Development of Mobile Applications

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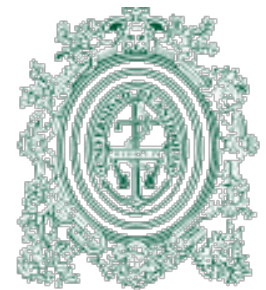
Carlos Avendaño

Juan David Gomez
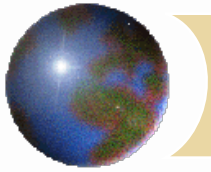
Medellín, Colombia
South America
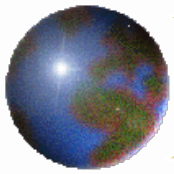
Why Developing Mobile Applications?

⊕ The mobile market is one of the fastest growing markets in the world. Users needs has grown beyond Voice Communications and they are asking for new services to be available trough their Mobiles Phones.

⊕ Developing countries are no exception The geographical conditions of most of these countries presented a challenge for service providers to install fixed networks, a challenge not very often met. That's why cellular network became an alterative to these fixed lines in countries like Nigeria, and some other African countries, and even islands countries in the pacific
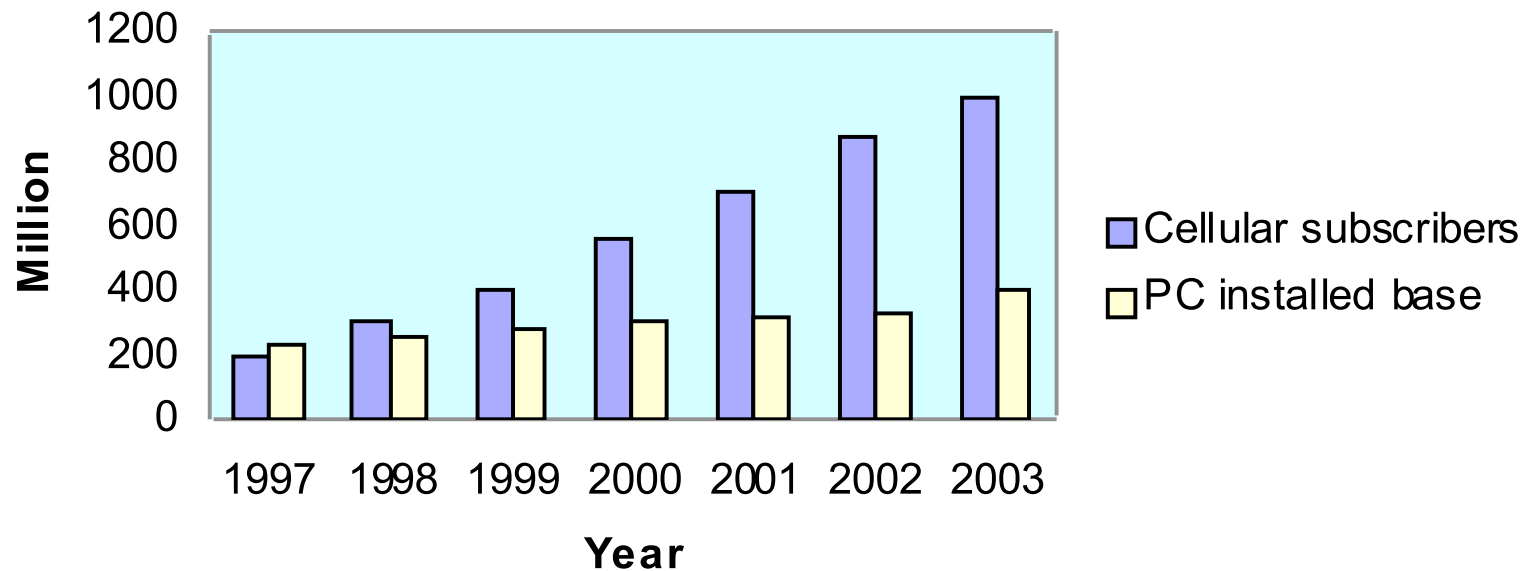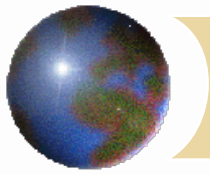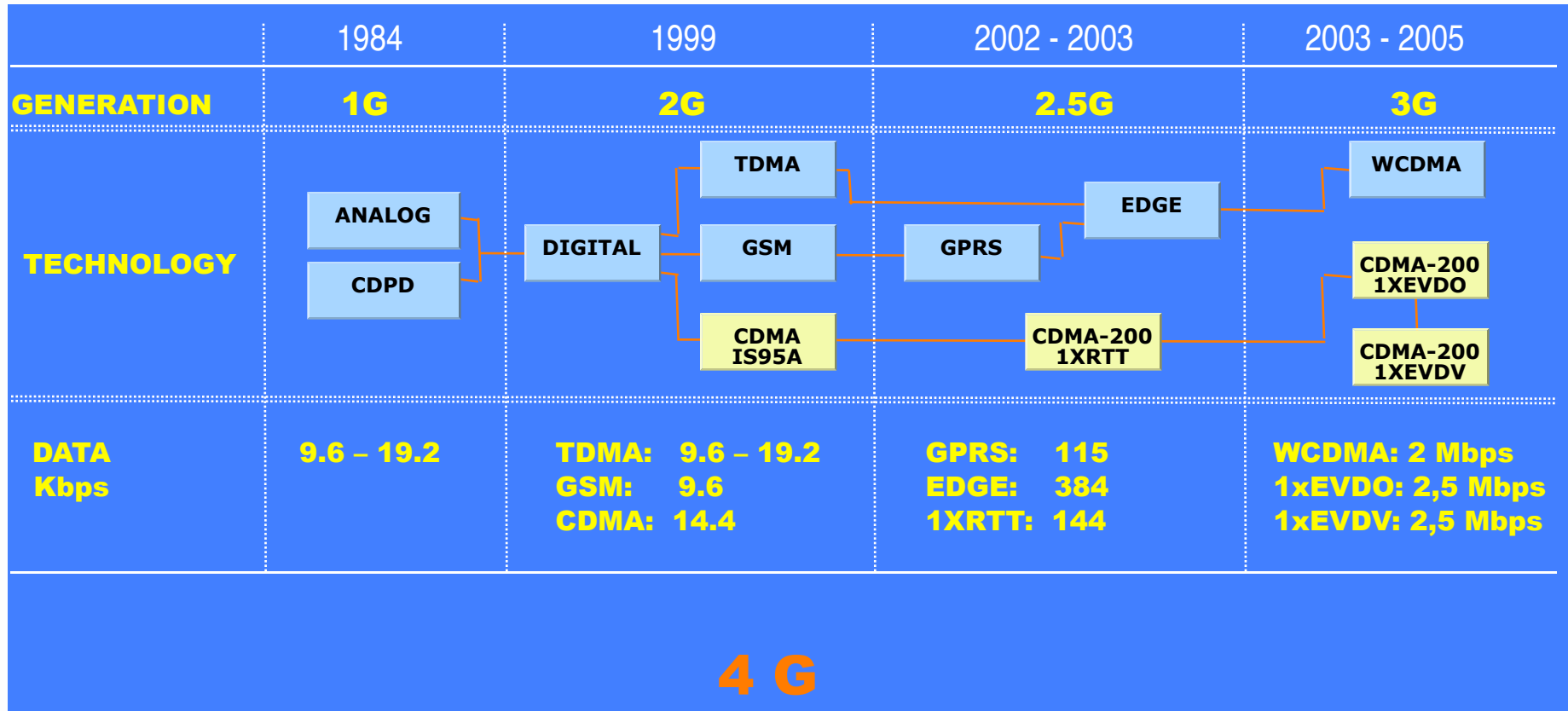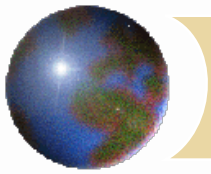
Market Behavior Worldwide

