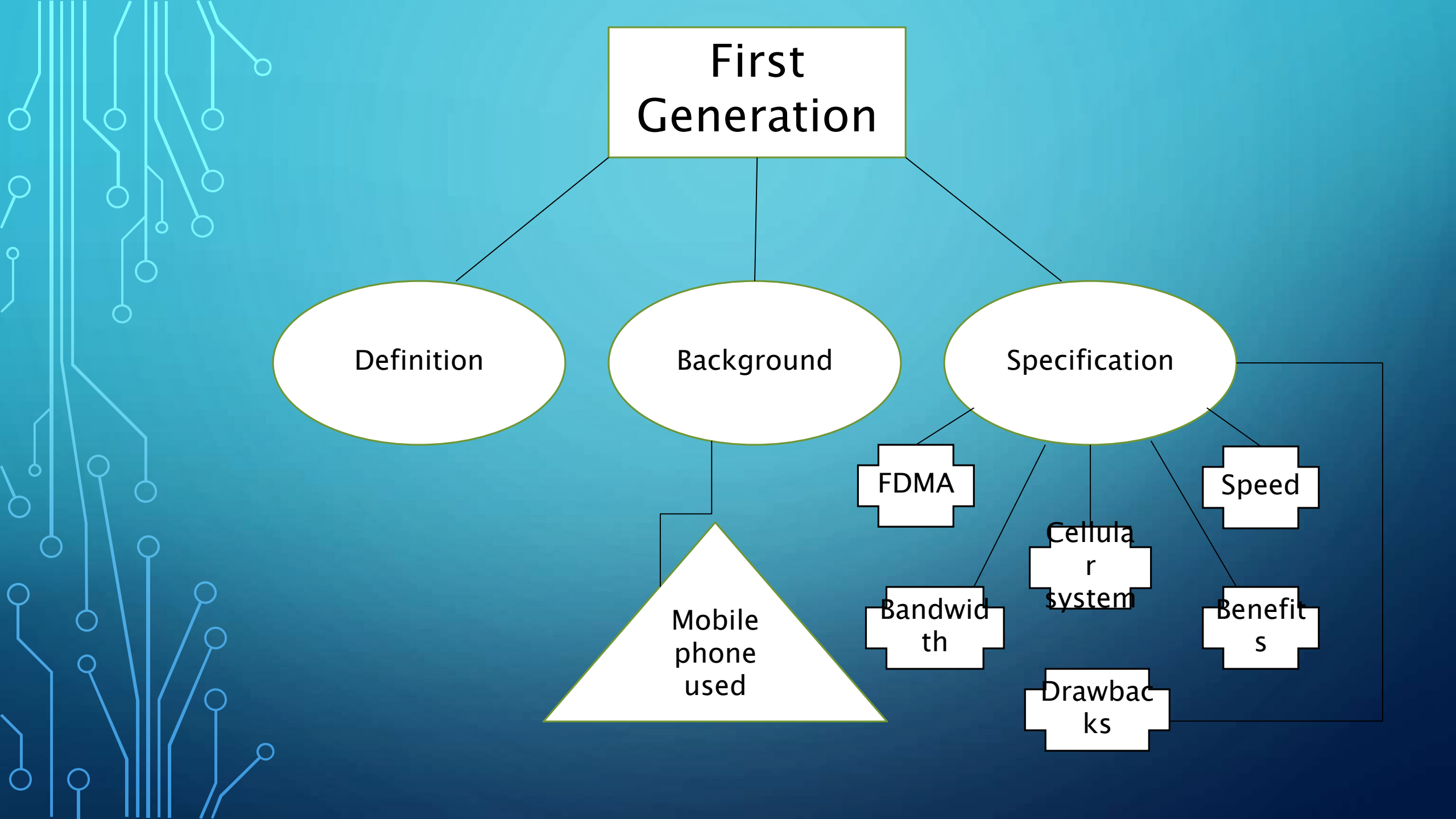
STARTING WITH THE NAME OF ALLAH

Presentation topic

1G

FIRST GENERATION


First Generation
Definition
Background
Specification
Mobile phone used
FDMA
Cellular system
Speed
Bandwidth
Benefits
Drawbacks

DEFINATION

- **1G** (or 1-G) refers to the first generation of wireless telephone technology (mobile telecommunications). These are the analog telecommunications standards that were introduced in the 1980s and continued until being replaced by 2G digital telecommunications.

