

# Training booklet WebTouch™ One



# Characteristics ...



- JAVA platform, JAVA applets
- V34, V34bis recommendations
- TCP/IP; HTTP, HTTPS (SSL 3.0) protocols
- HTML 3.2
- GIF, JPG images
- WAV, AU sounds
- JAVASCRIPT
- cookies
- 2Mo ROM, 8Mo Flash, 32 Mo SDRAM
- 600KB storage on the Flash File System and 200 contacts in the address book
- remote upgrade

# Hometop



06/07/98  
11:53

**Santa Monica Film Festival** Feb. 26-28  
**MOXIE! AWARDS**  
WWW.SMFF.COM Do you challenge convention?

Directory  
Weather  
TV Programs  
Entertainment  
Shopping

Search the Web

amazon.com  
Buy a book now

WELLS FARGO

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Travelocity  
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Plan your holiday travel

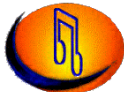
CDNOW  
30% off hot music

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setup phone internet address book email


# Settings



- date and time
- sounds 
- touchscreen -> calibration
- statistics -> memory use and number of contacts
- vocal message box (subscription)-> name configuration + message box number
- security -> lock/unlock, reinitialize, versions soft + hard
- telephone
- telephone services
- Internet | **Supplier**
- electronic mail | **connection parameters**

# Telephone



- Screen «  Make a call... »
  - ☞ call using the handset or the handsfree mode, bis function, secret mode call
- Services
  - ☞ services (subscription) available off/on line
- Received
  - ☞ 20 last calls or messages
- Sent
  - ☞ 20 last outgoing calls
- Address book
  - ☞ make a call from the address book , search by name

# Internet (1)



- Access a Web site
  - ☞ URL manually keyboarded or from the address book
- Optimize page loading
  - ☞ icon allowing to display / hide the images
- Navigate in the cache
  - ☞ visited pages historical during one session
- Register URLs
  - ☞ store a web site address in the address book
- Stop/restart a page loading
- Go back to the default page

# Internet (2)



- Security protocol : SSL 3
  - ☞ HTTPS sites based on SSL 2 or SSL 4 are not accessible
  - ☞ a lock appears during secure communications
  
- Starting from 2.0 version, JAVASCRIPT is managed

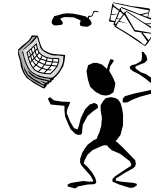




# Addresses



- Go through the address book different pages
- Access all the coordinates related to a given contact
  - ☞ telephone numbers, emails, URLs, notes
- Create a contact
- Associate a chosen ring to a contact (CLI !)
- Take notes
- Modify/Delete coordinates or contacts
- Complete the priority numbers page
- Reach a contact
- « search » function
  - ☞ search is made through a character chain



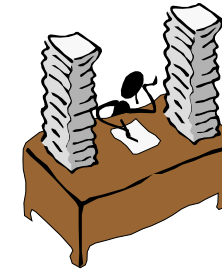


# Mail (1)



## ➤ Write

- ☞ manually keyboard the address or take it from the address book
- ☞ idem for joint addressees
- ☞ register the current mail rough copy
- ☞ delete the entire message
- ☞ send the message
- ☞ postpone sending
- ☞ personal copy
- ☞ impossible to attach documents



# Mail (2)



- Reception (connection to the provider to consult received mails )
  - ☞ automatic signalization on messages reception (if provided by the operator)
  - ☞ answer
  - ☞ forward
  - ☞ archive
  - ☞ delete
  - ☞ add an address to the address book
  - ☞ update (connection)
  - ☞ attached documents : accepted formats = GIF, JPG, AU, WAV, TXT, HTML
- Sending
  - ☞ delete, write and update
- Archives
  - ☞ save mails in local mode + all *RECEPTION* options



