



IoTEDU

Session 1

Basics



What exactly is the
"INTERNET"
of THINGS"?



**Smart Systems and the Internet of Things
are driven by a combination of:**

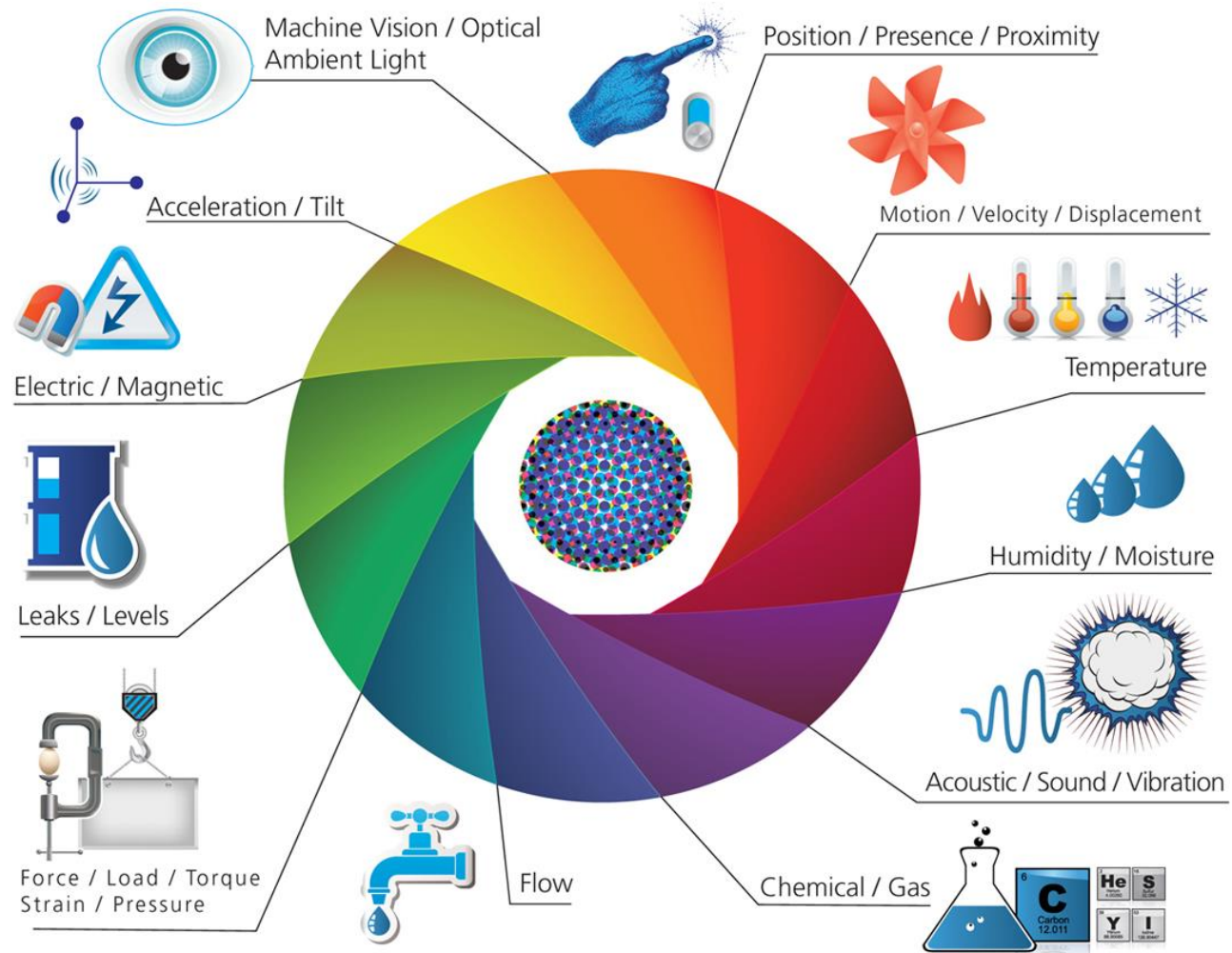
1 **SENSORS**
& ACTUATORS

2 **CONNECTIVITY**

3 **PEOPLE &
PROCESSES**