Figure 1: Cellular subscribers vs PC installed base

Evolution of Mobile Communications

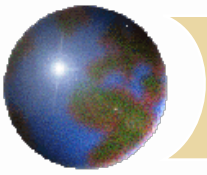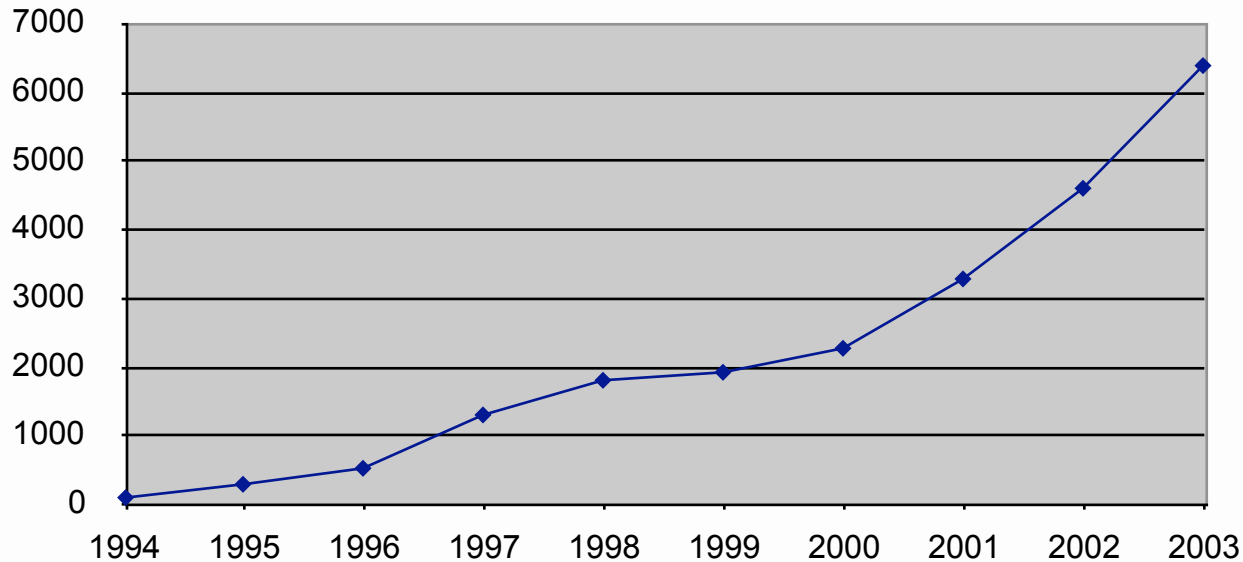|	1984	1999	2002 - 2003	2003 - 2005
GENERATION	**1G**	**2G**	**2.5G**	**3G**
TECHNOLOGY	ANALOG / CDPD	DIGITAL → TDMA / GSM / CDMA IS95A	GPRS / EDGE / CDMA-200 1XRTT	WCDMA / CDMA-200 1XEVDO / CDMA-200 1XEVDV
DATA Kbps	9.6 – 19.2	TDMA: 9.6 – 19.2 GSM: 9.6 CDMA: 14.4	GPRS: 115 EDGE: 384 1XRTT: 144	WCDMA: 2 Mbps 1xEVDO: 2,5 Mbps 1xEVDV: 2,5 Mbps

4 G

Why Mobile Applications in Colombia?

