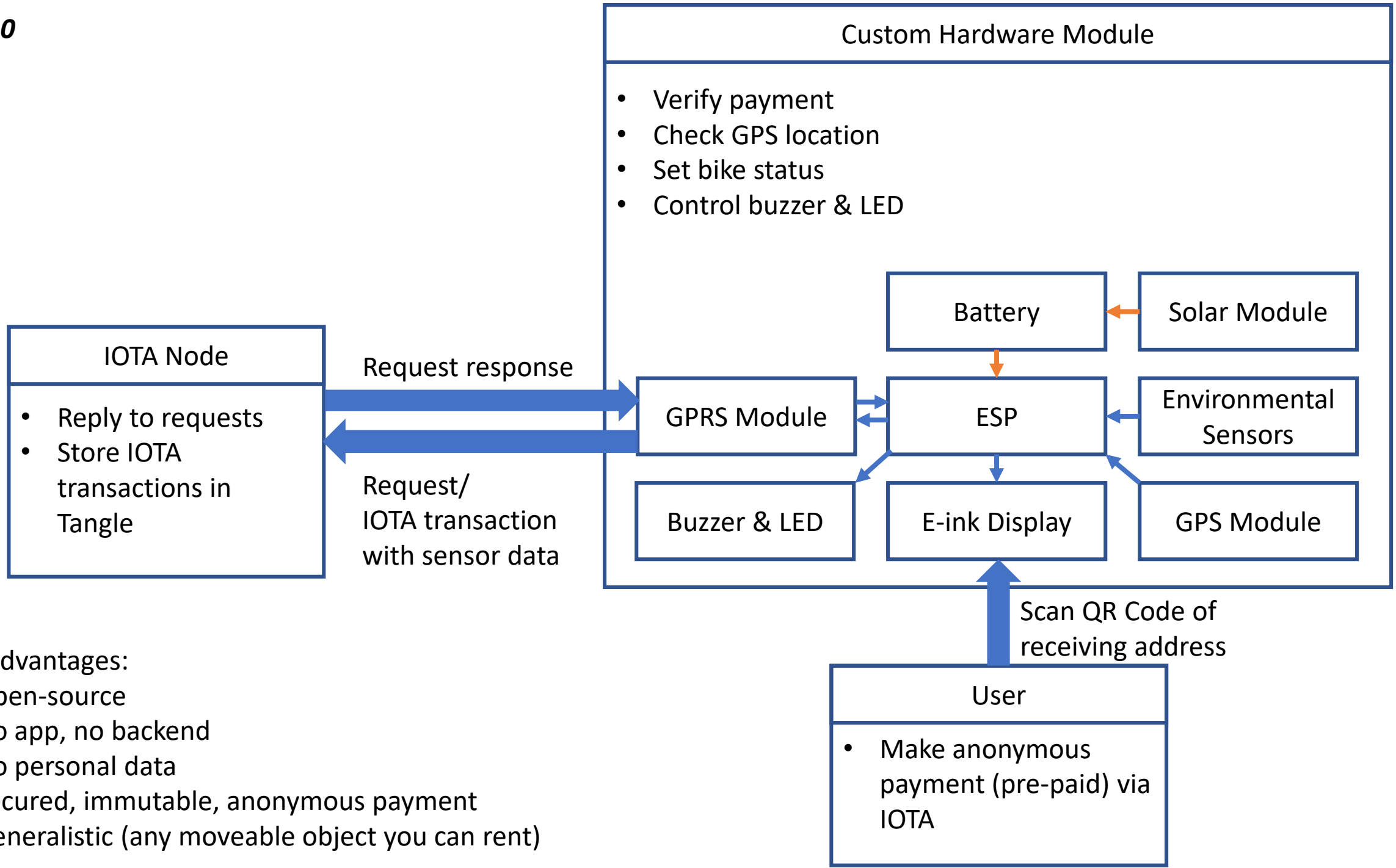