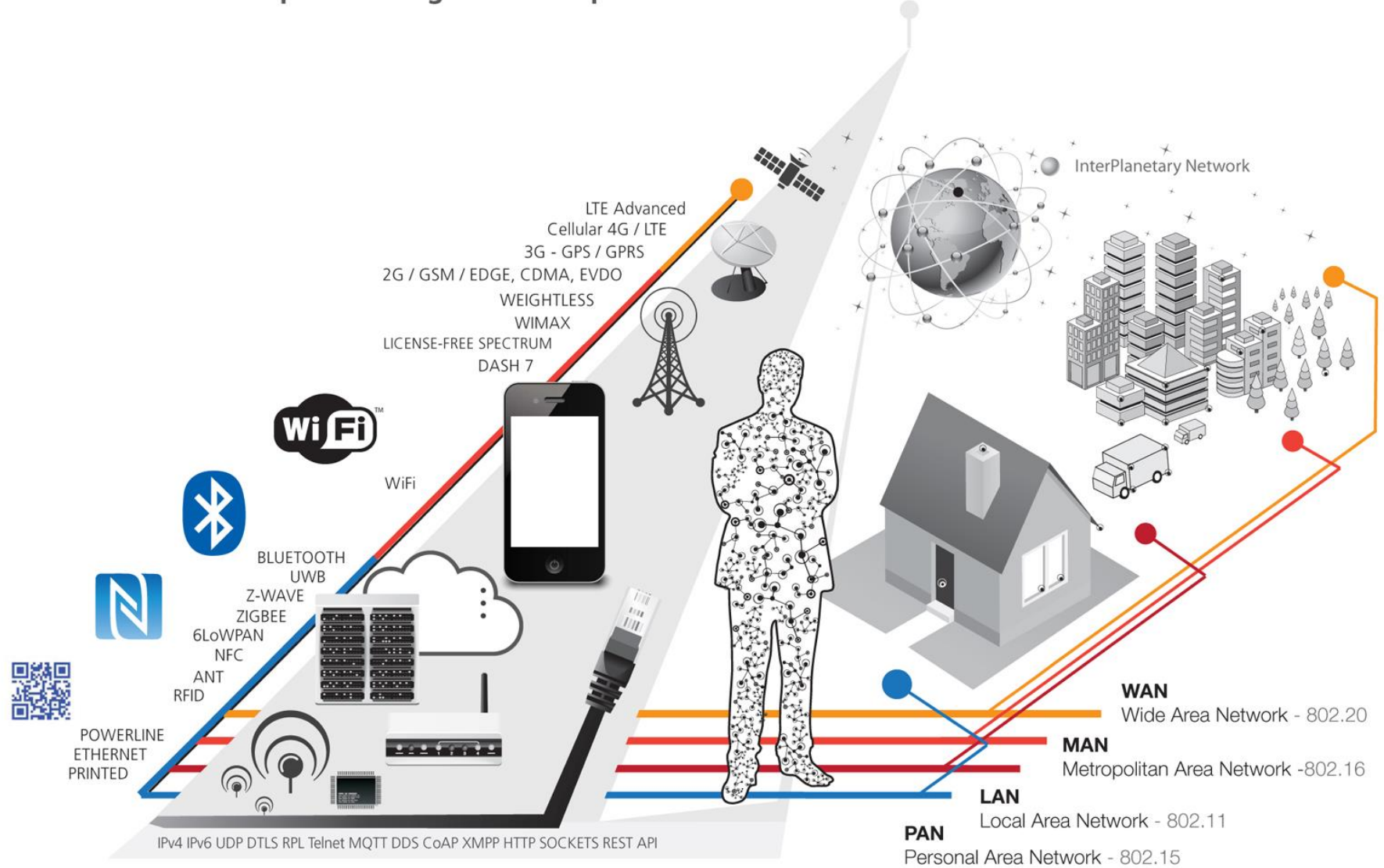
1 SENSORS & ACTUATORS

We are giving our world a digital nervous system. Location data using GPS sensors. Eyes and ears using cameras and microphones, along with sensory organs that can measure everything from temperature to pressure changes.



