In the GPRS, the GSM architecture is used for voice. the upgradation of GSM network is done for providing the GPRS services. As a new class of Network Nodes for offering the packet data services. the GPRS system components for the data services are shown in above figure.

The GPRS System components are

1. Authentication (AUC) Center
2. BSC
3. BTS (Base Transreceiver Station)
4. EIR (Equipment identity register
5. GGSN (Gateway GPRS support node)
6. GPRS (General packet radio Service)
7. HLR (
8. PSDN
9. MS (Mobile station)
10. MSC (Mobile switching Center
11. PDN (packet Data Network)
12. PLMN (public land mobile Network)
13. SMSC (Short message Service center)
14. SMSGMSC (SMS Gateway msc)
15. SMSIWMSC (SMS Interworking msc)
16. SGSN

If MS :- New MS is required to access GPRS services. these New terminals will be backward Compatible with GSM for voice purpose.

2) BTS :- a Software upgrade is required in the Existing base transreceiver Station Databases.

3) Database (HLR, VLR) → all the DB's involved in networks will require Software upgrades to handle the new call models & functions introduced by the GPRS.

Assignment

1) Near & Far terminal / hidden & exposed terminals - / moti

2) FDMA & FDT

3) TDMA

4) Gsm architechture

5) Types of handover in gsm

6) GPRS Structure

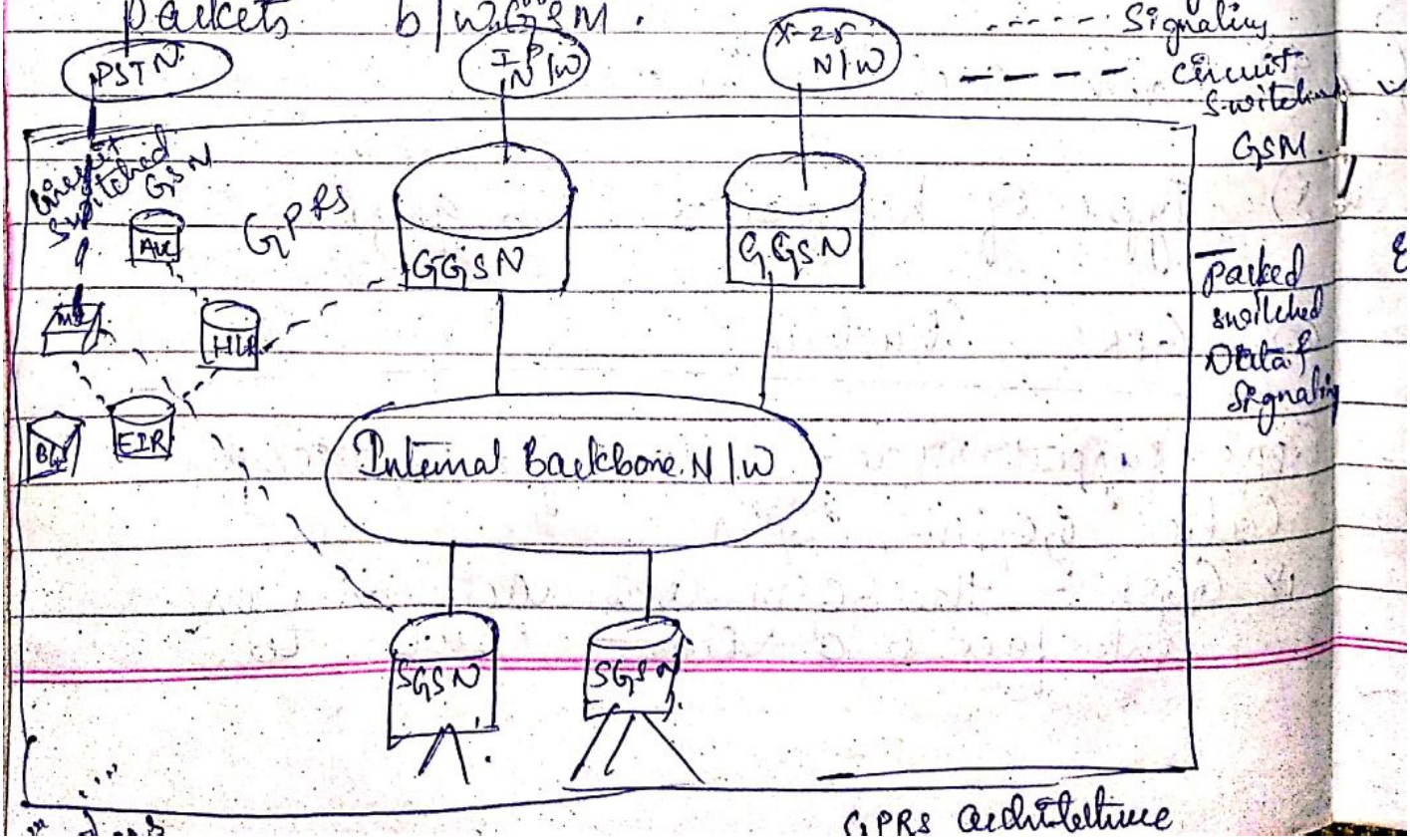
GPRS support mode :- following 2 New components Called GGSM, SGSM (over)

1) GGsm :- the GGsm acts as an interface & a Normal router to

External Networks. It contains routing info for GPRS mobiles which is used to tunnel packets through the IP based internal backbone to the correct Serving GPRS support node. the GGSN also collects charging info to use the external data network & can act as a packet filter for incoming traffic.

