3. DCCH (Dedicated Control Channel)

- (ii) SACCH (Slow Associated Control Channels) [both]
  - It is used for link measurement and Signaling during a call.
  - It also used for non urgent procedures.
- FACCH (Fast Associated Control Channels) [both]
  - It is used for hand over.
  - It also used for user authentication and immediate assignment.


3. DCCH (Dedicated Control Channel)
DCCH are responsible for roaming, handovers and encryption.
(i) SDCCH (Stand alone Dedicated Control Channel) [both]
Used in call setup
Service request
Subscriber authentication
SMS
Location updating

2. CCCH (Common Control Channel)

- (ii) RACH (Random Access Channel) [uplink]
  - It used by the subscriber for acknowledge the paging channel.
  - It also used for organize the mobile calls.
- (iii) AGCH (Access Grant Channel) [downlink]
  - It used by base station (BS) for mobile station to providing forward link communication.
  - It also used for carry data in specified dedicated control channel.

2. CCCH (Common Control Channel)

- It is used for both uplink and downlink between mobile station (MS) and base station (BS).
- (i) PCH (Paging Channel) [downlink]
  - It inform the mobile station for incoming calls or we can say that it work as small alert message.
  - With the help of this channel user can aware for any message or call.

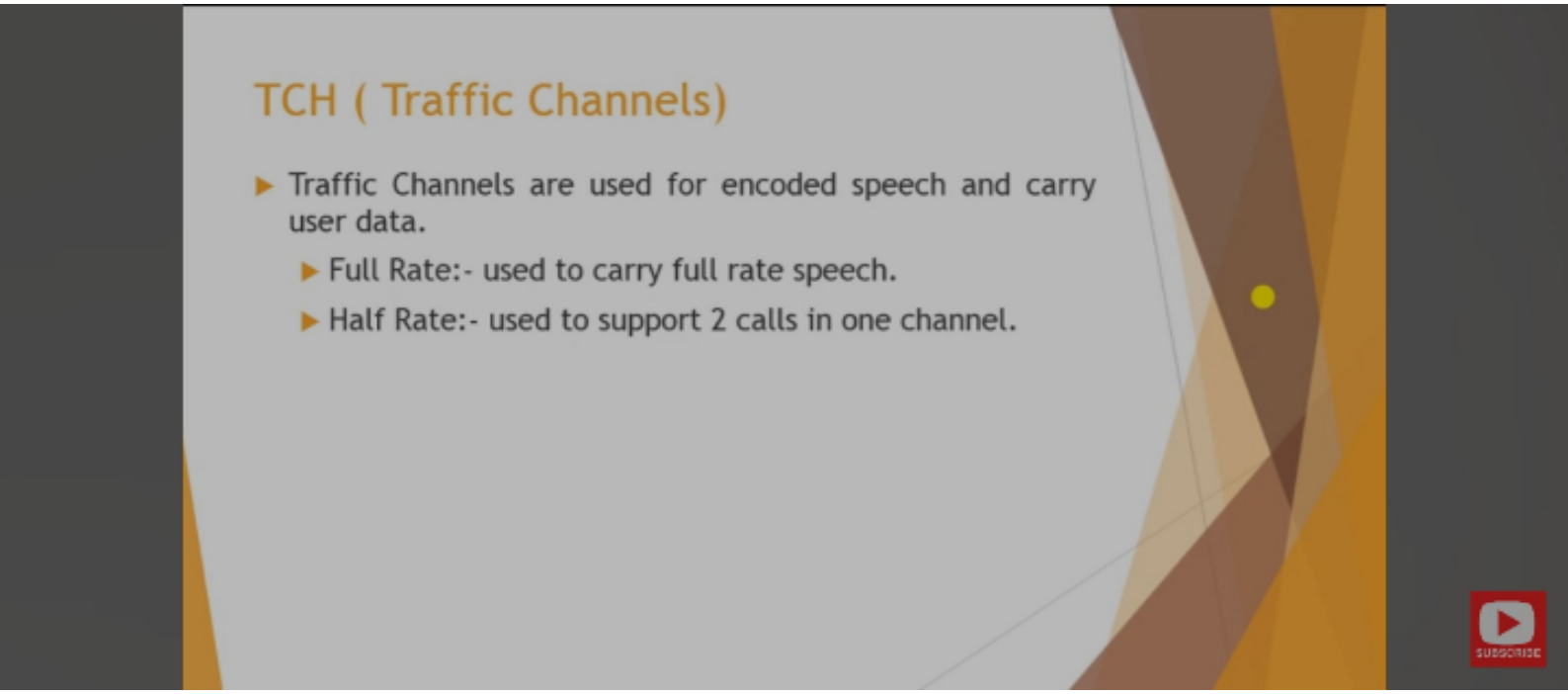
1. BCH (Broadcast Channel)

