INTERNET OF THINGS (IOT)AND ITS APPLICATIONS

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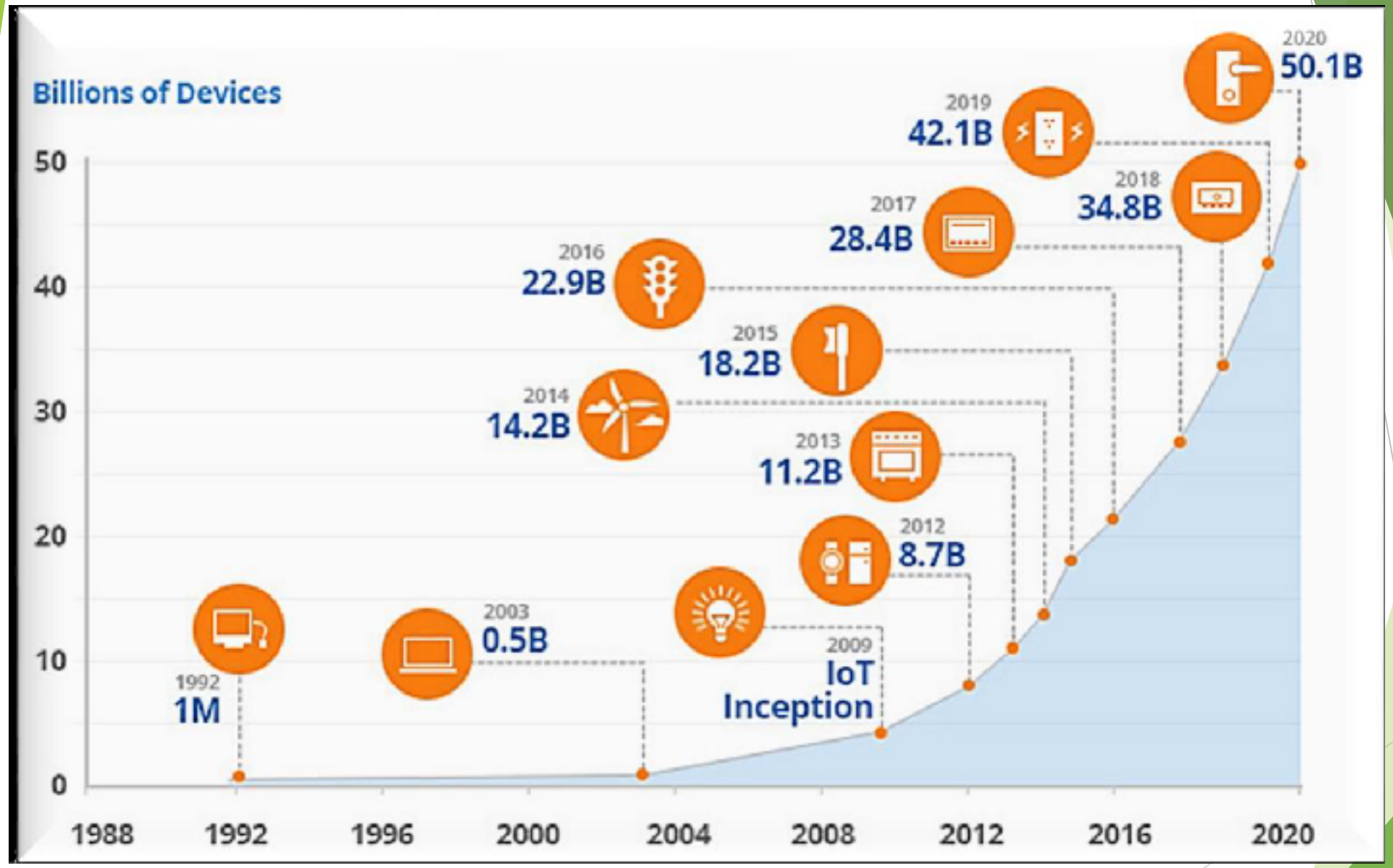
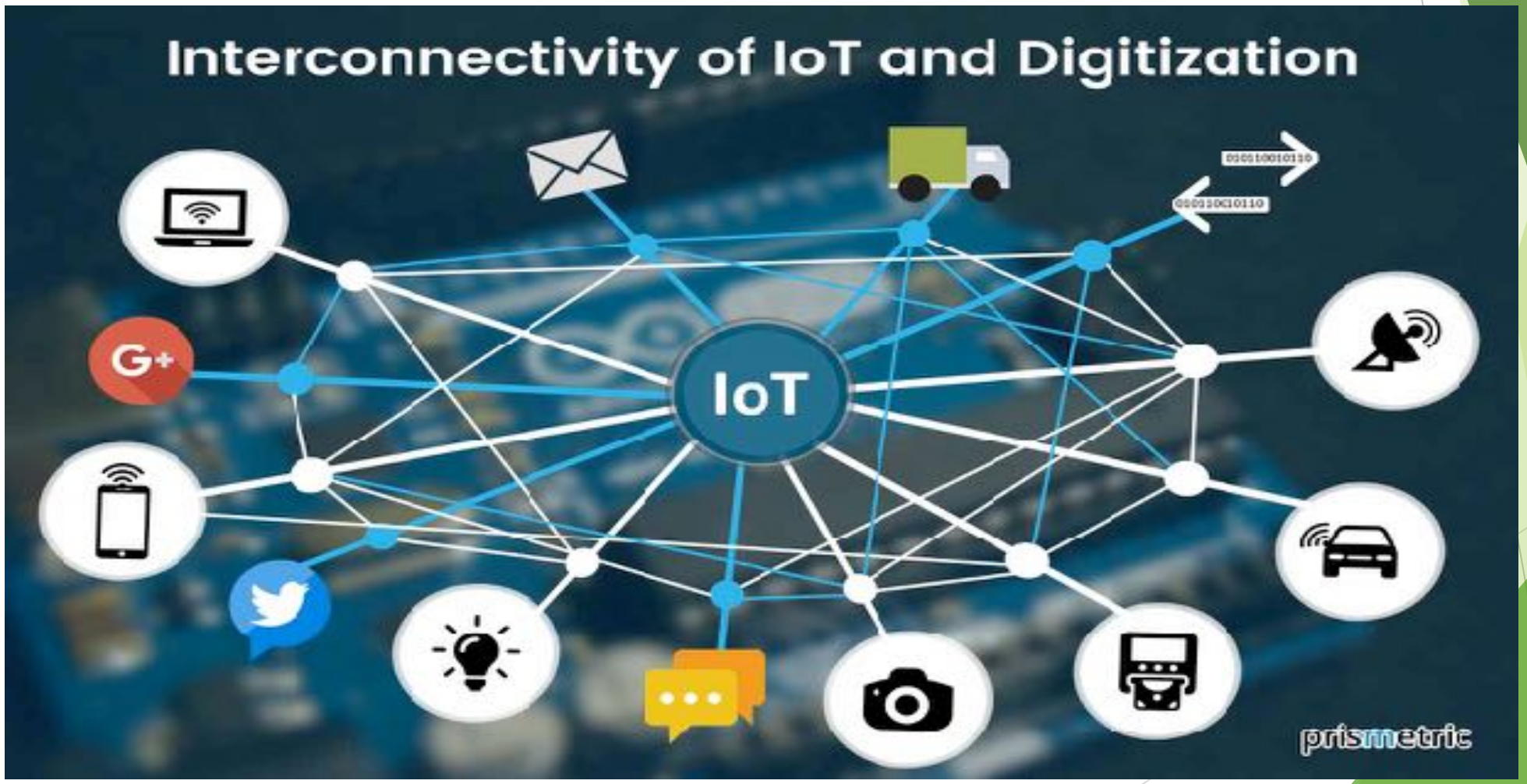
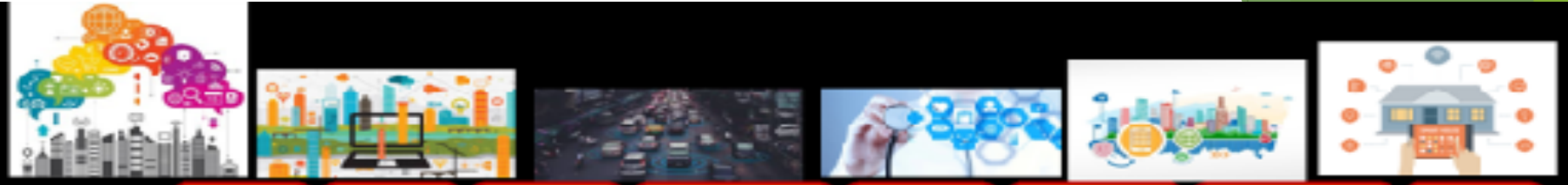


Increasing Trend of IOT

The internet of things (IoT) is a computing concept that describes the idea of everyday physical objects being connected to the internet and being able to identify themselves to other devices.





