

SMARTCAT CHALLENGE

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**CONNECTIVITAT BLUETOOTH**



# HOLA!



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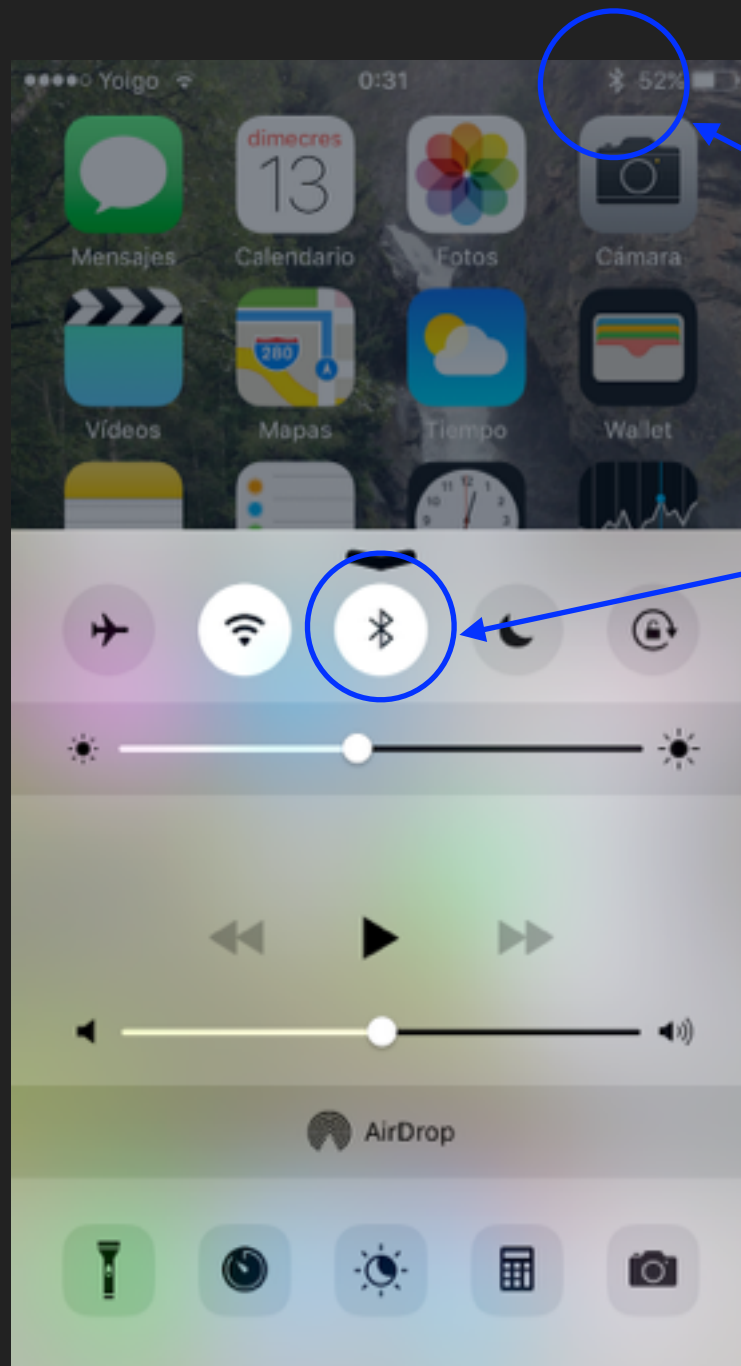
<https://github.com/cmorell>

## ÍNDEX

- ▶ Què és el Bluetooth?
- ▶ Exemples d'ús en el dia a dia
- ▶ Com funciona?
- ▶ Com configurem?
- ▶ Codi
- ▶ Demo



## QUÈ ÉS EL BLUETOOTH?



És això?

## QUÈ ÉS EL BLUETOOTH?

- ▶ Tecnologia sense fils destinada a la comunicació entre dispositius que estiguin a prop
- ▶ Hi ha dos tipus de Bluetooth
  - ▶ Classic
  - ▶ BLE

## QUÈ ÉS EL BLUETOOTH?

- ▶ Hi ha diferents tipus de dispositius:
  - ▶ Bluetooth classic
  - ▶ Bluetooth Low Energy
  - ▶ Smart Ready (els dos, com els smartphones)