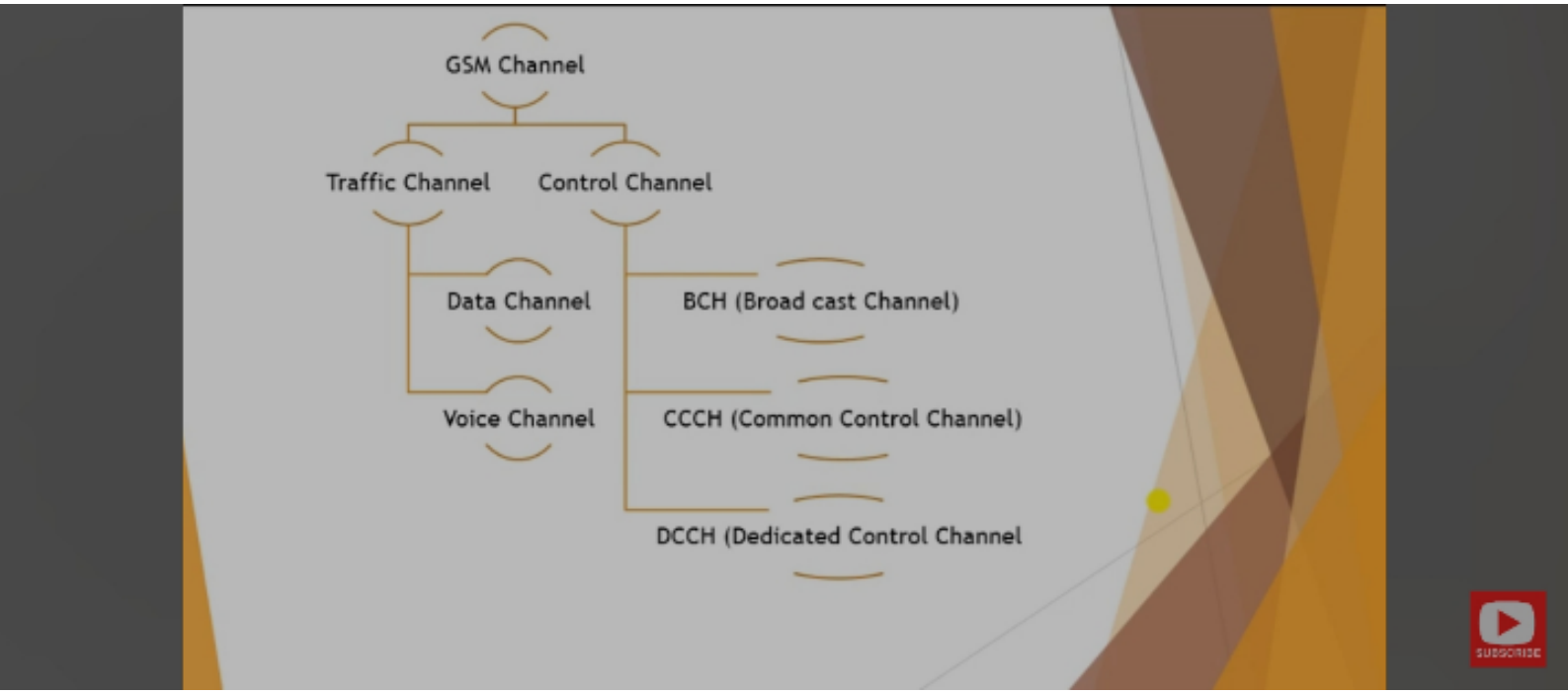
- (ii) FCCH (Frequency Correction Channel) [downlink]
  - It is used for frequency correction and synchronization of mobile station (MS).
- (iii) SCH (Synchronization Channel) [downlink]
  - It provide information to mobile station.
  - Based on this information mobile station search the base station.
  - After search, identify base station and synchronize with Base Station.

1. BCH (Broadcast Channel)

- (i) BCCH (Broadcast Control Channel) [downlink]
  - Unidirectional (downlink) used in U_m interface.
  - It is used for sending the base station's network identity.
  - This identity is used by mobile station for access the network.
  - In this identity mobile network code (MNC), Local area code (LAC), access parameter etc. information are present.


