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BUILDING SMART CITIES WITH SMART CITIZENS

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PRESENTATION CONTENTS

- Smart City with Smart Citizens
- Making Sense of City's Data
- Participatory Approach - Empowering Citizens to Sense
- Summary

The Final Aim of Smart City

- To support better living, create more opportunities, support stronger and more cohesive communities and improve the quality of life overall for all residents
- To make a better use of the public resources
- Reducing the operational costs of the public administrations.

Multiplier Effect of Economic Growth via Technology

With greater use of technology, a number of cities are accumulating data, delivering innovation, and enhancing lives of citizens.

“what is our city’s health Index?”


LISTEN TO THE
PULSE OF THE
CITY USING
78 BPM
69 BPM, 4m ago

BUILDING 3 TYPES OF CITIES

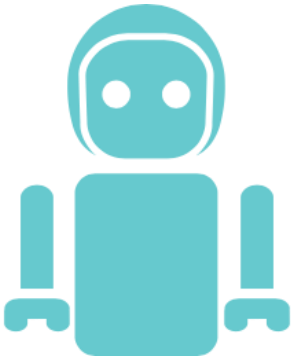
1. **ROI-driven**
   - the aim of rolling out smart city technologies is to generate income which pays for its deployment and more. There are many cities in the western hemisphere which fall into this category, such as Los Angeles, London.

2. **Carbon-driven**
   - The aim here is to reduce the carbon footprint and ideally become carbon neutral long-term. These are mainly cities in Middle and Northern Europe, such as Luxembourg, Helsinki, etc.

3. **Vanity-driven**
   - Finally, "vanity" driven cities are mainly driven by events where the entire world is watching and they want to be perceived as "modern"

TO OVERCOME 3 KEY CHALLENGES

Integrating data from multiple sources



Automating the collection of data

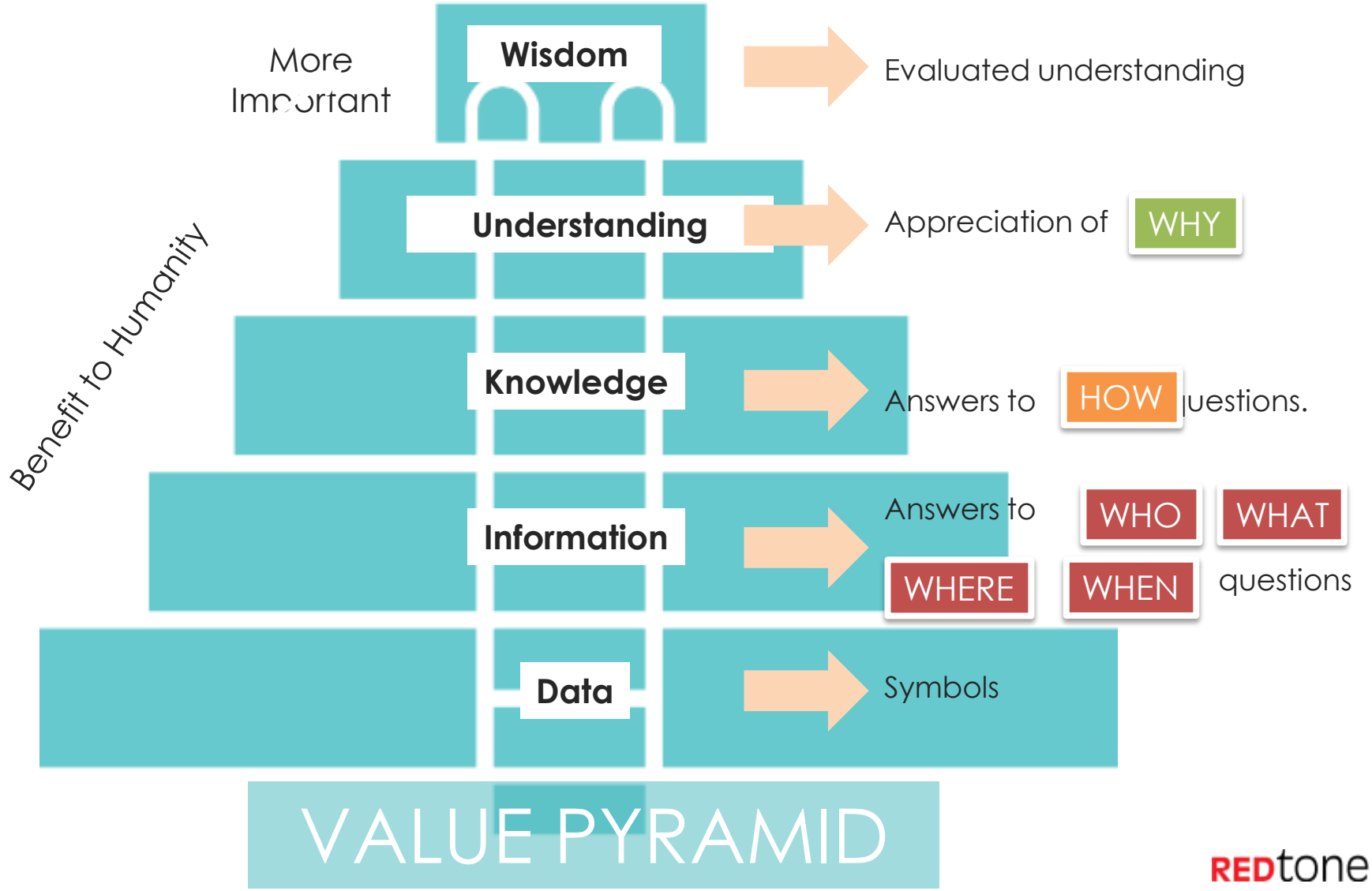
Analyzing data to effectively identify actionable insights

Only by addressing all three can organizations turn raw data into information and actionable insights.

