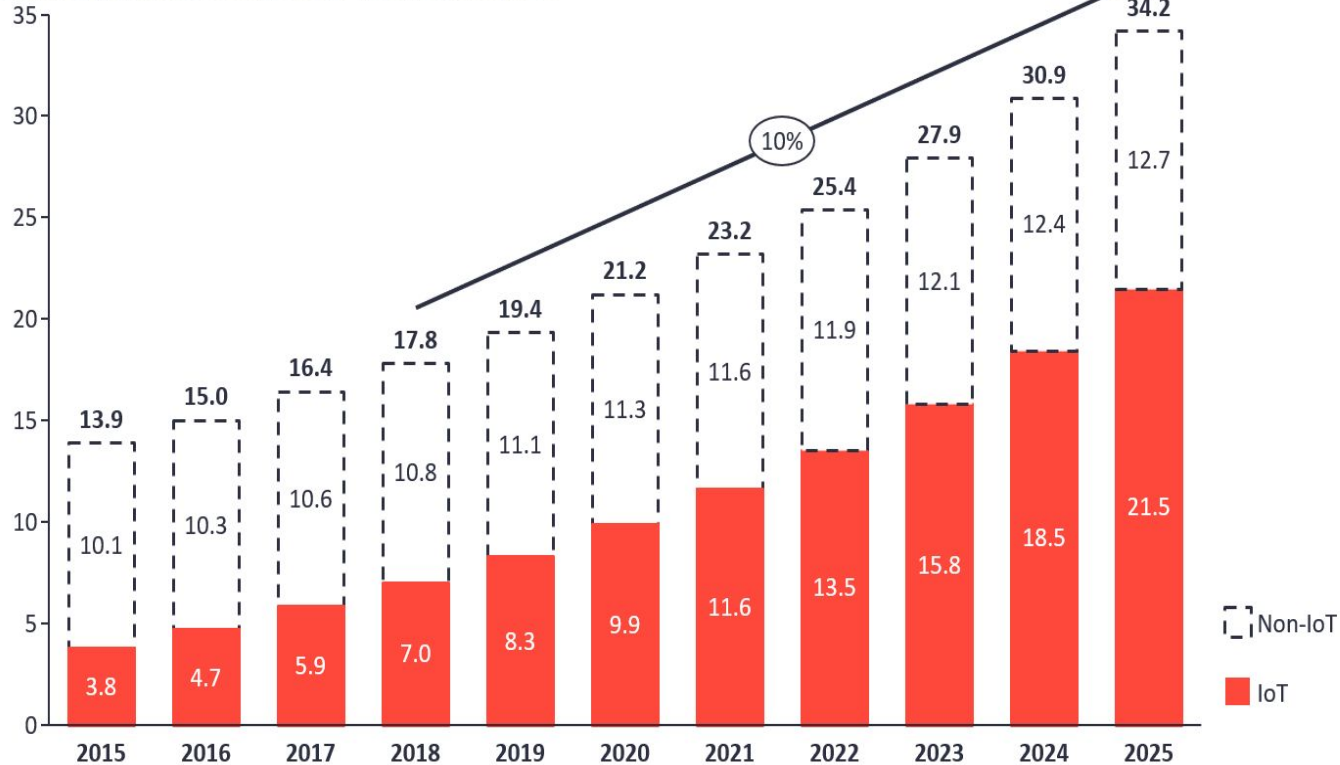


The Three Faces of IOT Ecosystem



Total number of active device connections worldwide

Number of global active Connections (installed base) in Bn



**\$560+ billion
in 2022**



**\$170 billion
in 2017**

IoT in our lives ...

