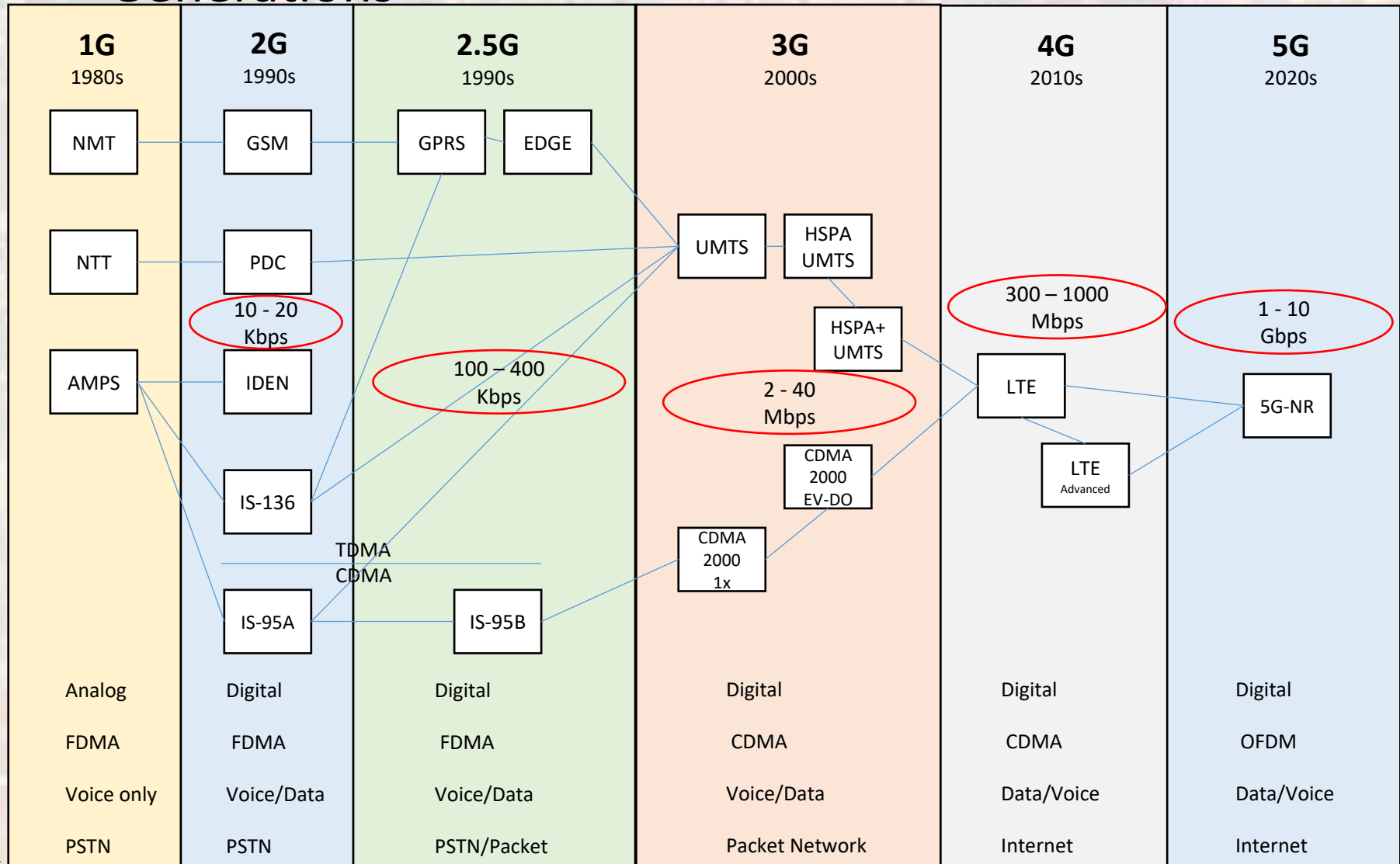


Cellular Packet Switched

Last updated 4/18/24

Cellular - Background

• Generations



Cellular – Packet Switched

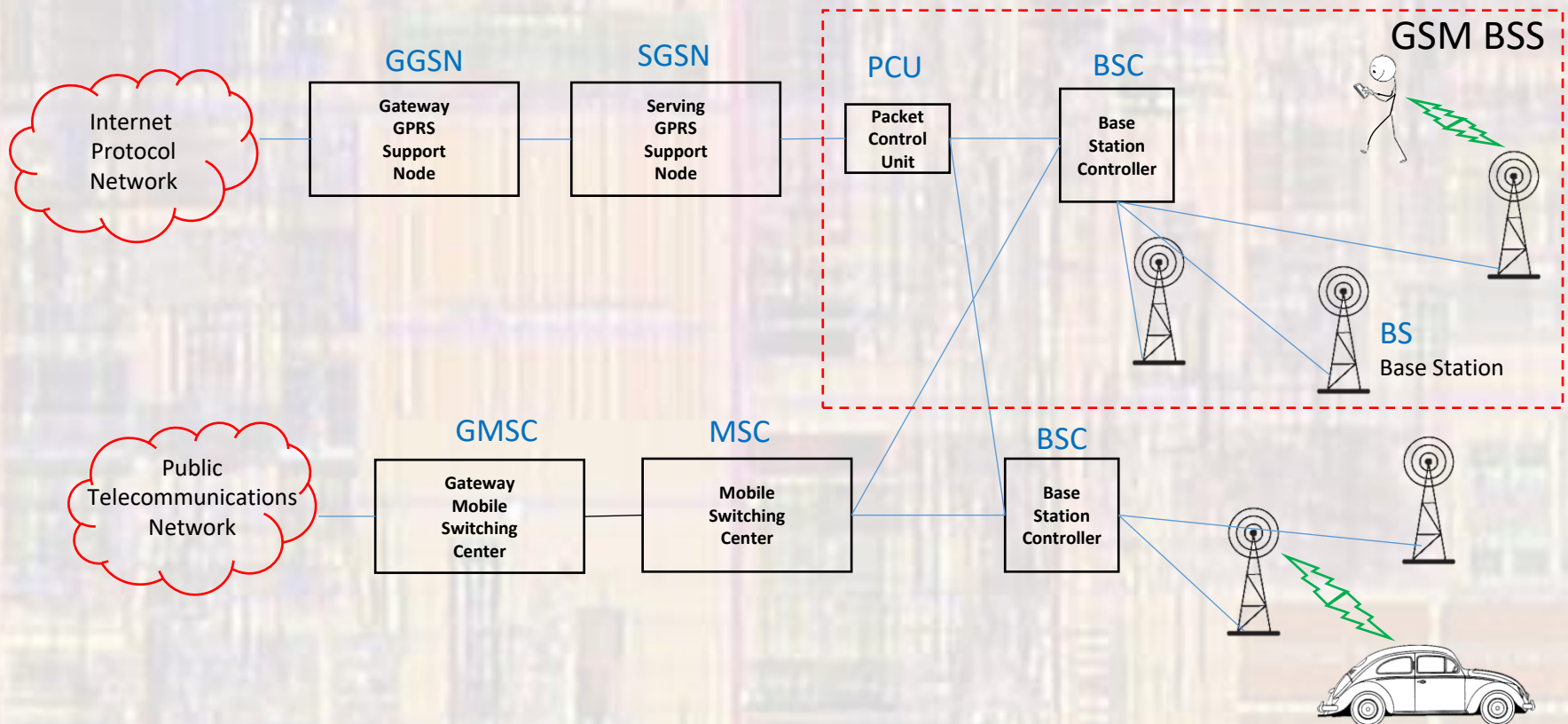
- Packet Switched
 - Uses the IP (internet protocol)
 - Channels are not dedicated to a call
 - Locations identified in packet headers
 - Can carry digitized voice
 - Can carry data
- Systems are backwards compatible to Circuit Switched
- GPRS – 2.5G
 - General Packet Radio Service
 - TDM/FDM similar to GSM
 - GMSK modulation with 20Kb/s per timeslot with enhanced coding
 - Timeslots are not dedicated to a call
 - More calls supported with existing resources
 - Multiple timeslots combined for faster data transfer

Cellular – Packet Switched

- EDGE – 2.5G
 - GSM Evolution
 - TDM/FDM similar to GSM
 - 8-PSK modulation – 3x bits of GSM/GPRS
 - 60Kb/s per timeslot with enhanced coding