Colombia's mobile market is growing at an accelerated rate in last months, and now "web-enabled" phones are becoming very common devices.
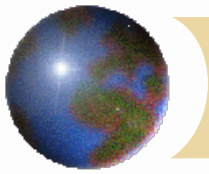
The market for "Mobile Services" is virtually unexplored in Colombia, mostly because our country was not "technically prepared", but now 2.5G networks are being deployed all over the country, making Mobile Application Development a great business opportunity.
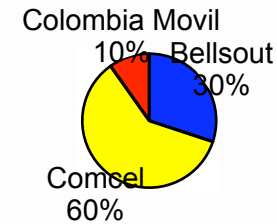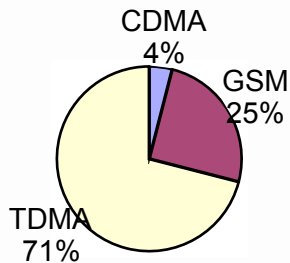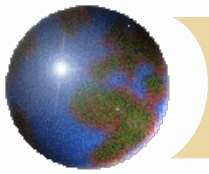
Market Behavior in Colombia

Mobile Market in Colombia had a remarkable growth of 38.6% last year, but now it's only reaching 14.4% of the total population of the country, being a good percentage compared to other developing countries trough out the world.
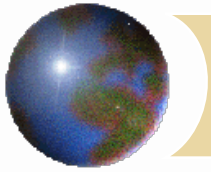
Mobile Technologies in Colombia

In only 2 months a new company called "Colombia Móvil" sold 620.000 GSM phones, an average of 10.000 phones per day, beating the previous world record set by Portuguese Mobile Carrier "Optimus", GSM technology became the second mobile Technology in Colombia in only 6 months.

Developing Mobile Applications

When we are developing mobile applications we have two choices:

- Executable files (J2ME)
  - Limited to device resources
  - Large files
  - Access to phone capabilities (API's)
- Mobile Web Applications (WAP)
  - Powered by server resources
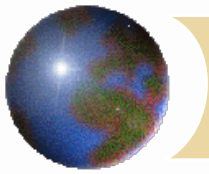 - no installation needed
  - Limited to browser capabilities

Why Mobile Web Applications?

Application development in all fields is moving away from the classic desktop application and moving into a "connected" application model.
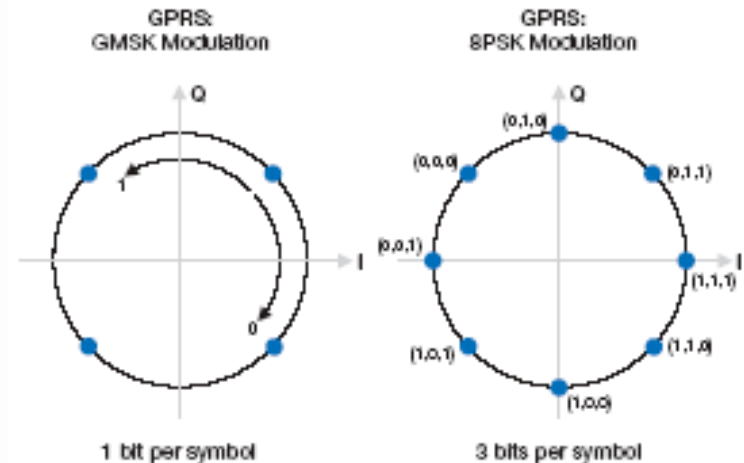
Web application development is becoming more popular among developers, IT professional and Corporate Executives.