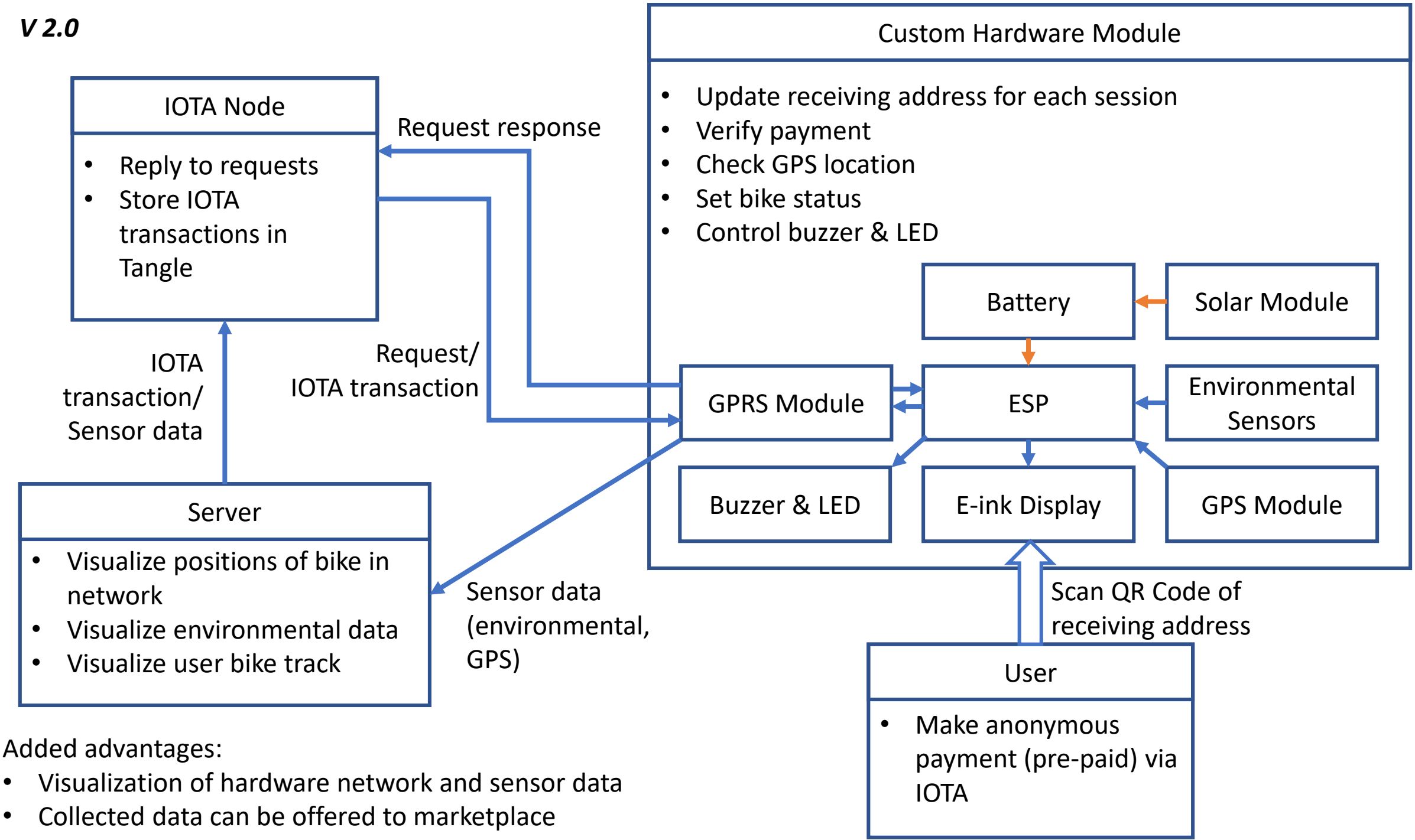
V 1.0



