COSC2473

Introduction

A short history of computing

Mechanical computers

- A ‘computer’ originally meant a person who performed calculations
- Early mechanical computing tools ranged from the Abacus (~2000 BCE) to the slide rule (1600s)

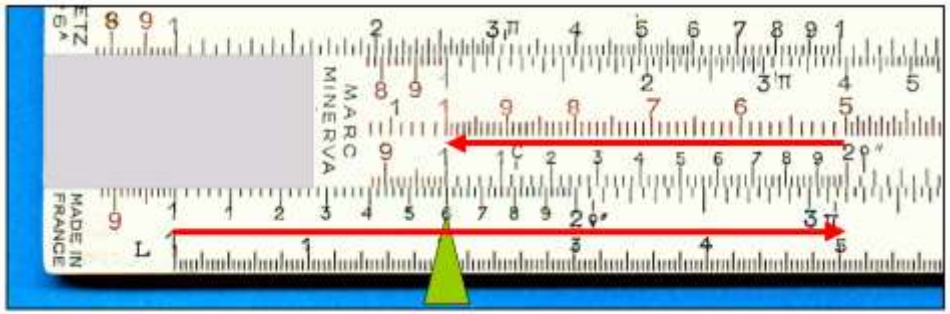
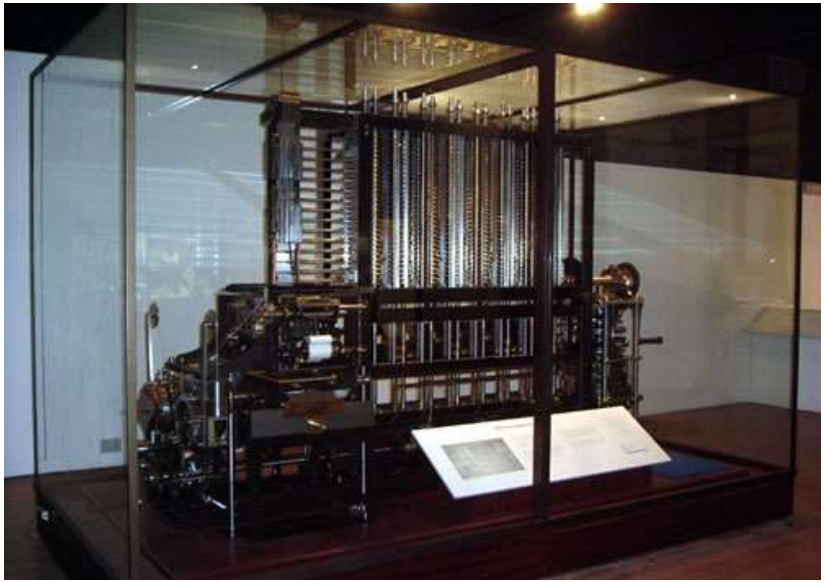


Photo: Jean-Jacques Milan

Mechanical computers

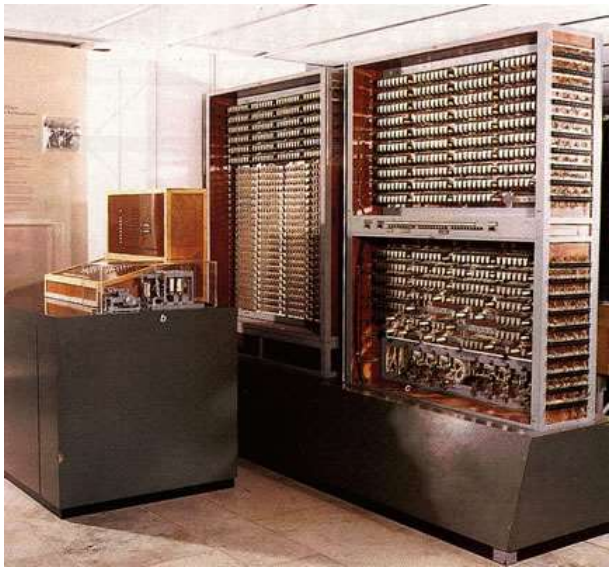
- Charles Babbage designed a Difference Engine in 1822
  - designed to perform complex arithmetic