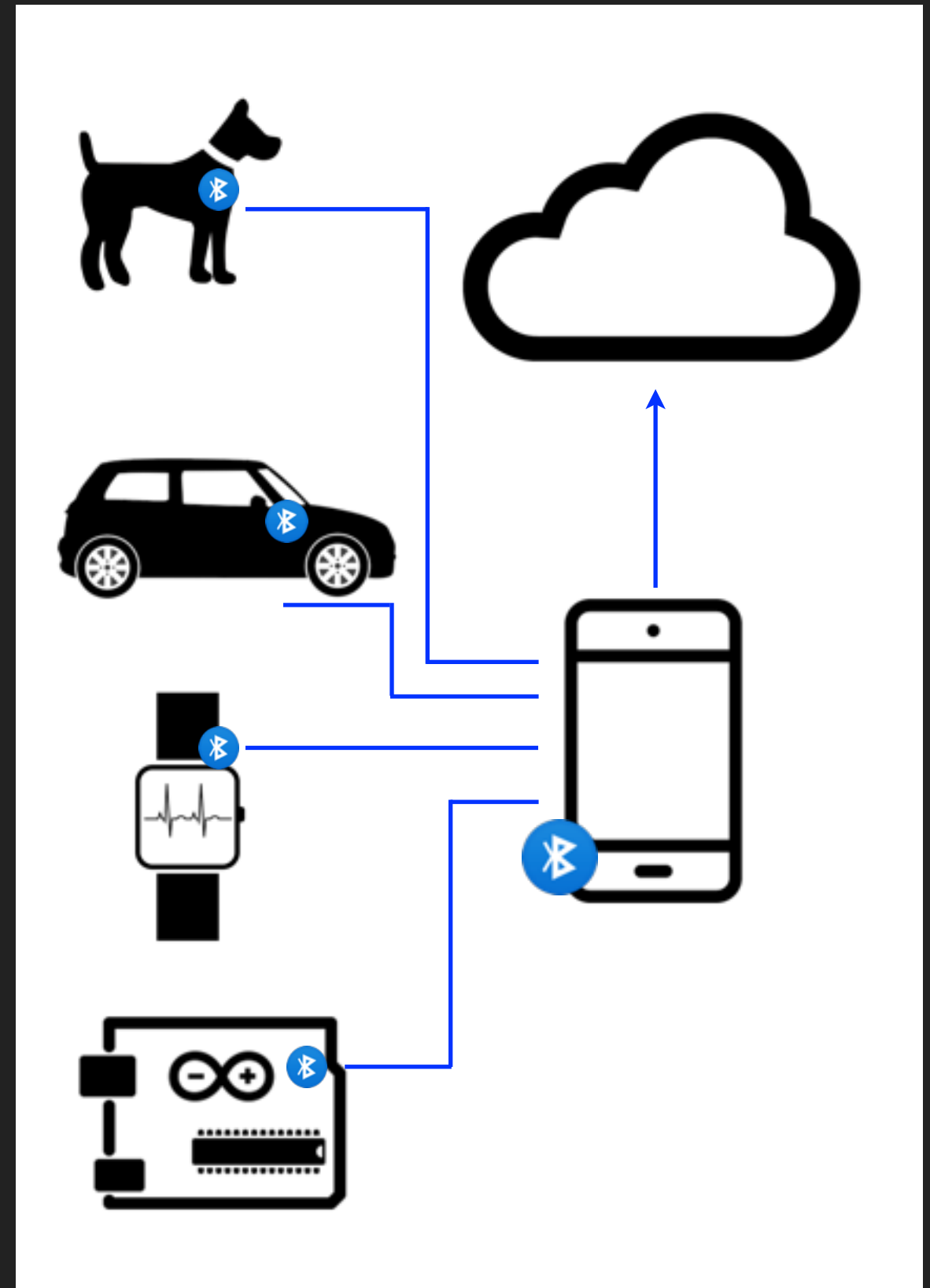


### QUÈ ÉS EL BLUETOOTH?

	BLE	Classic
Throughput	0.2 Mbps	2-3Mbps
Range	10 - 30 m	50 - 300m
Power consumption	0.01 to 0.05w	1 w
Connection set-up speed	Strong	Weak

## EXEMPLES D'ÚS DEL DIA A DIA

- ▶ Automotive
- ▶ Home automation
- ▶ Medical & Health
- ▶ Sports
- ▶ Security
- ▶ etc.



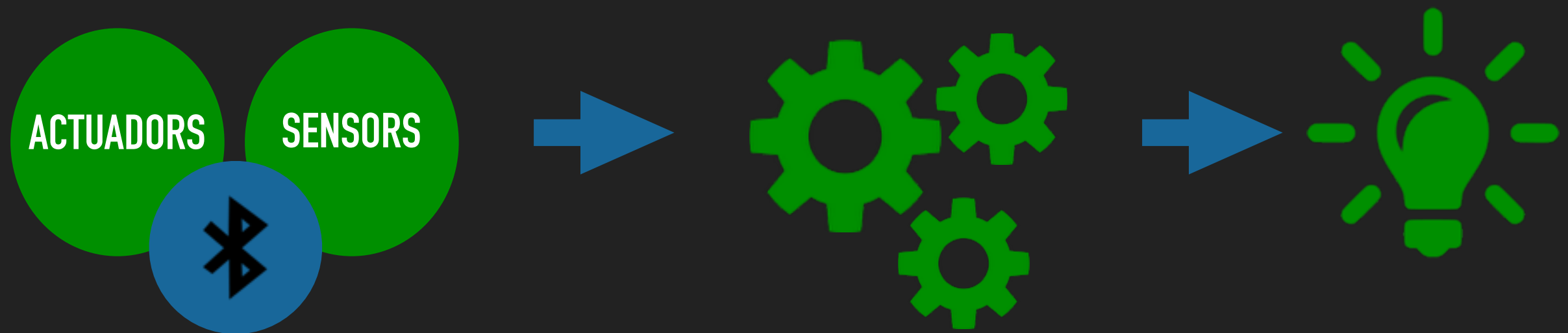


## EXEMPLE D'US - AUTOMOTIVE

- ▶ Mans lliures
- ▶ Escoltar música del mòbil a la radio del vehicle
- ▶ Monitoratge i diagnosis