BACKGROUND

- The first generation (1G) mobile communications technologies had limited capacity, serving only niche markets for the military, certain government agencies and users in special industries (e.g. loggers, construction foremen, realtors and celebrities). In the 1960s and 1970s, this service was geographically limited and the mobile device was too large, so it was usually mounted in cars or trucks; the smallest was a briefcase model. This form of mobile communications were not ready for mass development, because of:

(1) the limited capacity to service the general population.

(2) the limited technology capability to cover large areas.

(3) the large size of the mobile device.

(4) the high prices of mobile devices and tariffs.

MOBILE PHONE USED IN 1G

FIRST GENERATION

- Operates at
  - Frequency Division Multiple Access (FDMA)
  - Operates in the 900MHz frequency r
    - Three parts to the communications
      - Voice channels
      - Paging Channels (sleep mode proced
      - Control Channels (avoid from interru

FDMA CONTINUE…

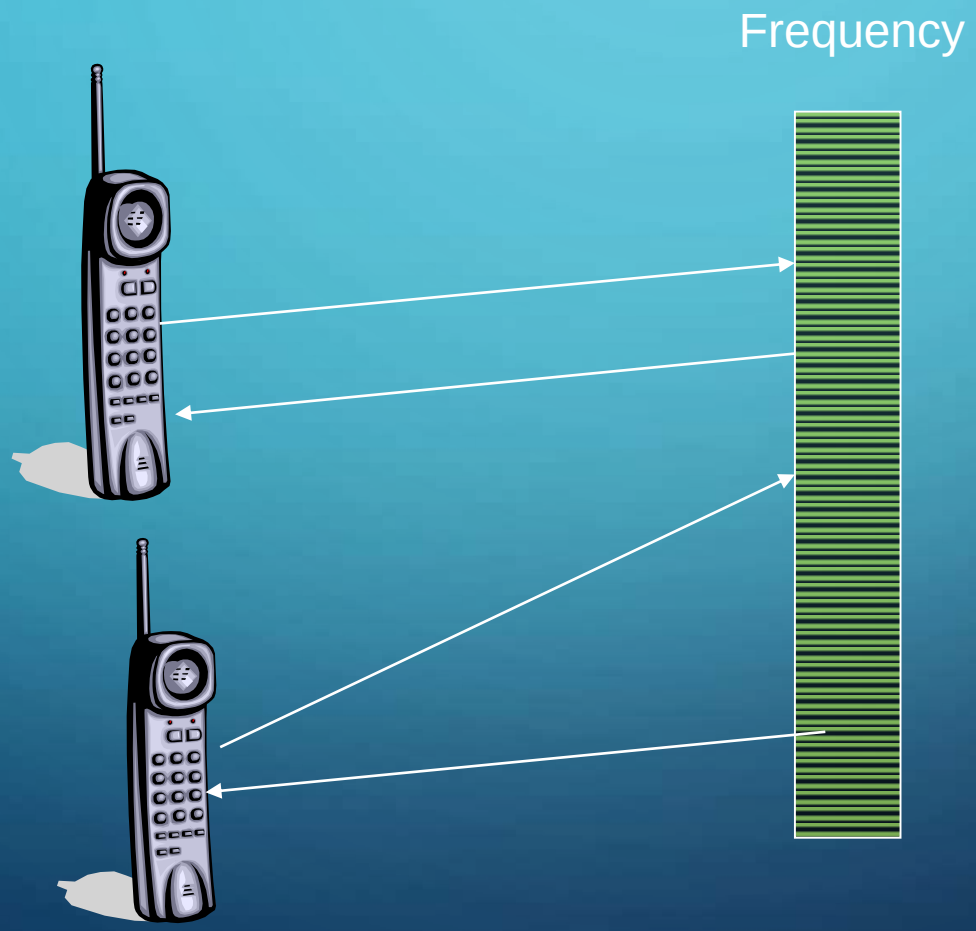
- In FDMA, all users share the frequency channel simultaneously but each user transmits at single frequency.
- FDMA can be used with both analog and digital signal.
- FDMA requires high-performing filters in the radio hardware, in contrast to TDMA.
- FDMA is not unprotected to the timing problems that TDMA has. Since a predetermined frequency band is available for the entire period of communication, stream data (a continuous flow of data that may not be packetized) can easily be used with FDMA.
- Due to the frequency filtering, FDMA is not sensitive to near-far problem which is pronounced for CDMA.
- Each user transmits and receives at different frequencies as each user gets a unique frequency slots.

PCS – 1G TECHNOLOGY

- FDMA
  - Breaks up the available frequency into 30 KHz channels
    - Allocates a single channel to each phone call
    - The channel is agreed with the Base station before transmission takes place on agreed and reserved channel
    - The device can then transmit on this channel
      - No other device can share this channel even if the person is not talking at the time!
      - A different channel is required to receive
    - The voice/sound is transmitted as analogue data, which means that a large than required channel has to be allocated.

