

Internet of Things for Smart Cities

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presented by Stela Seo

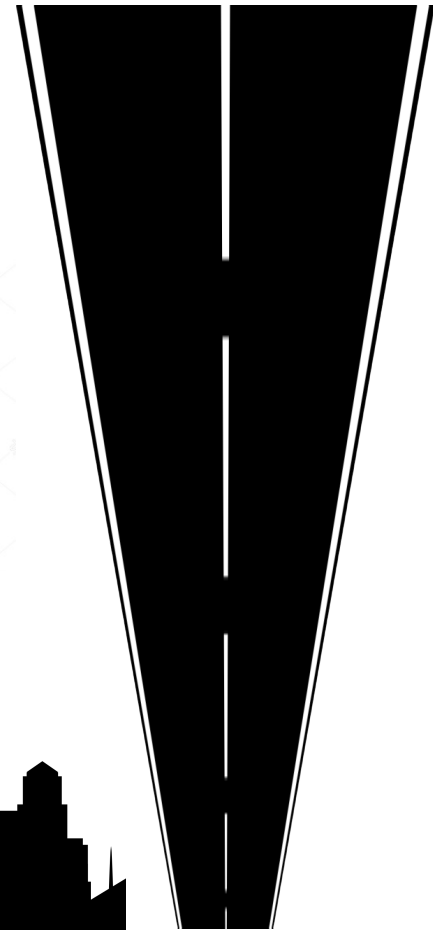
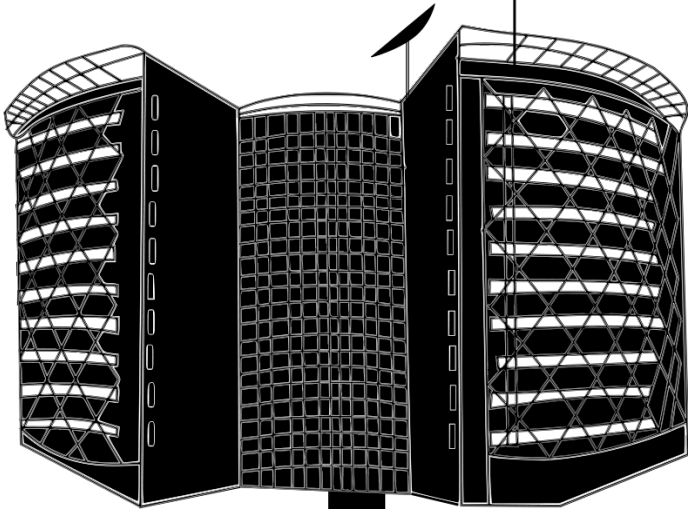
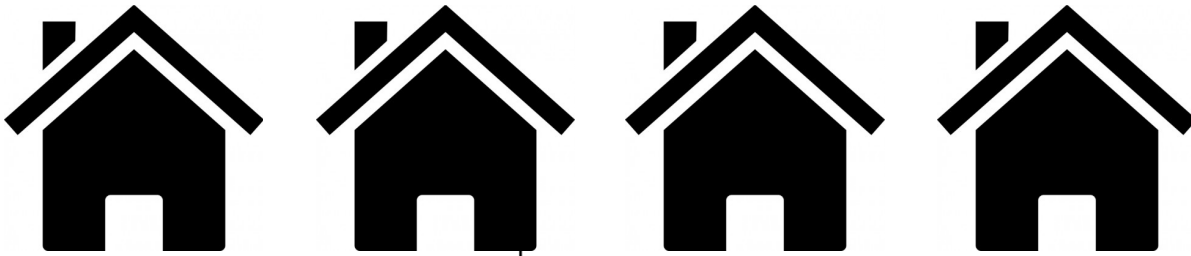