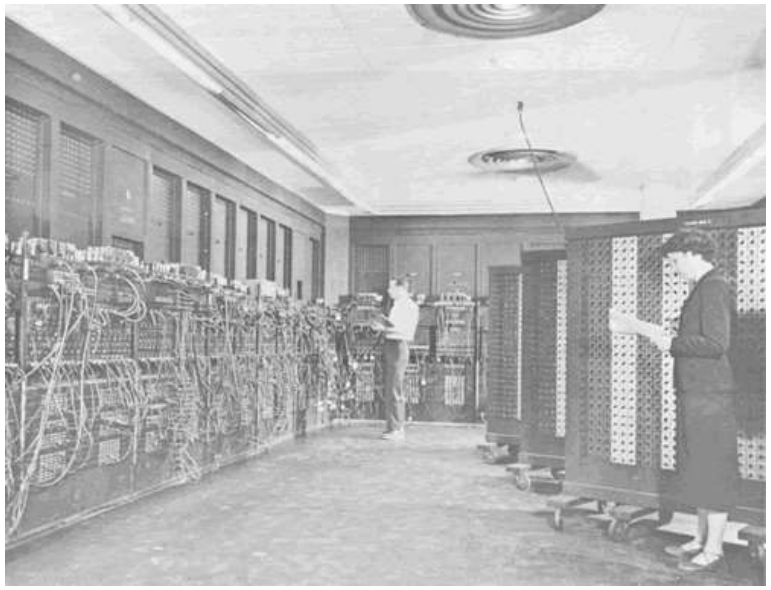


- And an Analytical Engine in 1834
  - programmable and capable of complex logic

Early electrical computers

- 1941 Konrad Zuse completes the Z3
  - world's first programmable digital computer
  - used relays





- 1943 ENIAC built by US army
  - used valves
  - general purpose computer

First Computer in Melbourne

- 768 20 bit words CSIRO, Sydney, 1949, Melbourne Uni 1955 now in Melbourne Museum

Photo: IBM

Integrated circuits

- 1947 Transistor invented
  - solid state circuits possible
  - increased reliability and smaller size vs valves
- 1958 Integrated circuit developed

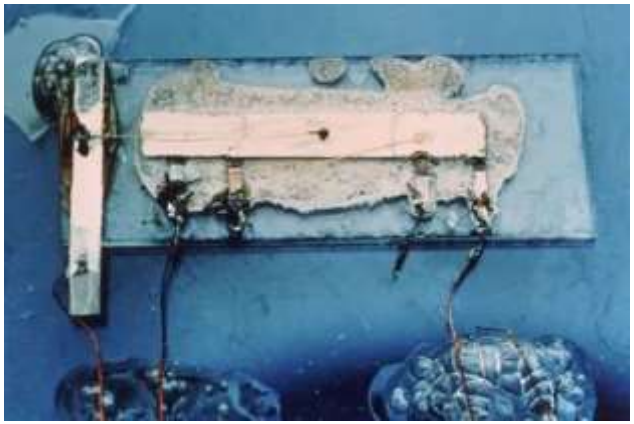


Photo: Texas Instruments

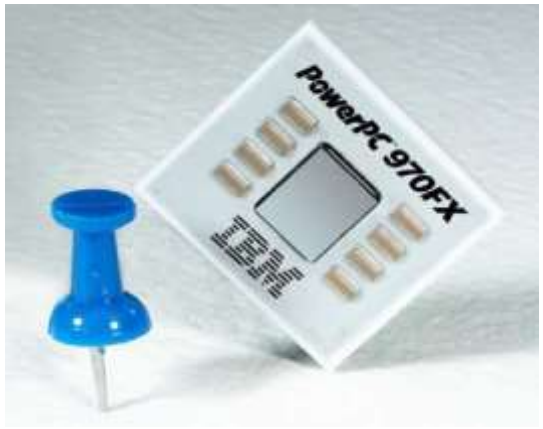


Photo: IBM

  - making processor chips possible

Mainframes & supercomputers

- 1960s+ Mainframes
  - designed to be highly reliable
  - IBM System/360 (now Z Series) introduced in1964

Photo: IBM

Tianhe-2. Photo: NUDT

- Supercomputers
  - at upper limit of computing ability
  - often specialised for particular types of calculations

Personal computers

- 1975 Altair 8800
  - hobby kit
  - used Microsoft's first product: Altair BASIC
  - started an explosion in demand for personal computers

Photo: Tom Carlson

- 1982 IBM PC introduced
  - became dominant desktop standard

PDAs, smart phones & tablets

- 1993 Newton (Apple)
  - personal digital assistant (PDA)
  - a commercial failure but educated consumers