Control Channel (Signaling Channel):-
Control Channels are used for call setup, paging, call maintenance and Synchronization.
BCH (Broadcast Channel)
CCCH (Common Control Channel)
DCCH (Dedicated Control Channel)


TCH (Traffic Channels)
Traffic Channels are used for encoded speech and carry user data.
Full Rate:- used to carry full rate speech.
Half Rate:- used to support 2 calls in one channel.


GSM Channel
Traffic Channel
Control Channel
Data Channel
Voice Channel
BCH (Broad cast Channel)
CCCH (Common Control Channel)
DCCH (Dedicated Control Channel

GSM Vs. CDMA

Parameter	GSM	CDMA
SIM	Required and Detachable	Not Detachable and may be or not required
Voice Quality	High or Good	Poor quality
Data Transfer or Service	High Speed	Poor Speed
Signal Used	Digital Signal	Analog Signal
Technology Generations	2G,3G,4G,5G	OG & 1 G
Multiple Access	TDMA and FDMA	CDMA
Operates in frequency	1900 MHz	850 MHz
Global Reach	80 to 85%	20- 25 %
Roaming Support	It supports roaming in worldwide	It supports in limited area (Not worldwide)

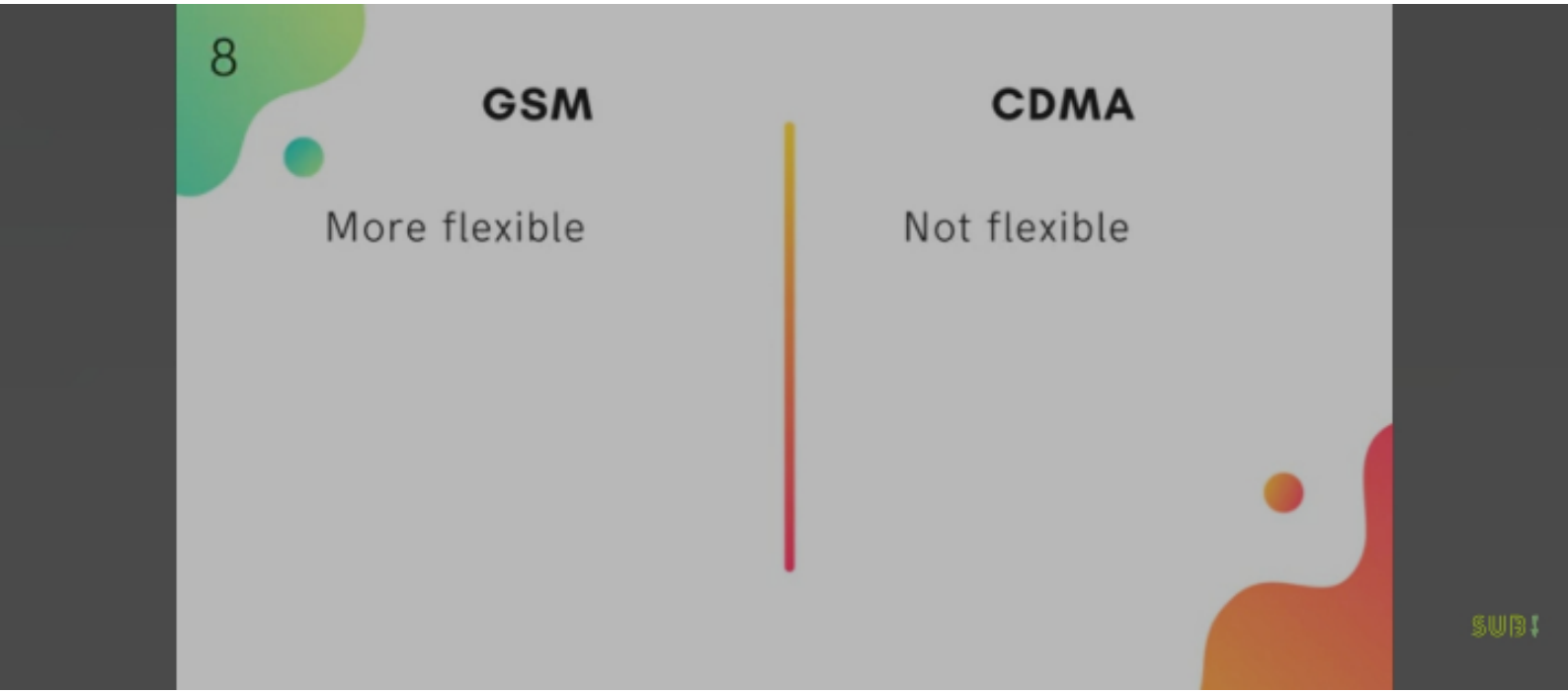
GSM Vs CDMA

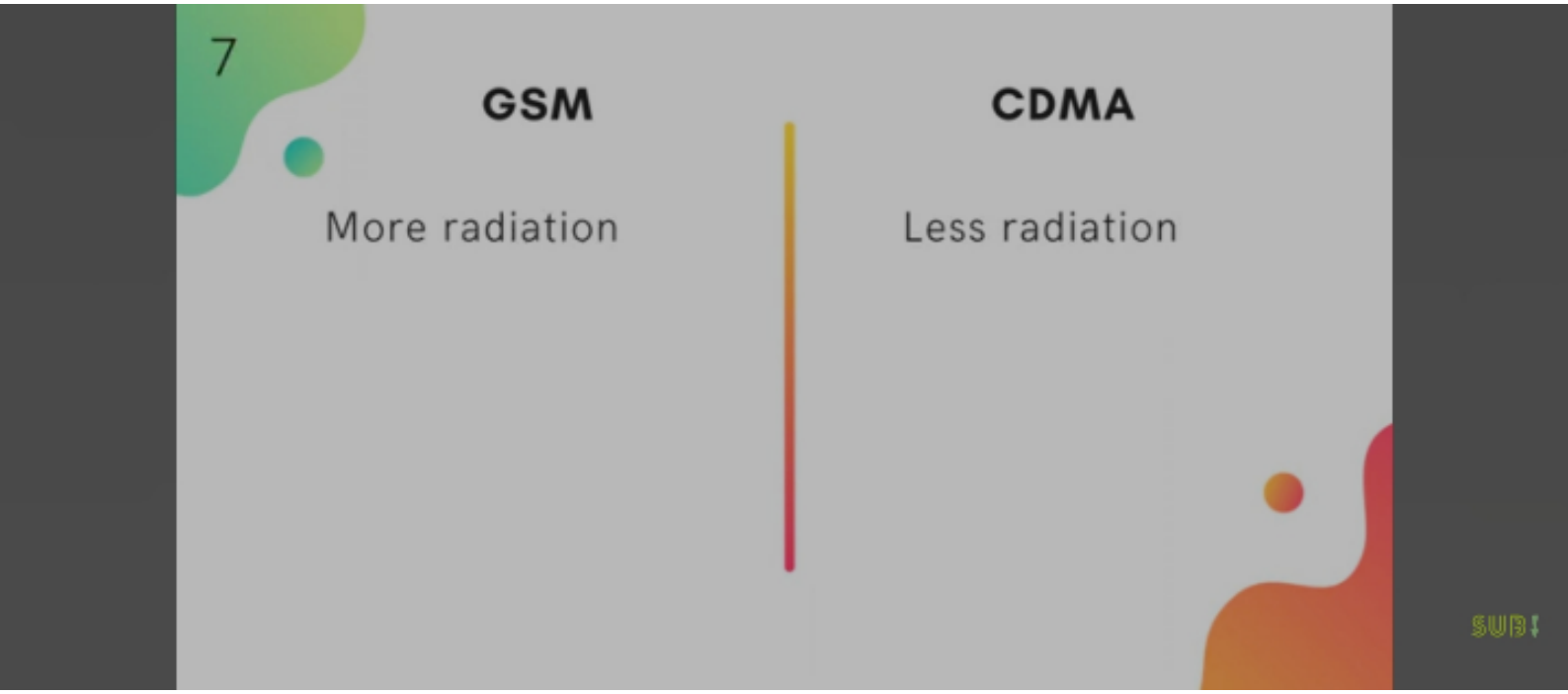
In Mobile Communication

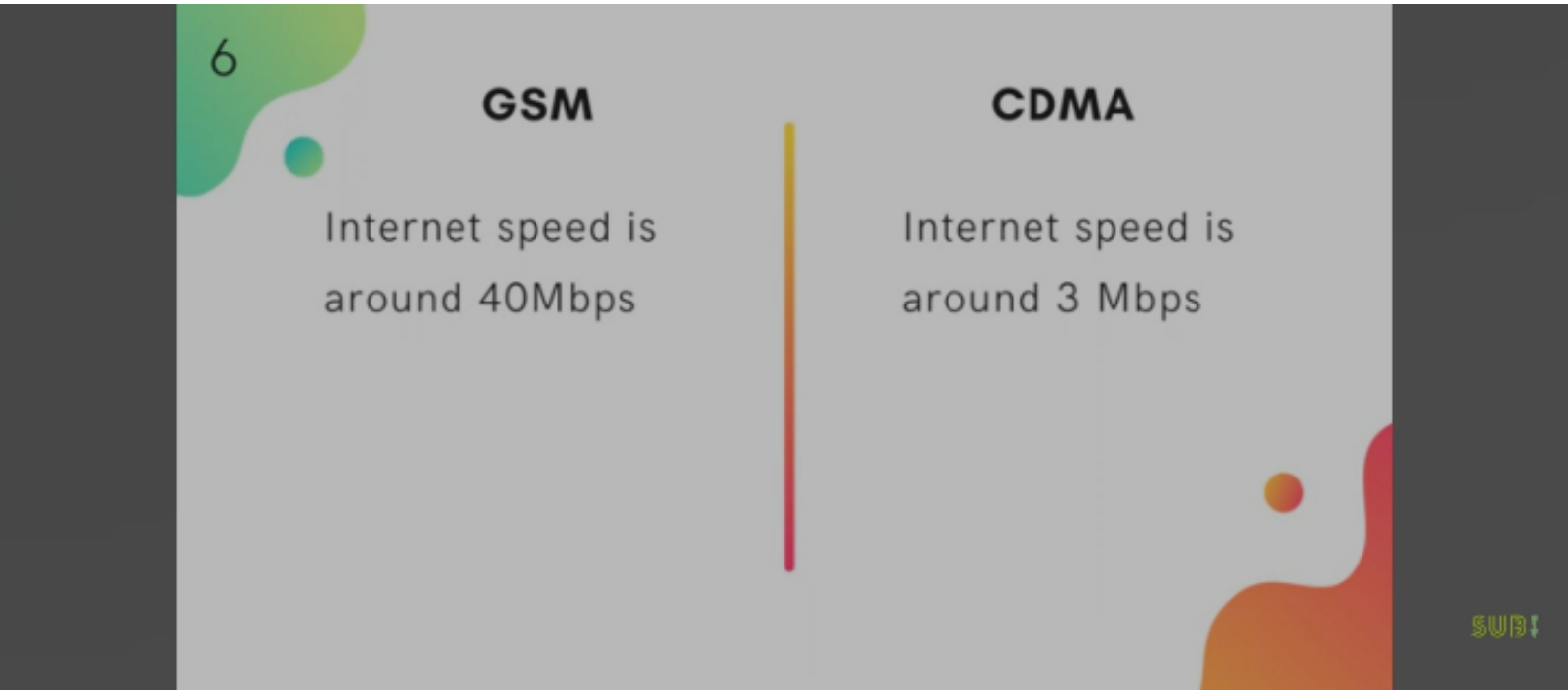
Important Difference Between GSM and CDMA Technology

Parameter	GSM	CDMA
SIM	Required and Detachable	Not Detachable and may be or not required
Voice Quality	High or Good	Poor quality
Data Transfer or Service	High Speed	Poor Speed
Signal Used	Digital Signal	Analog Signal
Technology	2G,3G,4G,5G	OG & 1 G