SGSN :- Serving GPRS is responsible for authentication of GPRS mobiles, Registration of mobiles in network, mobility management & collecting info on charging for the use of air interface

Internal backbone :- The internal backbone is an IP based Network used to carry packets b/w different GSM.



GPRS architecture

tunneling is used b/w SGSN & GGSN's so the internal backbone does not need any info about domains outside the GPRS Network. signalling from a GSM to MSC, HLR or EIR is done.

16th sep

* DECT :-

Fully digital cellular network is the digital enhanced Cordless telecommunication System Specified By ETSI. formerly also called digital European cordless telephone & digital European cordless tele-Communication, that replaces older analog Cordless phone systems. these analog systems only Ensured Security to an limited Extend as they did not use Encryption for data transmission & only offered a relatively low capacity. DECT is mainly used in offices, on the campus, at trade shows or in the home.

a big difference b/w DECT & GSM Exist in terms of cell diameter & cell capacity. while GSM is designed for outdoor use with a cell diameter upto 50km, the range of DECT is limited to about 300m from BS.

due to this limited range an additional multiplexing techniques, DECT can offer its service to some 10,000 people within one 1Sqkm.

This is a typical scenario within a big city, then 1000's of offices are located close together.

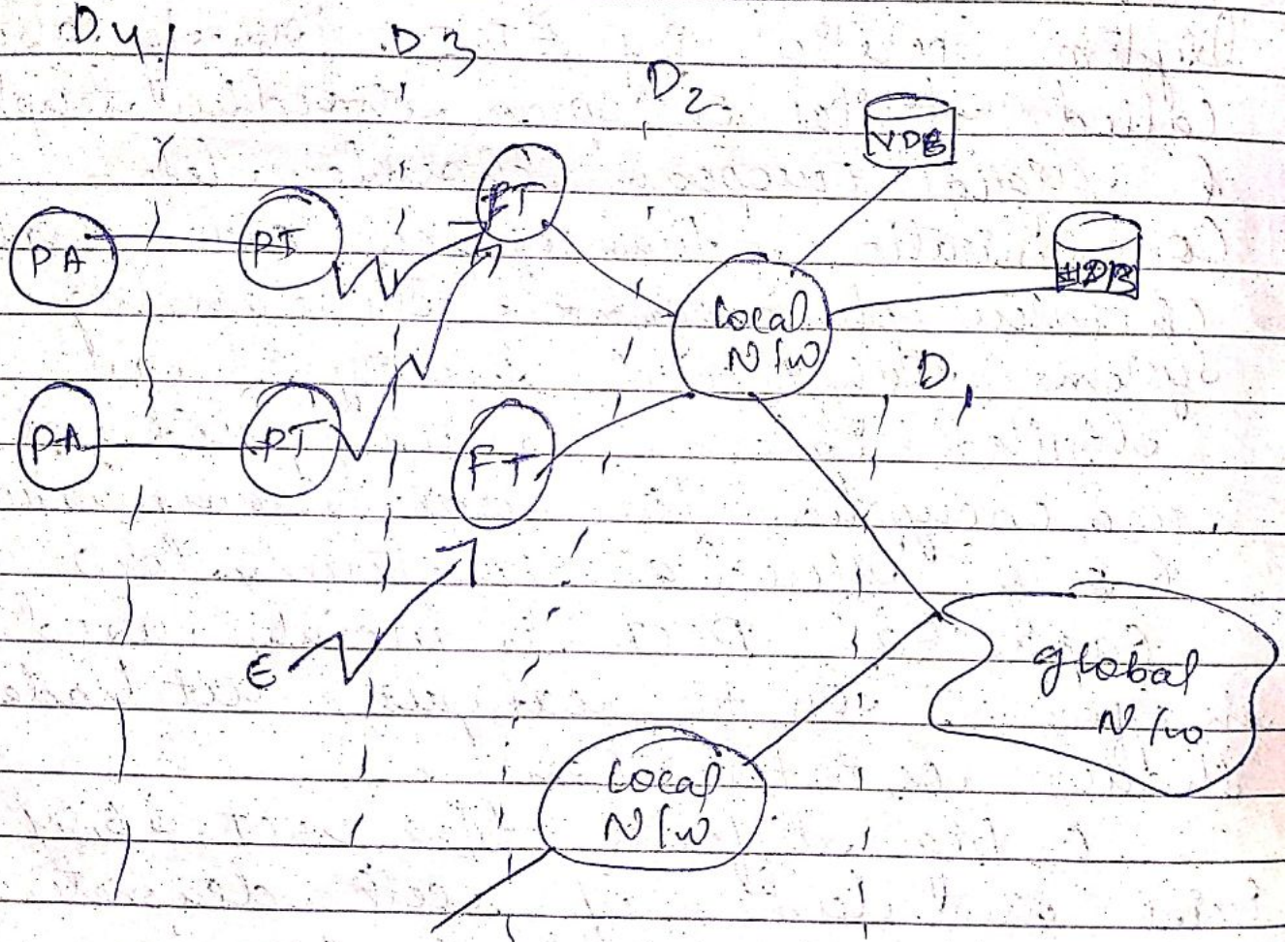


Fig:- DECT System architecture reference model

DECT

Digital Enhanced cordless telephone