Photo: Rama, Cc-by-sa-2.0-f

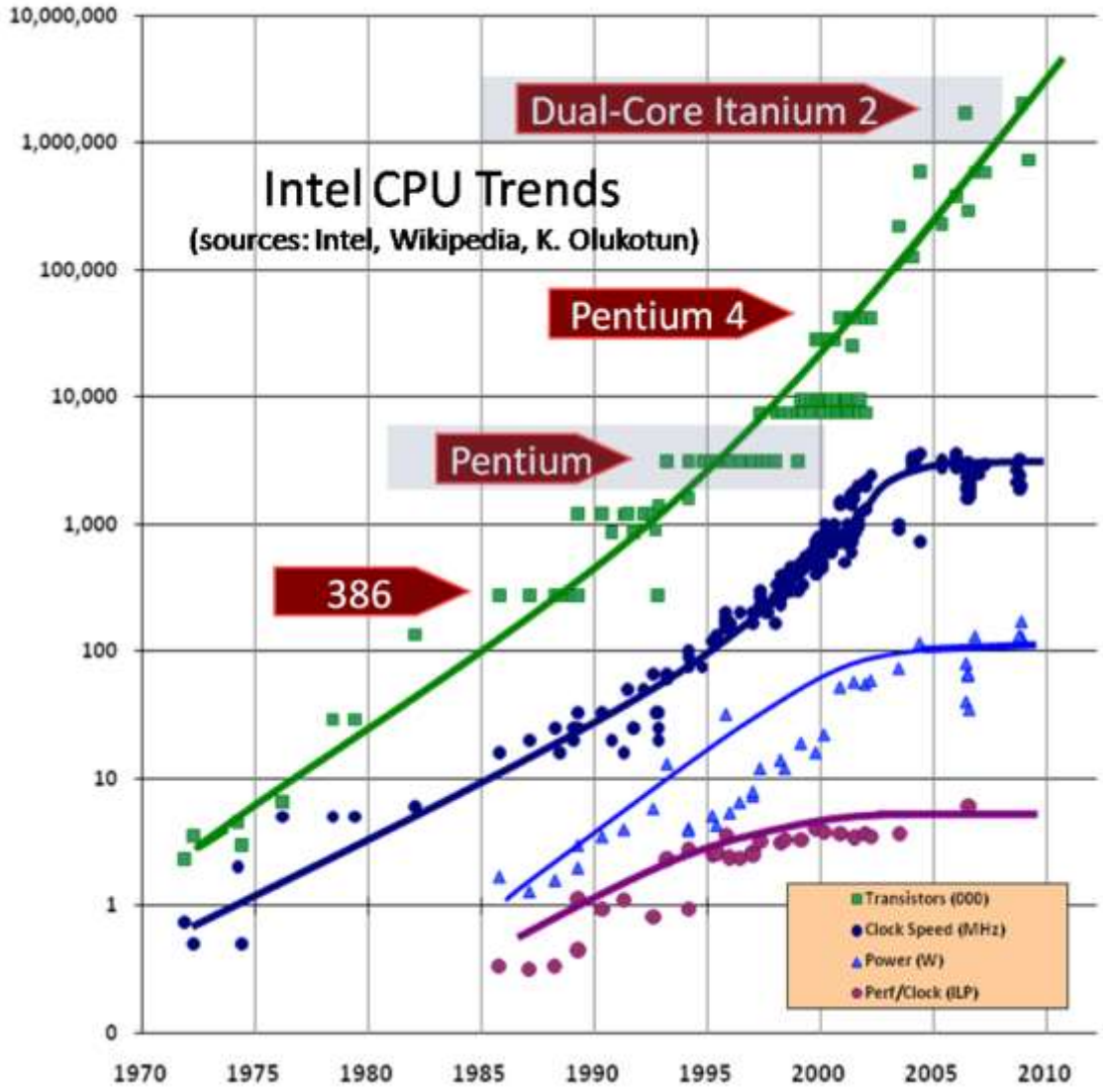
- Smartphones
  - merged a phone

Photo: Apple

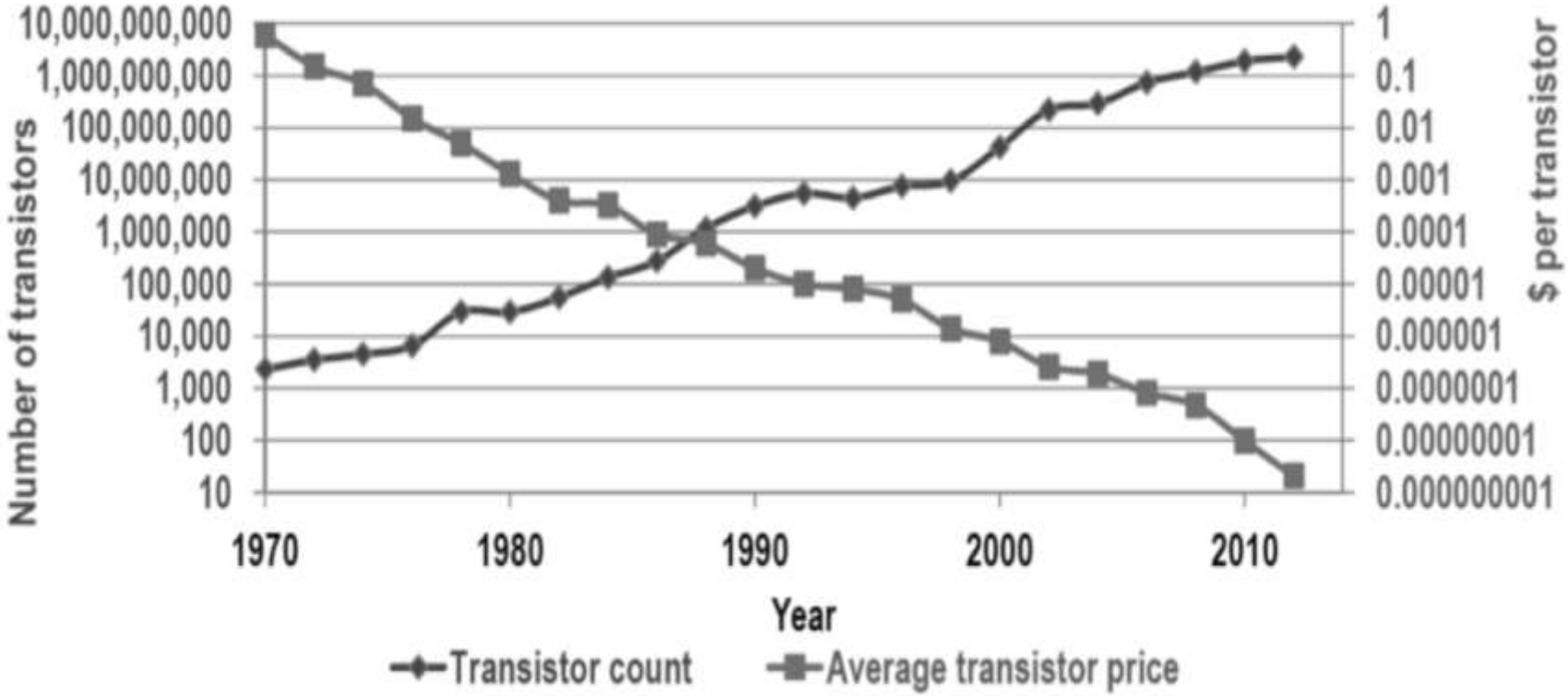
