Intro to IoT.

वस्तुओं का Internet

32 bits IPv4
IPv6

1. Nature of IoT.
2. Features of IoT
3. Benefits of IoT
4. Applications
5. Challenges in IoT

Today	Tomarrow
→ any Time	→ any Time
→ any place	→ any place
→ any body	→ any body
	→ any thing

progenetor of IoT

Kevin Ashton   Ashton
— 1999

WIFI
MEMS
Connecting
   protocols.

Smart Thermostat

TECHNOLOGY ROADMAP : The IoT

Technology Reach.

S/w Agents and advanced Sensor fusion

Miniaturization, Power efficient electronics & available spectrum.

Teleoperation & telepresence
— Ability to monitor & control distant objects

Physical world web.

Ubiquitous Positioning

Locating People & everyday objects

Ability of devices located indoors to receive geolocation signals.

Vertical-Market Applications.

Surveillance, security healthcare, transport food safety, document management.

Cost Reduction leading to diffusion into 2nd wave of Applications.

Demand for expedited logistics

RFID Tags for facilitating routing, inventorying and loss prevention

Supply chain Helpers.

Time

(RFID) — ASHTON   Inventory Supply chain;

Big Data

e book Reader   S. Camera   Wearable Computer   Smart meter   any other Smart device.

Connected over a network   promise of IoT

                                            Interoperability
                                            of these Technologies
                                            is still a Question?
                                            • ✓ Connectivity;
                                            • ✓ Connecting Protocols.
                                            • Building block

2G   Bluetooth   any many more
3G   WIRED   WIFI   Infrared
4G   LI FI   RFID
5G   M2M
6G   Space   m/c to m/c.
                                            Ballons

                                            Plant
                                            ATC1
                                            ATC2
                                            ATC3
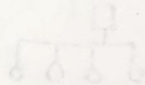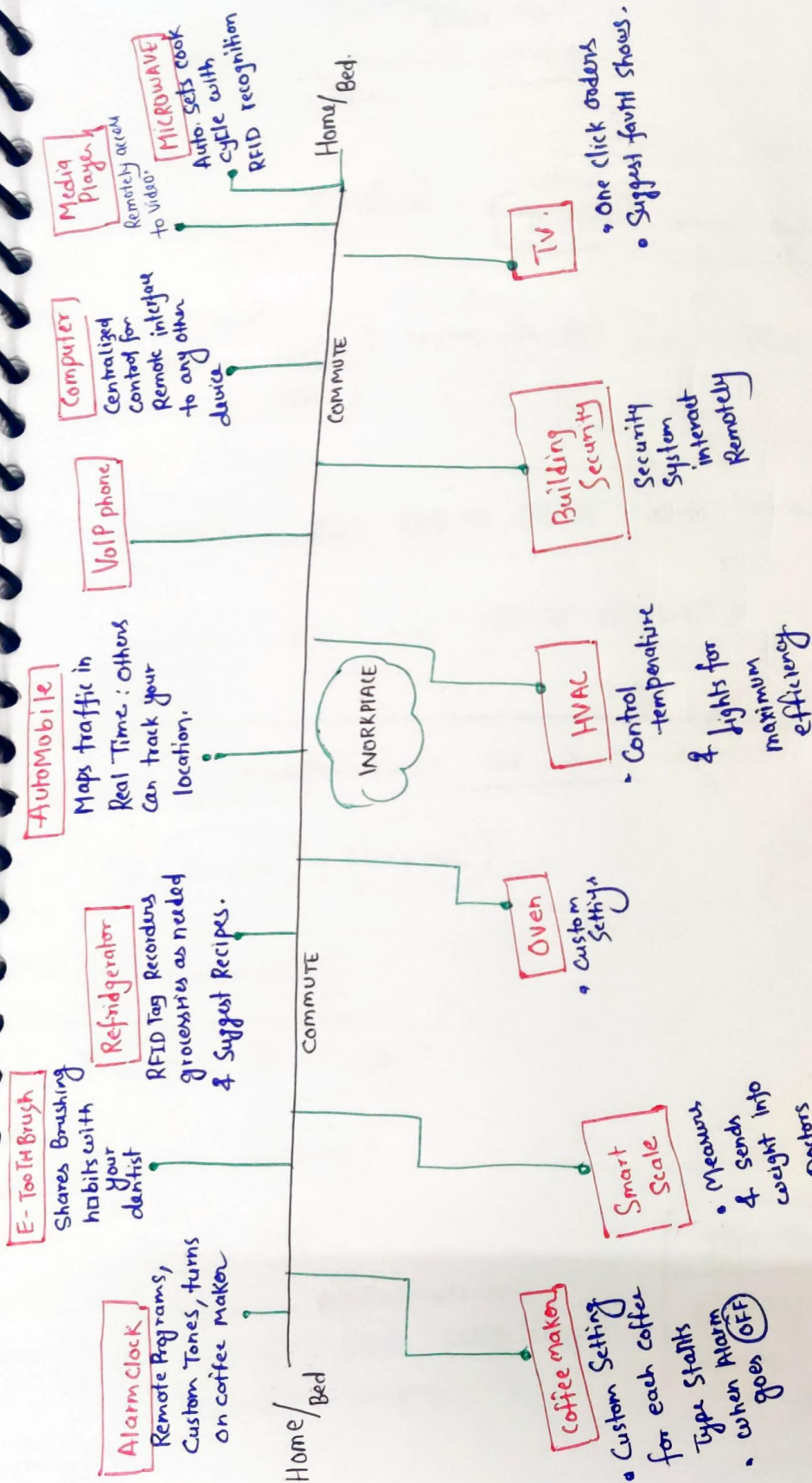   Protocol
                                            Language Protocol

