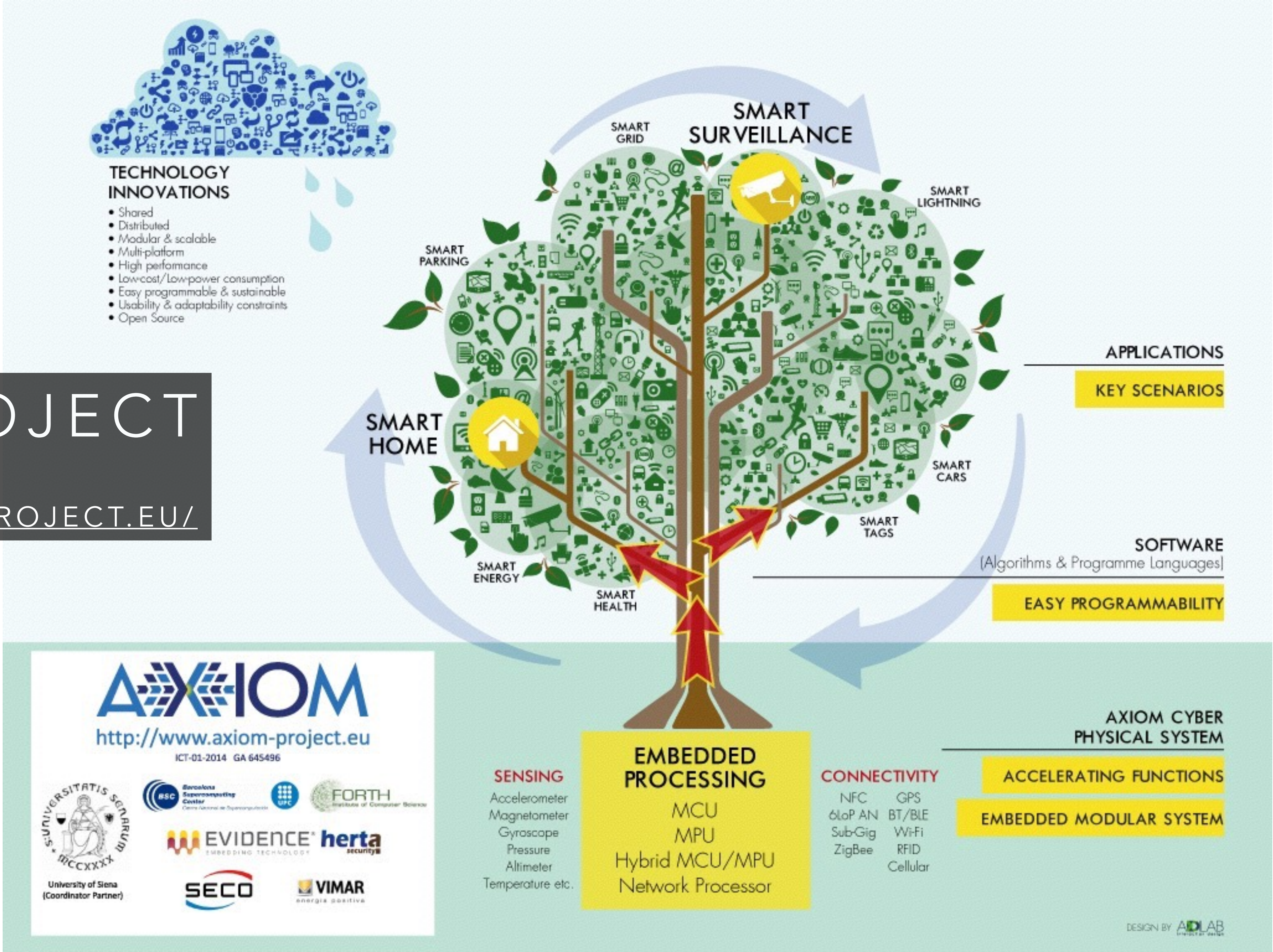
<https://www.linkedin.com/pulse/automatic-cars-distracted-drivers-we-need-automation-sooner-norman>



# AXIOM PROJECT

@AXIOM\_PROJECT  
[HTTP://WWW.AXIOM-PROJECT.EU/](http://www.axiom-project.eu/)

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 645496.





ARE YOU INTERESTED TO DESIGN  
SOMETHING RELATED TO IOT/CPS?