 - Timeslots are not dedicated to a call
 - More calls supported with existing resources
 - Multiple timeslots combined for faster data transfer

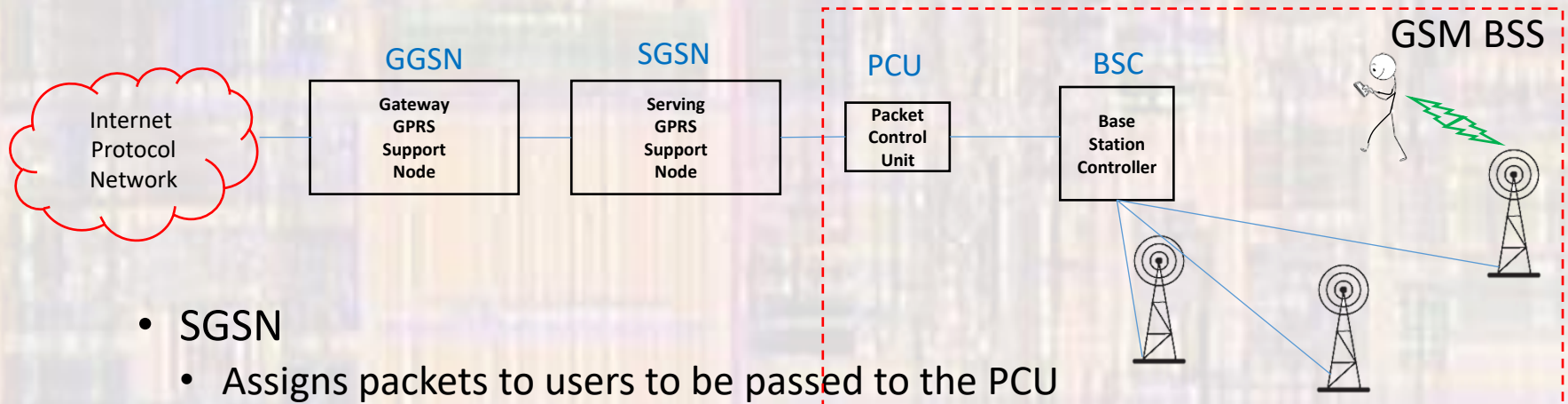
Cellular – Packet Switched

- Packet Switched Systems
 - IP type traffic
 - Bursty – does not require the kind of dedicated channels that circuit switched systems need



Cellular – Packet Switched

- Packet Switched Systems
 - PCU
 - Assignment of timeslots to users
 - Flow control



- SGSN
 - Assigns packets to users to be passed to the PCU
 - Assigns packets from specific users back to the network connection
 - Handles connections, handoffs, ...
- GGSN
 - Assigns IP addresses for users
 - Connects to the external network

Cellular – Packet Switched

- UMTS – 3G
 - GSM/GPRS/EDGE Evolution
 - Radical radio interface change - CDMA
 - Most network component remain
 - Radio components changed significantly,