THE GOLD RUSH

MAKING SENSE OF DATA … BUT WHAT CITY DATA?

VALUE IS CREATED BY MAKING SENSE OF DATA



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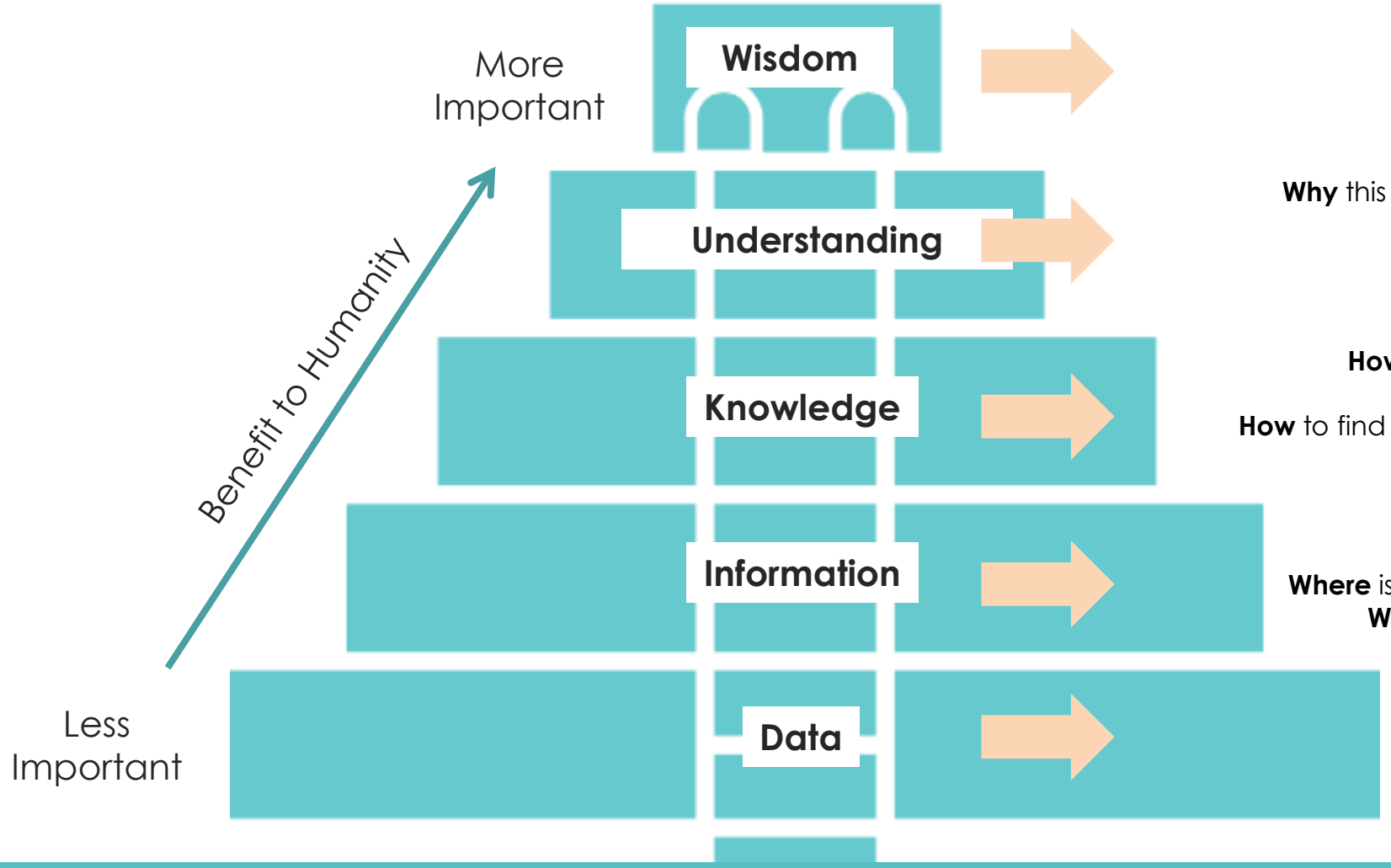
EXAMPLE - SMART PARKING



Who Benefits? - Citizens / Parking Operators / City Council / Shops

HOW-TO

HOW-TO PROVIDE A SMART CITY SOLUTIONS?