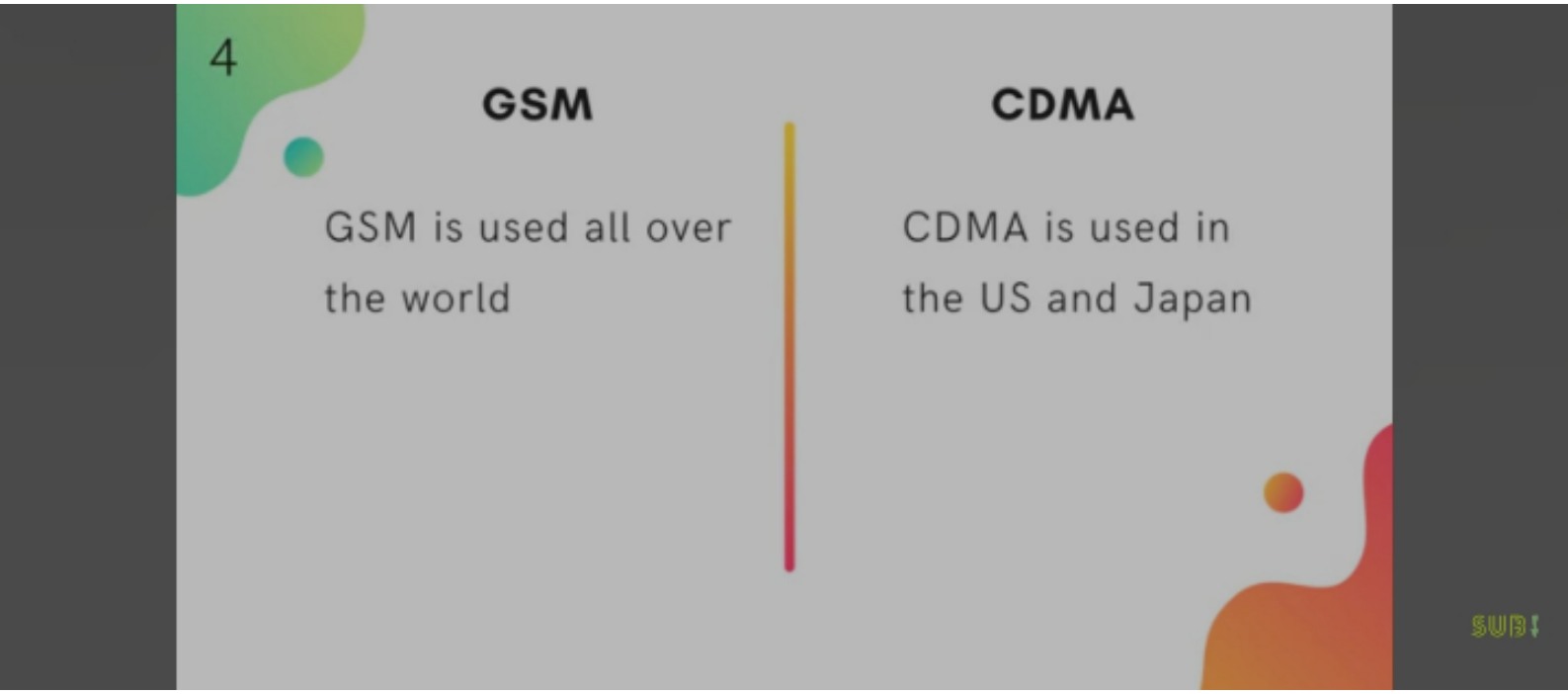

9
GSM
CDMA
SIM card is required
Not required


8
GSM
More flexible
CDMA
Not flexible


7
GSM
More radiation
CDMA
Less radiation


6
GSM
Internet speed is around 40Mbps
CDMA
Internet speed is around 3 Mbps


5
GSM
CDMA
Voice and data transmission simultaneously