SMART LIVING | SMART CITIES | SMART ENERGY | SMART TRANSPORT | SMART HEALTH | SMART INDUSTRY | SMART BUILDINGS | SMART HOMES

APPLICATION LAYER

- IOT APPLICATIONS

SERVICE SUPPORT & APPLICATION SUPPORT LAYER

- VIRTUAL ENTITY
- VIRTUAL ENTITY & IOT SERVICE MANAGMENT
- VIRTUAL ENTITY SERVICE
- IOT BUSINESS PROCESS MANAGMENT
- BUSINESS PROCESS EXECUTION
- BUSINESS PROCESS MODELING
- MANGMENT CAPABILITIES
- GENERIC/SPECIFIC MANAGMENT
- DEVICE MANAGER
- QOS MANAGER
- SECURITY
- AUTHENTICATION
- IDENTITY MANGMT
- ACCESS CONTROL
- ENCRYPTION
- DATA MANGMENT
- DATA GOVERNENCE
- DATA QUALITY MANGMT
- DATA MINING
- ANLYTICS PLATFORM
- IN MOTION ANALITICS
- PREDICTIVE ANALITICS
- STATISTICAL ANALITICS

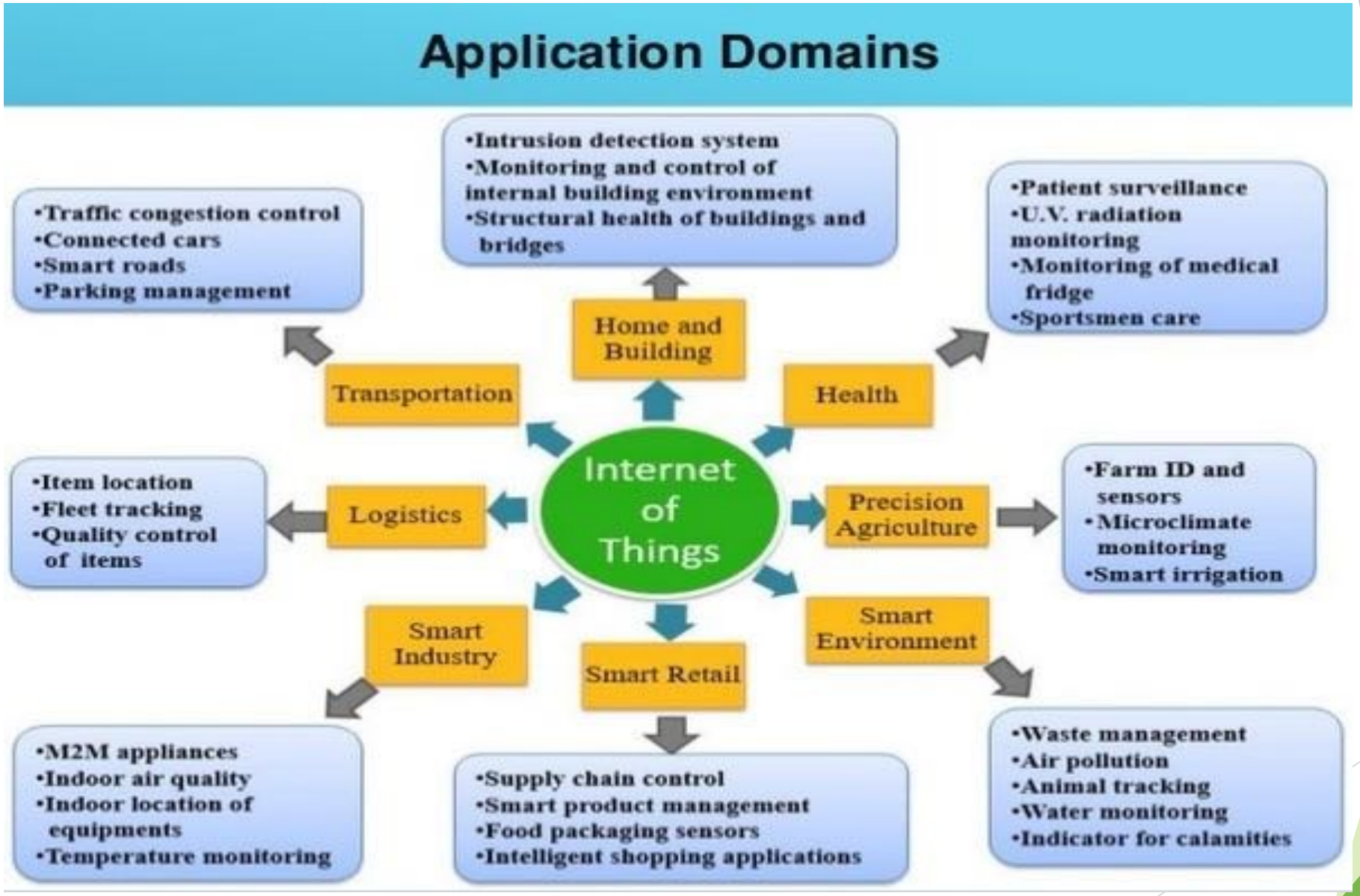
NETWORK / COMMUNICATION LAYER

- NETWORKING CAPABILITY
- TRANSPORT CAPABILITY
- GATEWAY NETWORK
  - WI-FI
  - GSM/GPRS
  - LTE
  - ETHERNET
- GATEWAY
  - EMEDDED & SIGNALPROSESSOR
  - OS
  - SIM MODULE
  - MICROCONTROLLER

SMART DEVICE / SENSOR LAYER

- SENSOR NETWORKS
  - WI-FI
  - ZigBee
  - ETHERNET
  - BLUETOOTH
  - UWB
  - WIRED
- SENSORS
  - ANALOG
  - DIGITAL
  - RFID
  - ELECTRO-MECH
  - PHOTO-ELECTRIC
  - GPS
  - SOLID STATE
  - INFRA-RED
  - GYROSCOPE
  - ELECTRO-CHEMICAL
- WSN
- devices

Application Domains



Challenges and Risks of IoT

Security & Data Governance

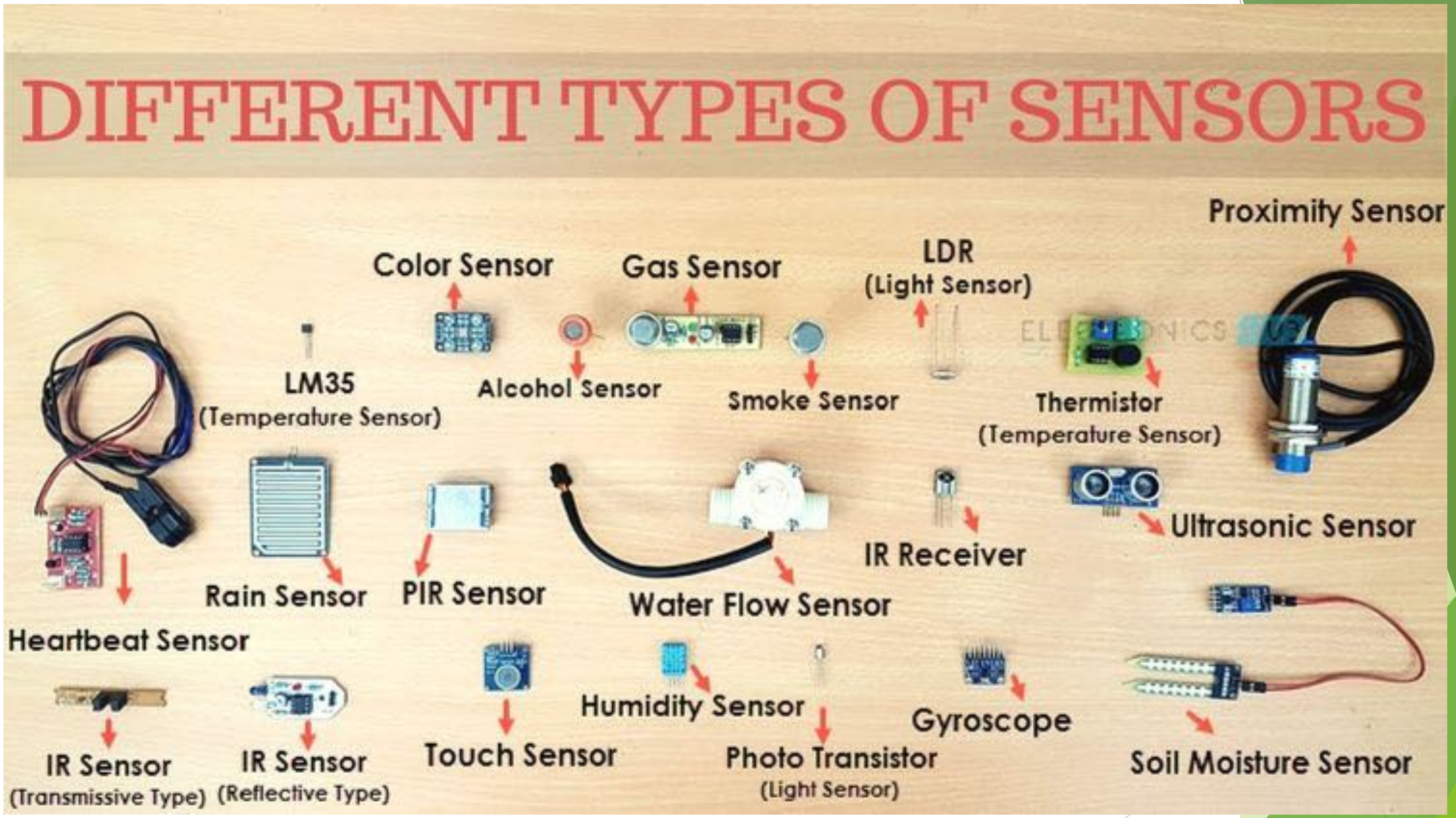
Confusion on where to get value (ROI)