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DATA OWNERSHIPS

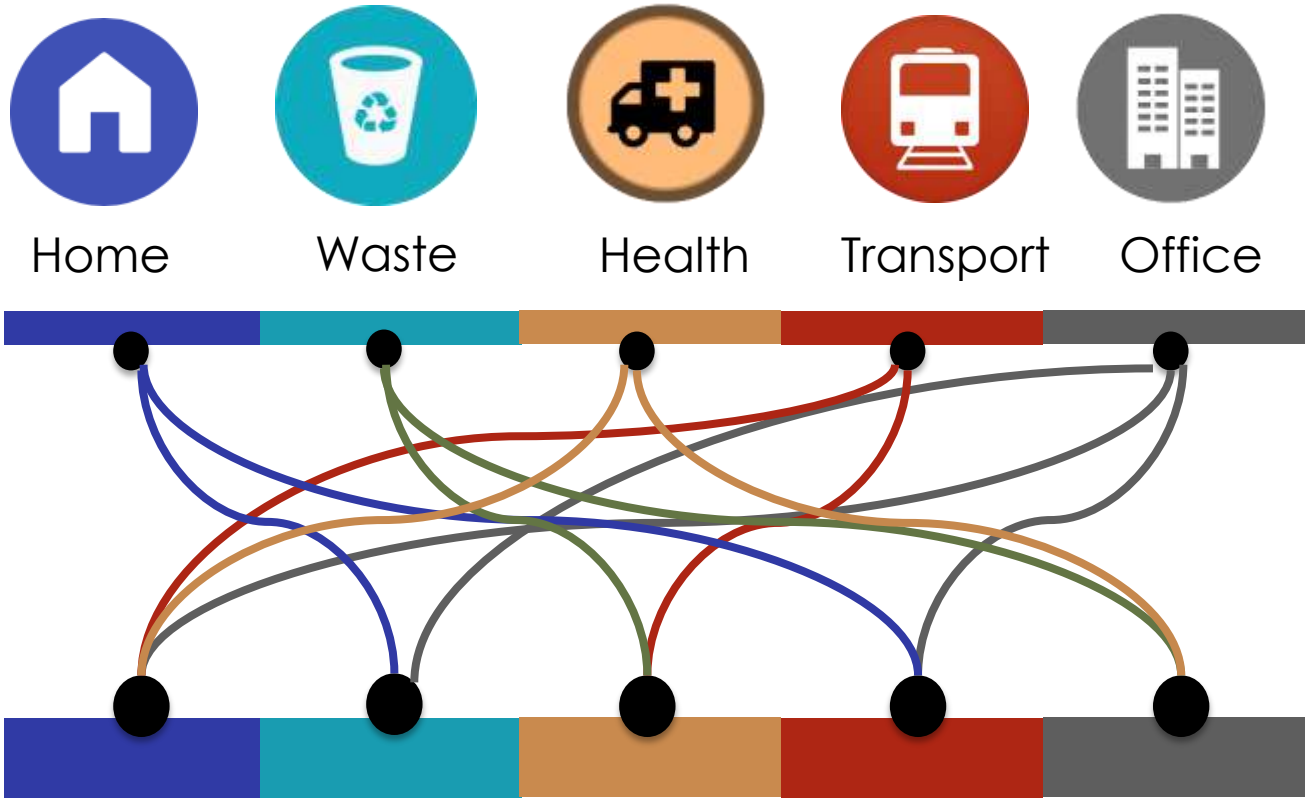
Personal / Household

Private

Public

Commercial Sensor Data Provider

WHAT-IF – WE CAN DO DATA BLENDING



Creating New Compound Applications

WHAT-IF

SENSING-AS-A-SERVICE

COMMERCIAL IOT SENSOR PROVIDER

Gathering **temperature, light, pressure, humidity and pollution**.

The **Local Councils** would want the temperature and humidity data for planning during rough weather

The **city** would pay for access to the light sensors in order to decide when to turn on and off the street lights

The **weather department** would want the temperature and pressure data

A **university** may want access to the pollution information for research purposes for a limited period

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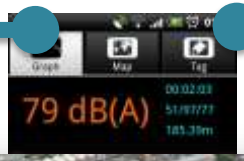
COMMERCIAL IOT SENSOR PROVIDER

Gathering **Noise Pollution**
from Crowdsensing

Local government and City Planners

Citizens and Communities



Developers

Researchers

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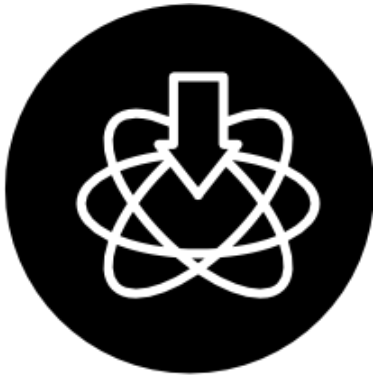
BENEFITS OF SENSING-AS-A-SERVICE

Harnessing
the Creativity

Rapid Deployment

Sustainable
Business Model



Assisting Scientific
Community

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EMPOWER THE CITIZENS TO SENSE

GETTING INSIGHTS FROM

CROWDSENSING

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SMARTPHONE AS YOUR “SENSING ASSISTANT”

Sensors:

① Camera – “Eyes”
② Audio – “Ears”
③ Accelerometer – “Speed”
④ GPS – “Location”
⑤ Gyroscope – “Movement”
⑥ Compass – “Direction”
⑦ Proximity – “Closeness”
⑧ Ambient light – “Eyes”
⑨ Others…