## EXEMPLE D'US - HOME AUTOMATION



## EXEMPLE D'ÚS - HEALTHCARE

- ▶ OralB, SDK
- ▶ Heart rate
- ▶ Sensors
- ▶ etc



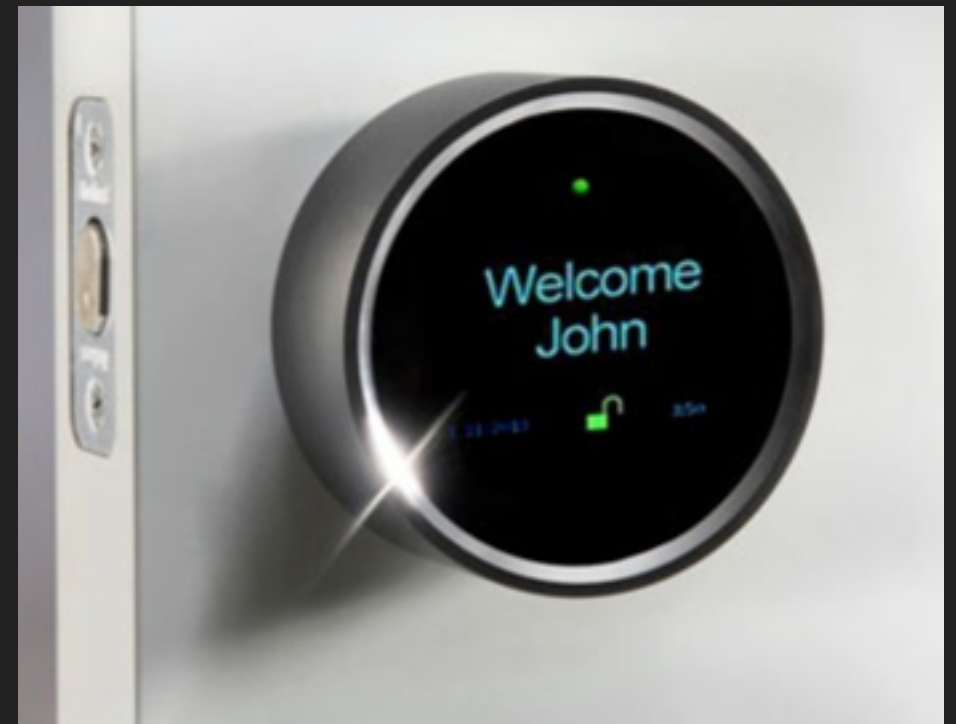
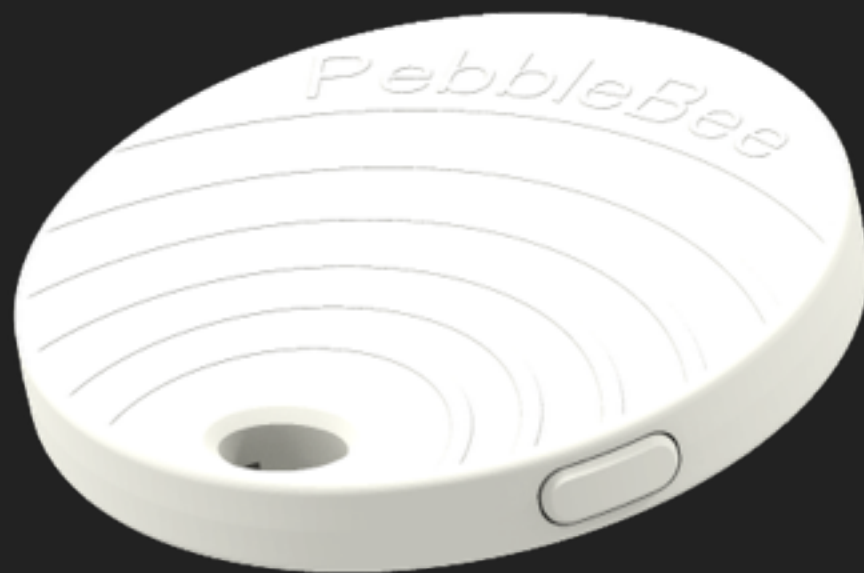
### EXEMPLE D'ÚS - SPORTS

