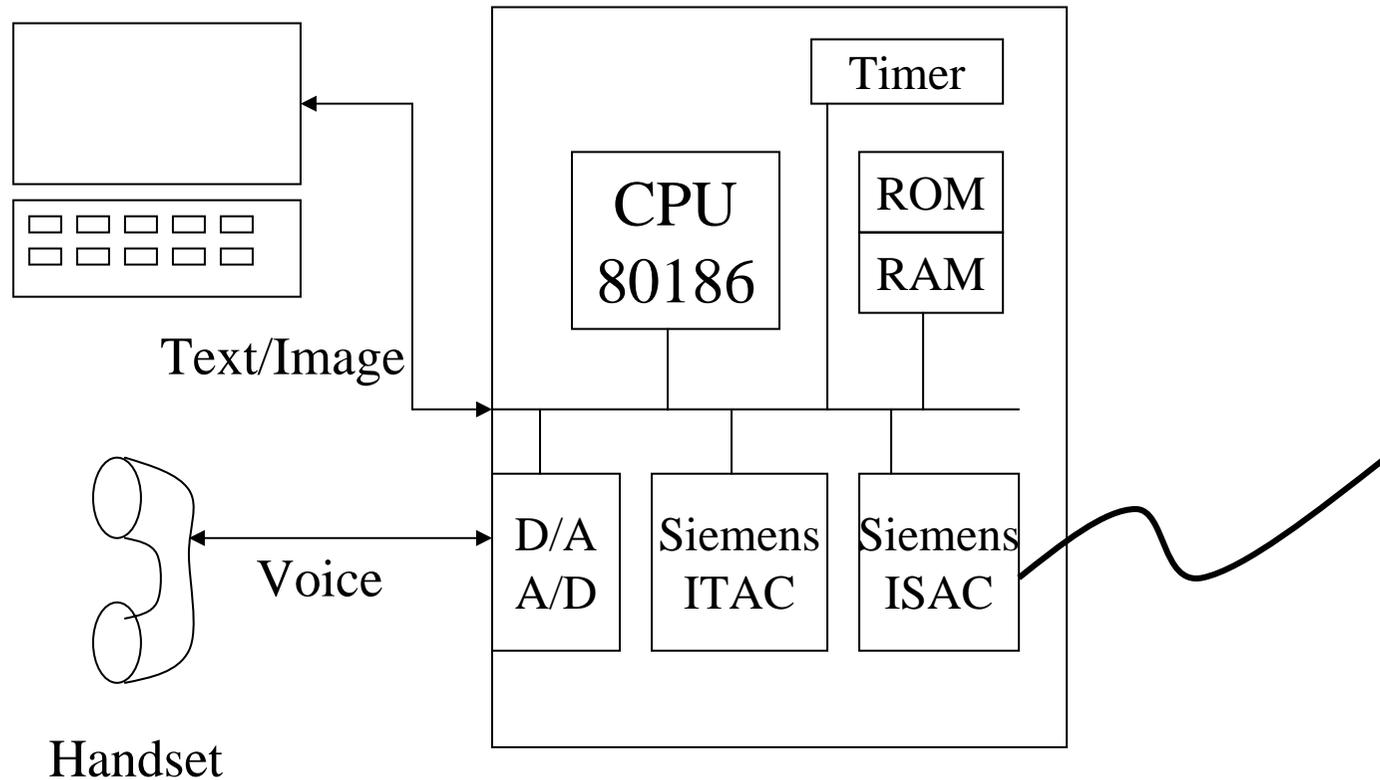


Monolithic Design Approach

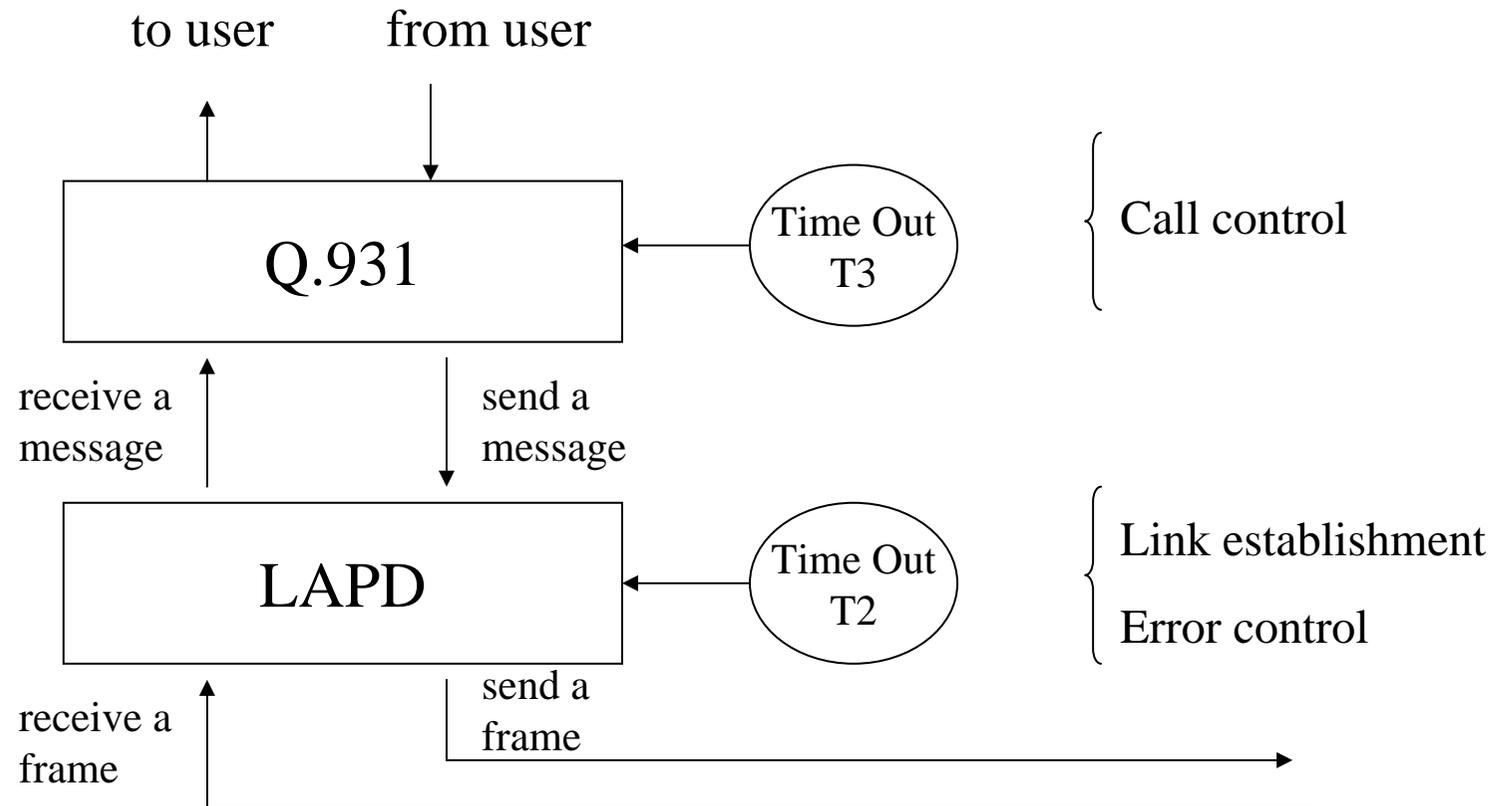
ISDN Terminal Adaptor (HW)



ISDN Terminal Adaptor (SW)

- Control Plane: Protocol Processing
 - Layer 2: LAPD – Data link management
 - Layer 3: Q.931 – Call control
 - Adaptation Layer: Interact to the user
- Data Plane: Plain data delivery (no touch)

ISDN Terminal Adaptor (SW)



Two fundamental HW components

- Interrupt
 - Whenever a frame is received, ISAC interrupts the CPU
- Timer
 - Interrupts CPU with programmed period