Crowdsourcing Via Crowdsensing

Context

① **Spatial** – Location / Speed Orientation
② **Temporal** – Time / Duration
③ **Environmental** – Temperature / Light / Noise Level
④ **User Characterization** – Activity (Mobility Pattern) / Social (Friends, Interactions)

MAKING CITIES BETTER USING CITIZENS

Network Coverage
(WiFi/3G/4G)

Traffic

Environment

Noise

LET ALL CITIZENS BE OUR “EYES”

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CitiAct

MOBILE APPLICATION

ANDROID APP ON Google play

Available on the App Store

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CitiAct

Sign Out

Reported | Acknowledged

Report Detail

Report ID | Date Ack | Status

#A1442271262804 | p 15 2015 10:16:29

Reporter's Comm

not provided

Acknowledgement

Noted. Thanks for your report.

RESOLVE REPORT

FALSE REPORT

Uploaded Imag

Persiaran Desa Tambun, 31400 Ipoh, Perak, Malaysia

Resolving Report

UPLOAD IMAGE

Comment

Resolve

Cancel

Perak

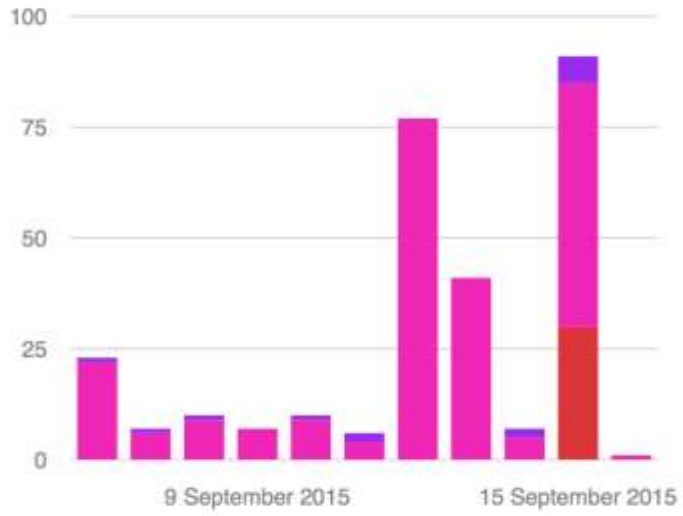
07:48
Wednesday, September 16, 2015

26°C PEKAN AMPANG HAZE

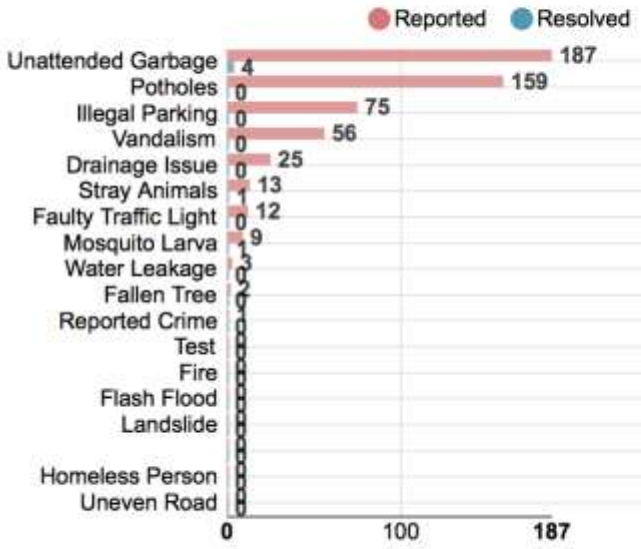
1.61 Km/h E	25°C	32°C
Wind Speed & Direction	Lowest Temperature	Highest Temperature

@citi_sense

Cases in Last Ten Days



Reported and Resolved Cases per Category



Tweets Follo

CitiSense 4
@citi_sense
Stray Animal reported by rizalina at Ampang (Report I : #A1442358010461). citisense.com pic.twitter.com/2qG902HJF