Photo: Samsung

- Tablets
  - mobile computing device
  - uses touch screen for input

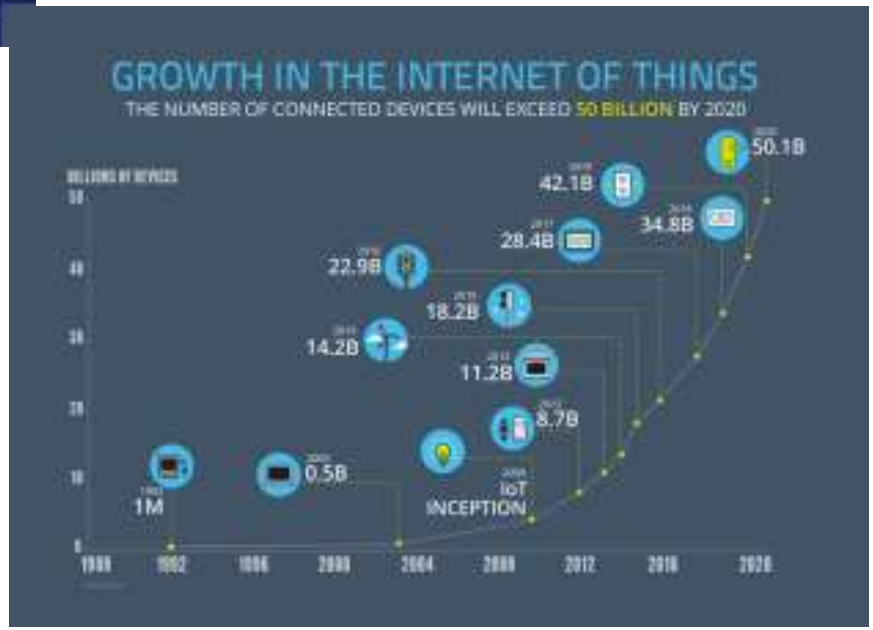