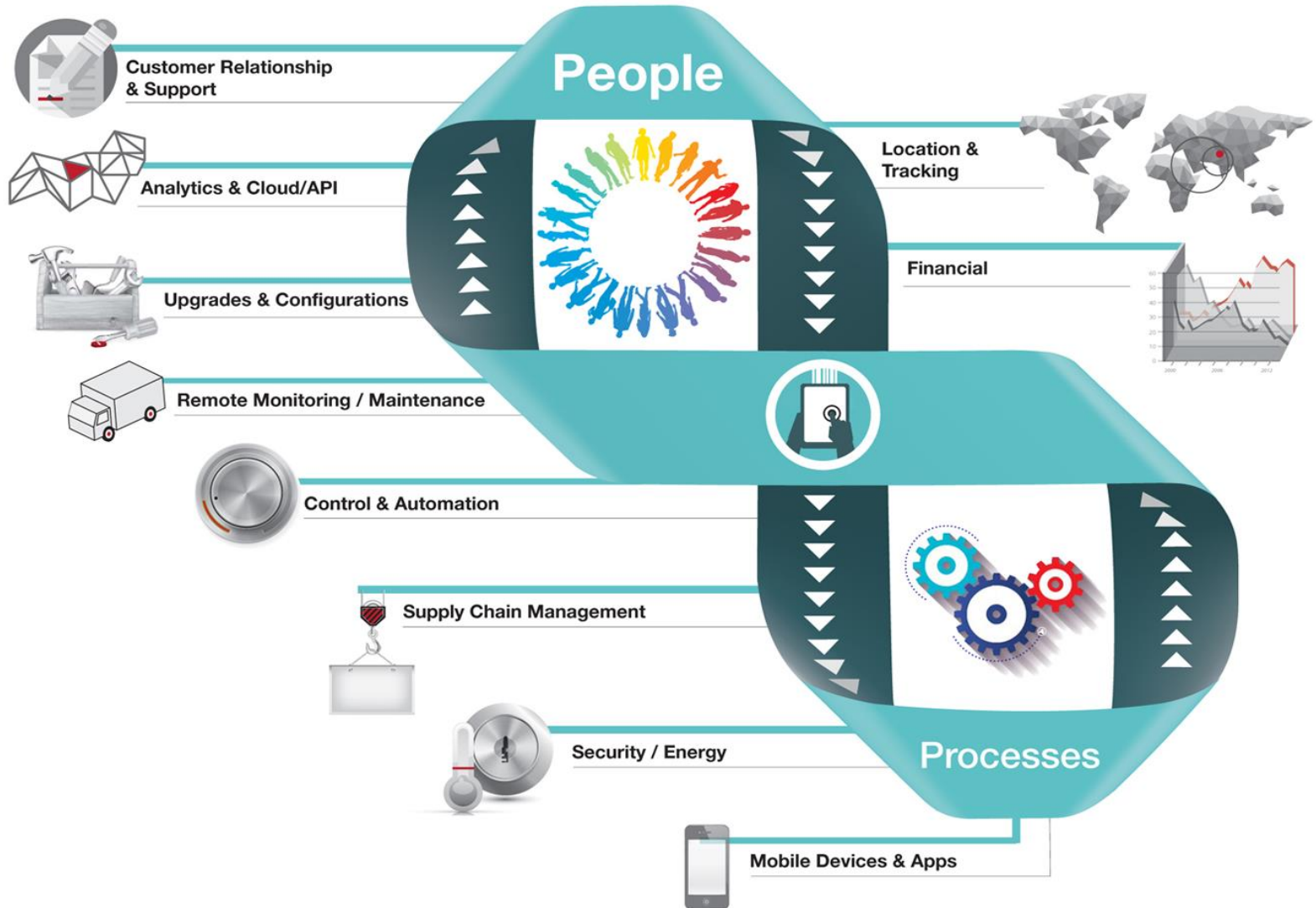
2 CONNECTIVITY

These inputs are digitized and placed onto networks.



3 PEOPLE & PROCESSES

These networked inputs can then be combined into bi-directional systems that integrate data, people, processes and systems for better decision making.



The interactions between these
• SENSORS + CONNECTIVITY + PEOPLE + PROCESSES
entities are creating new types
of smart applications and services.

Starting with popular connected devices already on the market



SMART THERMOSTATS

nest



Save resources and money on your heating bills by adapting to your usage patterns and turning the temperature down when you're away from home.

CONNECTED CARS

CAR
2GO



Tracked and rented using a smartphone. Car2Go also handles billing, parking and insurance automatically.

ACTIVITY TRACKERS

BASIS



Continuously capture heart rate patterns, activity levels, calorie expenditure and skin temperature on your wrist 24/7.

SMART OUTLETS

belkin



Remotely turn any device or appliance on or off. Track a device's energy usage and receive personalized notifications from your smartphone.

