# SECTOR – IoT deployment for Smart Cities

GOALS

Create all-in-one, adaptive IoT weather web-portal where:

- *Visualizing real-time IoT measured Urban Heat Island (heatmap) is done*
- *Automatic number and location of new sensors can be displayed, for selected city-zone*
- *More environment parameters can be added-on (rainfall, air-quality)*

CHALLENGES

While rainfall can be accurately measured with a single instrument, like X-band radar, **other weather-parameters like temperature can not.**

Challenge is to use IoT-sensors for temperature in cities:

- Visualize Urban Heat Island using IoT sensor SmartSantander testbed

- Create automatic function for spatial planning of new sensors that need to be deployed

- Design and develop front-end that will be used for these toos and be user-friendly

DEMO SETUP

Workflow diagram of data from SmartSantander API into the adaptive weather web-app, with the planner.
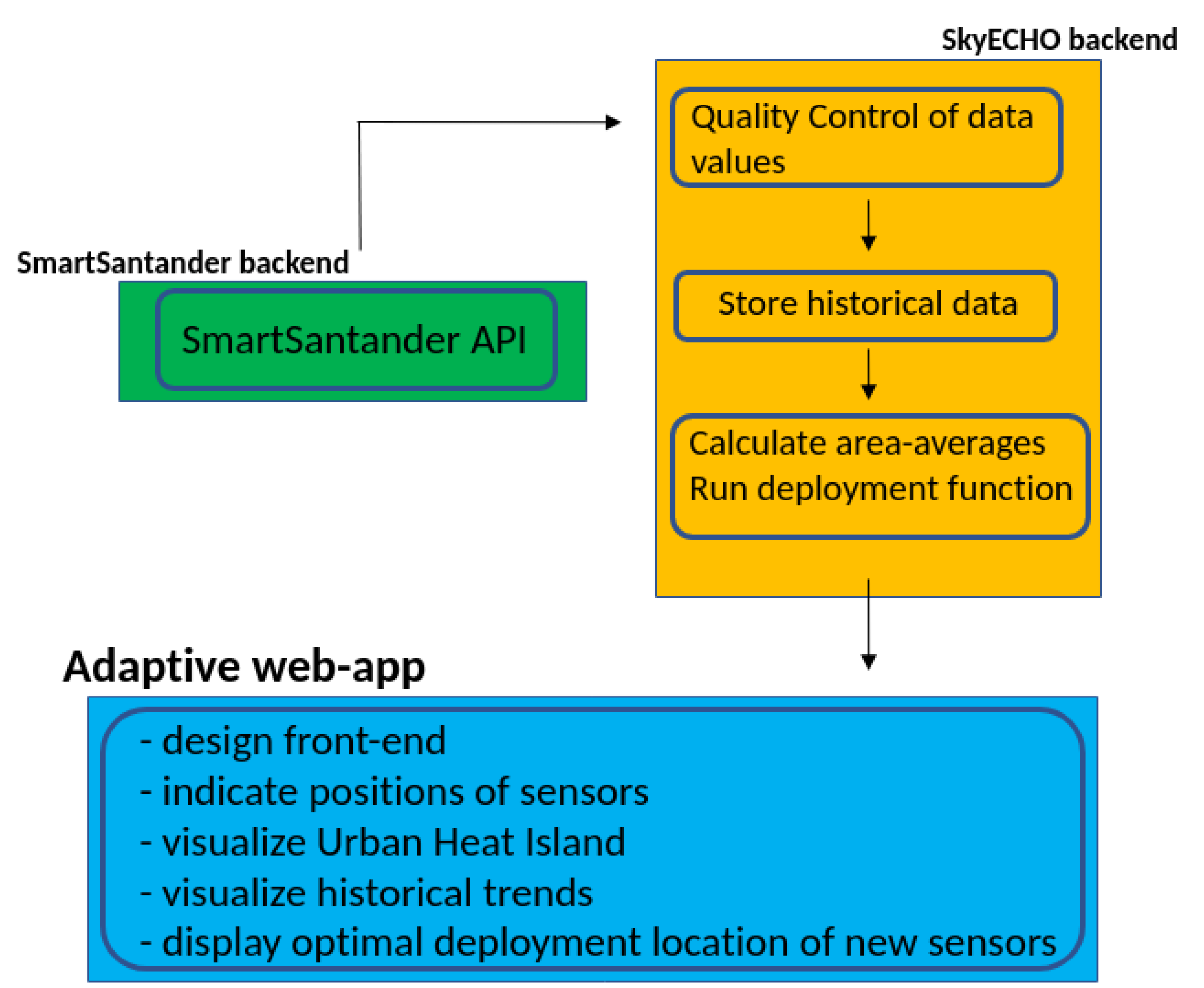
RESULTS
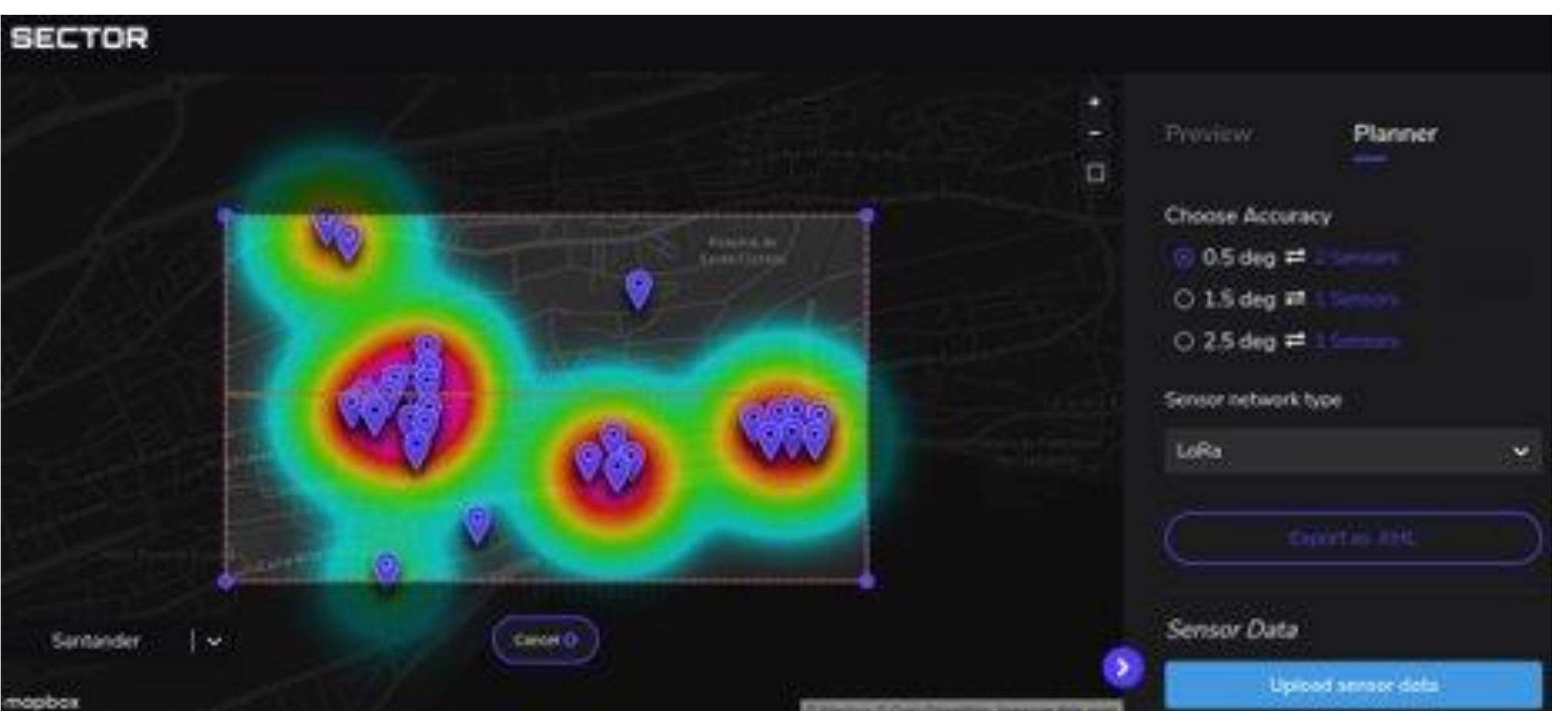
1. **Original front-end design**

