Applications in diferent sectors:

* **Health & Life Style**
  - wearable Electronics
  - Health & Fitness Monitoring

* **Smart cities**
  - Smart parking
  - Smart Roads
  - Emergency Response

* **Industries**
  - Machine Diagnosis
  - Indoor Air quality Monitoring

* **Logistics**
  - Shipment Monitoring
  - Remote vehicle Diagnostics
  - Fleet Tracking

* **Home Automation**
  - Smart lighting
  - Smart Appliance
  - Smart security systems

* **Energy**
  - Smart Grids
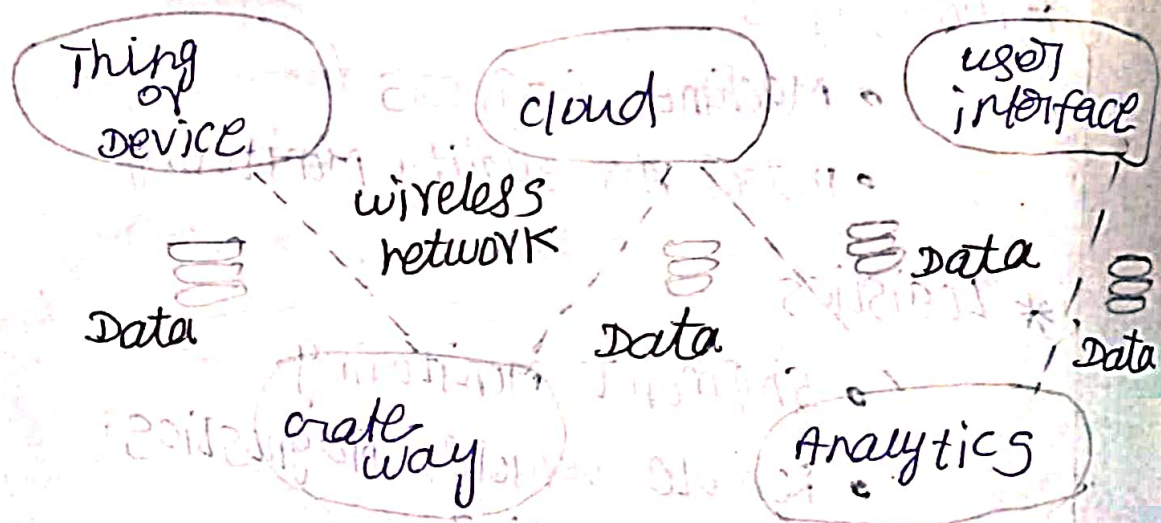 - Renewable Energy systems