# IT'S MORE COMPLEX THAN DEVELOP AN APP:

- Mechanical design
- Electronic design
- Firmware developing
- Software design
- Software development
- Production
- Certification
- Commercialization and Delivery
- Customer care



# CREATING A PROTOTYPE



- Open Community: Arduino, Raspberry Pi, UD00,...
- Open Source Hardware for electronic developing: UD00 Neo
- 3D Printing
- Simple programming





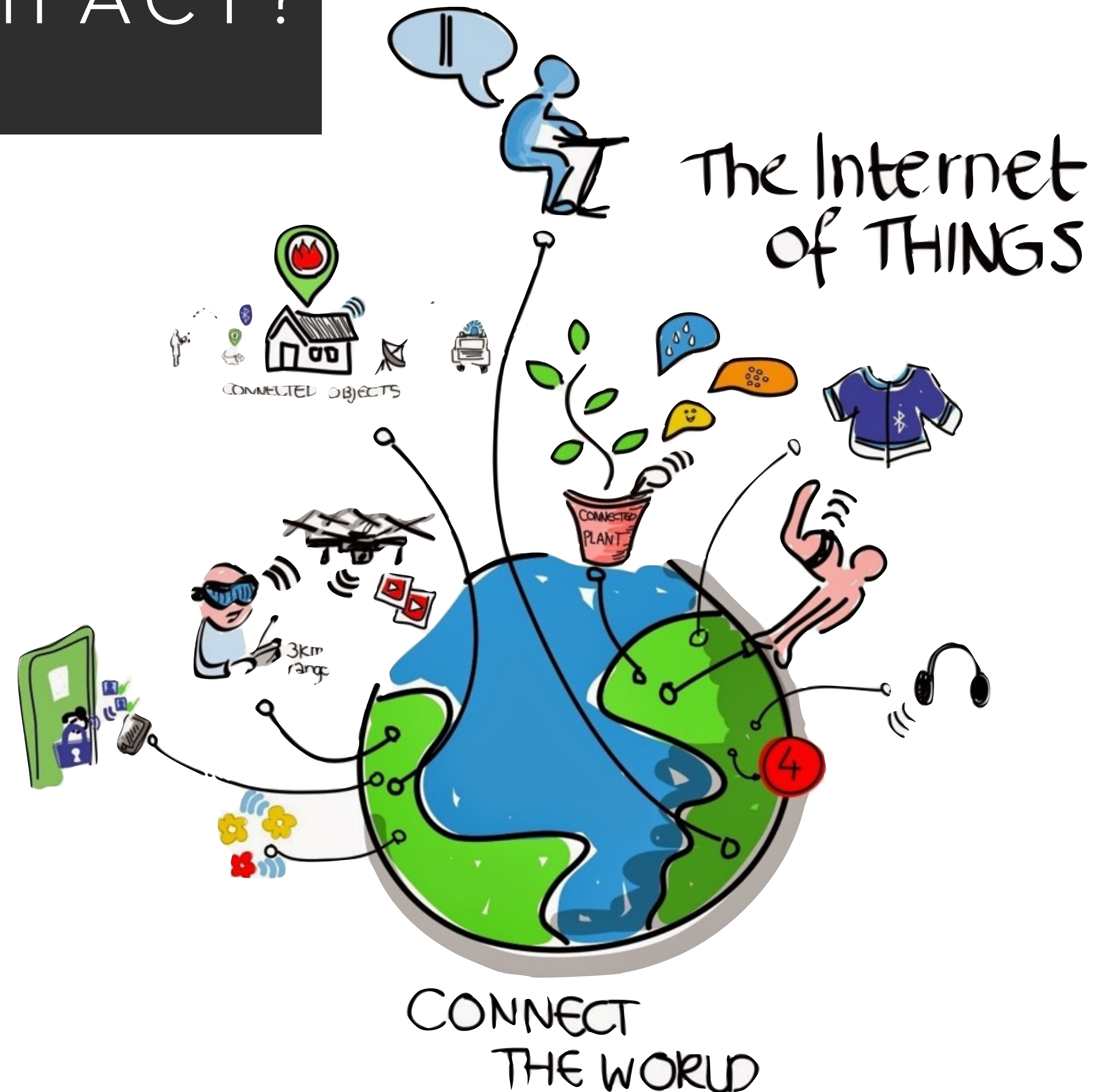
# CROWDFUNDING

- Investor
- Platform
- Startup Company
- Microcredit



# WHAT IS THE SOCIAL IMPACT?

- The impact it can create in each of our lives





Thanks!

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