# Techniques used in the 2840



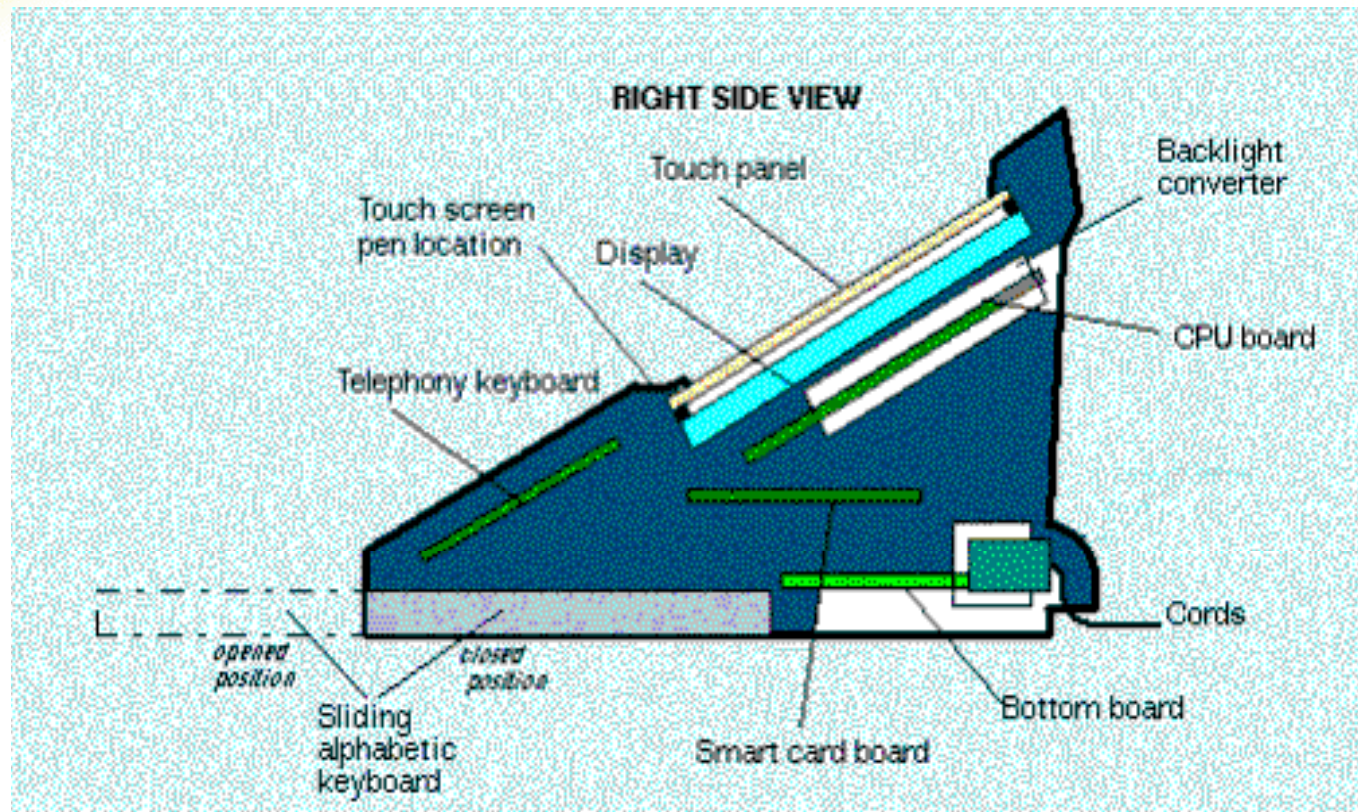
# Product characteristics



- Dimensions : 28,4 cm x 21,8 cm x 12,1 cm
- Weight :
  - ☞ 2,065 Kg terminal alone
  - ☞ 3,1 Kg packaged terminal (avec le transfo)
- Alimentation par transfo 230V/11V - 0,1A/1,3A
- Connectique
  - ☞ cordon de ligne (RJ11 à 6 contacts, 3m)
  - ☞ cordon de combiné (RJ11 à 4 contacts)
  - ☞ cordon d'alimentation (JACK 5mm)
- LCD touchscreen 7,5 inches
- Telephone keyboard including 25 keys and 5 leds :
  - ☞ power supply led
  - ☞ call forwarding led
  - ☞ handsfree mode led
  - ☞ internet led
  - ☞ message led
- Sliding alphabetical keyboard



# Inside Architecture



- The product's framework is composed of three cards :
  - ☞ CPU card
  - ☞ BOTTOM card
  - ☞ KEYBOARD card

# The 2840 's heart : the CPU card (1)



- The CPU card handles :
  - ☞ The Power PC Motorola **MPC823** and the associated memories
  - ☞ The modem Chip
  - ☞ The audio functions related to telephony (numerical/analogical converter allowing to play audio files)
  
- The microprocessor MPC823
  - ☞ 32 bits Architecture
  - ☞ **66 MHz rhythm**
  - ☞ LCD controller integrated (uses SDRAM)
  
- **2 Mo ROM** (including the « minimal application »)
  
- **8 Mo FLASH** (the card can be 4Mo or 8Mo)
  - ☞ it 's the terminal virtual haddisk (Flash File System)
  - ☞ Contains the compressed application code
  
- **32 Mo SDRAM**
  - ☞ It 's the terminal workspace (when the terminal boots, code is loaded and decompressed from ROM or FLASH memory)

# The 2840 's heart : the CPU card (2)



- The Modem chip :
  - ☞ Rockwell Chip
  - ☞ Connection V34+ (33,6 Kbps)
  - ☞ The software is stored in a ROM memory and cannot be upgraded (56K)
  
- The caller ID function
  - ☞ Processed by the Modem chip
  
- Telephony
  - ☞ half duplex handsfree function done using analogical components
  - ☞ commutators and audio amplifier
  
- Audio files converter (coding/decoding standard)
  
- Date and time
  - ☞ Based on local supply (50Hz AC)
  - ☞ Automatic update through CLI



# The « Bottom » card



- Line interface
  - ☞ Common to modem and telephony
  - ☞ Ensure direct current and impedance adaptation to the telephone line.
  - ☞ The interface functions dedicated to telephony (handset or handsfree) and modem (V34, CLI) are supplied through the local power 50Hz
  - ☞ Consequence : **The terminal telephone functions do not work if there is a local supply cut**
- Power supply
  - ☞ Serie regulation (low cost and little noise)
  - ☞ Generates the following voltages : +5V -5V 12V (backlight) 3,3V (CPU) 32-40 (contrast)

# *The keyboard card*



- Manages the contact matrix of the telephone keyboard, the leds and the PC keyboard.
- This card is managed by a 8 bits NEC microcontroller, which has ROM and RAM integrated. The communication with the processor is done through the 200 Kbits/s (10 characters/s) highspeed serie link. NEC manages :
  - ☞ the telephone and PC keyboards
  - ☞ the shell 's 5 leds
  - ☞ the PC keyboard led
  - ☞ the smartcard exploitation software 's low layers (according to 7816-3)
  - ☞ the touchscreen polling mechanism