- ▶ SmartWatches
- ▶ Wearables
- ▶ Sports Sensors



### EXEMPLE D'ÚS - SECURITY

- ▶ Obrir portes
- ▶ Detecció d'elements pròxims

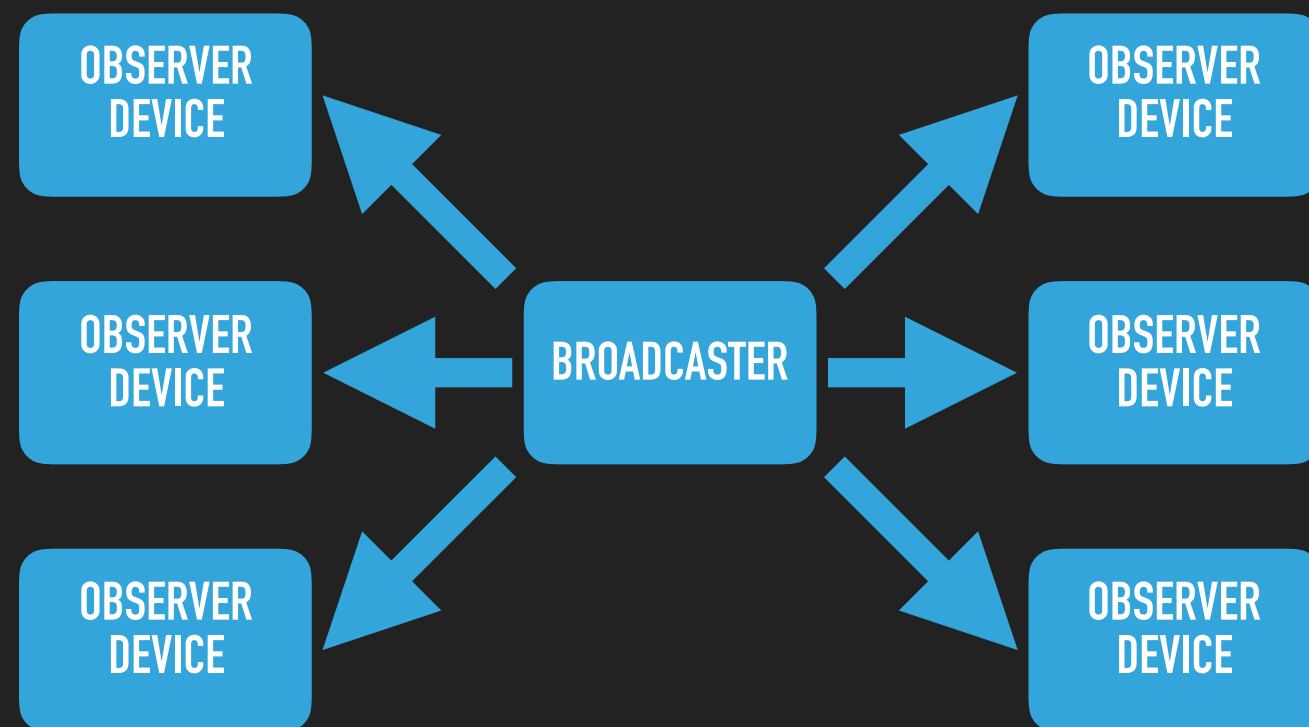


### COM FUNCIONA?

- ▶ Hi ha dues maneres de comunicar-se
  - ▶ Sense connexió (Broadcasting and Observing)
  - ▶ Amb connexió (Central and Peripheral)

# BROADCASTING AND OBSERVING

- ▶ Sense connexió, unidireccional, 1 a molts (Broadcaster to observer(s))

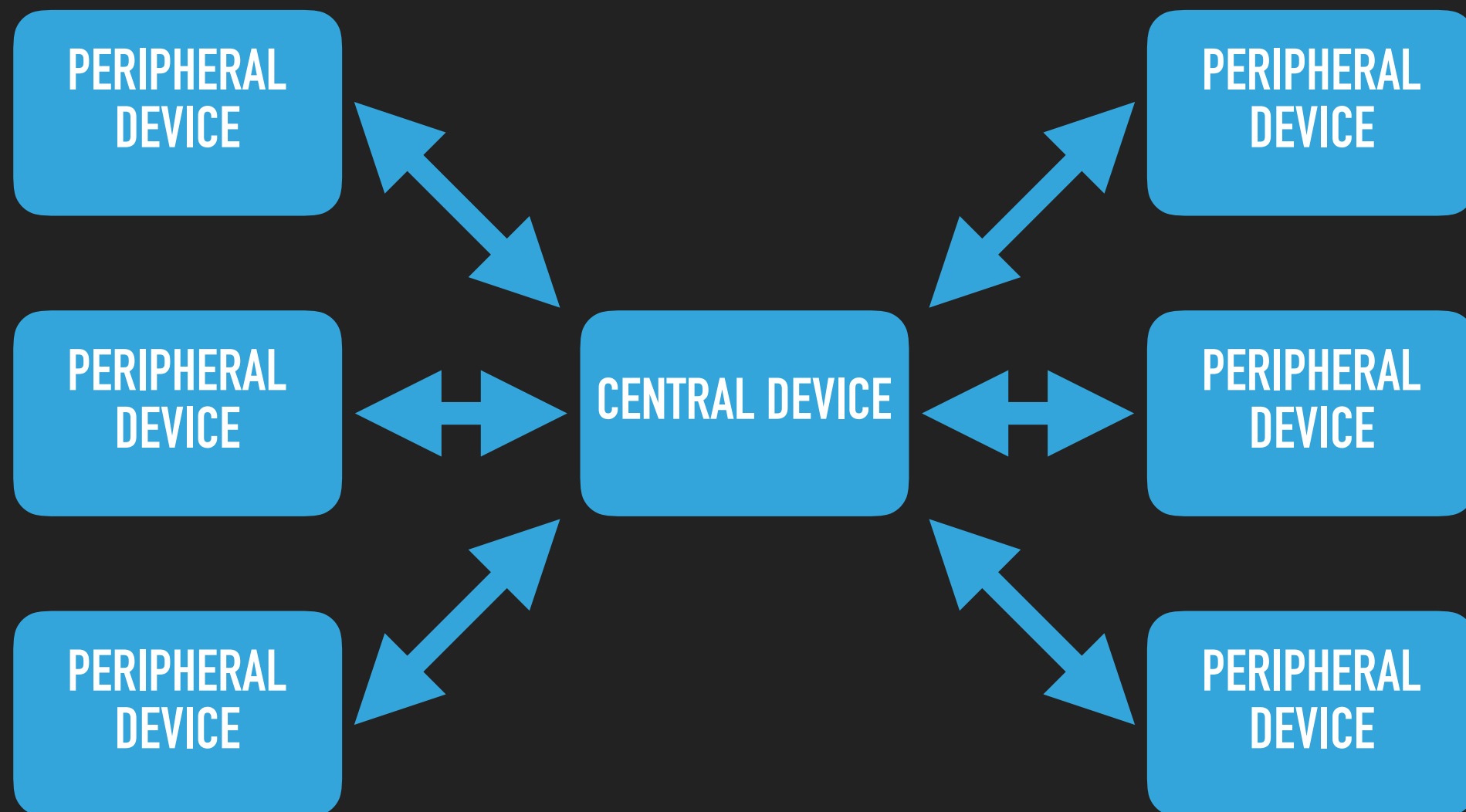


- ▶ Broadcaster: Envia  
advertisaments de forma  
periódica
- ▶ Osbserver: Rep els  
advertisaments