Not


4
GSM
GSM is used all over the world
CDMA
CDMA is used in the US and Japan


3
GSM
Less secure
CDMA
More secure

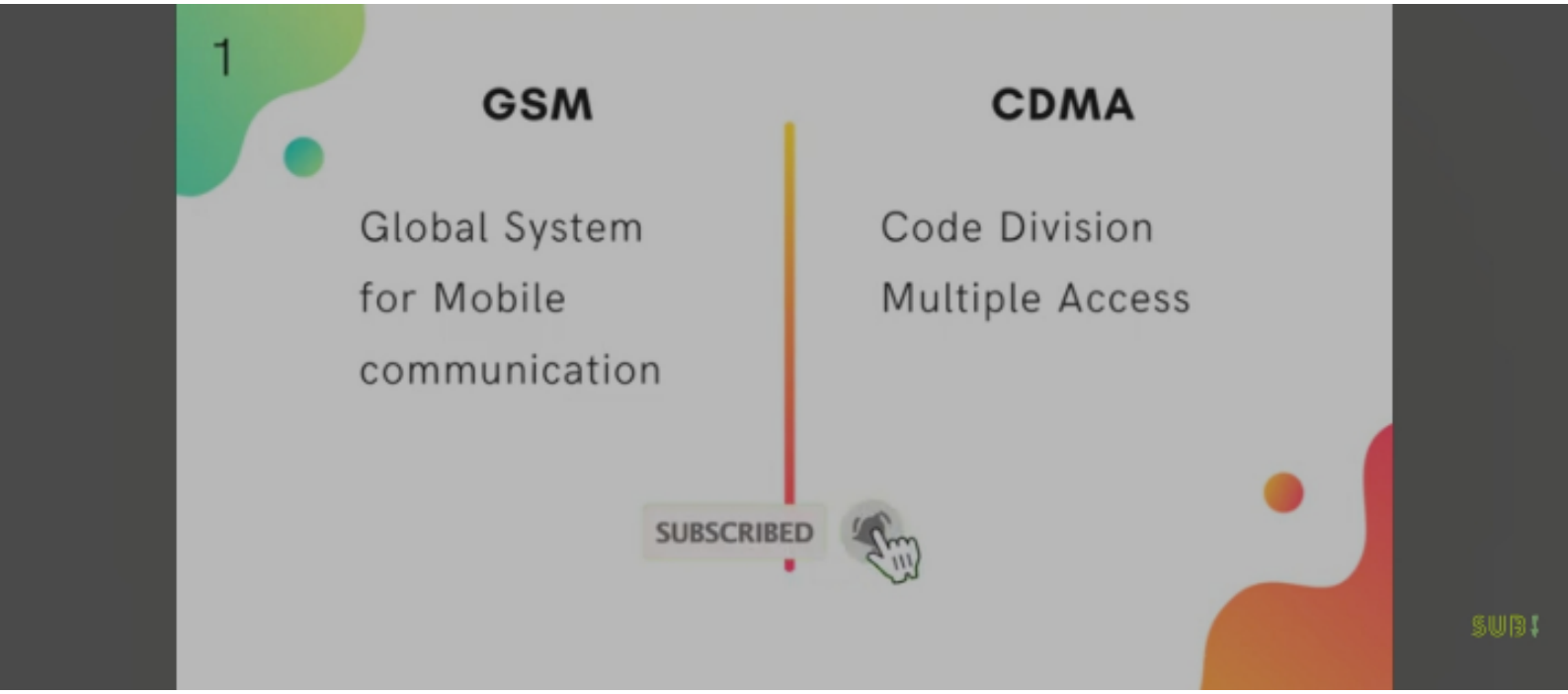
2

GSM

The technology used FDMA(Frequency division multiple access) and TDMA (Time division multiple access)