* A Global N/w connects the local N/w structure to the outside world & ~~oppos~~ offers its services via the interface D. Global N/w connects the local comm? Global N/w could be Integrated Services digital N/w (ISDN), public switch telephone N/w (PSTN), public land mobile N/w (PLMN) Example GSM & packet switch public data N/w (PSPDN) local N/w in the DECT contains offus to LTS (Local Telecommunication service) that can include everything from simple switching to intelligent call forwarding, address. translation.

18th Sep 2019

* all typical Network fun? have to be Integrated in local ~~Ad Hoc~~ global network. ~~that~~ where the DB's Home Database (HDB) & (VDB) Visitor Data base are located. Both DB support mobility with fun?s that are similar to those in the HLR & VLR in GSM System.

* Incoming calls are automatically forwarded to the current Subsystem responsible for DECT user, & the current VDB informs the HDB about changes in location.

The DECT core network consist of the fixed radio termination (FT) & portable radio termination (PT) & basically only provides a multiplexing service.

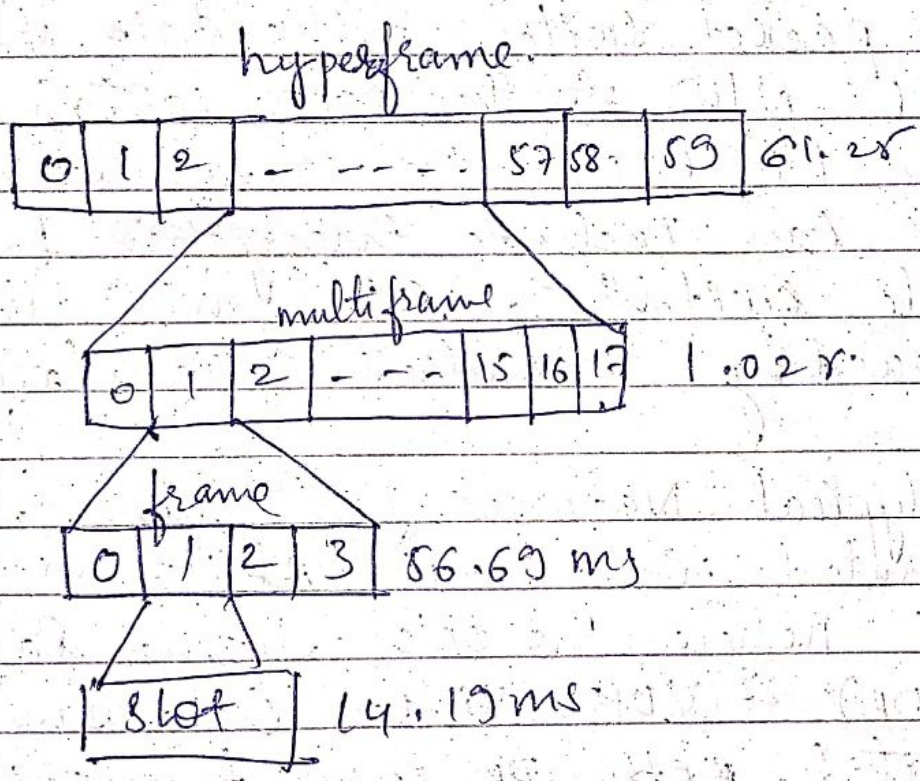


fig:- TETRA Frame Structure

To allow a common system throughout the Europe ; ETSI standardised the TETRA system, Terestrial trunk radio.
This system should replace National systems
TETRA offers two standards (services) : the voice plus data service and the packet data optimised service. while V+D (voice data) offers circuit switched voice & data transmission & PDO only offers packet data optimised
TETRA also offers bearer services of upto 28.8 kbps for unprotected data transmission & 9.6 kbps for protected transmission.

Eg for End to End services

1) call forwarding
2) identification
3) call hold.
4) Call priorities
5) Emergency calls & group joins.

The system architecture of TETRA is very similar to GSM. ~~while I~~ Via the radio interphase, the MS connects to the switching & management infrastructure (SWMI), which contains the users DB'S, BS & interphases, PSTD, ISDN, PDN.