CitiSense 4
@citi_sense
Stray Animal reported by rizalina at Ampang (Report I

Tweet to @citi_sense

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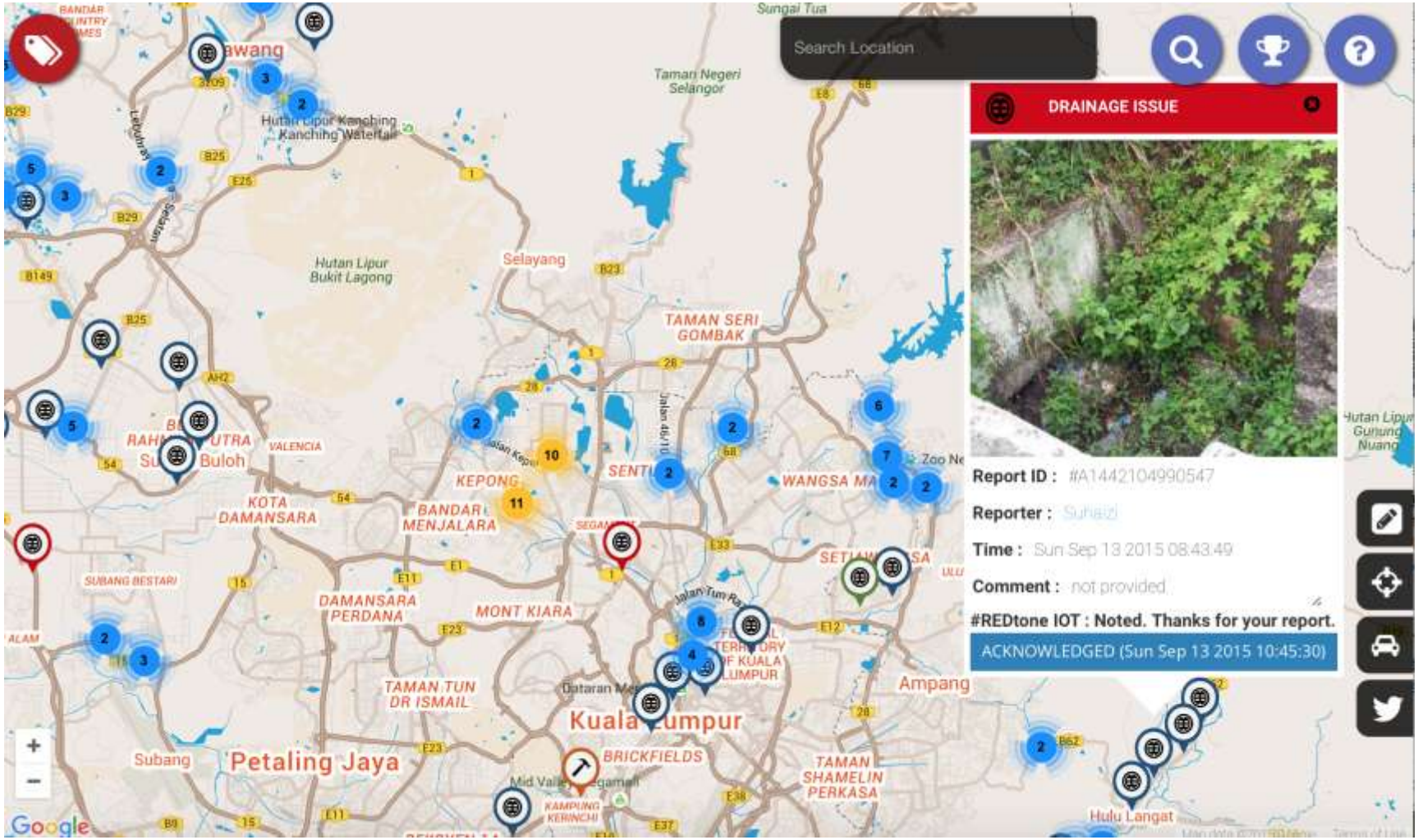
DRAINAGE ISSUES – CAUSE OF FLASH FLOOD?



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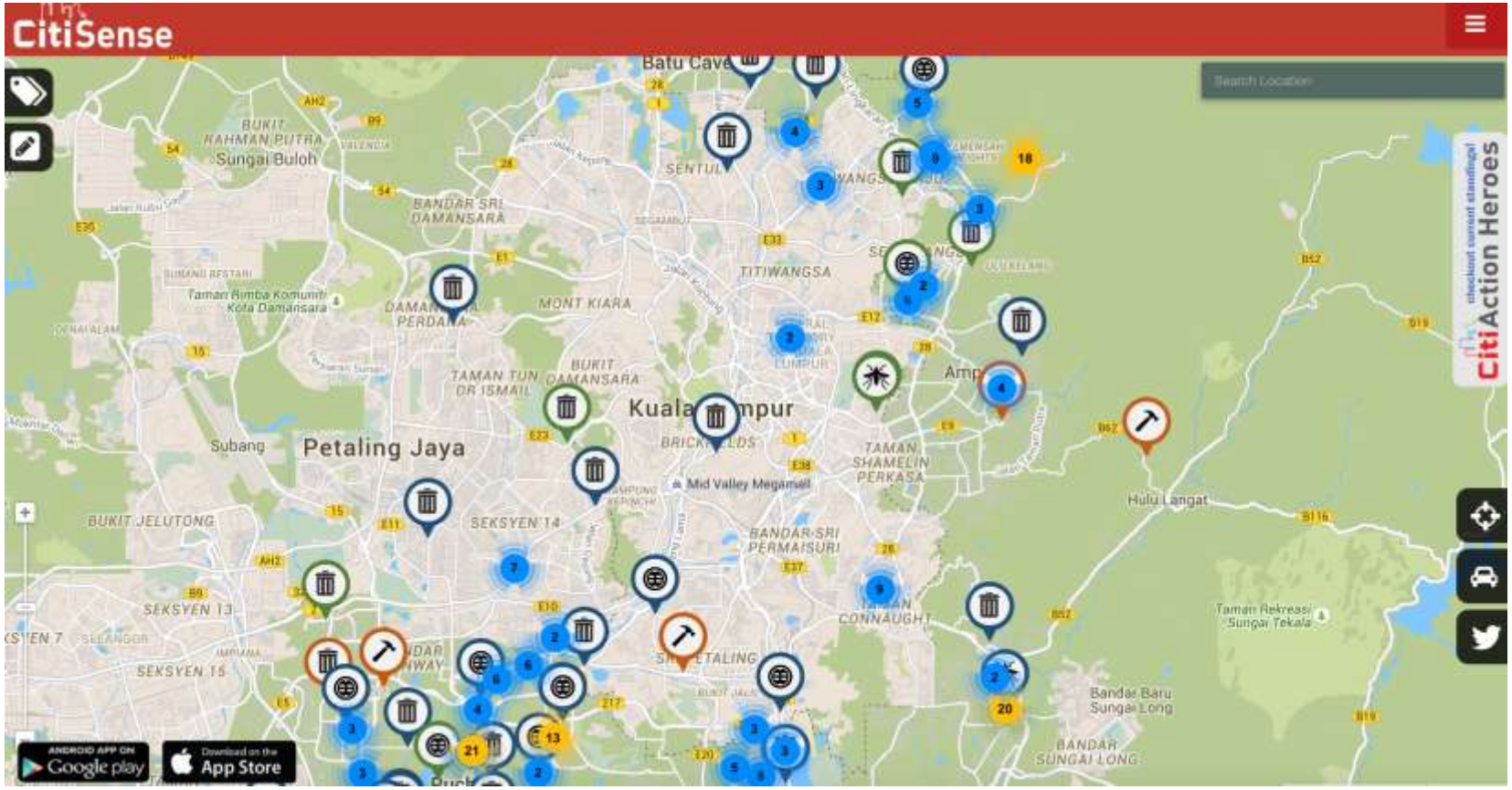
CORRELATE SEVERAL DATASETS