# The touchscreen



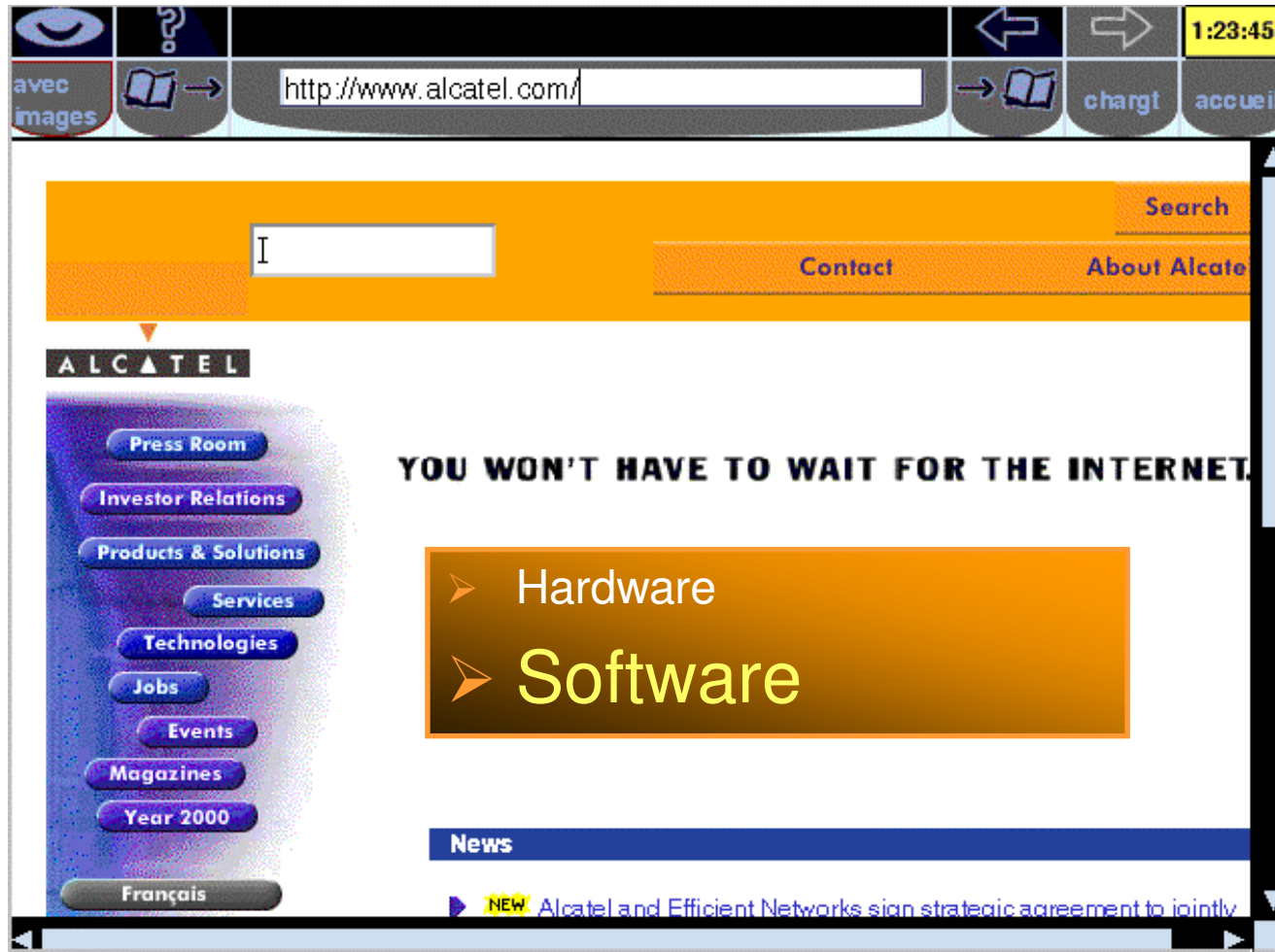
- VGA screen 640x480, 256 colors
- passive matrix (the action is done on the crystals properties)
- single scan (one drivers 'set)
- Incline angle : 27 degrees
- Forward/backwards perception angle +/-20 degrees
- Left/right perception angle +/- 45 degrees
- Resistant touchscreen
- Temperature regulation algorithm (automatic contrast tension modification)
- Lighting is done through a fluorescent cathodic pipe on the top of the screen
- Backlight tension is automatically cut when the terminal is not used (timeout)