PCS – 1G TECHNOLOGY

- FDMA

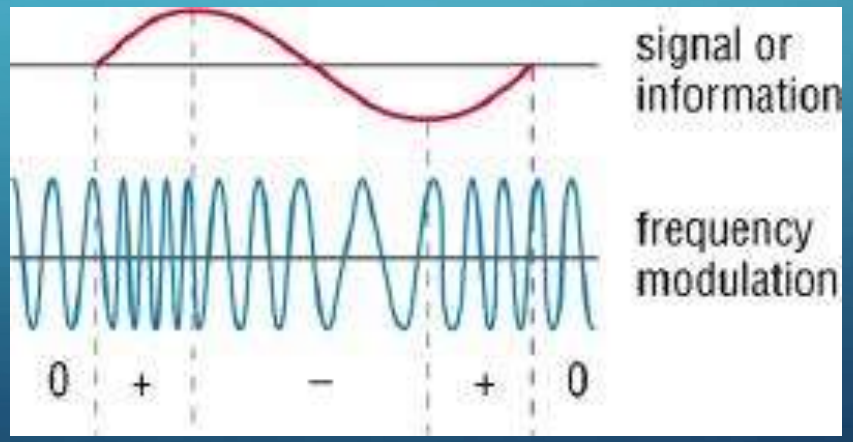


PCS – 1G TECHNOLOGY

- FDMA
  - You use this technology all of the time!
    - Consider your radio in the house
    - As you want different information you change the frequency which you are receiving

PCS – 1G TECHNOLOGY

- Voice calls
  - Are transferred using Frequency modulation
  - The rate at which the carrier wave undulates is changed
    - Encoding information
    - More resistant to interference than AM radio



CONTINUED…

- Voice signals only
- Analogue cellular phone
- AMPS (Advance mobile phone system)
- NMT (Nordic mobile telephone)

CELLULAR SYSTEM

- Wireless communication technology in which several small exchanges (called cells) equipped with low-power radio antennas (strategically located over a wide geographical area) are interconnected through a central exchange.
- As a receiver(cell phone) moves from one place to the next, its identity, location, and radio frequency is handed-over by one cell to another without interrupting a call.

SPEED

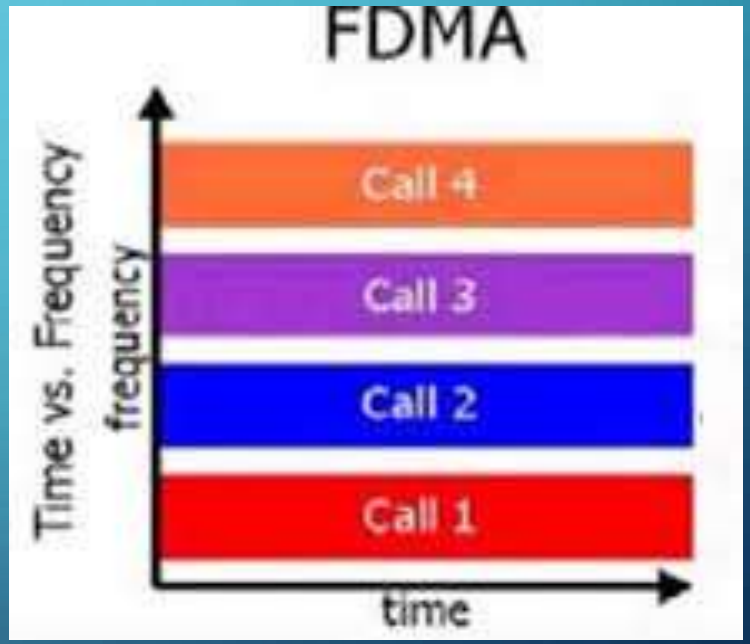
- Minimum=2.4kbps
- Maximum=14.4kbps

WIDTH

- 1G is only modulated to higher frequency, typically 150 MHz and up. The inherent advantages of digital technology over that of analog meant that 2G networks eventually replaced them almost everywhere.
- It allows voice call just in one country.
- It uses analog signal.
- AMPS was first launched in USA in 1G mobile systems.

BENEFITS

- Allocates frequency to each caller
- Network standardizing
- Mobility
- Pricing plans
- Cost



DRAWBACKS

- Poor voice quality
- No security
- Large mobile phone size
- Limited capacity
- Poor handoff reliability
- No data service

REFERENCES

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Thank
you!

ANY QUESTIONS