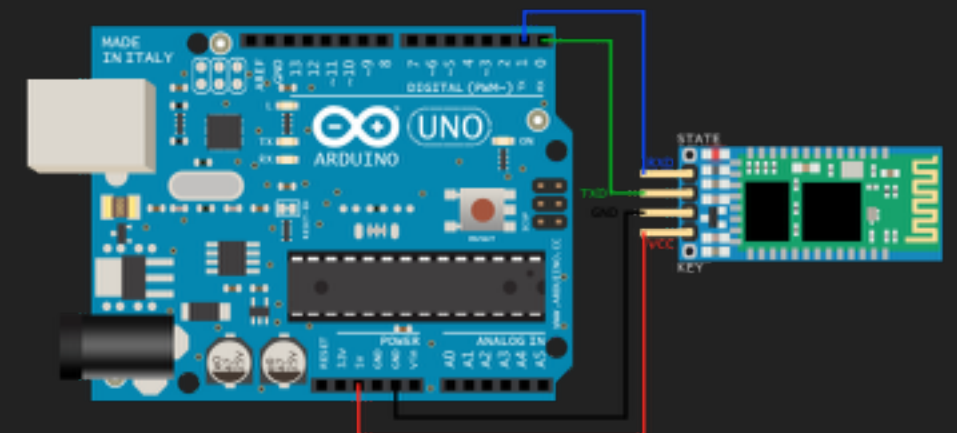
# CONNECTIONS

### ► Directa i bidireccional

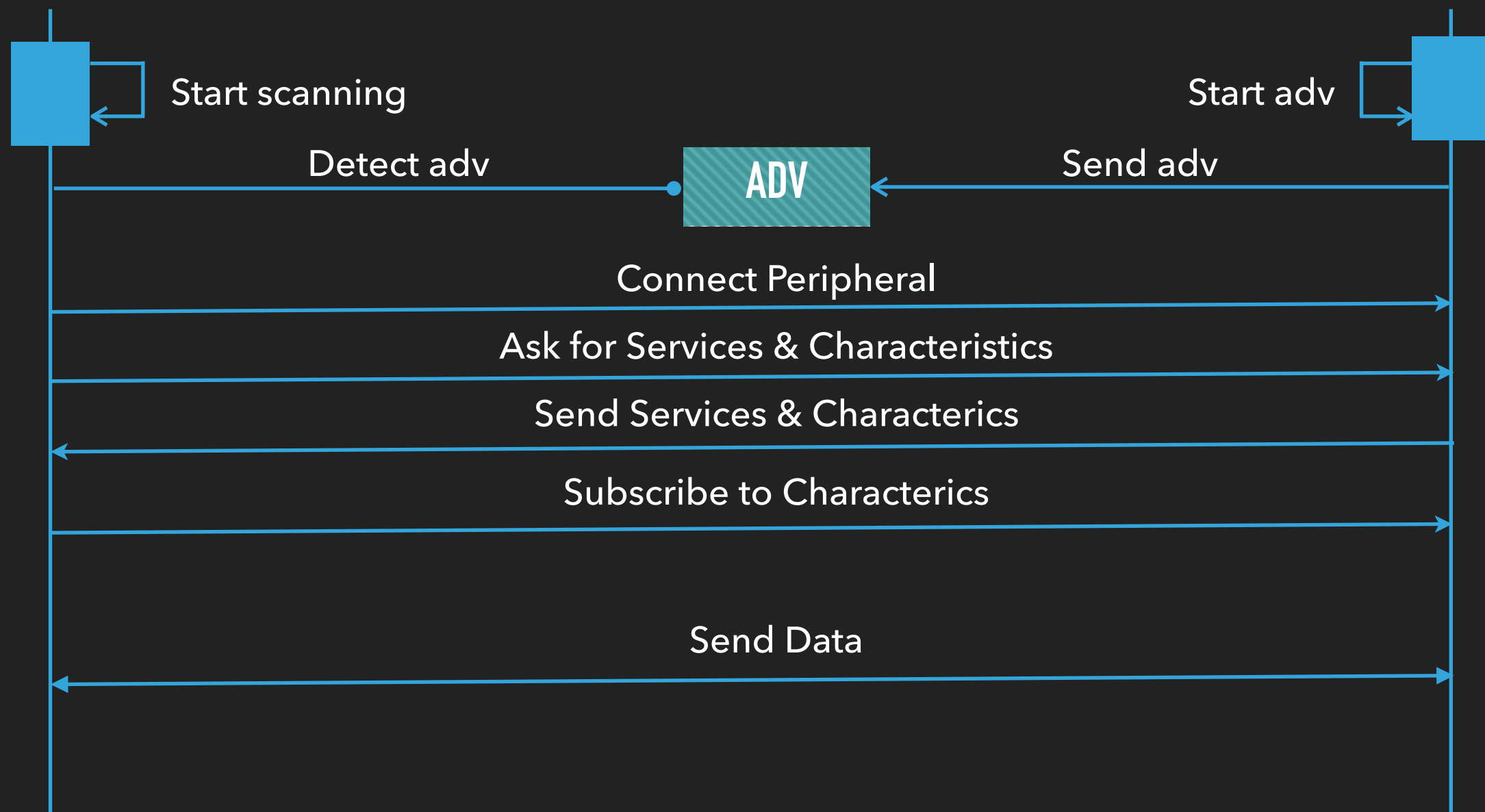
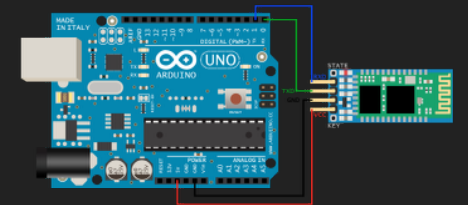


# CONNECTIONS-ROLES IN COMMUNICATION

- ▶ Central
  - ▶ Buscant perifèrics per connectar-se i l'encarregat de gestionar la connexió
- ▶ Perifèric
  - ▶ Enviant advertiments de forma periòdica i acceptant les connexions d'entrada.