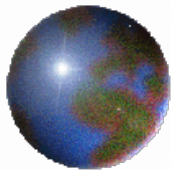Mobile Web Application, offer an extra power through "Wireless Connectivity".
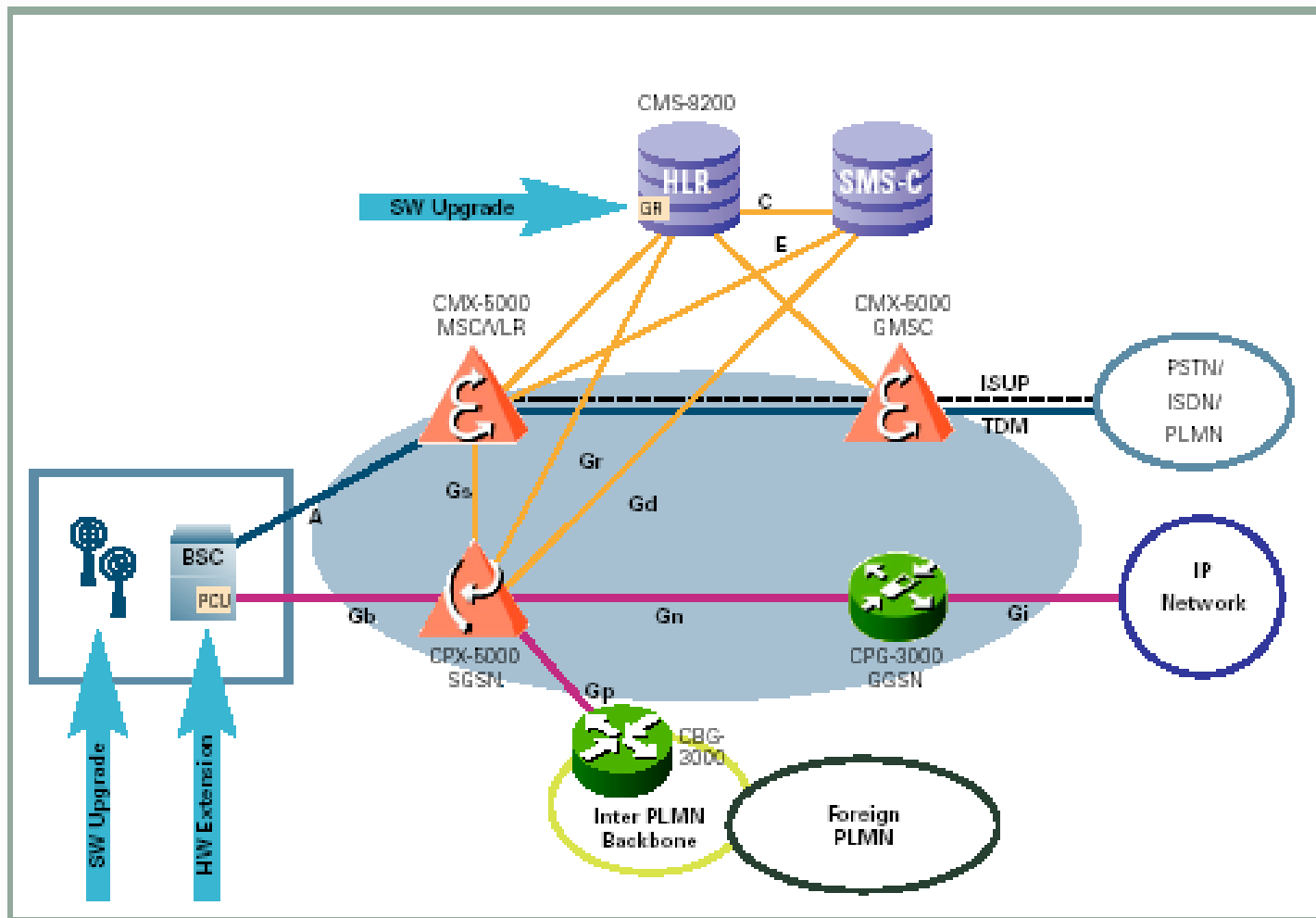
Data Protocols for Cellular Networks

	GPRS	EDGE
Modulation	GMSK	8-PSK/GMSK
Symbol rate	270 ksym/s	270 ksym/s
Modulation bit rate	270 kb/s	810 kb/s
Radio data rate per time slot	22,8 kb/s	69,2 kb/s
User data rate per time slot	20 kb/s (CS4)	59,2 kb/s (MCS9)
User data rate (8 time slots)	160 kb/s	473,6 kb/s
	(182,4 kb/s)	(553,6 kb/s)