Key advantages:

- Open-source
- No app, no backend
- No personal data
- Secured, immutable, anonymous payment
- Generalistic (any moveable object you can rent)

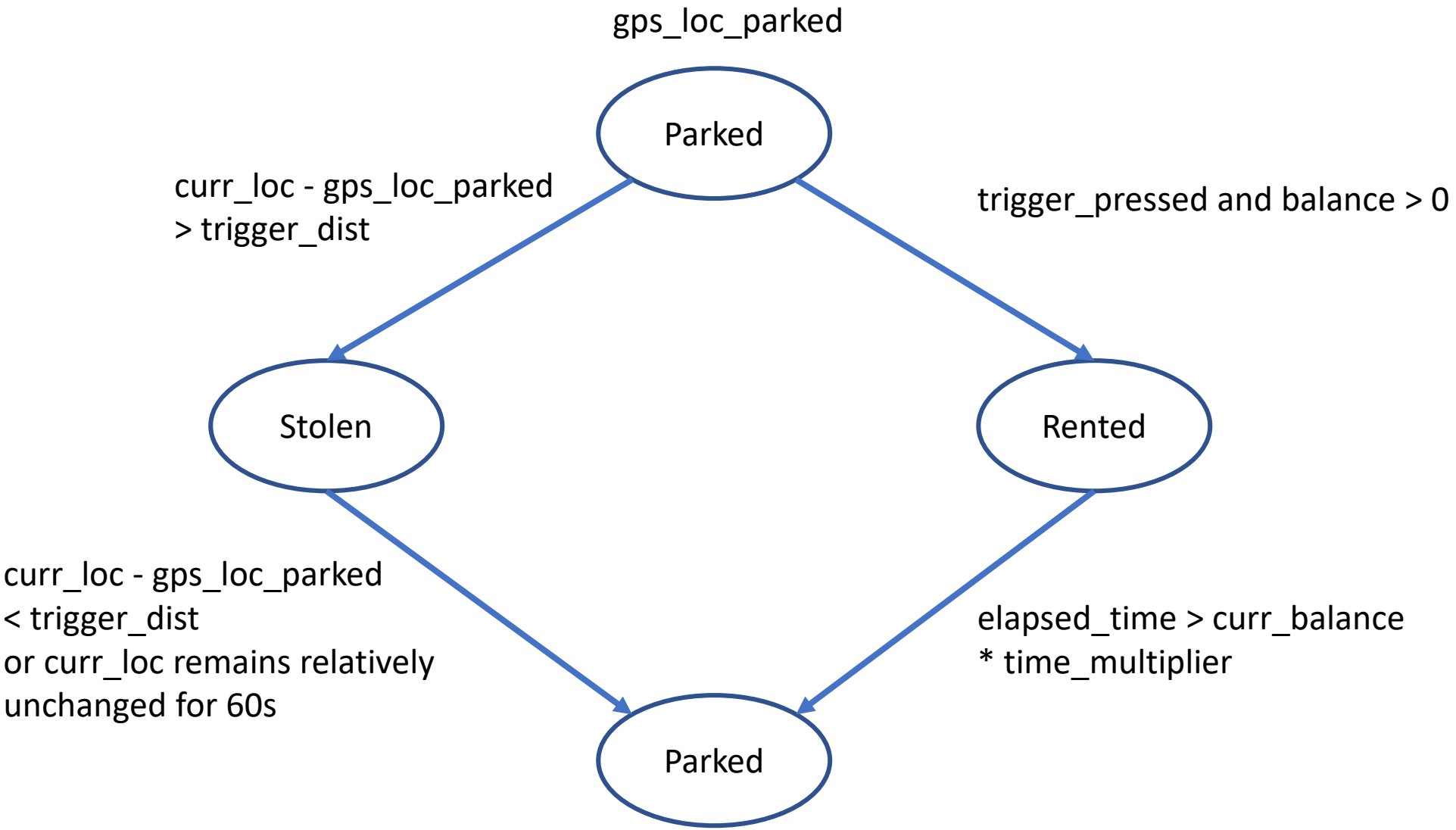
V 2.0



Added advantages:

- Visualization of hardware network and sensor data
- Collected data can be offered to marketplace

State diagram of hardware module



"Parked" loop

- Check if trigger button is pressed
  - If true: get_balance()

Loop 10 times

- Go to sleep
- Wake up every 60 seconds
- Take sensor data
- check_if_stolen()
  - If true: get start_loc, get start_time, break loop

- Send to server all data

get_balance()

Loop 10 times

- Get account balance B
  - If B = 0: delay 10s
  - If B > 0: status = rented, break loop

check_if_stolen()

curr_loc – gps_loc_parked > trigger_dist

- If true: status = stolen,
- If false: status = parked

"Rented" loop

- Collect sensor data & send to server
- Check balance for top-ups
- Check if session expires
  - If true: status = parked, update receiving address, break loop

"Stolen" loop

- check_if_stolen()
  - If false: break loop
  - If true:
    - loc_avg = (start_loc + curr_loc)/2,
    - If time > 60 seconds:
      - If (loc_avg – start_loc) < trigger_dist:
        status = parked,
        gps_loc_parked = loc_avg,
        break loop

Database

HARDWARE	
*hardwareID	*integer*
session_address	*text*

SENSOR_DATA	
*index	*bigserial*
address	*text*
latitude	*real*
longitude	*real*
temperature	*real*
humidity	*real*
timestamp	*timestamp with timezone*

JSON Data of PUT request to update session address

```
{
        "hardwareID": 1; #Bike ID
        "address": "ABC…999"; #Session address
}
```

JSON Data of POST request to insert sensor data

```
{
        "hardwareID": 1; #Bike ID
        "data": [52.5157, 5.8992, 23.57, 40.5]; #Data: latitude, longitude,
        temperature, humidity
}
```