Environment
- weather Monitoring
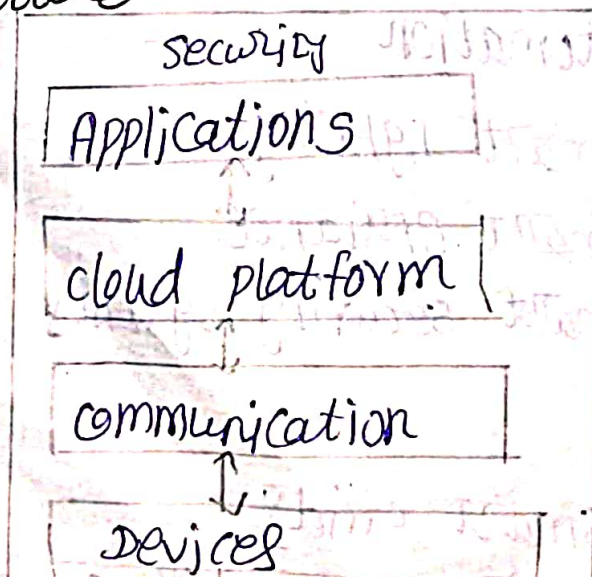- Forest Fire Detection
- Air pollution
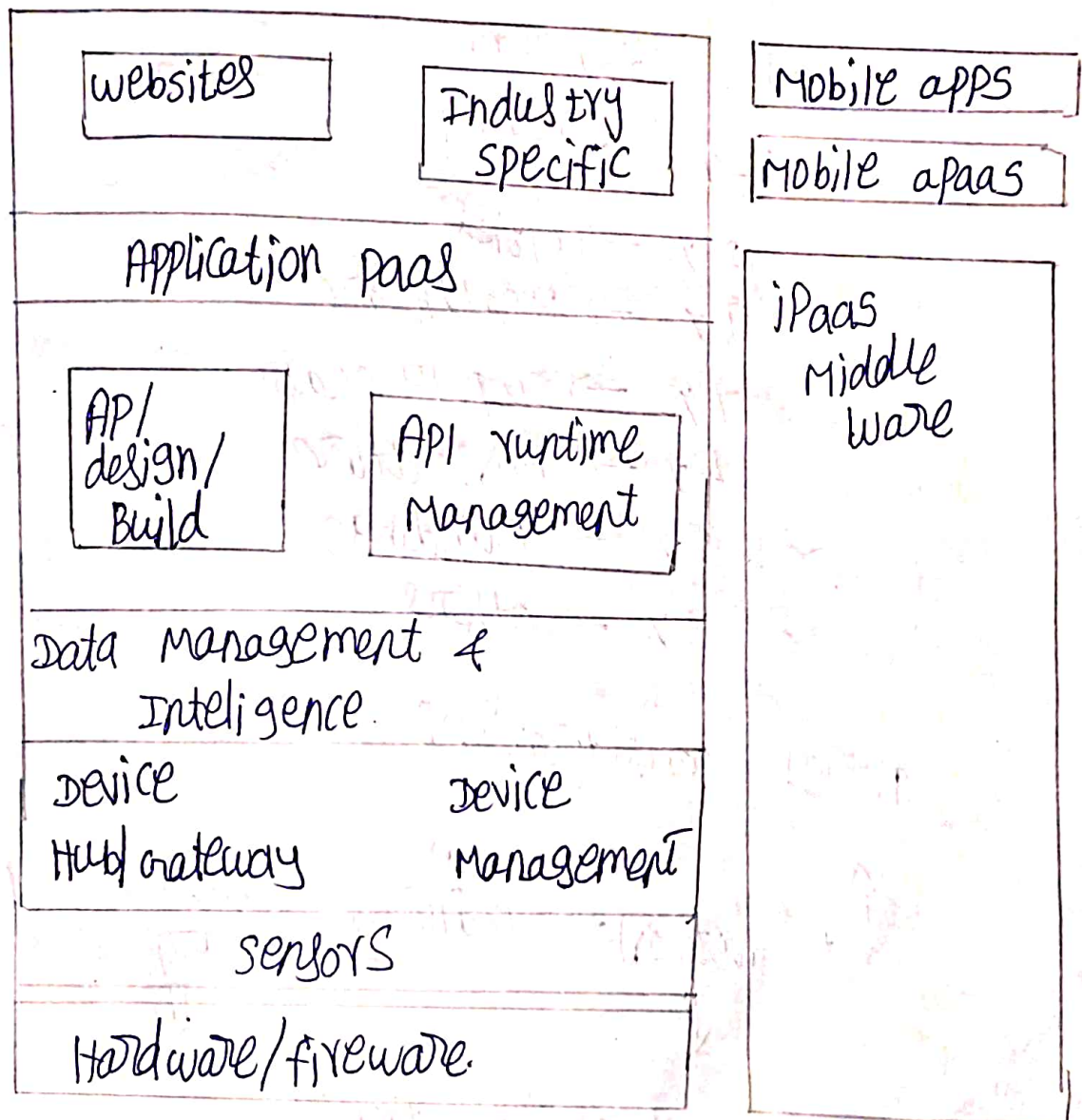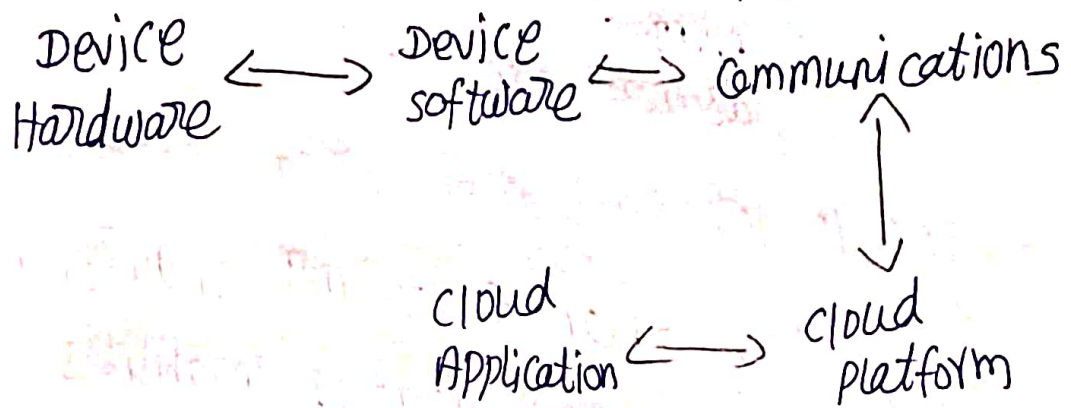
Agriculture
- smart irrigation
- green House