2. **Real-time UHI visualization**

historical data integration

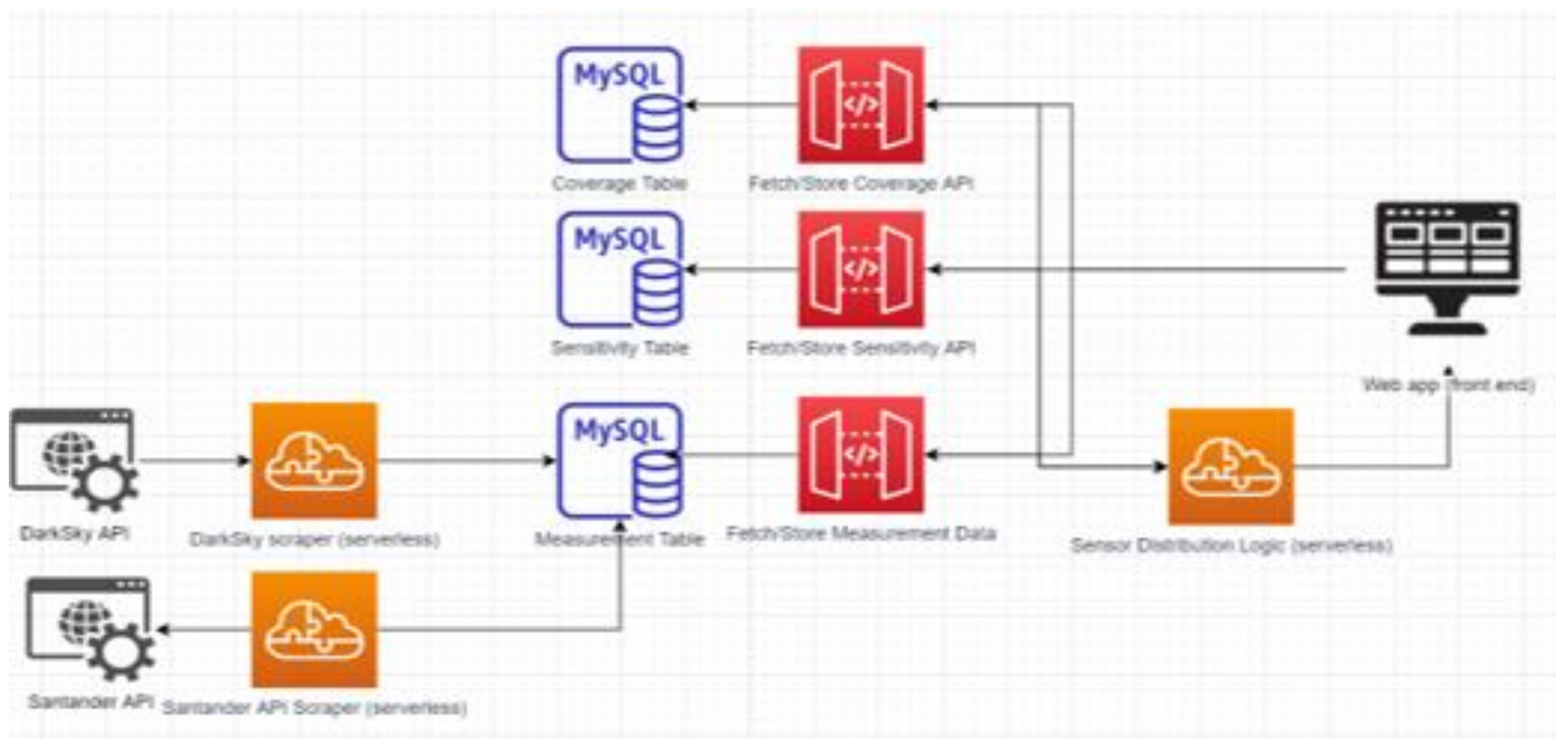3. **Planner for new sensor deployment**

MORE RESULTS

-> **Real-time temperature-sensor IoT data can be processed and visualized**

-> Existing IoT sensor location (stationary & mobile) can be used to make automatic deployment function

-> LoRa network coverage maps can be used to evaluate best location for function.

new IoT sensors-location

Data flow and processing steps to calculate deployment

CONCLUSIONS

Can existing wireless sensor networks be used to create automatic distribution function?

-> Yes, **SECTOR** can now be also applied for other cities which are becoming equiped with IoT technology

-> IoT hardware can visualize UHI for heat stress-test

-> This tool can be made user-friendly for use by non-highly technical departments in municipalities

POST MORTEM

Result from executing experiment for our product on B2B and B2G markets:

1. SECTOR-tool now **enables use-cases for many municipalities in Europe**, which need to use sensors data for policy decisions (heat-waves)

2. SECTOR makes a very appealing **marketing tool** for any weather-data we provide

3. Our startup SkyECHO HD *Weather-Experts* has **gained experience of working with IoT sensors and incorporating another HD weather parameter**