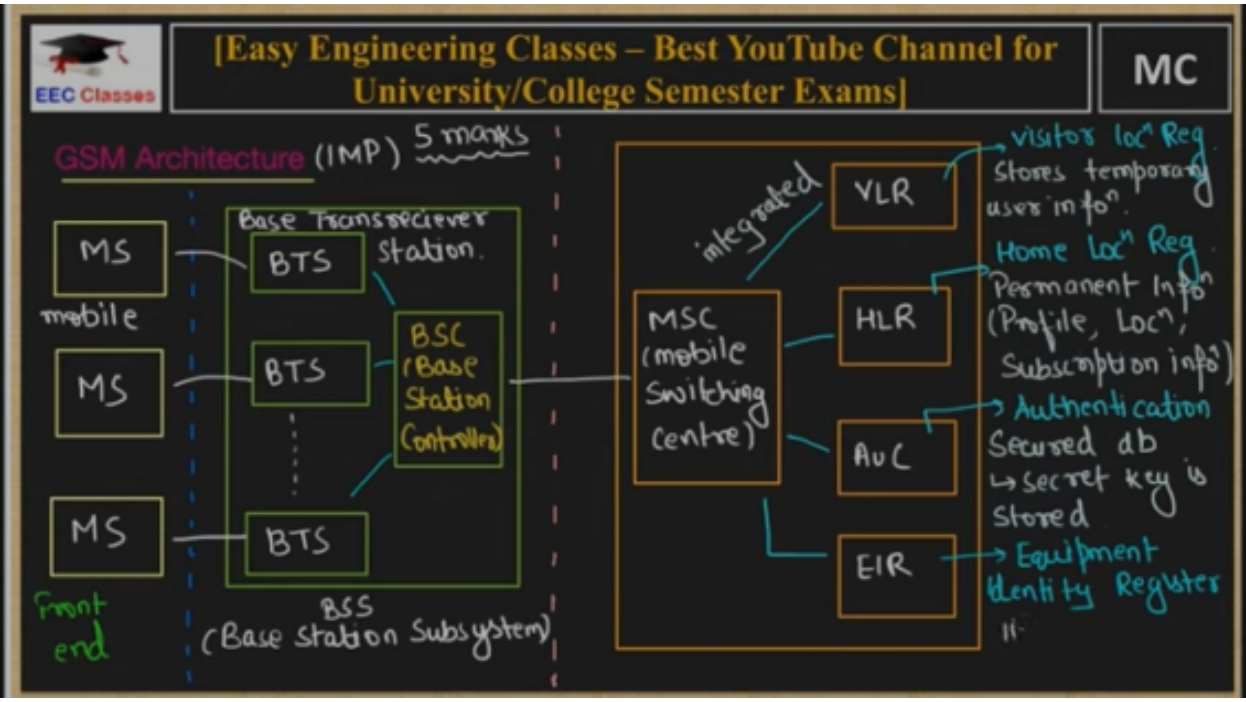
CDMA

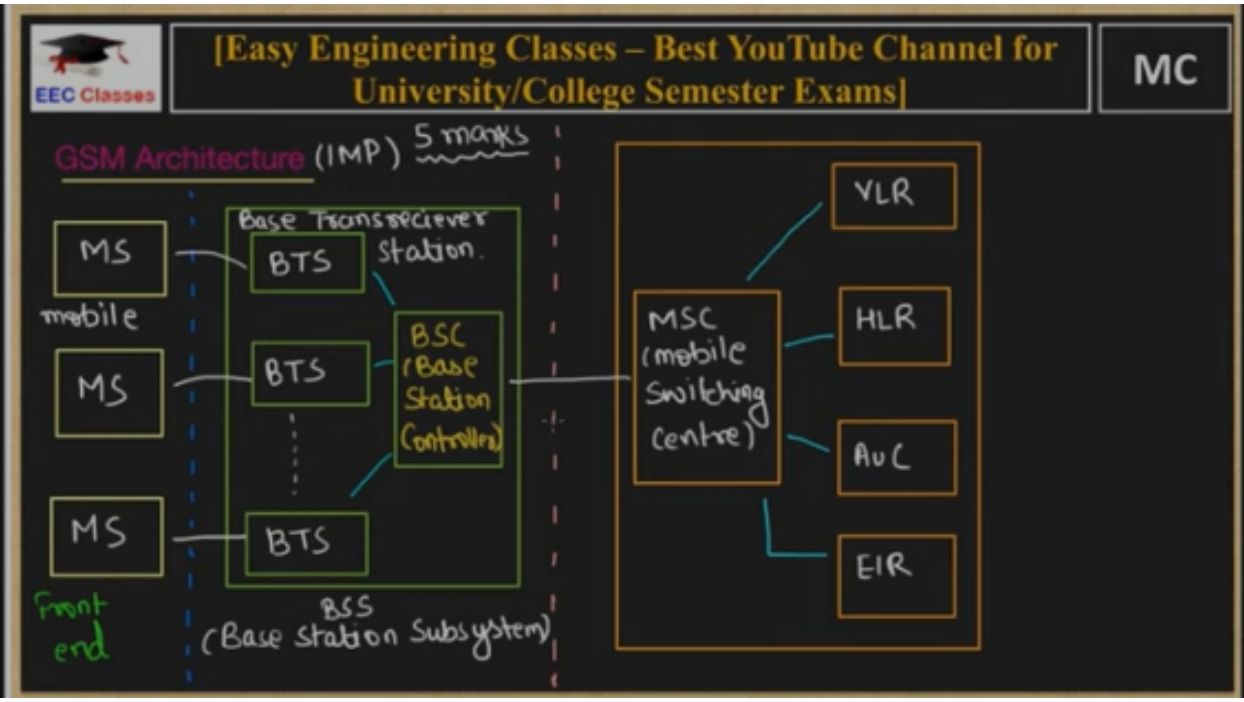
The technology used CDMA(Code division multiple access)


1
GSM
Global System
for Mobile
communication
CDMA
Code Division
Multiple Access
SUBSCRIBED

GSM Architecture Imp. Points:-

Component	Functions
BTS	Encoding, Encryption, multiplexing, modulation } Decoding, decryption }
BSC	Frequency hoping Control, Traffic management, Interface, Power management, (Handoff management)
MSC (NSS) → Network Switching Subsystem	Registration, authentication, loc^n update, handover, Call routing, Call setup, Supervision.


EEC Classes
[Easy Engineering Classes – Best YouTube Channel for University/College Semester Exams]
MC
GSM Architecture (IMP) 5 marks
MS
mobile
MS
MS
Base Transsecievet Station.
BTS
BTS
BTS
BSC (Base Station Controller)
BSS (Base station Subsystem)
Front end
integrated
MSC (mobile Switching Centre)
VLR
HLR
AuC
EIR
visitor loc^n Reg. Stores temporary user info^n.
Home Loc^n Reg. Permanent Info^n (Profile, Loc^n, Subscription info^n)
Authentication Secured db
↳ secret key is stored
Equipment Identity Register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GSM Architecture (IMP) 5 marks
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BSC (Base Station Controller)
BSS (Base Station Subsystem)
Front end
MSC (mobile Switching Centre)
VLR
HLR
AuC
EIR

GSM Global System for Mobile Comm^{n}.

→ Cellular N/w.

→ operates in 4 diff. frequency ranges.

→ uses combination of both FDMA and TDMA.

→ Cell Sizes in GSM N/w.

- Macro :- BS antenna is installed.
- Micro :- antenna height < avg. roof level.
- Pico :- Small cells (indoor) dia = (m)
- Umbrella :- Cover shadowed regions
  - → Fill in Gaps b/w cells.

GSM features :-

1. International roaming.
2. Good Voice Quality.
3. Handheld terminals support.
4. Low service cost.
5. ISDN Compatibility.
6. New features and service :-