Driverless Cars

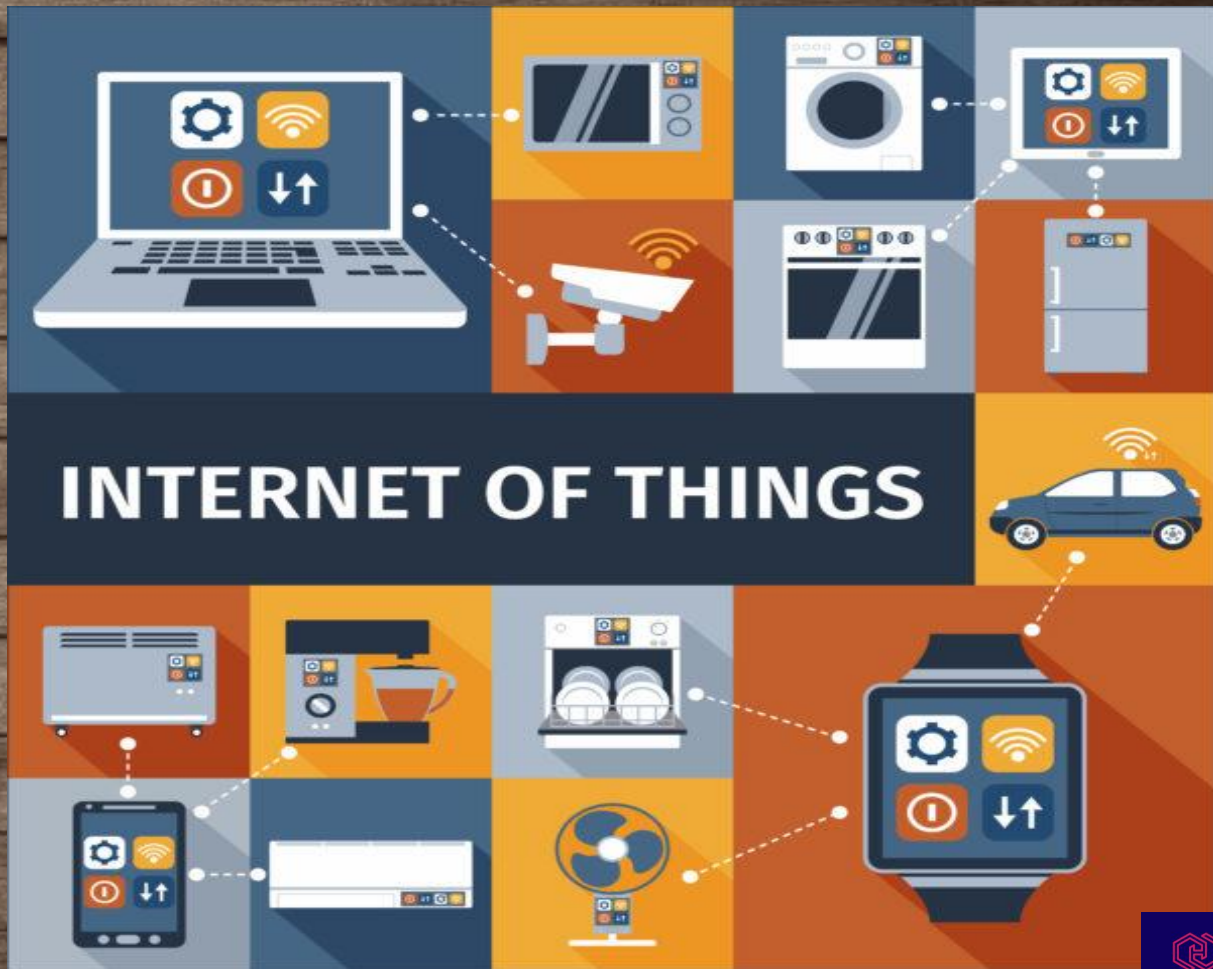
Smart Wearables

Amazon Go

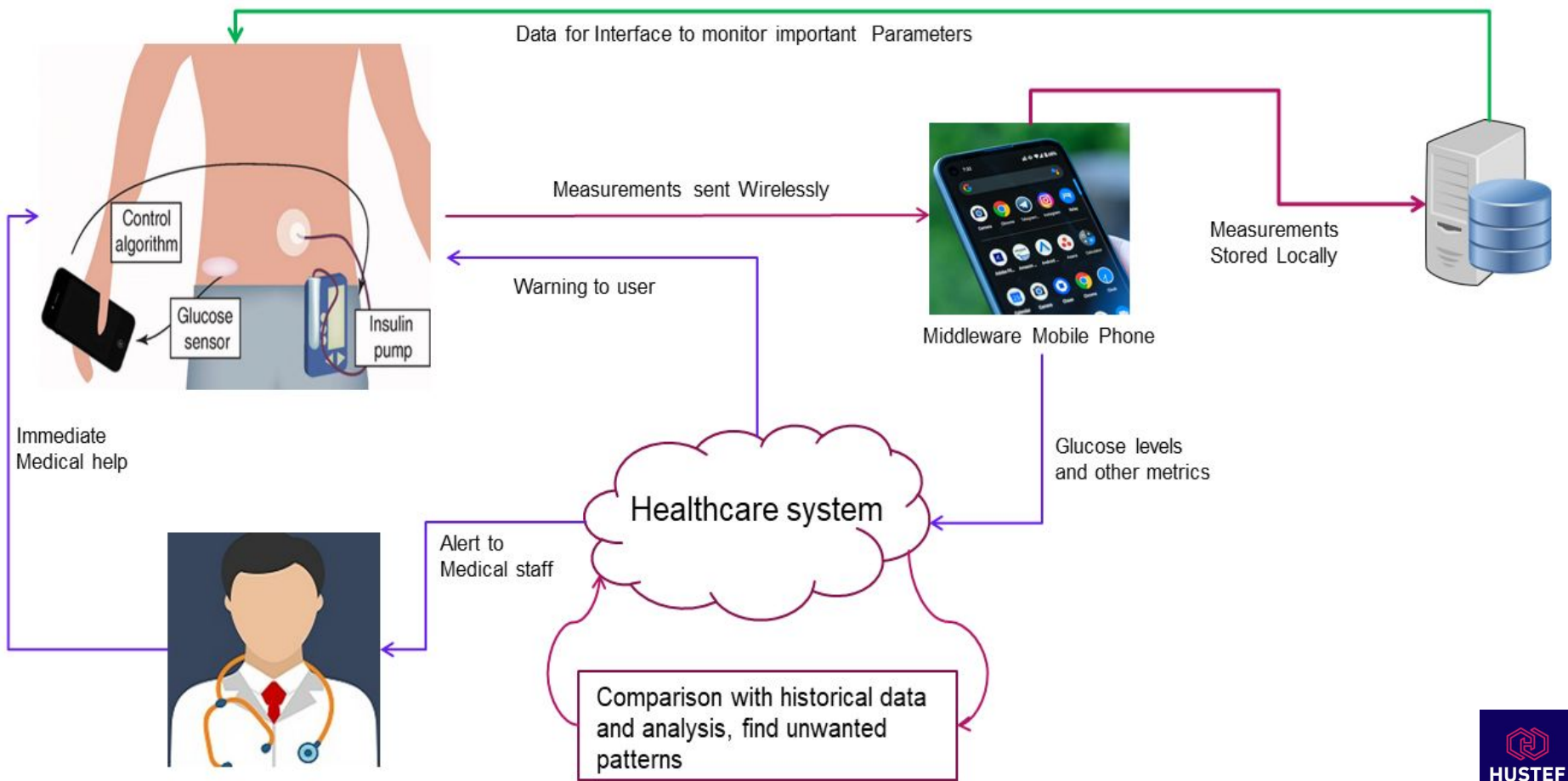
Smart Homes

Agriculture

Healthcare



IoT Saving lives ...



The “Good” in IoT that world has Adopted...

- In **BARCELONA**, citywide Wi-Fi linked to Sensors, software and Data

Analytics enabled the city to provide ..

- smart water technology
- automated street lighting
- remote controlled water irrigation in green spaces and water fountains
- “on-demand” waste pickups
- digital bus routes and smart parking meters

The “Good” in IoT that world has Adopted...