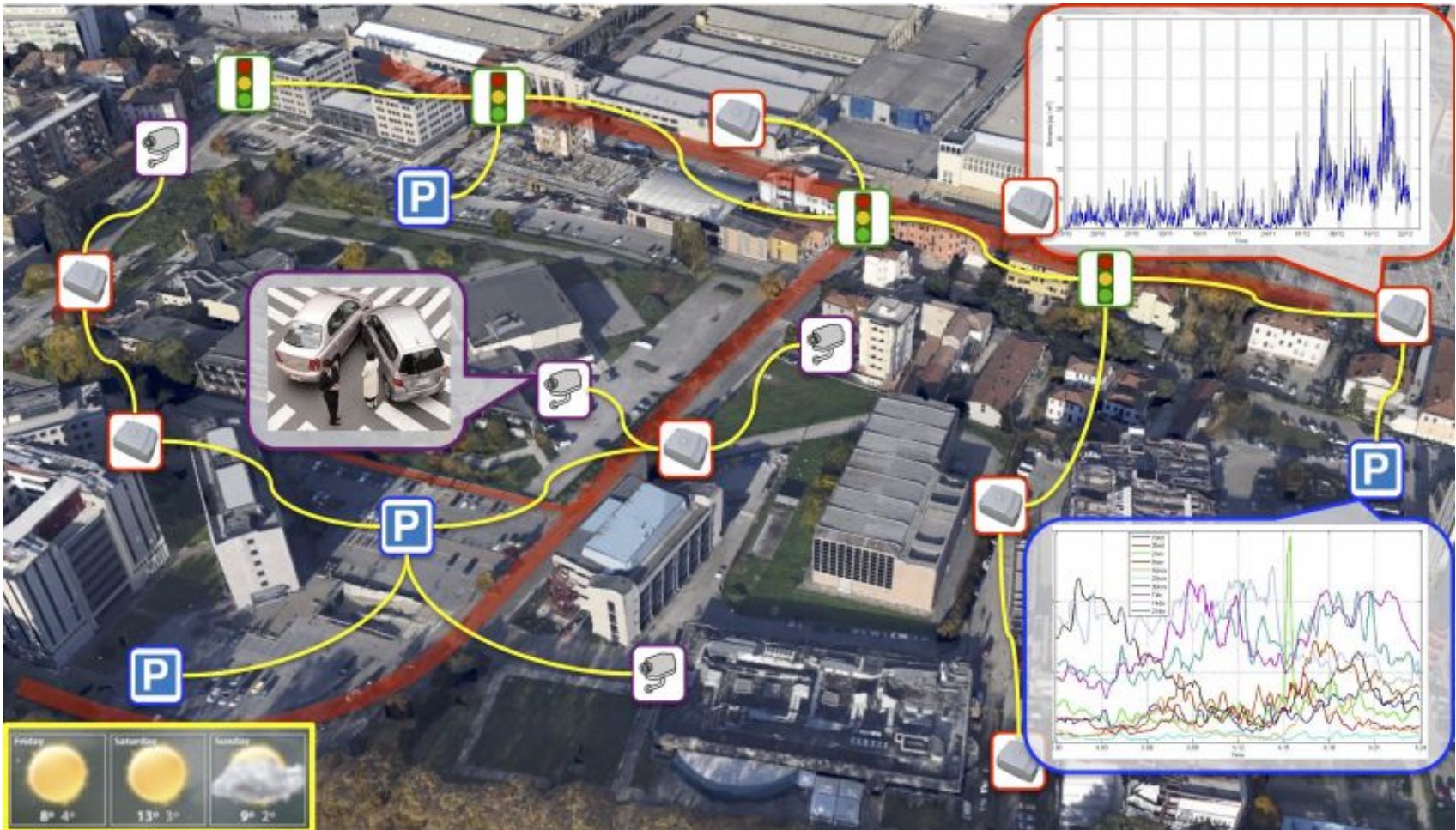
internet of things

monitor and provide data

can be useful for urban cities

eventually urban IoTs supports Smart City





smart cities

the quality of the services offered to the citizens

reducing the operational costs of the public admin

enhance awareness of people about city status

why not smart cities yet?