PARKING SENSORS

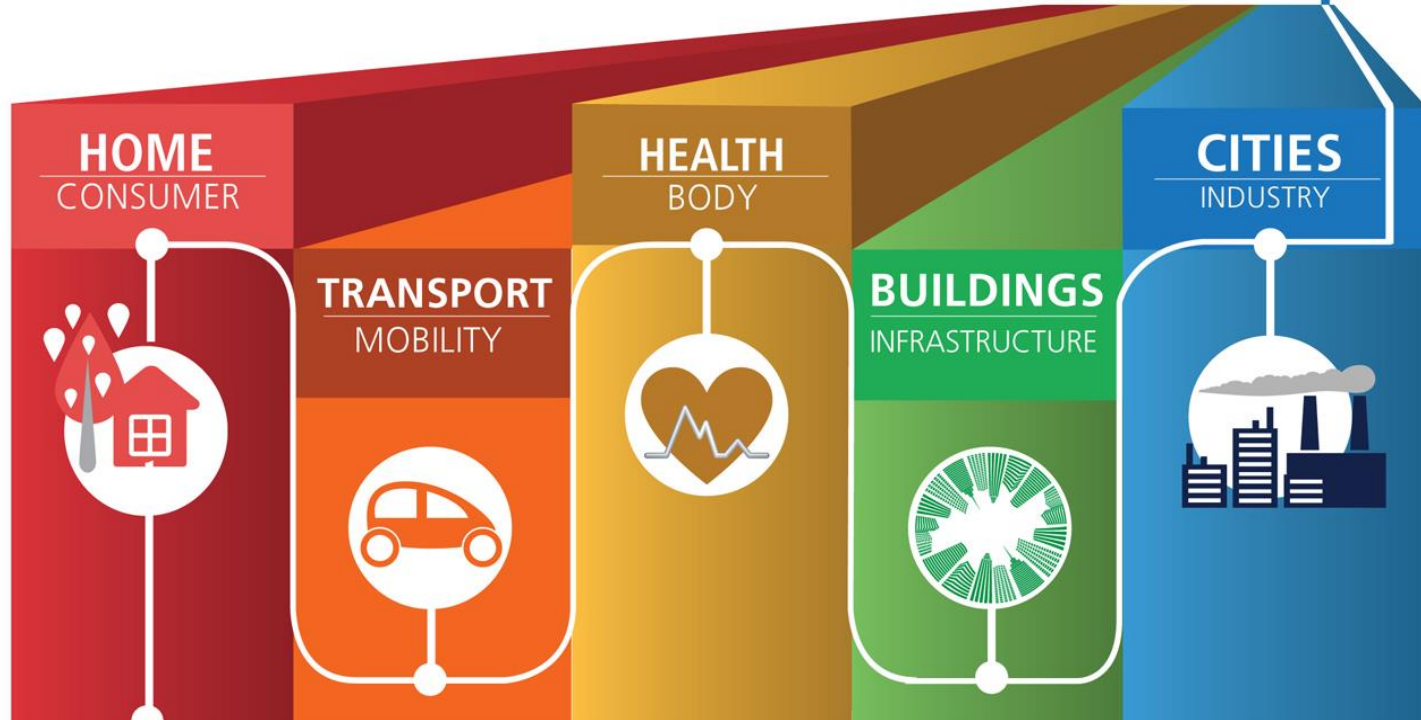
STREETLINE
CONNECTING THE REAL WORLD



Using embedded street sensors, users can identify real-time availability of parking spaces on their phone. City officials can manage and price their resources based on actual use.

And quickly advancing

TO DIVERSE APPLICATIONS



Light bulbs
Security
Pet Feeding
Irrigation Controller
Smoke Alarm
Refrigerator
Infotainment
Washer / Dryer
Stove
Energy Monitoring

Traffic routing
Telematics
Package Monitoring
Smart Parking
Insurance Adjustments
Supply Chain
Shipping
Public Transport
Airlines
Trains

Patient Care
Elderly Monitoring
Remote Diagnostic
Equipment Monitoring
Hospital Hygiene
Bio Wearables
Food sensors