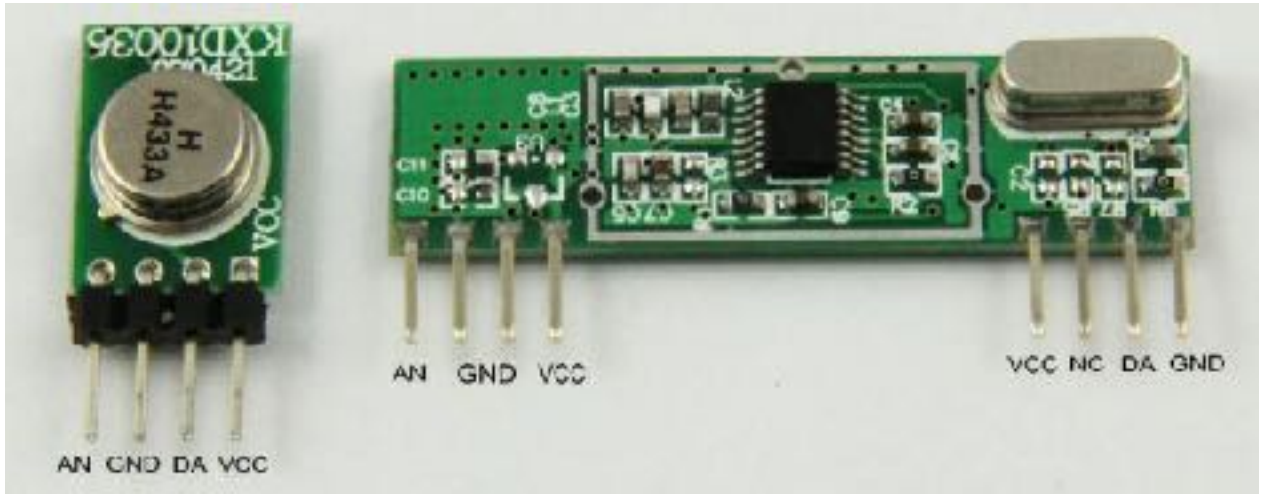
IT and business partnership

Diversity of niche providers & solutions

Data and analytics complexity

Lack of data protocol standards


DIFFERENT TYPES OF SENSORS
Proximity Sensor
Color Sensor
Gas Sensor
LDR
(Light Sensor)
LM35
(Temperature Sensor)
Alcohol Sensor
Smoke Sensor
Thermistor
(Temperature Sensor)
Ultrasonic Sensor
IR Receiver
Rain Sensor
PIR Sensor
Water Flow Sensor
Heartbeat Sensor
Humidity Sensor
Gyroscope
Touch Sensor
Photo Transistor
(Light Sensor)
Soil Moisture Sensor
IR Sensor
(Transmissive Type)
IR Sensor
(Reflective Type)