- In **CHICAGO**, they installed fitness tracker for city, where sensors collect data about air quality, climate and traffic, analyze it and then send to its citizens to consume it.
- In **LAS VEGAS**, the city is relying on IoT to improve traffic flow to smooth out bottlenecks and idled vehicles emitting carbon dioxide into the air.
- In **SOUTH KOREA** , a \$35 Billion city is getting designed to eliminate the need of cars



What's BAD about it ?

Research says...

52

64

62

1.5

1

IoT and Medicine

DISTRUST

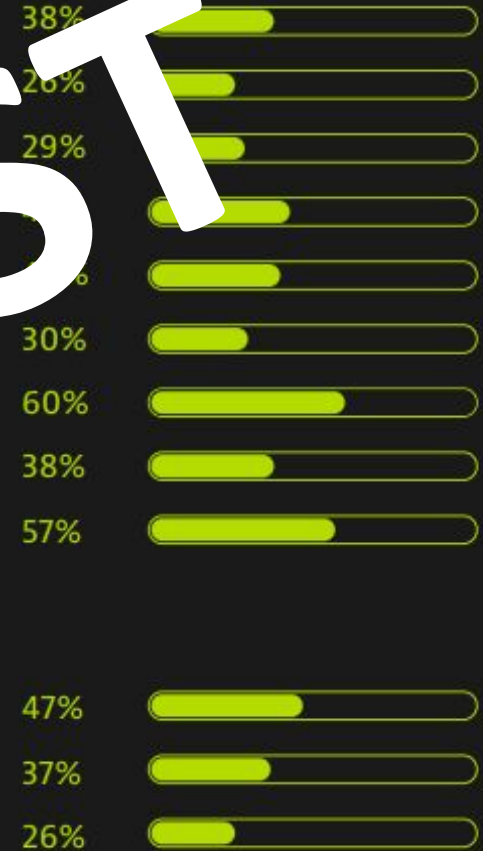
COUNTRIES

- GLOBAL
- UK
- USA
- FRANCE
- GERMANY
- AUSTRALIA
- BRAZIL
- SINGAPORE
- CHINA
- GERMANY
- 18-34
- 35-54
- 55+

Percentage of consumers that would not trust IoT devices to administer medication.