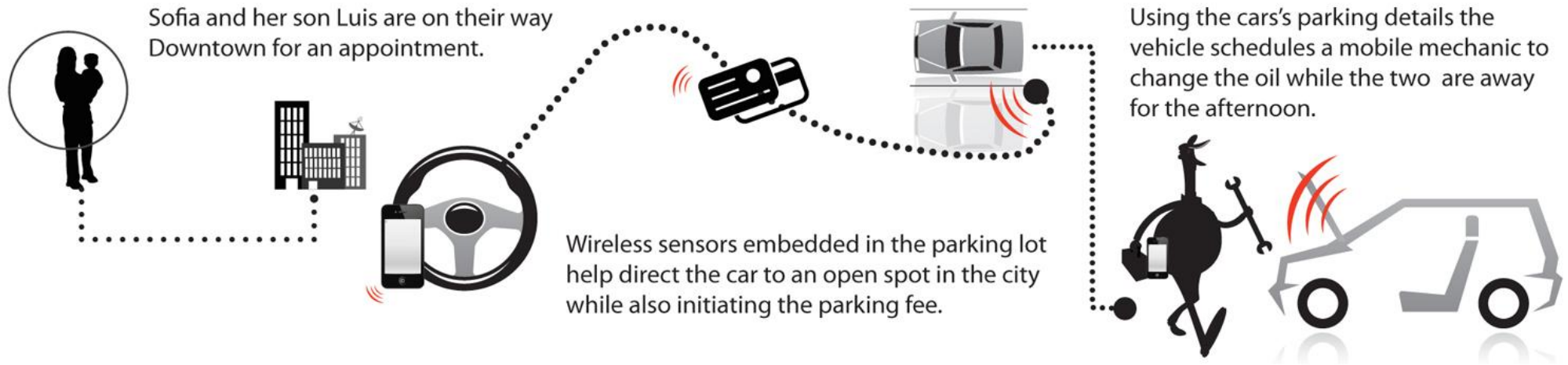
HVAC
Security
Lighting
Electrical
Transit
Emergency Alerts
Structural Integrity
Occupancy
Energy Credits

Electrical Distribution
Maintenance
Surveillance
Signage
Utilities / Smart Grid
Emergency Services
Waste Management

FOR EXAMPLE



TRANSPORTATION + SMART CITIES



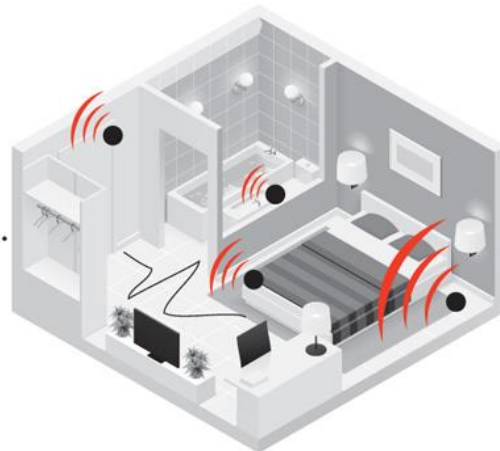
In Downtown San Francisco 20-30% of all traffic congestion is caused by people hunting for a parking spot.

- San Francisco Municipal Transportation Agency (SFMTA)

HEALTHCARE + SMART HOME



Aging uncle Earl is still living isolated at his home and you are concerned about his safety.



Wireless sensors throughout his house help measure healthy activity levels, sleeping patterns and medication schedules.



Alerts are automatically sent to health care services and authorized family members if any abnormal activity is detected.

40 million adults age 65 and over will be living alone in the U.S, Canada and Europe.

- U.S. Department of Health and Human Services: Administration for Community Living (ACL)

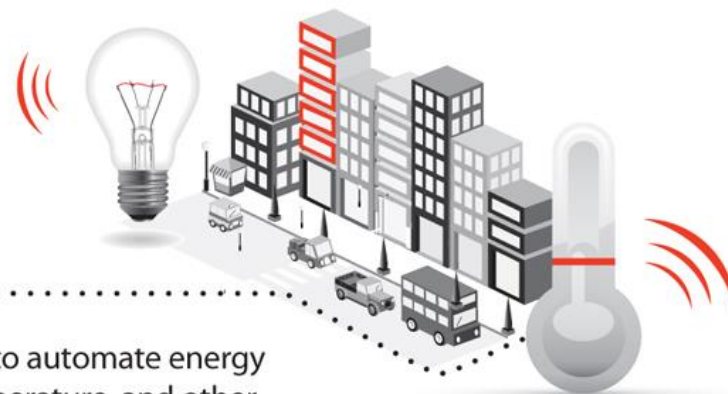
SMART BUILDINGS + MOBILITY



Anna is being pressured to reduce her company's expenses for their new corporate office.



After speaking with experts she decides to install sensors to automate energy usage according to building occupancy, people flow, temperature, and other ambient conditions -- improving the building's overall efficiency.



Energy used by commercial and industrial buildings in the US creates nearly 50% of our national emissions of greenhouse gases.

- United States Environmental Protection Agency