2.4 DECT

● The aim of DECT is to deliver a **wide range of services** to wireless terminals with similar quality of service (QoS).

● DECT, like ISDN, was designed to be an **access system** that would act as the interface between a wireless device and a network (wireless or wireline).

● As such its architecture is fairly straightforward, consisting of a an Interworking Unit (IWU), a portable termination (PT) and a fixed termination (FT).

● The standard consists of a 1) **common interface** that defines the PT and the FT and the information flow between them and 2) a **system description document** that outlines DECT connections to several different kinds of networks, e.g., the PSTN, GSM, PBX, etc.

● As an access system, DECT will provide the interface between a terminal and a base station (referred to as telepoint). The IWU will then translate the data from DECT format to some other format depending on what network the data will flow over to get to the destination point.
### 2.4.1 Radio Transmission

- It is a hybrid FDMA/TDMA system that uses TDD.
- It consists of 10 carriers. The carrier bit rate is 1.152MHz.
- Each carrier is time slotted. Frames are 10ms long and consist of 24 time slots (generally 12 for each direction of transmission, however assymetric connections can are possibl).
- Slots consist of 420 bits plus 60 bits guard time.

```
+----------------+    +----------------+    +----------------+
| 1 2            | 11 12 | 1               |
+----------------+    +----------------+    +----------------+
            0.417msecs
```

- **A field** carries control data
- **B field** carries user data
- **X field** consists of 4 parity check bits.

<table>
<thead>
<tr>
<th>SYNC 32bits</th>
<th>64 C/M/N/P/Q channels</th>
<th>I channel 320bits</th>
<th>4 x GUARD 60bits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-field</td>
<td>B field</td>
<td>Xfield</td>
<td></td>
</tr>
</tbody>
</table>

- **Header 8bits**
- **DATA 40bits**
- **CRC 16bits**
2.4.2 Logical channels

- DECT specifies 2 logical channels for **user data** transmission and 5 logical channels for **network control**.

- The data channels (B-field):
  - **Unprotected In**: data uses 320 bits in every slot and rate is 32Kbps.
  - **Protected Ip**: data uses 256 bits, error control uses 64 bits. Rate is 25.6Kbps.

- The control channels (A-field):
  - 5 logical channels are muxed over this field in a slot.
  - An 8-bit header is used to identify the type of channel and nature of message.
  - 40 bits are devoted to transmitting the control channels:
    - C: call management
    - M: physical layer control - has priority
    - N: hand shaking - carries an identification code to identify BS.
    - P: paging to locate a mobile terminal
    - Q: system information
2.4.3 Network Operations

- The terminals are required to do most of the work in DECT. If a terminal wants to originate a call, it searches for an idle channel and starts to communicate with the BS.
- DECT supports soft hand off, the mobile terminal can communicate with two BSs when necessary.
- DECT supports authentication and encryption.