Percentage of consumers that would trust IoT devices to administer medication.



IoT and Self Driving Cars



GLOBAL

84% of consumers are deterred from using a self-driving car.



UK



US



FRANCE



GERMANY



AUSTRALIA



BRAZIL



SINGAPORE



CHINA

DISTRUST

IoT and Smart Homes

IoT Malfunction won't allow homeowners to control Thermostats

68%

IoT Malfunction won't allow homeowners to control Light

64%

IoT Malfunction may result in homeowners losing control of their homes

83%

IoT Malfunction worry about being overcharged for problems in smart meters

81%

The ROOT cause...

- Staggering volume of IoT devices coming to Market
- Rate of adoption is sky-rocketing due to Peer pressure and market competition

As a result...

- Consumer wants to invest big but is also increasing skeptical about the software reliability
- Fixing issues in hardware/software/firmware can be too costly
- Replacing a faulty device with another may use compatibility issues

We have a leakage



The Cost Trap..



- User can switch on/off mobile
- Recharge mobile
- Unlimited Software Updates



- Onsite repair is costly
- Huge network of interconnected devices is hard to repair



No. But can the term 'ugly' be used to describe a person's appearance?

Hackable Cardiac Devices

The Owlet Wi-Fi Baby Heart Monitor

Elon Musk: I'm afraid of the Terminator

The Jeep Hack

Mirai botnet in Action

DDoS Attack Attempts to Knock Liberia off the Internet

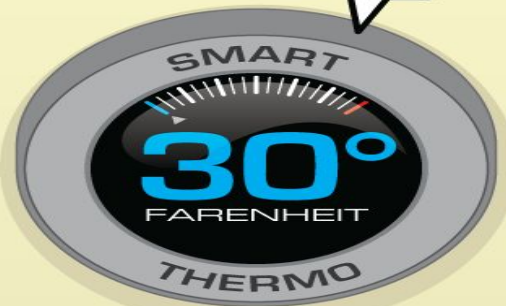
People are really worried about IoT data privacy and security—and they should be

Stephen Hawking: IoT could be a 'real danger'

Bad News: Bots Thrive on the IoT

IS HEAT YOUR THERMOSTAT'S FIRST PRIORITY?

FREEZING?
SORRY, I'M TOO BUSY
WITH THIS DDOS ATTACK
RIGHT NOW



IT'S ABOUT
TIME YOU JOINED
THE BOT ARMY

What would happen IF ... ?

- Medical alarm in an elderly patient fails to operate?
- The recall process of a faulty device fails and it is still embedded in the body?
- IoT sensor that monitors temperature fails?
- Hackers hack any electrical grid and shut down entire city, cause accidents as traffic lights stop working and put lives of critical patients in danger?
- Attackers gain hold of heart patient's pacemaker and then cause it to produce electric shocks?
- The Internet enabled devices are hacked and they start sending your audio and recorded videos to some server?
-



Are you SERIOUS?

Localization
API
Functionality
Compatibility
Usability

Application
Layer

Gateway &
Network Layer

Network Connectivity
Network Compatibility

Inter-Operability
API
Functionality

Services
Layer

Things (Sensor)
Layer

Functional
Security

Performance

Security

Compliance

Inter-opera
bility

Privacy &
Analytics

Test examples

Performance

e.g. : Verify response time against bench-marked time with defined connectivity conditions.

Security

e.g. : Verify no unauthorized access to device Or Verify the data on compromised devices can be remotely wiped out.

Compatibility Tests

e.g. : Verify IoT software supports defined set of devices Or Ensure device to device communications protocols are compatible

Test examples

E-to-E Application Testing –

e.g. : Verify IoT application has all required features working as per the specifications
Or verify whether the User Experience (UX) is good.

Device Interoperability

e.g. If a user is using an iPad as well as a Mac for IoT application, the transactions done or data saved on iPad is “As-is” when accessed through Mac desktop.



The GOOD Prevails in



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