lack of business model

investment

return

economic difficulty

world-wide

social utility

hardware is not an issue for immediate use

possible implementation

structural health of buildings

waste management

traffic congestion

smart parking

smart lighting

blah

Accelerometer



blah



Pendulum Resistive Tilt Sensors

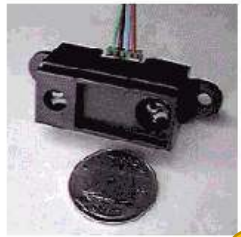


Piezo Bend Sensor

blah



Gas Sensor



Digital Infrared Range



CDS Cell Sensitive Light Sensor



Flexive Bend Sensors

blah



UV Detector



Pyroelectric Detector

blah

blah



IR Pin Diode



IR Sensor w/lens



Side view of Lens



Limit Switch



Mechanical Tilt Sensors



Touch Switch

blah



Miniature Polaroid Sensor

blah



Thyristor

blah

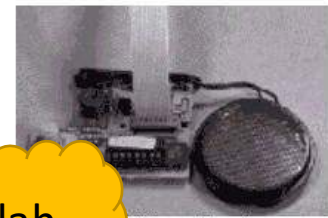


Magnetic Reed Switch



Hall Effect Magnetic Field Sensors

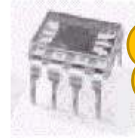
blah



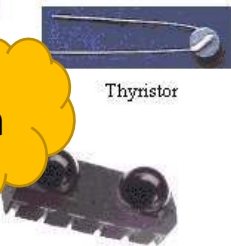
Board Sensor