Examples

- Relationship between **Dengue Cases** with drainage issues, mosquito larvae, weather
- Relationship between **Leptospirosis (Penyakit Kencing Tikus)** with unattended garbage, weather, etc

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EMPOWERING SMART CITIZENS

CitiAct
MOBILE
APPLICATION

Smartphone Users

CitiAct
CASE
MANAGEMENT
SYSTEM

Social Media

CitiSense

Open Data

Users

PORTAL
CITISENSE.COM

CitiAct
DASHBOARD

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CONNECTING AND AGGREGATING

SMART CITIZENS AND SENSORS

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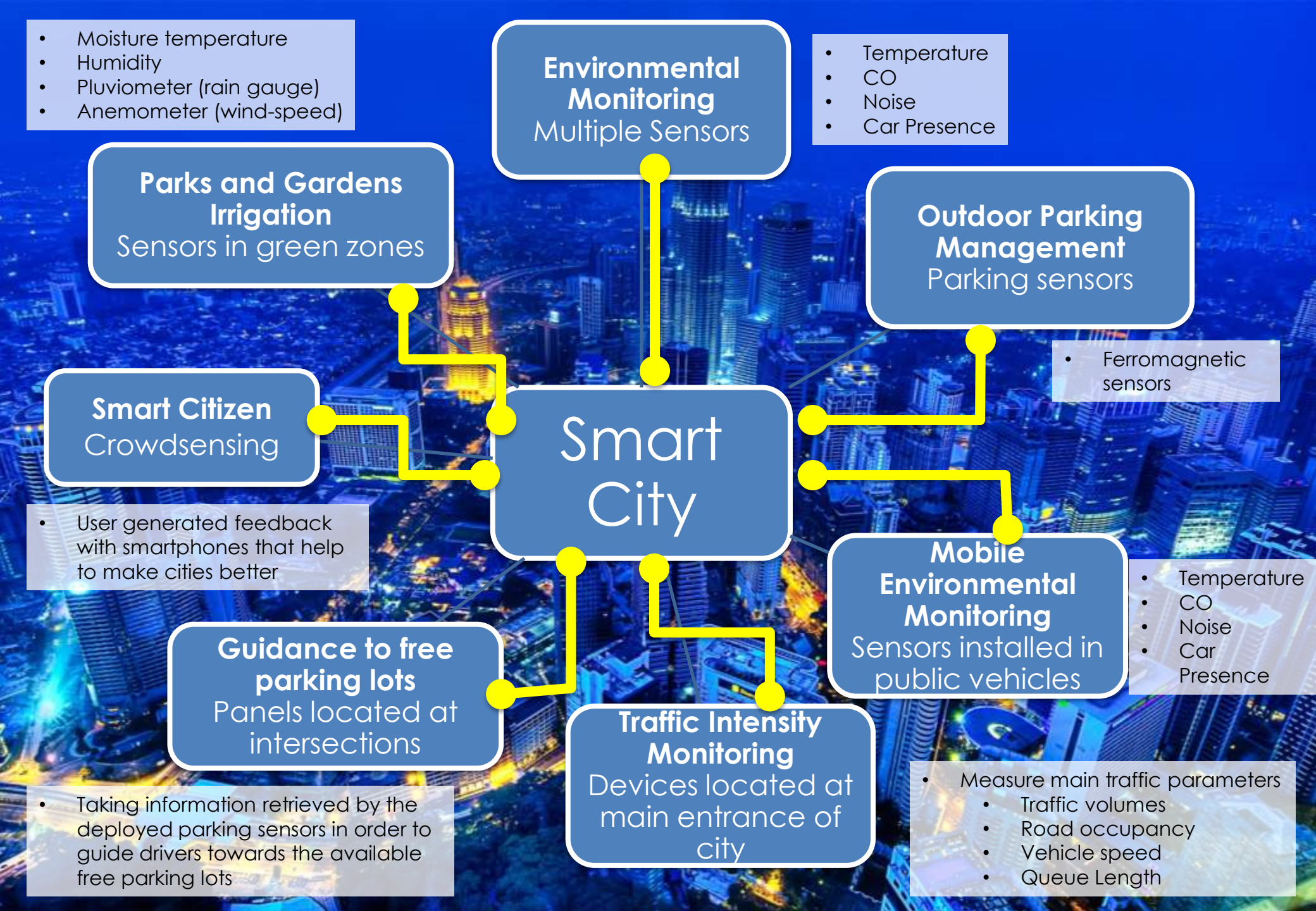
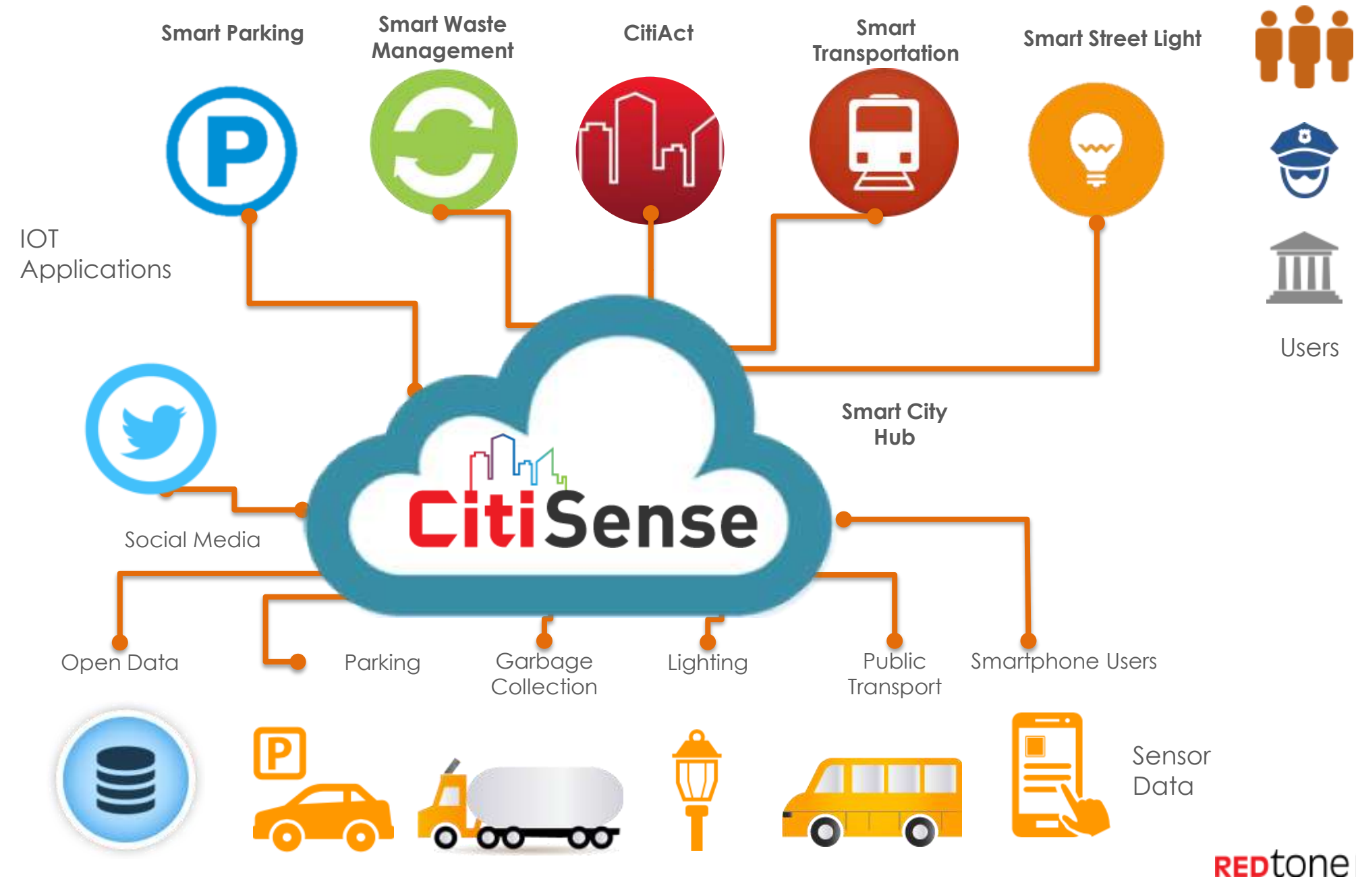

Smart City
Environmental Monitoring
Multiple Sensors
Moisture temperature
Humidity
Pluviometer (rain gauge)
Anemometer (wind-speed)
Temperature
CO
Noise
Car Presence
Parks and Gardens Irrigation
Sensors in green zones
Outdoor Parking Management
Parking sensors
Ferromagnetic sensors
Smart Citizen
Crowdsensing
User generated feedback with smartphones that help to make cities better
Mobile Environmental Monitoring
Sensors installed in public vehicles
Temperature
CO
Noise
Car Presence
Guidance to free parking lots
Panels located at intersections
Taking information retrieved by the deployed parking sensors in order to guide drivers towards the available free parking lots
Traffic Intensity Monitoring
Devices located at main entrance of city
Measure main traffic parameters
Traffic volumes
Road occupancy
Vehicle speed
Queue Length