# Standards and life time

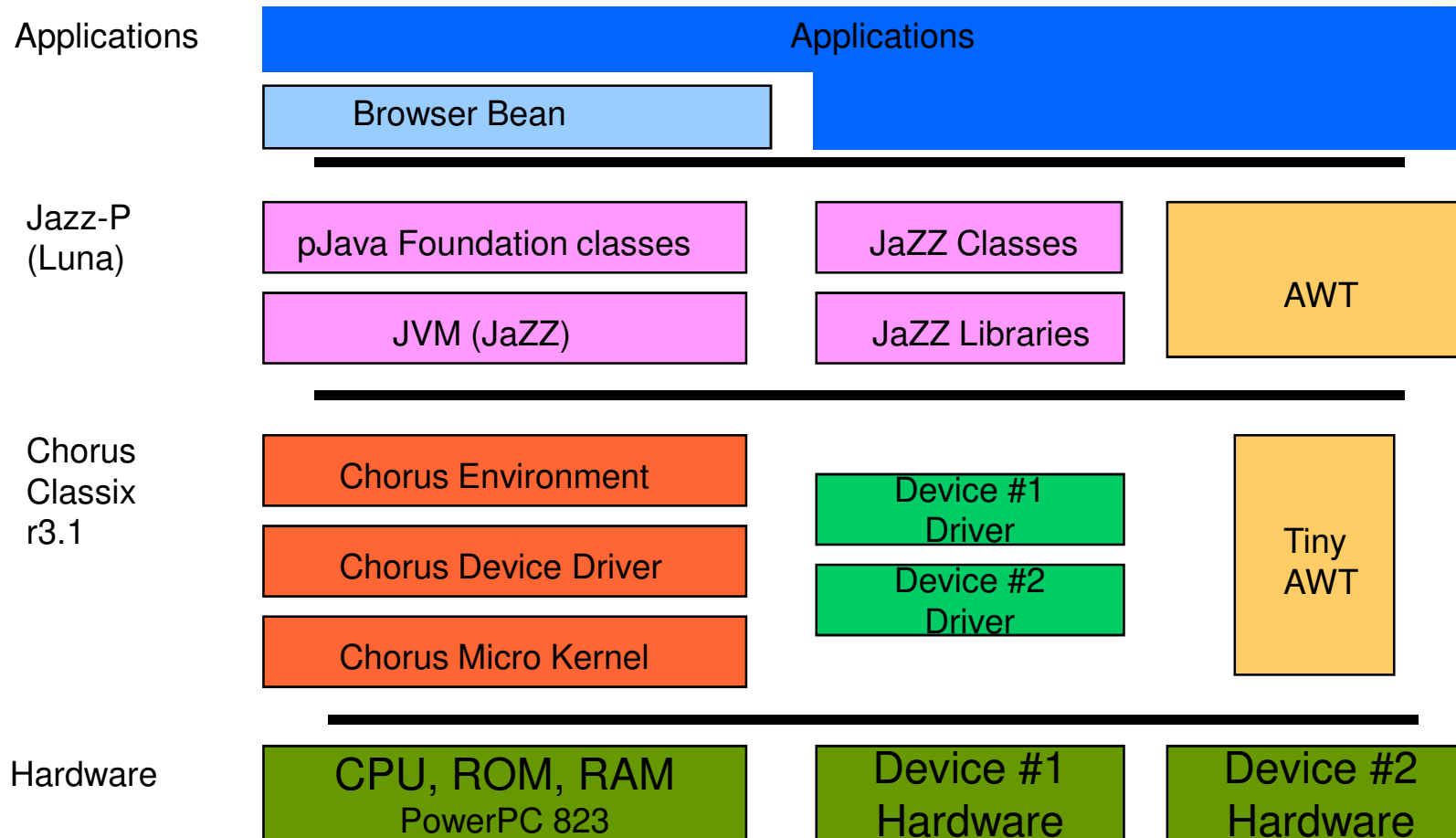


- The MTBF guarantee lasts 8 years on the following hypothesis :
  - ☞ 3h/day average use and 15 phone calls / connections
  - ☞ The light loses half of its brightness after 10 000 h, i.e. 5h/day 250 days/year.
  - ☞ The touchscreen supports 1 million presses (500 /day 250 days/year)
  
- Agreement (depend on the countries) :
  - ☞ Conform to CEM 's CE norms : EN 55022 (August 94); EN55082 (Jan 92)
  - ☞ Conform to the CE security norms : EN 60950 (94), A1, A2, A3
  - ☞ Line interface : electric specifications : B1123 ed2 (july 96)
  - ☞ Line interface : acoustic specifications : B0021 ed1 (feb 96)

# Techniques used in the 2840



# Software architecture (1)





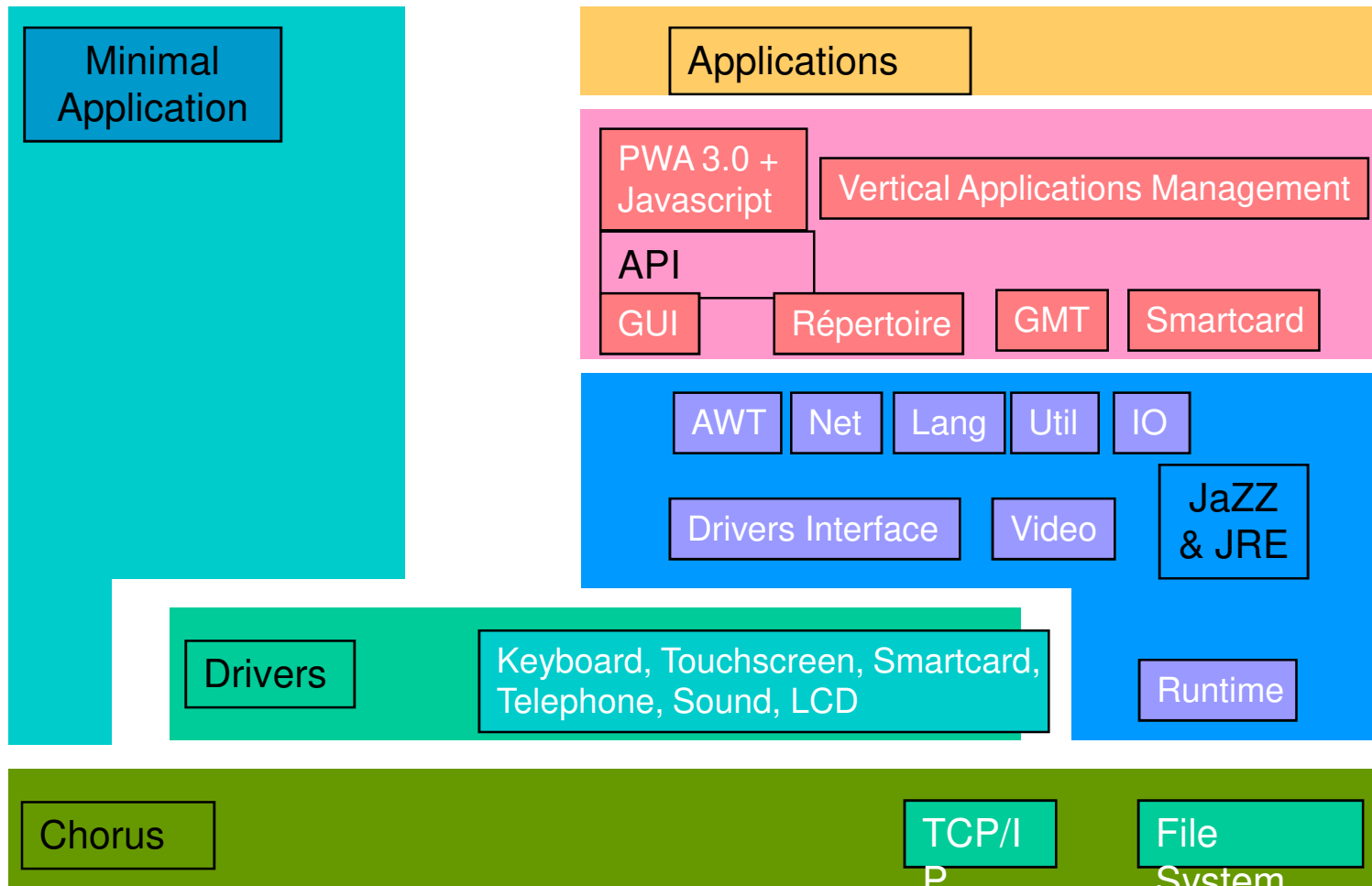
# Software architecture (2)