temperature and humidity sensor with RF modules Arduino

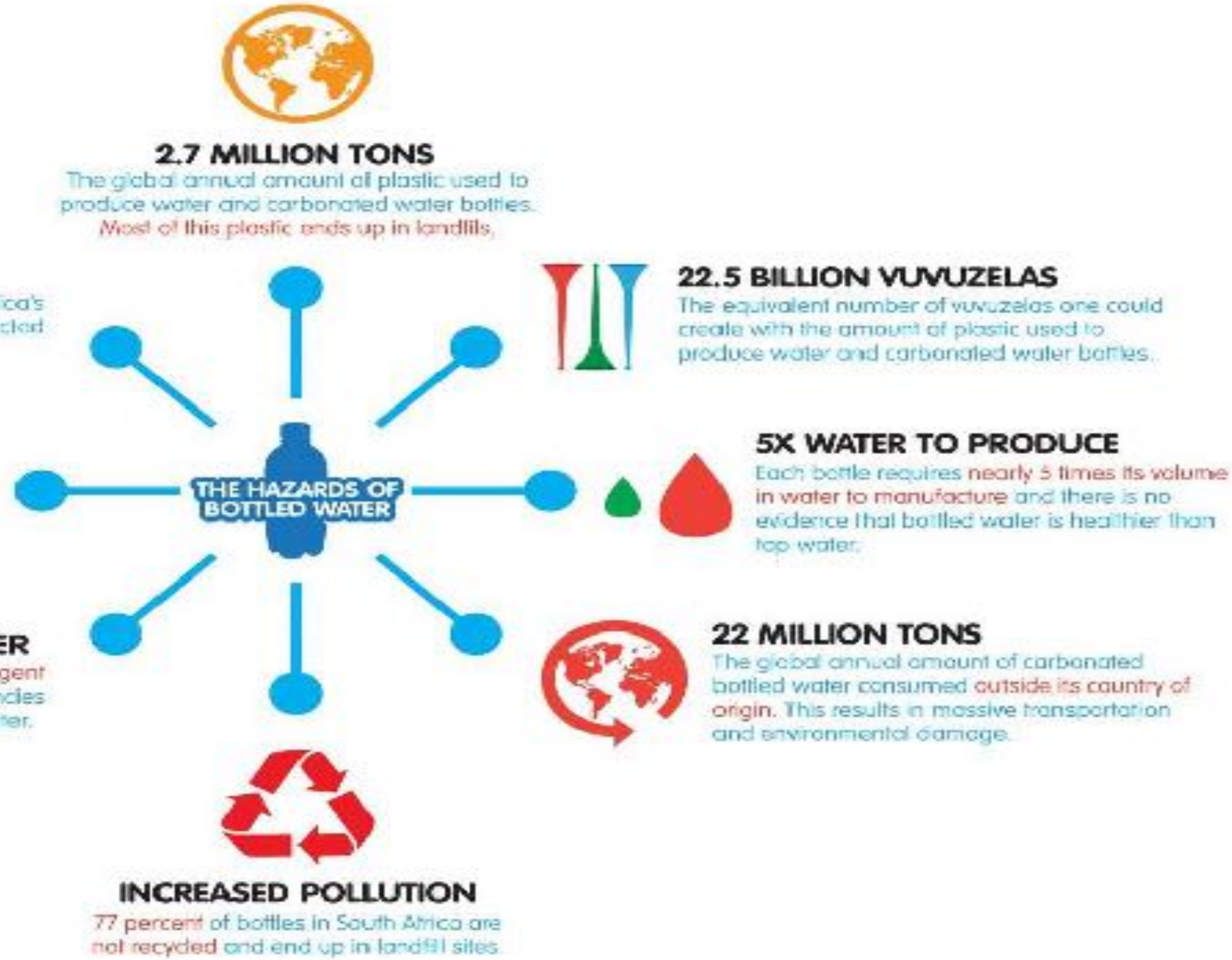
Air Quality Sensor

bluetooth beacon IP67

- Bluetooth Beacon
  - 4 USD
- Air Quality Sensor
  - 6 USD
- Sensor + RF Transmittor
  - 15 USD

CASE STUDY- Sensor Based Smart Cap and Bottle to Rectify Plastic Pollution and Its Hazardous Effects

- How to do waste management of plastic bottle efficiently?
- How to know the safety limit of reuses for drinking water?
- Who will ensure that water in bottle is pure and healthy?
- Is there any way that waste management company reaches out to waste plastic bottle timely?
- Is it possible to provide complete information about Bottle manufacturing water quality ?