Platforms &
Enablement
(horizontal)

|||

Applications
(verticals)

|||

Building blocks
(connection Protocols)

Range of Application.

Home/Bed.

Media Player — Remotely access to video?

MICROWAVE — Auto. sets cook cycle with RFID recognition

Computer — Centralized control for Remote interface to any other device

VoIP phone

Automobile — Maps traffic in Real Time ; others Can track your location.

Refridgerator — RFID Tag Recordings groceries as needed & Suggest Recipes.

E-TooTH Brush — Shares Brushing habits with your dentist

Alarm Clock — Remote Programs, Custom Tones, turns on coffee maker

COMMUTE

TV — • One click orders • Suggest favñt shows.

Building Security — Security System interact Remotely

HVAC — • Control -temperature & lights for maximum efficiency

WORKPLACE

Oven — • Custom Settings

COMMUTE

Smart Scale — • Measure & Sends weight Info to Doctors & your Diet planner

SMART DIET PLANNER

Home/Bed

coffee maker — • Custom Setting for each coffee Type Starts • when Alarm goes (OFF)

History of IOT.

1970 — (Idea of Connected device.)

1990 — जॉन रोमकी (Toaster) which can be on/off by internet.

1995 — सीमेंस ने M2M के लिये first Cellular Module पेश किया गया ।

(1999) — IOT शब्द का उपयोग Kevin Ashton द्वारा किया गया ।

2008 — IOT real अस्तित्व में आया ।

COMPONENTS OF IOT

① (Sensor) / (Device)

2. Connectivity.

3. (Data Processing)

4. [User Interface]

IOT के लाभ :

1. Technical optimization.
2. Improved Data Collection.
3. Reduced waste

IOT के DisAdvantage

Security
Privacy
Flexibility
Complexity
Compliance.

IoT अनुप्रयोग

Smart Thermostats.

Connected Cars.

Activity Trackers.

Smart Outlet.

Parking Sensor

Connect Health

Smart City.

Smart home.

Smart Supply chain.