IR Reflection Sensor



IR Amplifier Sensor



IRDA Transceiver

blah



Lite-On IR Remote Receiver



Radio Shack Remote Receiver



IR Modulator Receiver



Solar Cell

blah



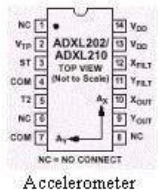
Compass



Compass



blah



Accelerometer



Gyro



Pendulum Resistive Tilt Sensors



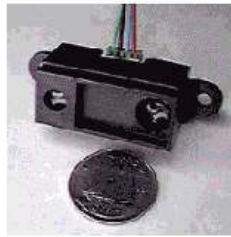
Metal Detector



Gas Sensor



Gieger-Muller Radiation Sensor



Digital Infrared Ranging



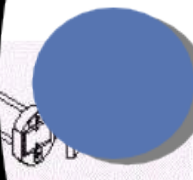
CDS Cell Resistive Light Sensor



UV Detector



Pyroelectric Detector



IR Sensor w/lens



Mechanical Tilt Sensors



Miniature Polaroid Sensor



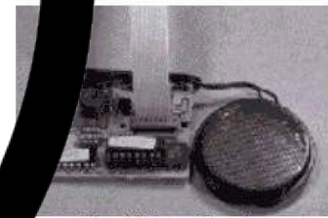
IR Pin Diode



Thyristor



Hall Effect Magnetic Field Sensors



Polaroid Sensor Board



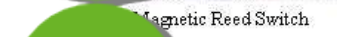
IR Reflection Sensor



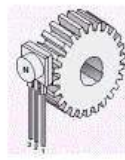
IR Amplifier



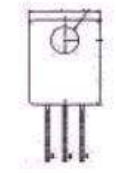
IRDA Transceiver