AppliMini Actor

Drivers Actor

JaZZ Actor





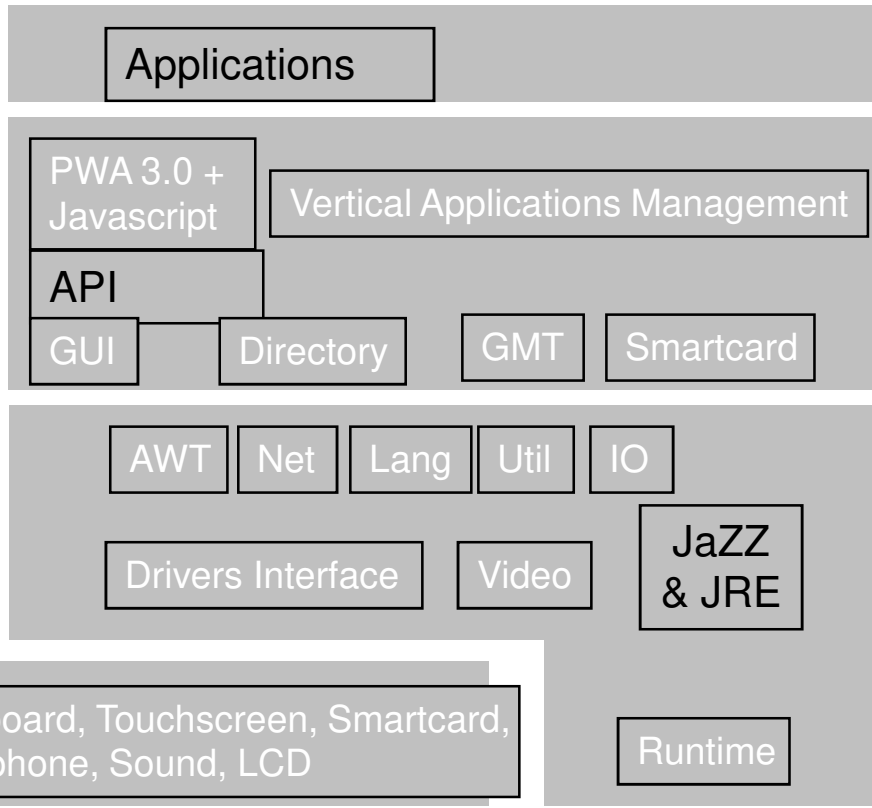
# Chorus : real time kernel (1)



## AppliMini Actor



## Drivers Actor



## JaZZ Actor



## Chorus : real time kernel (2)

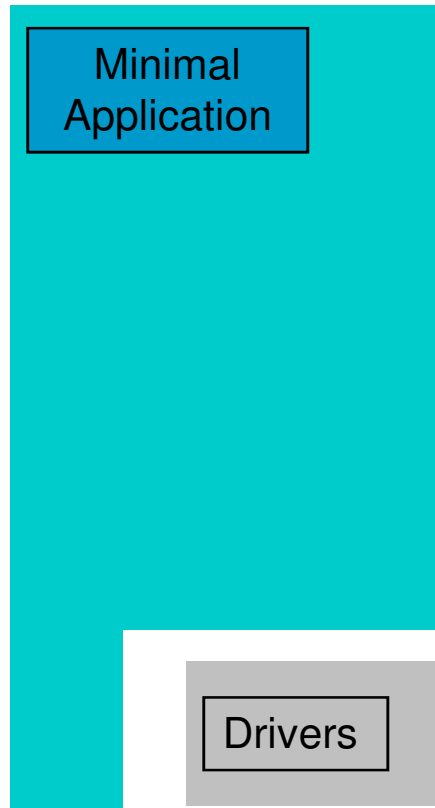


- The version used is **Classix r3.1**
- Manages actors dynamic creation and destruction (*an actor defines a set of ressources -memory, process...*).
- **Scheduling** : tasks priorities management (*drivers have the highest priority and the background task the lowest*)
- Contains TCP/IP and PPP stack, i.e. :
  - ☞ LCP : transports IP datagrams
  - ☞ IPCP : IP address and DNS address negotiation
  - ☞ **PAP** : distant server authentication (login, password)
  - ☞ **CHAP** : authentication using key algorithm (should not be used)
- Flash File System management

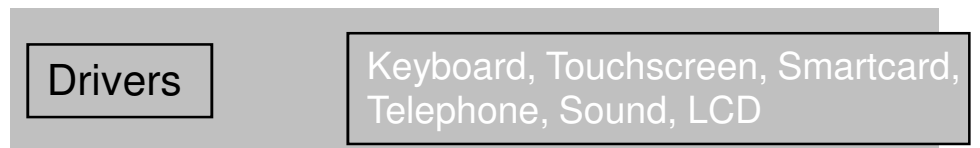
# Minimal application (1)