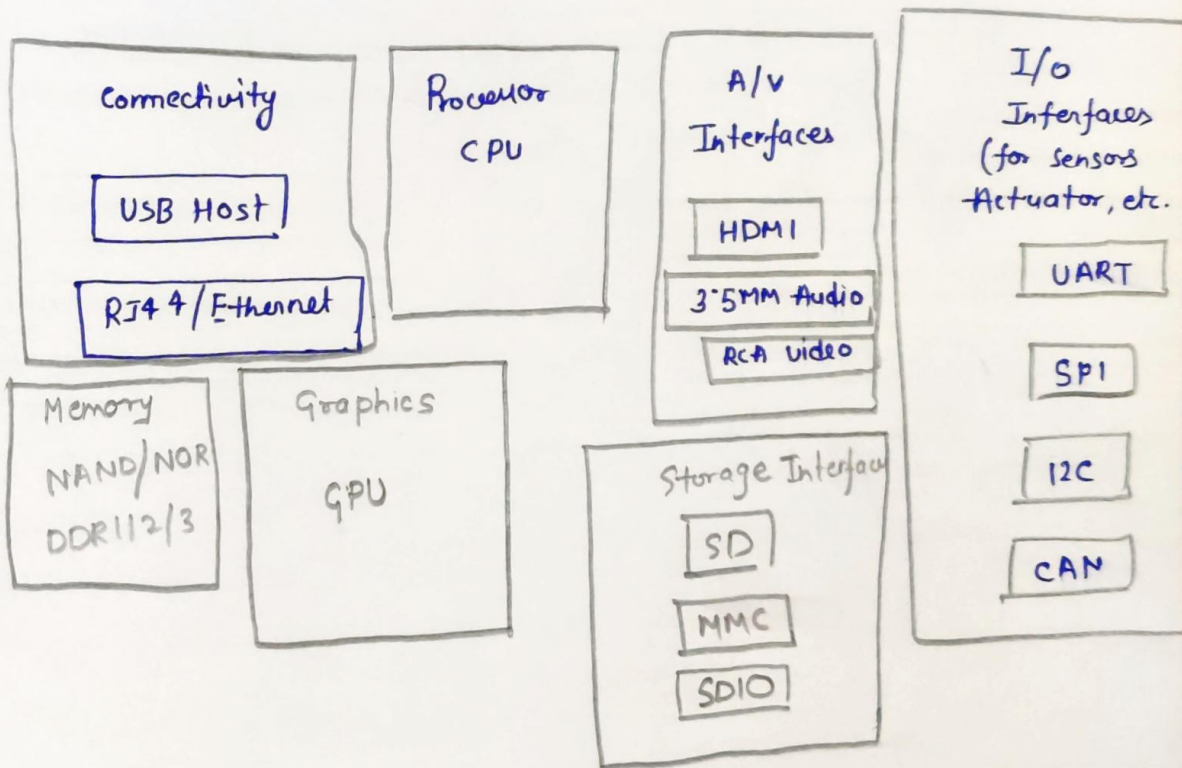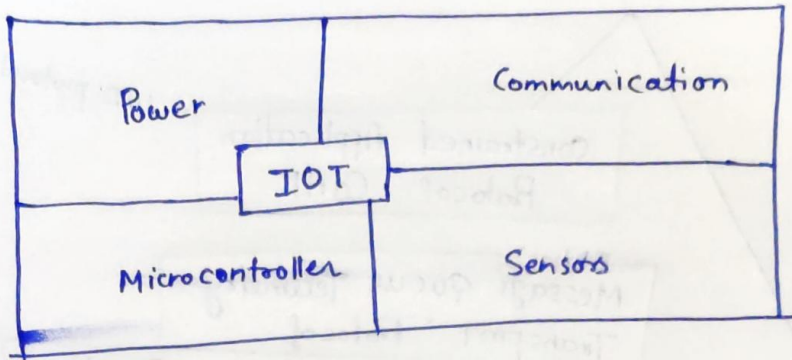## Characteristics of IOT

Connectivity

Things

Data

Communication

Intelligence

Action.

Ecosystem.

Physical Design of IOT

X————————————————X

Power	Communication
IOT	
Microcontroller	Sensors

Connectivity

[USB Host]

[RJ4 4/Ethernet]

Processor
CPU

A/v Interfaces

[HDMI]

[3·5MM Audio]

[RCA video]

I/o Interfaces
(for sensors Actuator, etc.

[UART]

[SPI]

[I2C]

[CAN]

Memory
NAND/NOR
DDR1|2/3

Graphics
GPU

Storage Interface

[SD]

[MMC]

[SDIO]

Generic Block Diagram of IOT

IOT Protocol

UPD protocol.

Constrained Application Protocol CoAP

Message Queue Telemetry Transport Protocol

Advance Messaging Queuing Protocol

Data Distribution Services