# CONNECTIONS - COM ENS COMUNIQUEM AMB ELS PERIFÈRICS?



# HOW CONFIGURE?

### ▶ Central

- ▶ Setting up BLE
- ▶ Discover and connect to peripheral devices
- ▶ Explore peripheral
- ▶ Subscribe to the characteristics to get/send data

### ▶ Peripheral

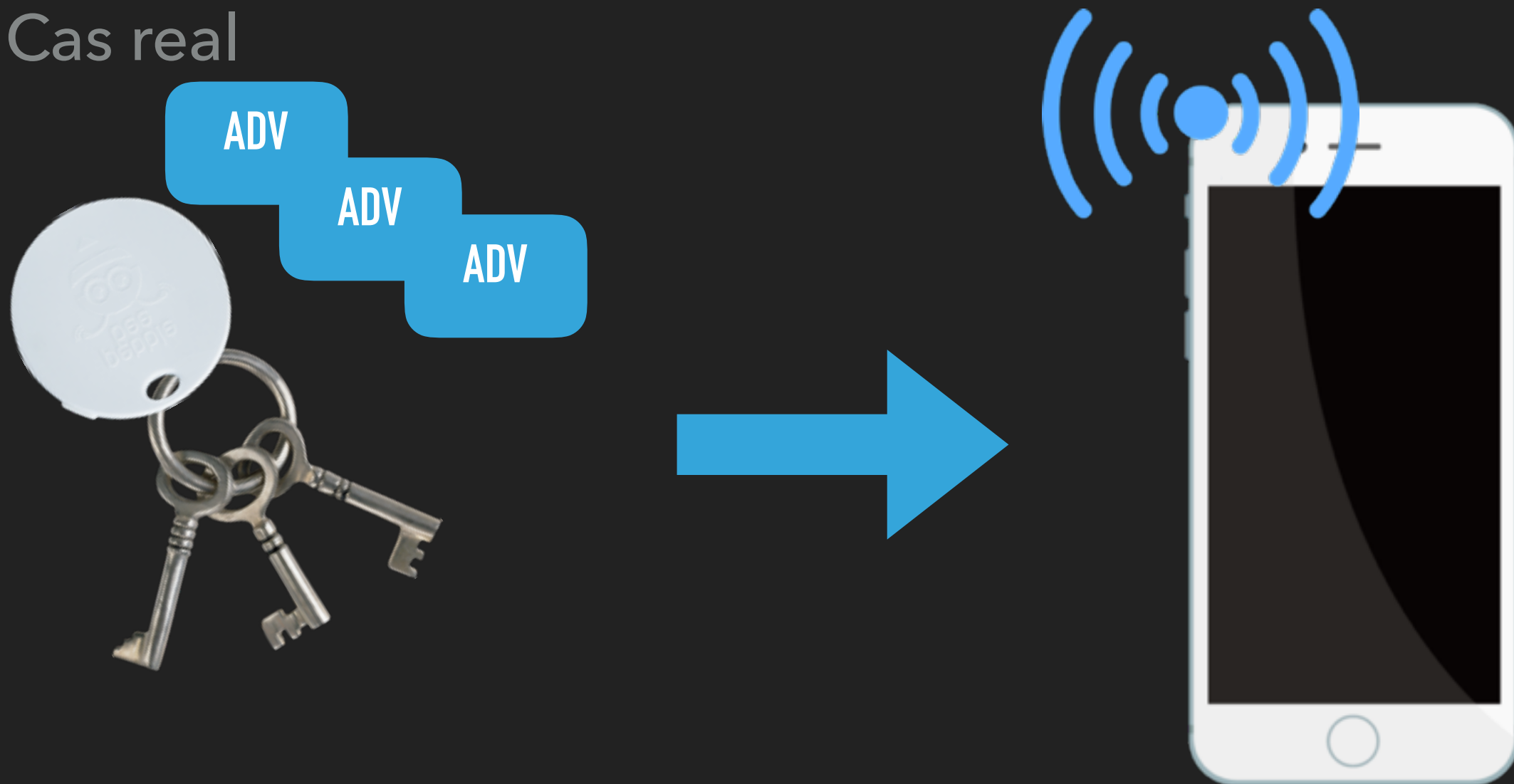
- ▶ Setting up BLE
- ▶ Set up services and characteristics on your local peripheral BLE Device
- ▶ Advertise your services
- ▶ Respond to read and write requests from a connected central
- ▶ Send updated characteristic values to subscribed centrals