2.7 MILLION TONS
The global annual amount of plastic used to produce water and carbonated water bottles. Most of this plastic ends up in landfills.
1.7 BILLION RAND
The estimated market value of South Africa's bottled water market. This figure is expected to increase at a staggering rate.
22.5 BILLION VUVUZELAS
The equivalent number of vuvuzelas one could create with the amount of plastic used to produce water and carbonated water bottles.
ADDED CHEMICALS
About 40 percent of all bottled water starts as tap water, to which minerals and other chemicals and flavourings are added.
THE HAZARDS OF BOTTLED WATER
5X WATER TO PRODUCE
Each bottle requires nearly 5 times its volume in water to manufacture and there is no evidence that bottled water is healthier than tap water.
NOT SAFER THAN TAP WATER
The bottled water industry has less stringent testing policies than governmental agencies which require rigorous testing of tap water.
22 MILLION TONS
The global annual amount of carbonated bottled water consumed outside its country of origin. This results in massive transportation and environmental damage.
INCREASED POLLUTION
77 percent of bottles in South Africa are not recycled and end up in landfill sites.

Water Bottle Garbage

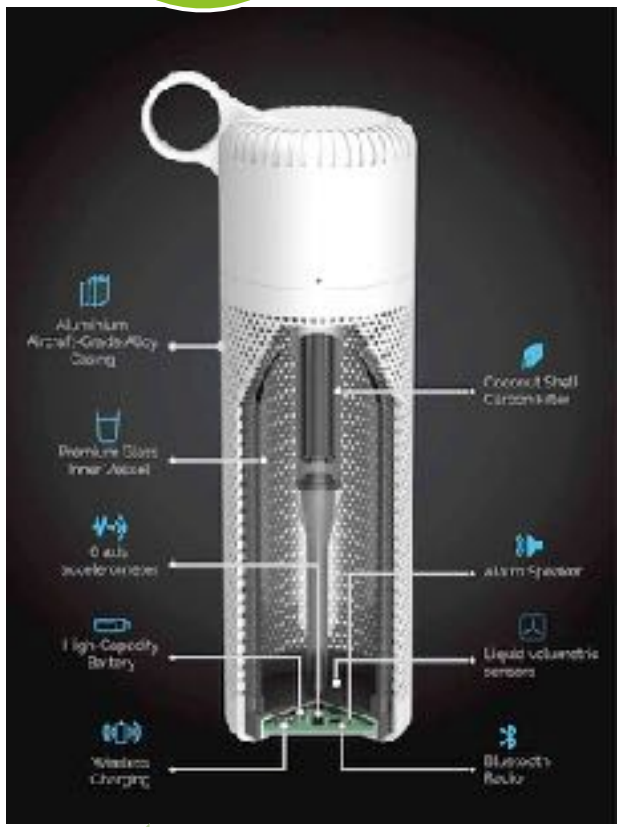
Quality of Water. Number of minerals and Ph level

Life cycle of Plastic, Whether it has been already used or not? If used how many times it has been opened, no of reuses allowed

Bar code containing information about Date, time position of bottle manufacturing , how it has been trransported

Position Tracking and in case of any contamination or deformation or completion of life cycle for reuses of bottle, data will be sent to Waste Management Company

To check about any contamination in water , any impurity



Idea of Smart Bottle and Smart Bottle Cap

Conclusion

- IoT has been gradually bringing a sea of technological changes in our daily lives, which in turn helps to making our life simpler and more comfortable, though various technologies and applications.

The key observations in this presentation are that

(1) There is no standard definition in worldwide

(2) Universal standardizations are required in architectural level

(3) Technologies are varying from vendor-vendor, so needs to be interoperable

(4) For better global governance, we need to build standard protocols. Let us hope future better IoT

- Once all our tasks are automated what do humans do everyday?

Creativity. Innovation. Humanity.


THANKS
AND QUESTIONS?