GPRS: GMSK Modulation — 1 bit per symbol

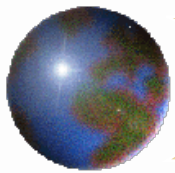GPRS: 8PSK Modulation — 3 bits per symbol

To enhance the Data capabilities of cellular network a new set of protocols needed to be developed, giving Mobile Networks higher Data throughputs for supporting information exchange between devices not only within their networks, but on the outside world (Internet)
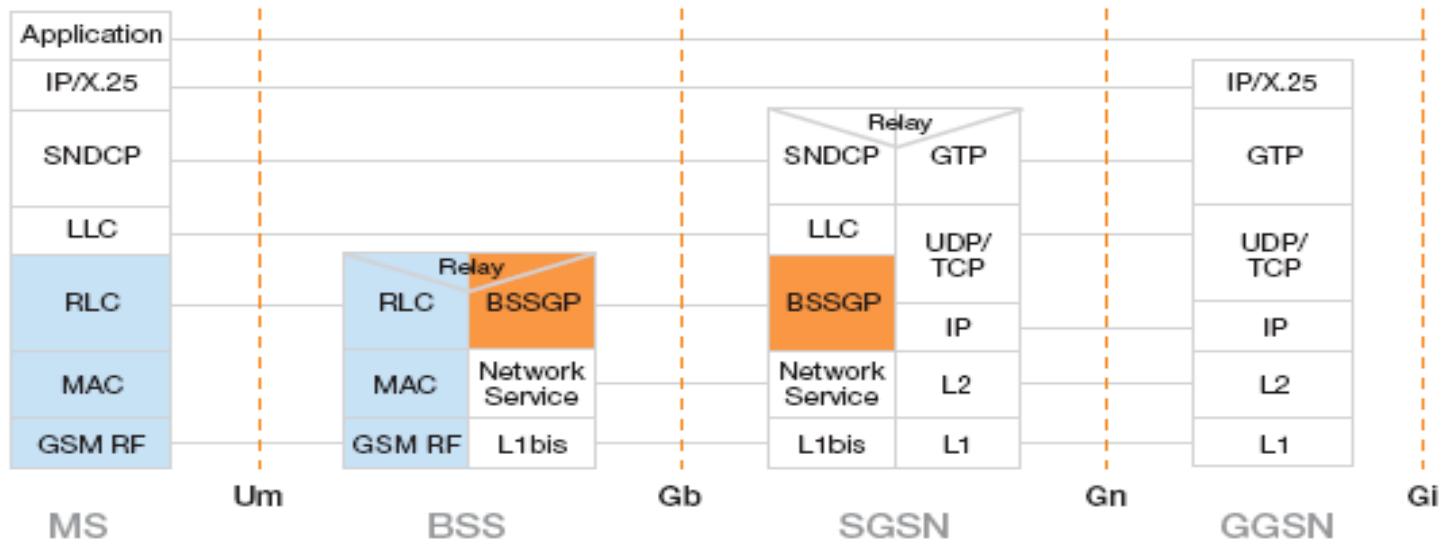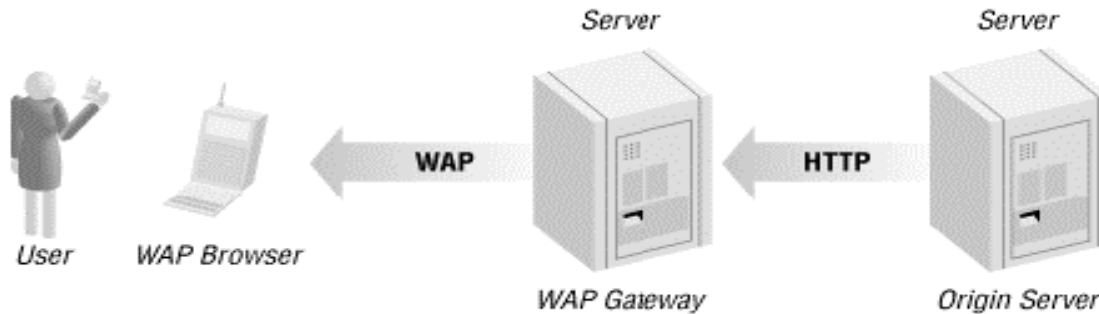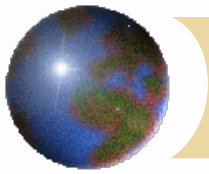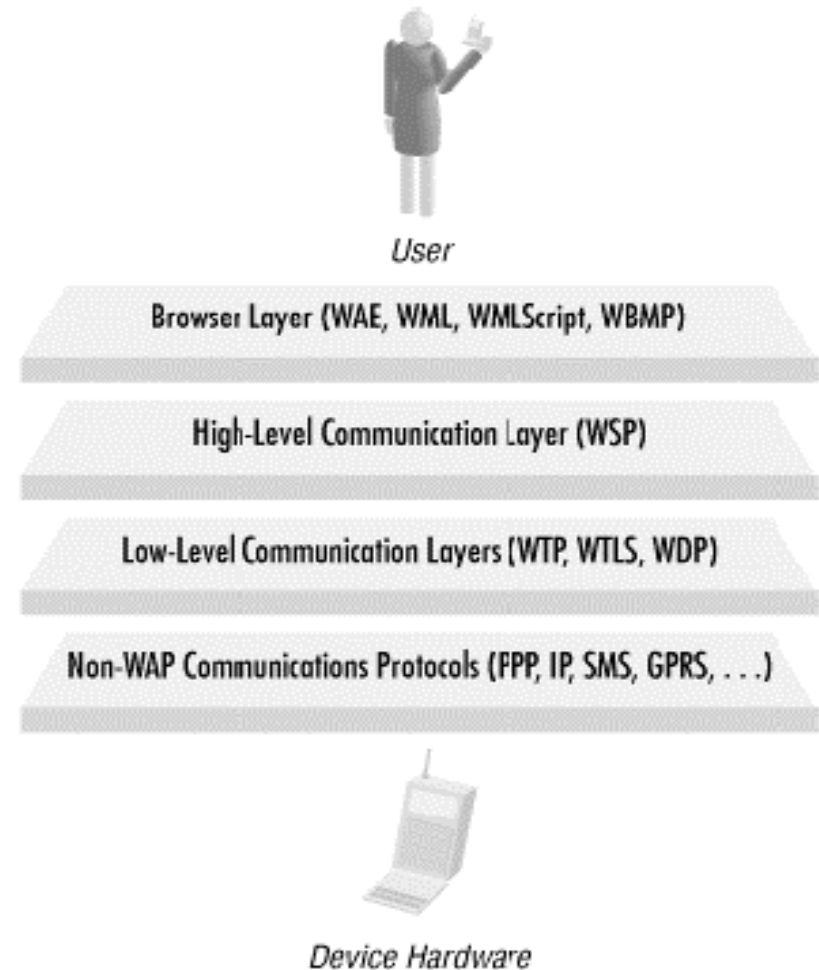
Structure of a Mobile Network
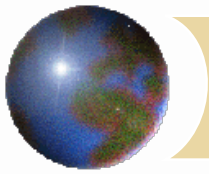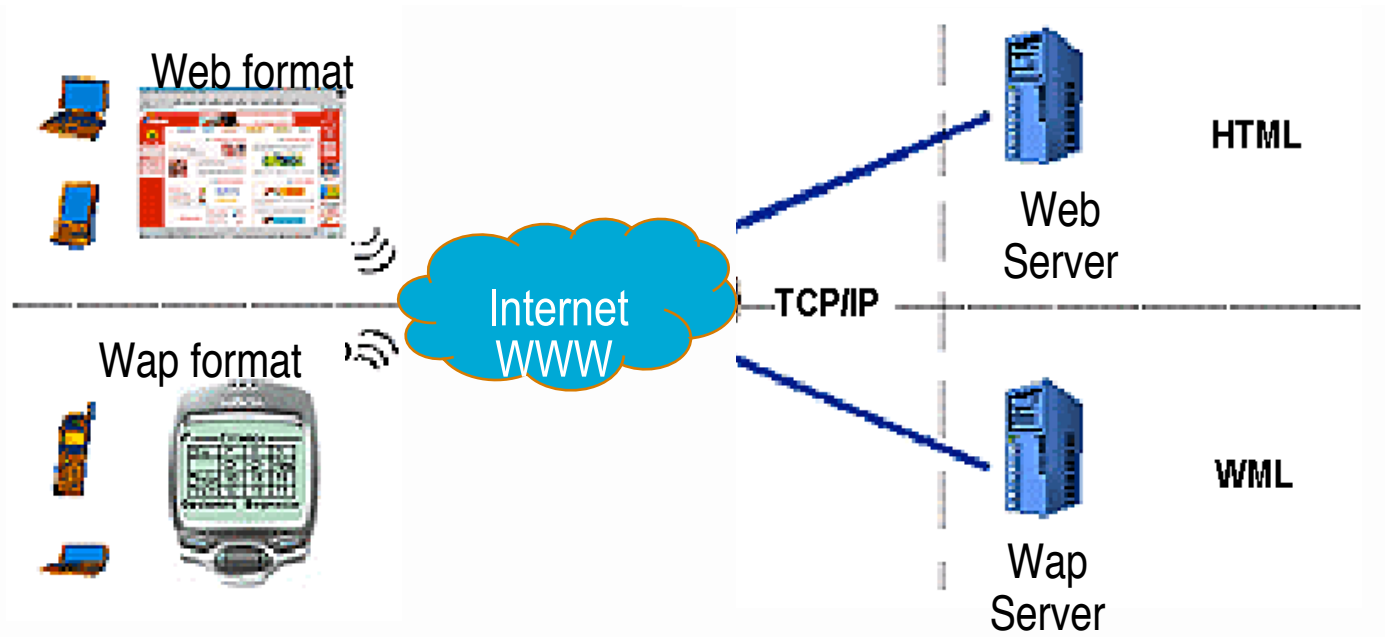
Protocol Stacks for EDGE/GPRS
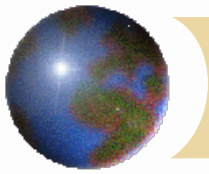
WAP (Wireless Application Protocol)