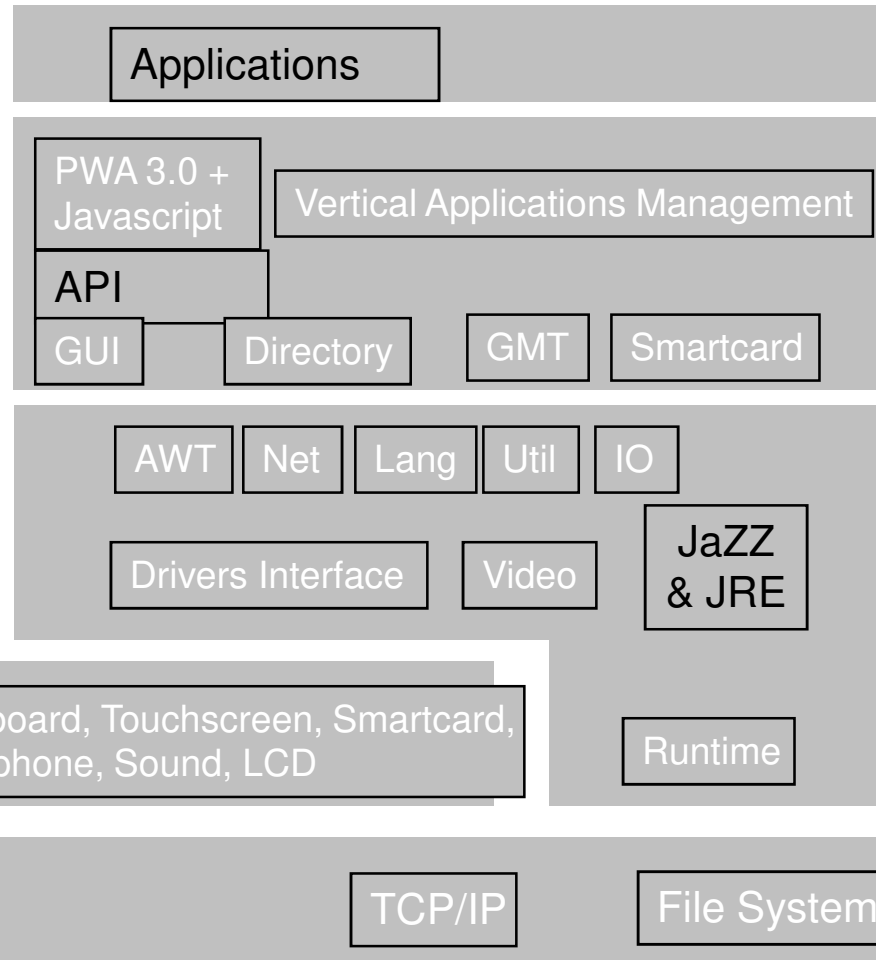
## AppliMini Actor



## Drivers Actor



## JaZZ Actor



## *Minimal application (2)*



- Loaded right after boot
- Initializes shared resources.
- Determines whether the main application should be loaded or not
  - ☞ yes : loads JaZZ and goes to a passive state
  - ☞ no : the driver actor is handled to ensure minimal telephone applications and upgrade agent loading.

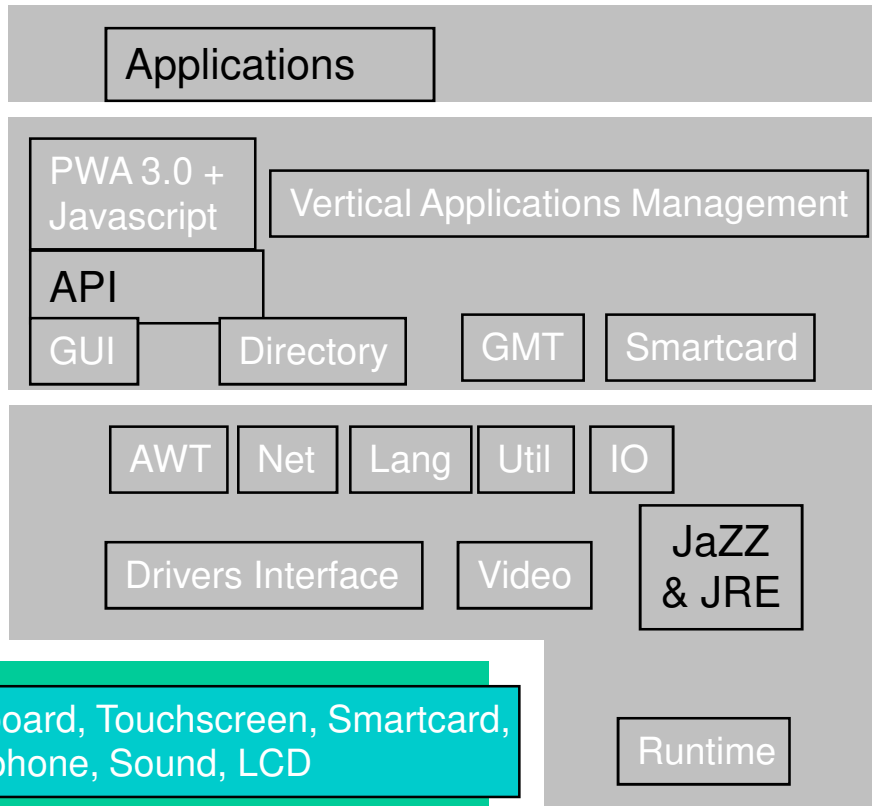
# The drivers actor(1)



## AppliMini Actor



## Drivers Actor



## JaZZ Actor



## *The drivers actor (2)*



- HW drivers (Modem/telephone, smartcard, keyboard, LCD touchscreen, Audio) are part of a unique actor
- this actor is localized in ROM
- The Driver actor is created during system initialization : it defines the machine 's material configuration and initializes each driver (HW parameters : country, screen, keyboard, modem, etc.)
- The screen is controlled by the video unit (physical initialization, switch on and switch off, contrast)