Smart Parking
Smart Waste Management
CitiAct
Smart Transportation
Smart Street Light
IOT Applications
Users
Smart City Hub
CitiSense
Social Media
Open Data
Parking
Garbage Collection
Lighting
Public Transport
Smartphone Users
Sensor Data
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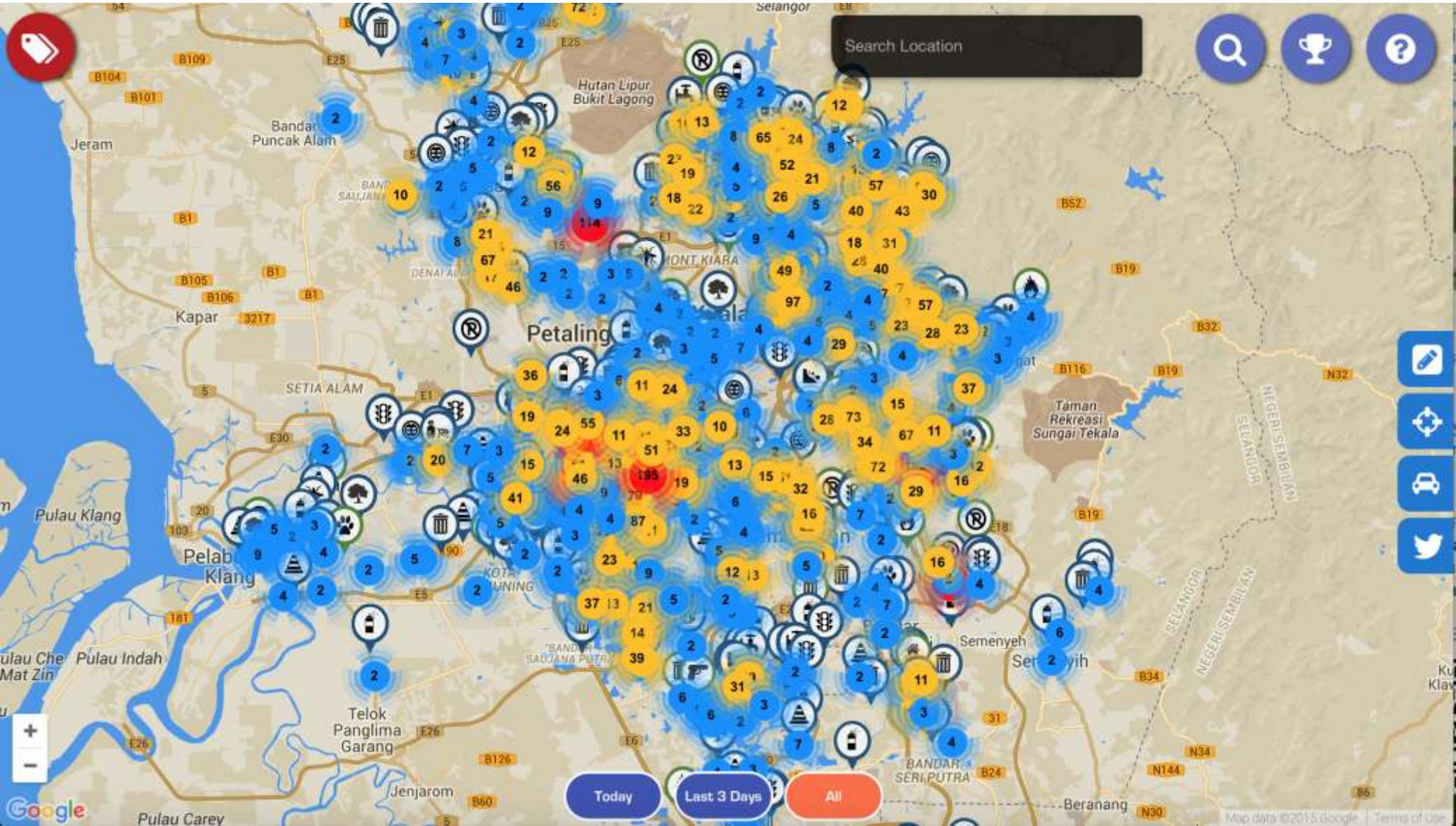
ONE THE MAIN CHALLENGES

Changes in the law do not adapt as quickly as technology changes behavior.

Example - Many city managers now carry Smartphones — and some receive communications from citizens about potholes. They worry: **The law says, once a pothole is reported, the city is responsible for any damage a car experiences — once it's officially reported.**

In a web 2.0 world, what's an "official" report — when does liability begin — once the city official receives a text? Once a formal notice is filed? Once it's tweeted to the world?

WHAT ARE WE GOING TO DO WITH THE DATA?



LET'S ASK OURSELVES

ARE WE READY?

THANK YOU

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 @REDtoneIOT

 citiactapp

 @citi_sense

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