All made possible by miniaturization



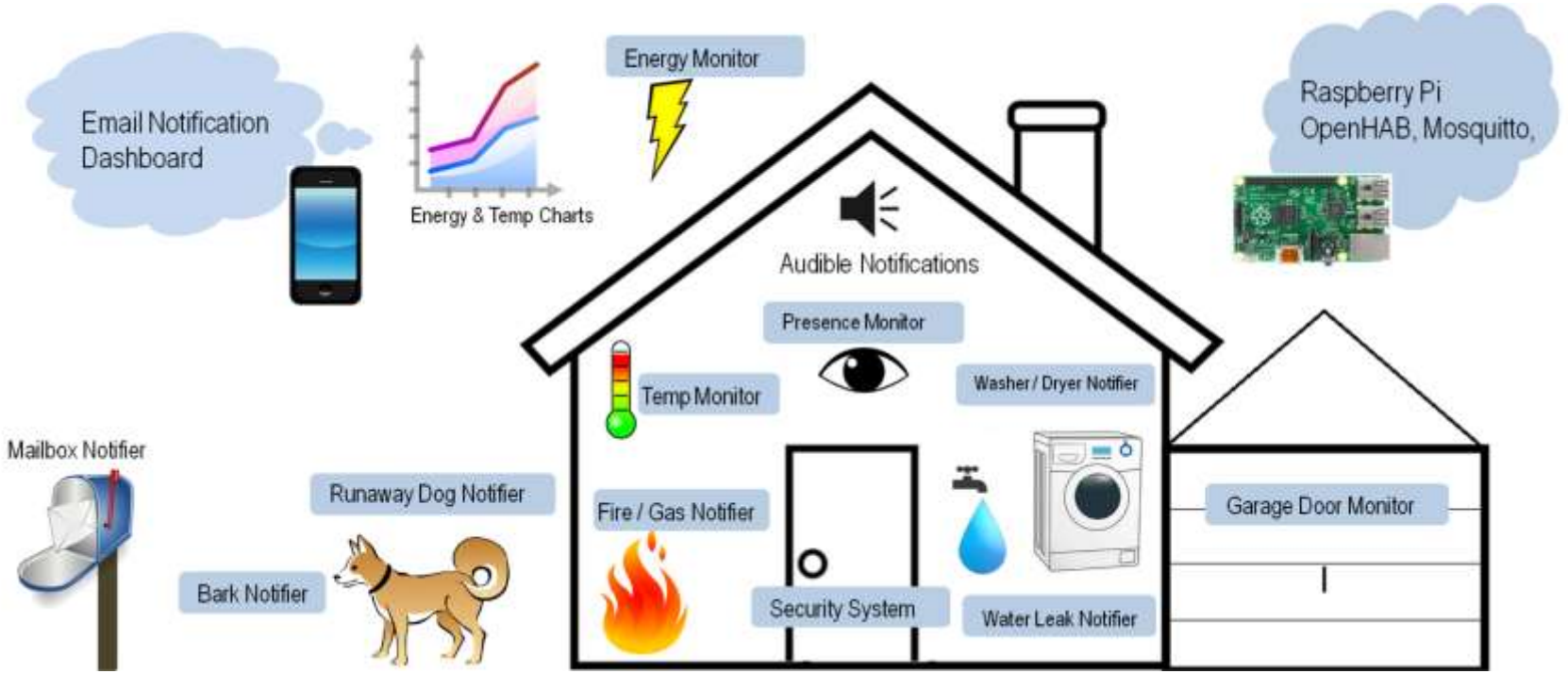
The "computing revolution is driven by economics