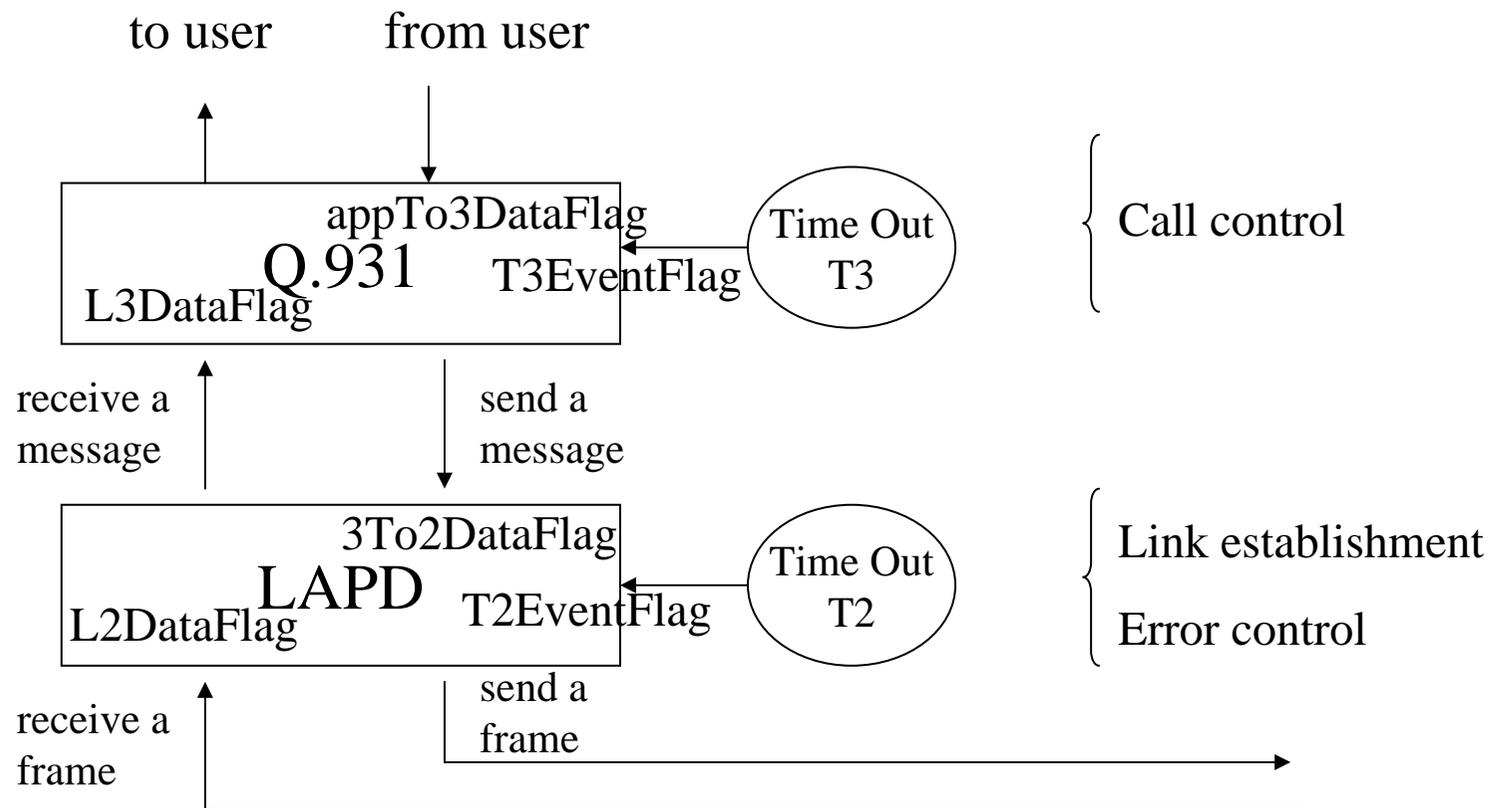
Data Interrupt Handler

- void DataIntHandler ()
 - read a frame from ISAC
 - store the frame in frame Queue
 - set L2DataFlag

Timer Interrupt Handler

- void TimerIntHandler ()
 - t2++
 - if (t2 == T2) {set T2EventFlag; t2=0}
 - t3++
 - if (t3 == T3) {set T3EventFlag; t3=0}

Events (Interrupt, Timer, SW)



Initialization

- Start point (0xffff0)
 - configure programmable HW components
 - configure timer
 - reset L2DataFlag, L3DataFlag, T2EventFlag, T3EventFlag (appTo3DataFlag, 3To2DataFlag)
 - register DataIntHandler
 - register TimerIntHandler
 - jump to MAIN

Main

- MAIN

```
while(1){  
    if (L2DataFlag || T2TimerFlag||3To2DataFlag){  
        call LAPD();  
        reset the corresponding flag;  
    }  
    if (L3DataFlag || T3TimerFlag||appTo3DataFlag){  
        call Q931();  
        reset the corresponding flag;  
    }  
}
```

LAPD()

- Event handling according to the protocol specification
- Note! LAPD() should return ASAP. Busy waiting is not allowed inside the function

Q931()

- Event handling according to the protocol specification
- Note! Q931() should return ASAP. Busy waiting is not allowed inside the function