# VIDEO DEMO



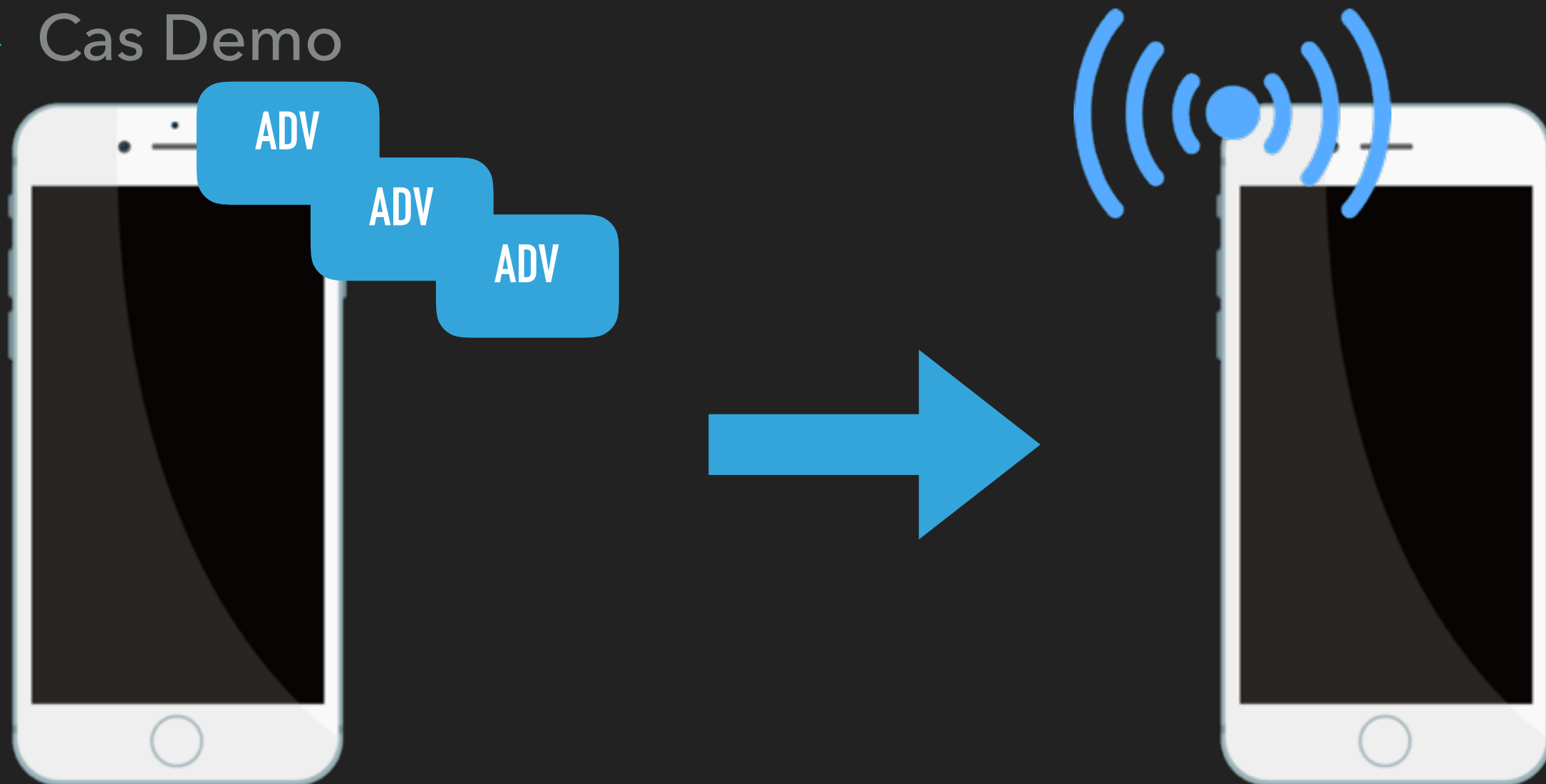
## VIDEO DEMO – BROADCASTING OBSERVER CASE

► Cas real

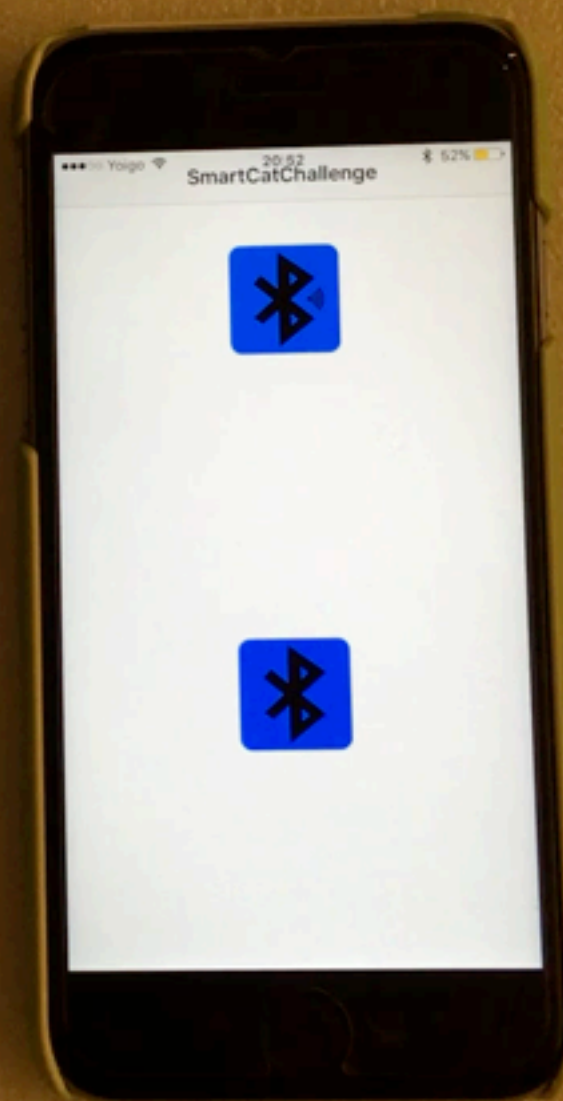
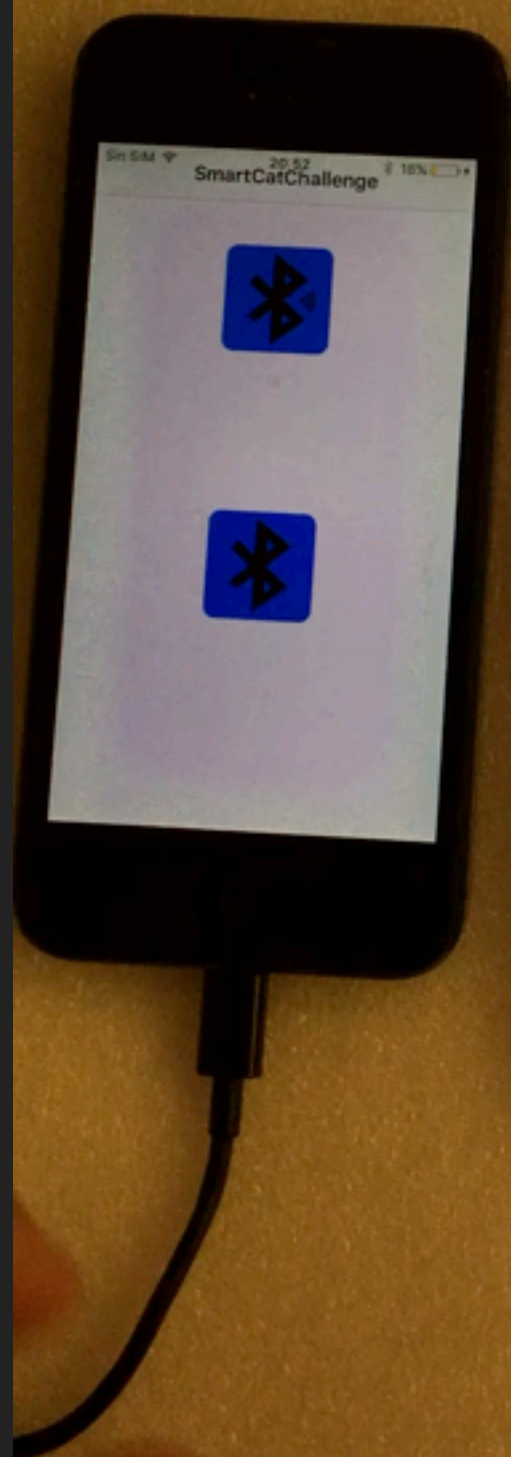