Building Blocks of IOT

IOT Architecture

IoT Technology Stack

Device Hardware $\longleftrightarrow$ Device Software $\longleftrightarrow$ Communications

Cloud Application $\longleftrightarrow$ Cloud Platform

		Mobile apps
websites	Industry Specific	Mobile apaas

Application Paas

AP/ design/ Build	API Runtime Management

Data Management & Inteligence.

DEVICE Hub/ Gateway	Device Management

Sensors

Hardware/ fireware.

iPaas Middleware

IOT Technology stack
- NVIDIA
- ARM AVR
- intel
- http://
- IBM watson

- Learn
- Tensor Flow
- NORDIC
- dsango etc

TOP 10 IOT Application areas 2020

22% → Manufacturing /Industrial

15% → Transportation /Mobility

14% → Energy

12% → Retail

12% → Cities

9% → Healthcare

7% → Supply chain

4% → Agriculture

3% → Buildings

3% → Others

Design considerations:

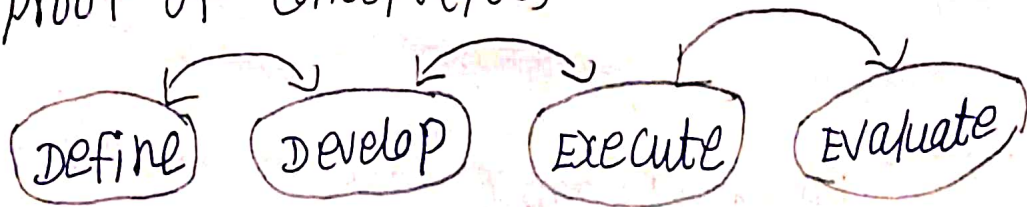cost   Network   features   user interface   power

Other design considerations:

- Applicability
- Software updates
- Support
- Data Management

- Data collection
- Analytics
- Market Trends

proof of Concept (poc)

Define → Develop → Execute → Evaluate

How to build a successful poc?

① Brainstorming
- project analysis, improvements, HW/SW requirements, communications.

② Development & config :-
- Build solid base on IoT platform by customizing and configuring the device

③ Launch your prototype
- Demonstration / implementation Panel creation ---- all with our support team.

④. Result evaluation
Generate the reports and data which allow us to make a comparative analysis of results.

Actuator

Electrical impulses sent from the control system & converting them into mechanical motion, it actually introduces changes to its physical surroundings by means of a varietly of simple actions, including but not limited to opening and closing values, changing other devices position or angle.

Actuators

- linear actuators
- Motors
- Relays
- solenoids

Sensor to Actuator flow

Sensor   Control Center   Actuator

| Temperature sensor detects heat | sends this detect signal to the control center | control center sends command to sprinkler | sprinkler turns on & puts out flame |

Types of Arduino:

- Entry level Boards
- Wearable Boards
- Enhanced Boards
- IOT Board

Features Arduino:

- Operating voltages   5V and 3.3V
- Analog input pins   6
- SRAM   2KB (AT mega 328)
- Clock speed   16 MHz
- Microcontroller   AT mega 328

Software:-

- Launch the Arduino IDE
- Select your serial Port
- Select yours board
- Open the example
- Upload the program