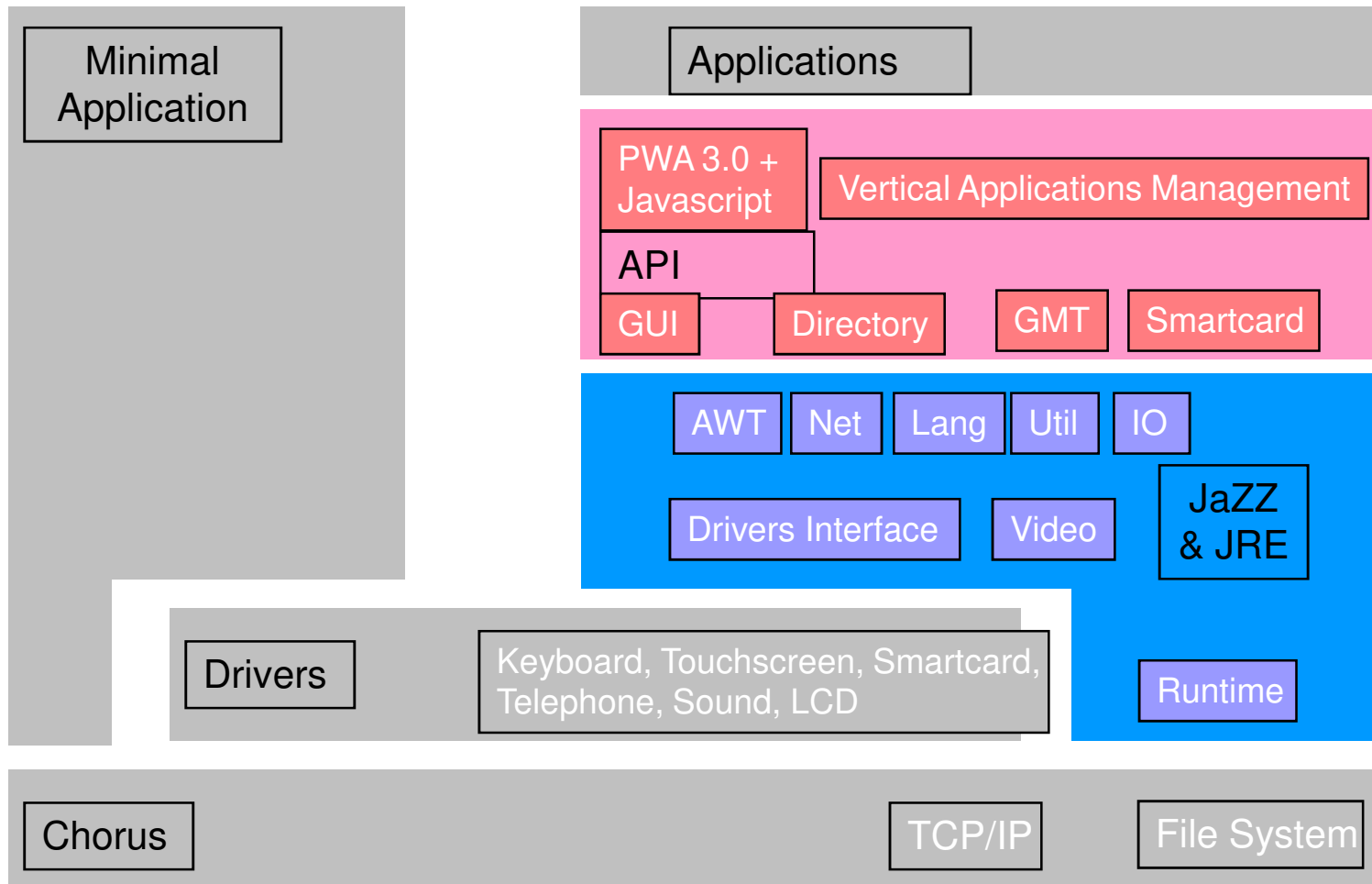
# The JaZZ actor (1)



AppliMini Actor

Drivers Actor

JaZZ Actor





## The JaZZ actor(2)



- Name given to the JavaOS adaptation on Chorus
- Provides a processing environment (**JVM**) to the pJava code and an interface to the OS (drivers, video)
- The software is developed in pJava 1.0, which is a subset of JDK1.1.

# The JaZZ actor(3)

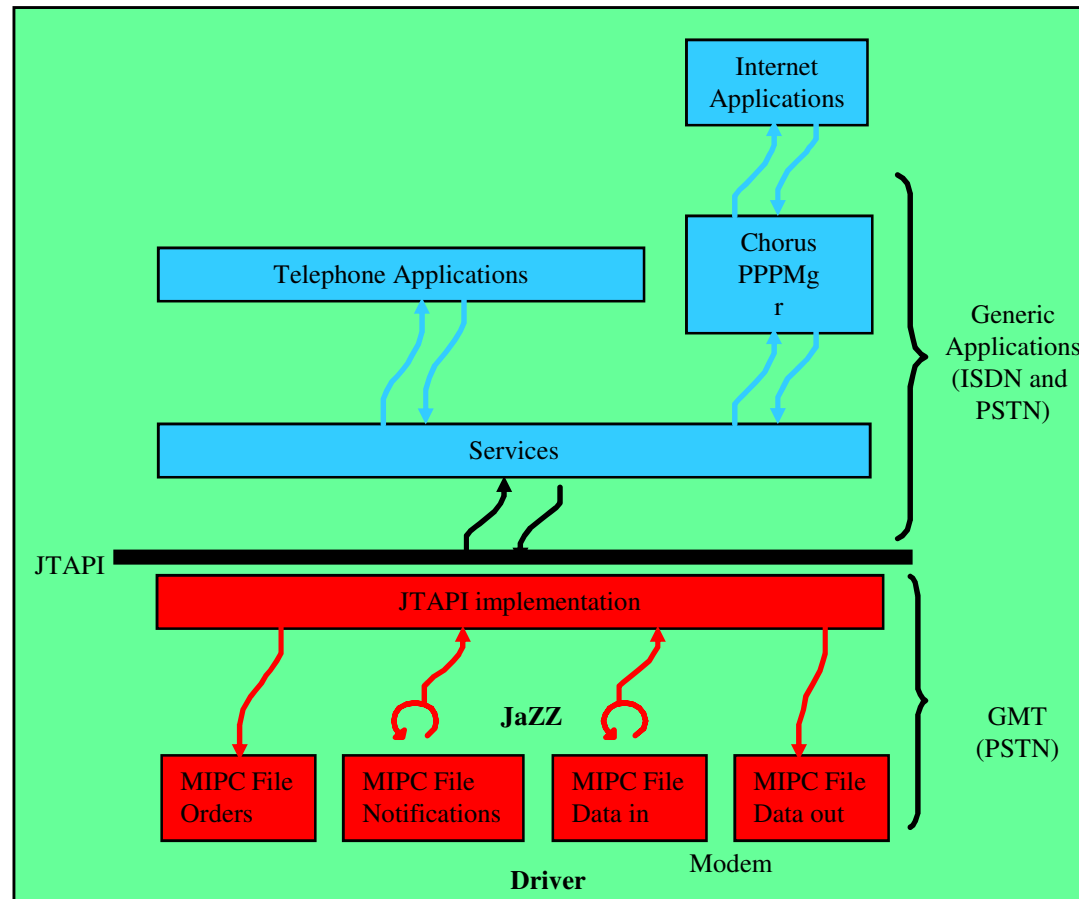


- The network unit
  - ☞ SMTP : to send mail (Javasoft)
  - ☞ HTTP & HTTPS : takes the information displayed by the browser (Javasoft)
  - ☞ POP3 : to read mails stored on the server (Alcatel)
- The AWT unit(*Window Toolkit*): classes managing the graphical interface. pTinyAWT (AWT implementation ) deals directly with the video driver, the keyboard and the touchscreen pointing mechanism. The access to these ressources cannot be done by other actors.
- The video unit
  - ☞ graphical control (pixels display)
- The security unit
  - ☞ SSL 3.0 : HTTPS security protocol and secure applets
- The other units (LANG, UTIL, IO) : classes and librairies