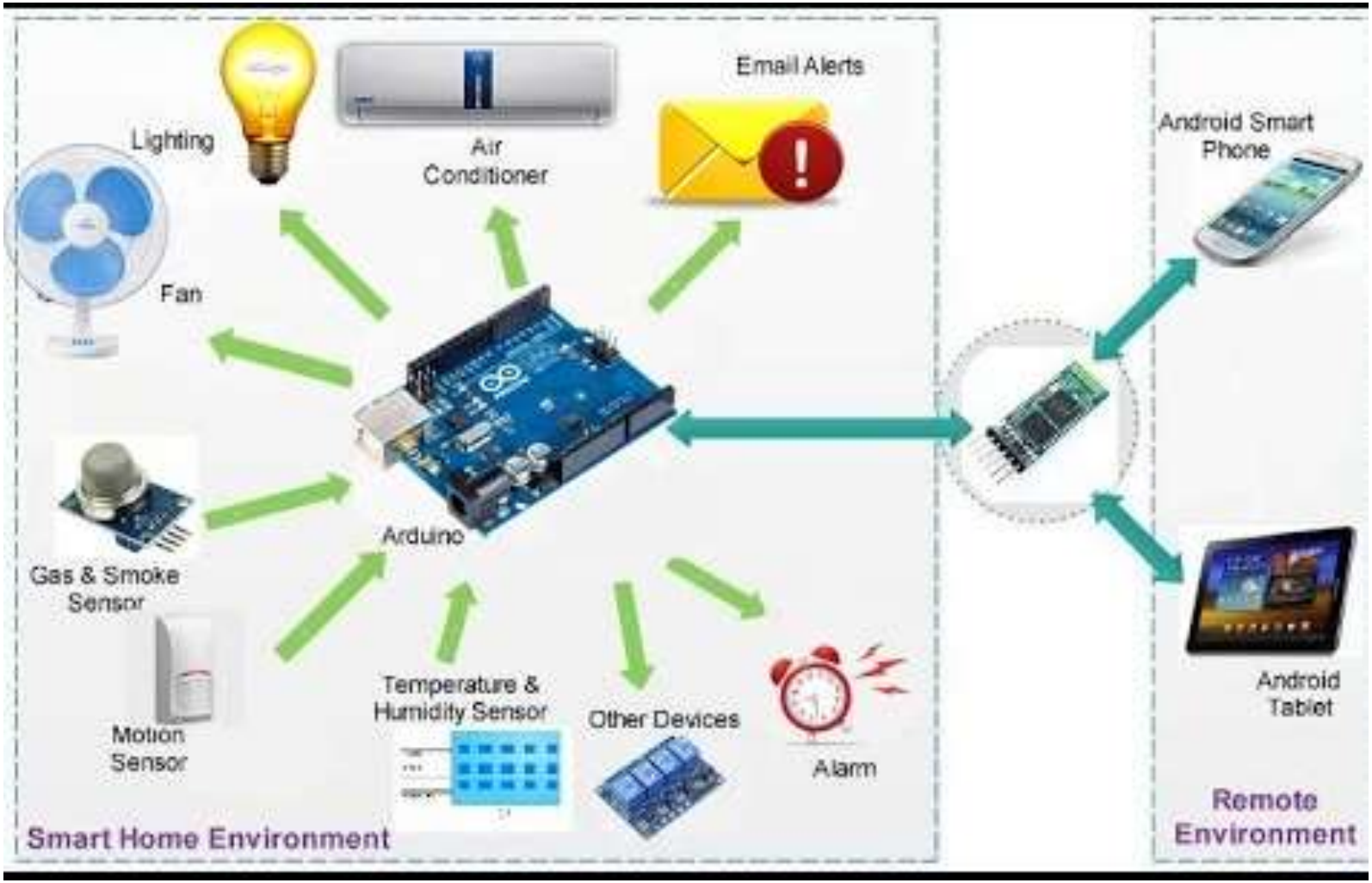
The Internet of Things



IoT at home


Email Notification
Dashboard
Energy & Temp Charts
Energy Monitor
Raspberry Pi
OpenHAB, Mosquitto,
Audible Notifications
Presence Monitor
Temp Monitor
Washer / Dryer Notifier
Mailbox Notifier
Runaway Dog Notifier
Fire / Gas Notifier
Garage Door Monitor
Bark Notifier
Security System
Water Leak Notifier

IoT at home


Email Alerts
Lighting
Air Conditioner
Android Smart Phone
Fan
Arduino
Gas & Smoke Sensor
Motion Sensor
Temperature & Humidity Sensor
Other Devices
Alarm
Android Tablet
Smart Home Environment
Remote Environment

Home assistants

BBC Micro:bit