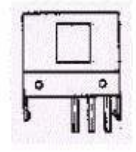
Magnetic Reed Switch



Hall Effect Magnetic Field Sensors



Lite-On IR Remote Receiver



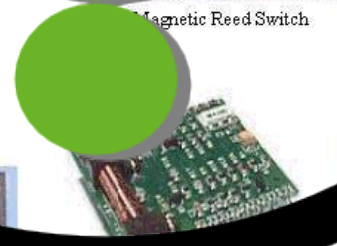
Radio Shack Remote Receiver



IR Modulator Receiver



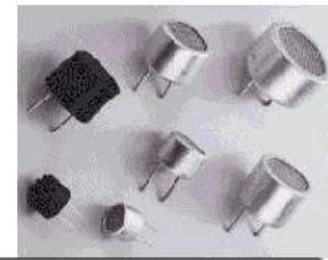
Solar Cell



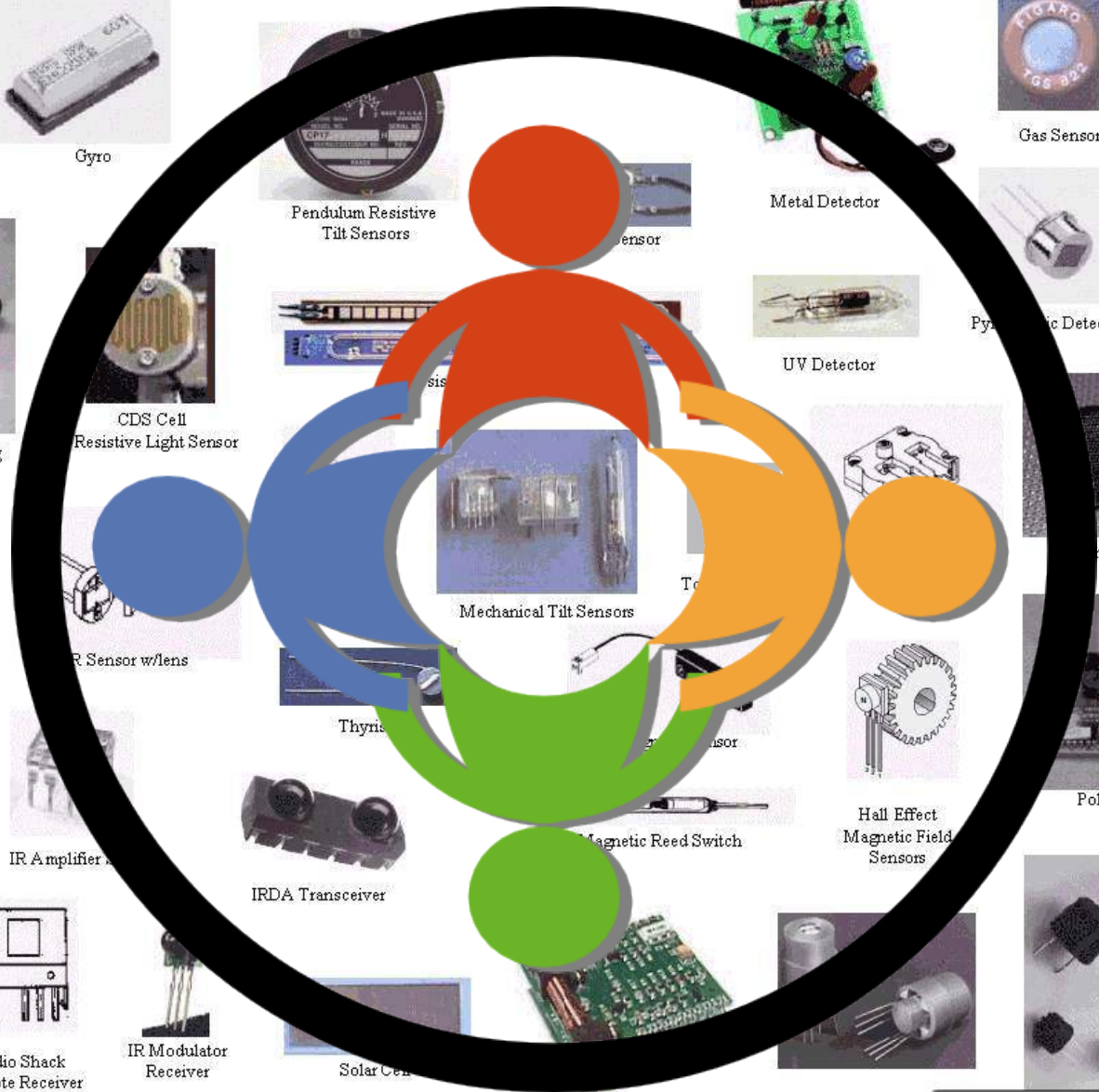
Compass

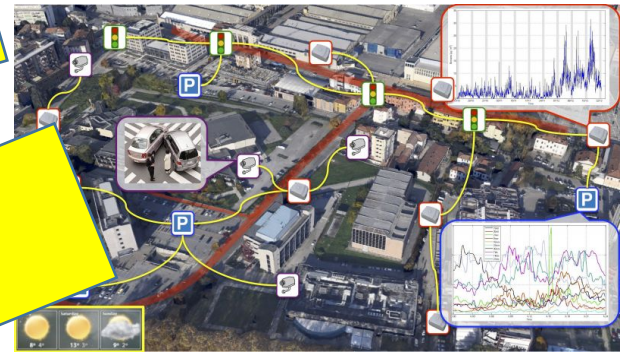


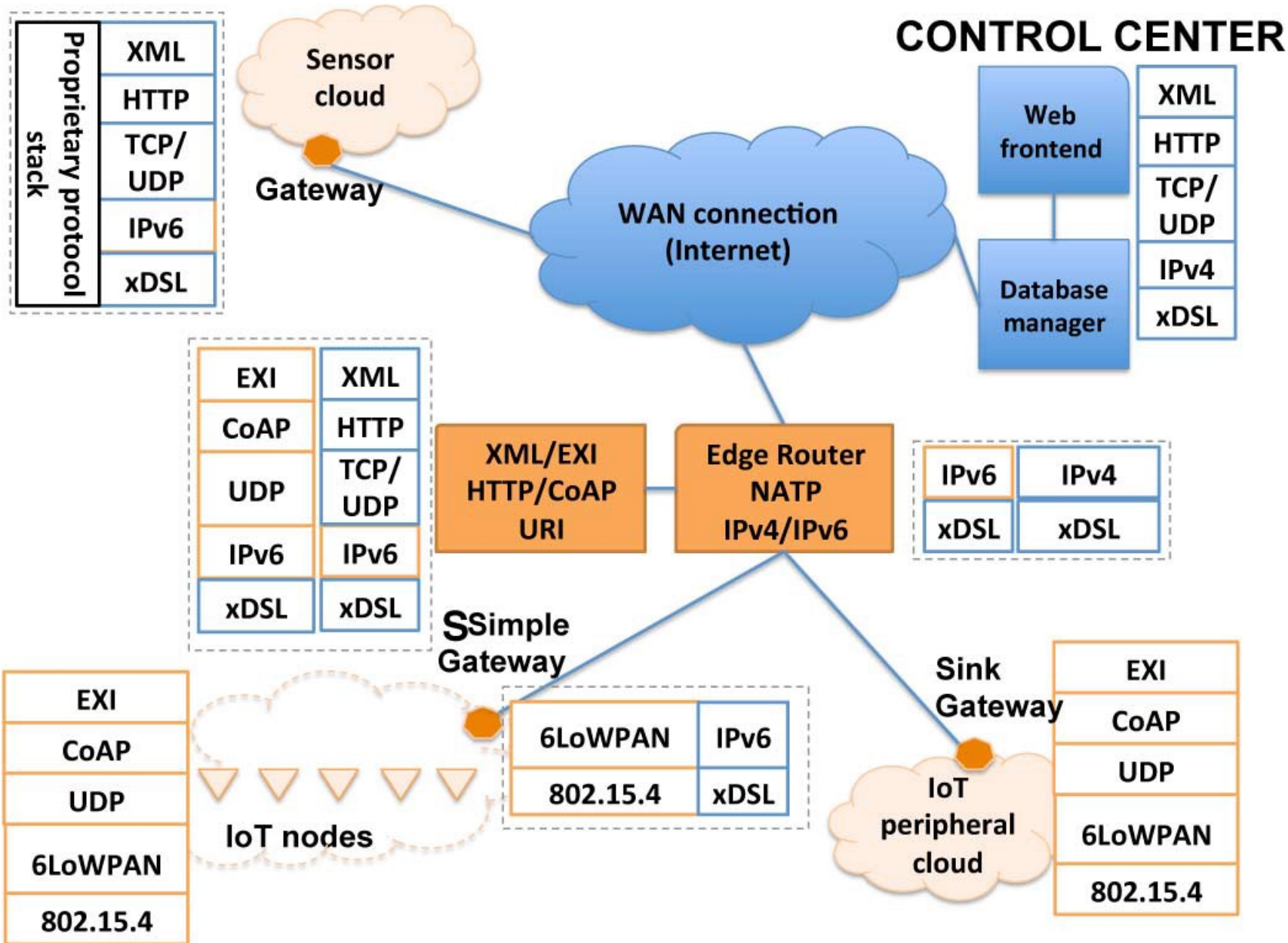
Compass



Optimized by www.ImageOptimizer.net







Patavina Technologies
VPN server

IPv4
SSL
IPv4

Secure VPN



Padova municipality's
network infrastructure



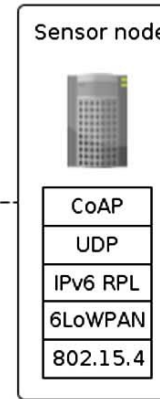
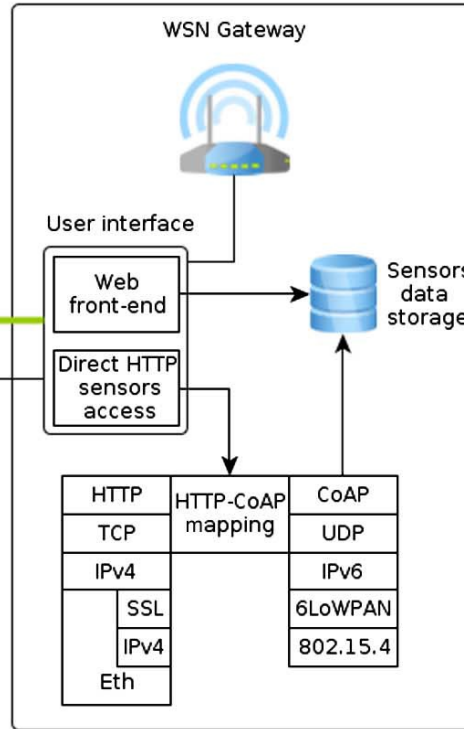
Remote user

HTTP
TCP
IPv4
SSL
IPv4



Local user

HTTP
TCP
IPv4



Sensor node



Sensor node



discussion

is it really beneficial to spend \$\$ for a Smart City?

a movable sensor (robot) vs. many sensors?

hardware improvement while prototype and testing?

can you trust the city?