# The JaZZ actor (4) : the application units



- The GMT module (*telephone unit management*):
  - ☞ generic : the application software is independent from the underlayer link (external modem, ISDN, UA, etc.)
  - ☞ superior interface : JTAPI (phone calls object oriented modelization)
  - ☞ CLASS services management (on top of JTAPI)



# The JaZZ actor(5) : application units



- The PWA 3.0 unit+ Javascript (*Browser*)
- The directory unit : it is the user 's database stored on the Flash File System.
  - ☞ Manages the different applications concurrent access to the database (directory, telephone, browser,...)
  - ☞ allows to create, save, delete and sort entries
- The GUI unit:
  - ☞ The HCI is built using a set of Java classes.
  - ☞ Help mode management
  - ☞ Properties management

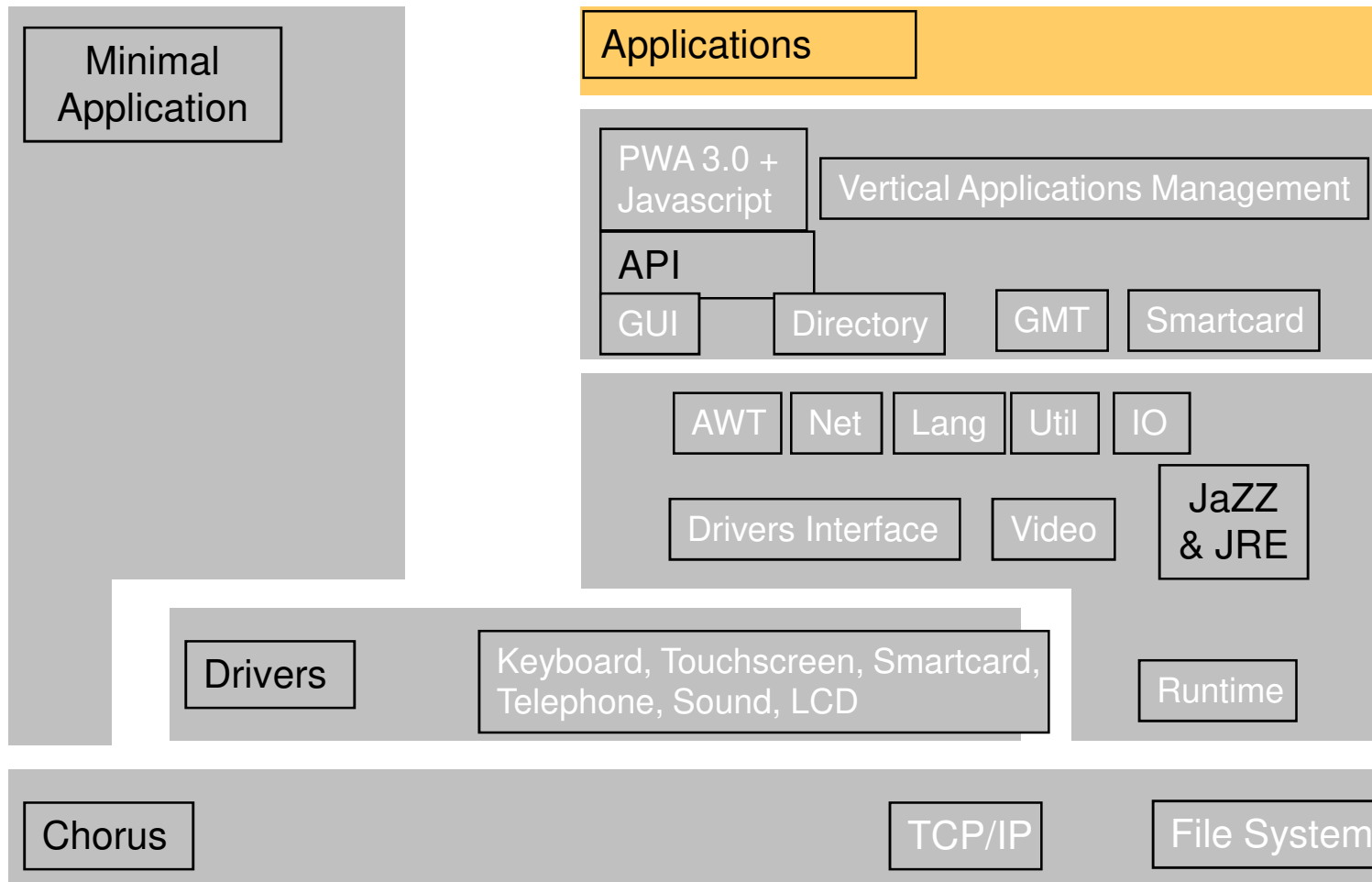
# Applications (1)



## AppliMini Actor

## Drivers Actor

## JaZZ Actor



## Applications (2)



- The directory
- The OFF LINE mail: based on POP3 and SMTP
- The ON LINE mail: based on HTTP
- The browser with ISP LOCK
- The telephony
- The configuration (SET UP)

# Upgrade



- 2 types of upgrade :
  - ☞ « intelligent » (end-user)
  - ☞ total (laboratory)
- « Intelligent » upgrade : compares file by file the modifications done and makes the necessary modifications
- Total upgrade : complete re-programming, each file is replaced => the address book contacts, the pages stored in the cache and the user 's parameters are lost
- The loading time varies with the type of upgrade :
  - ☞ total : approximately 70 minutes
  - ☞ « intelligent » : really shorter, depending on the amount to load : 10 minutes average
- Protocol used : HTTP