## VIDEO DEMO – BROADCASTING OBSERVER CASE

### ► Cas Demo

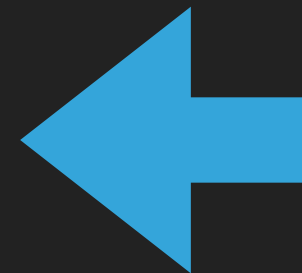
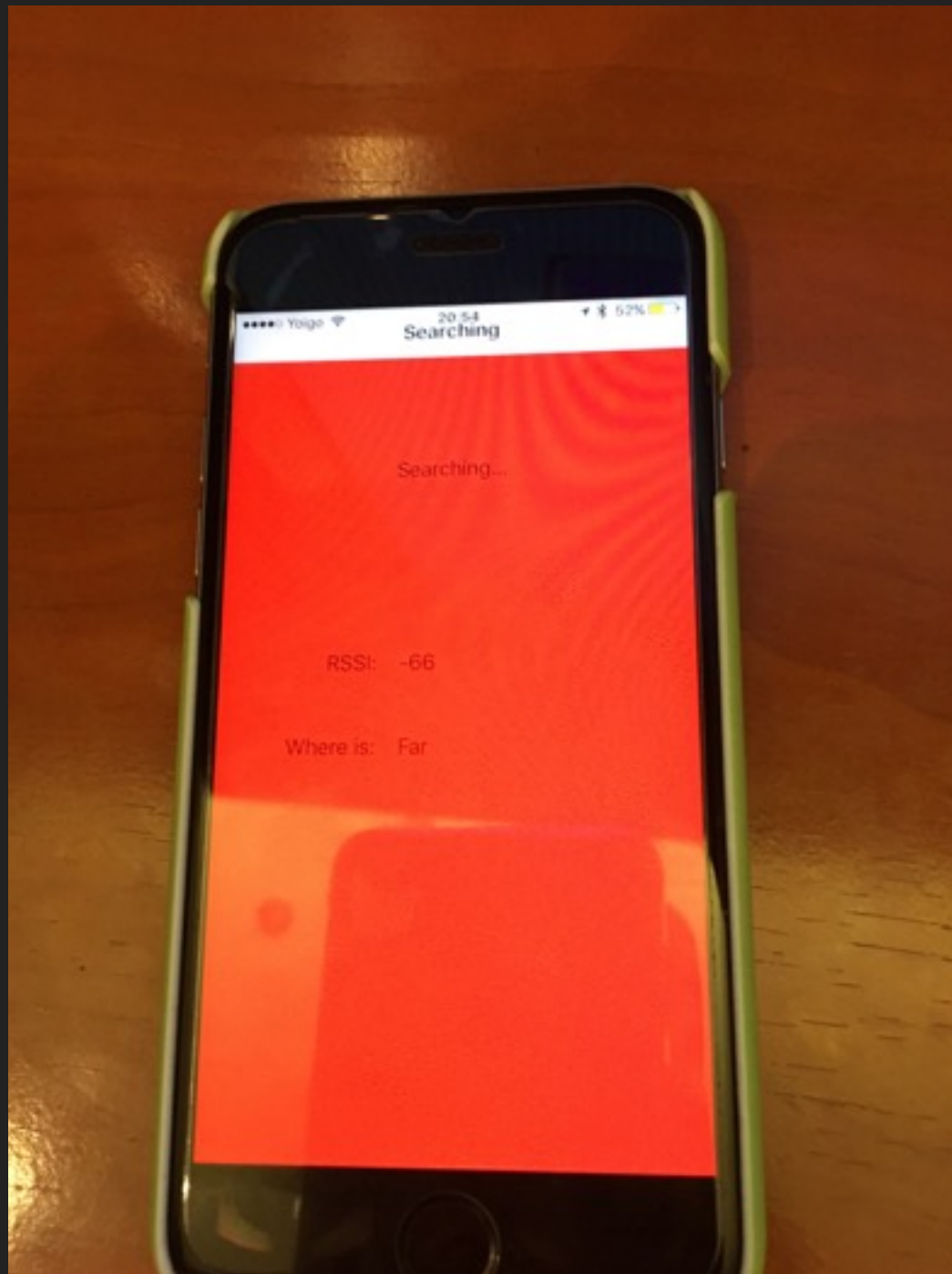






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No hi ha trampes!  
Lluny també exsiteix!

**GRÀCIES!**

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