It's a set of standard protocols that define Web applications development for mobile devices, allowing Phones and mobile devices like PDA's to interact with information contained in wired networks (Intranet, Extranet and Internet). Wap by itself it's not mobile Internet.

User
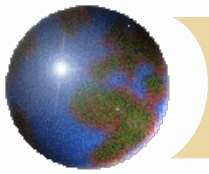
Browser Layer (WAE, WML, WMLScript, WBMP)

High-Level Communication Layer (WSP)

Low-Level Communication Layers (WTP, WTLS, WDP)

Non-WAP Communications Protocols (FPP, IP, SMS, GPRS, . . .)
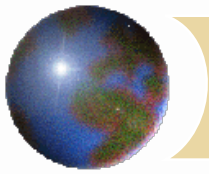
Device Hardware

Basic Web Application Structure

A World of Seamless Possibilities

- Internet + Wireless = Mobile Internet
- Information Services (PCS)
- E-Commerce
- Location Based Services
- Data, Voice, Audio, Video….
- SMS, MMS, E-mail, Games
- Telemetry, Telematics. User – Machine Interaction

Useful Links and tools

- http://java.sun.com/j2me/docs/

- http://java.about.com/cs/j2me/

- http://www.forum.nokia.com/

- http://www.openwave.com/

- www.asp.net/mobile

- http://www.oreilly.com/catalog/learnwml/

Questions?

Thank you for your attention

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