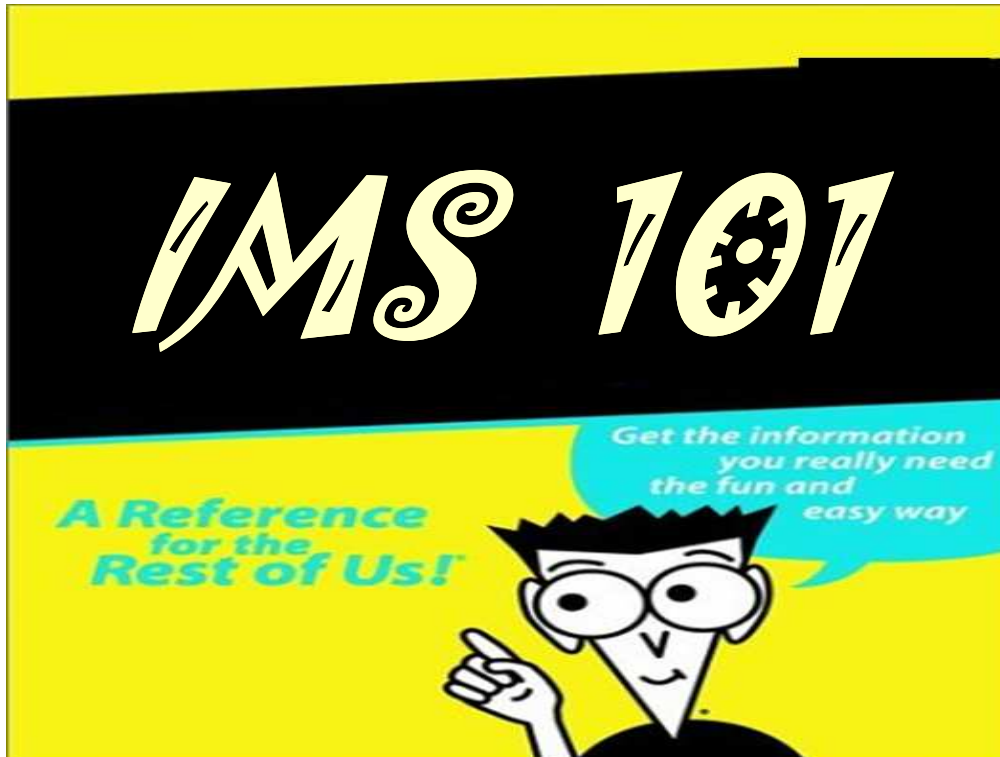




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April 4, 2006

IP Multimedia Subsystem

David J. Stelte
VP of Engineering
Clarity Communication Systems Inc.
dstelte@claritycsi.com
www.claritycsi.com



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Topics we'll cover today:

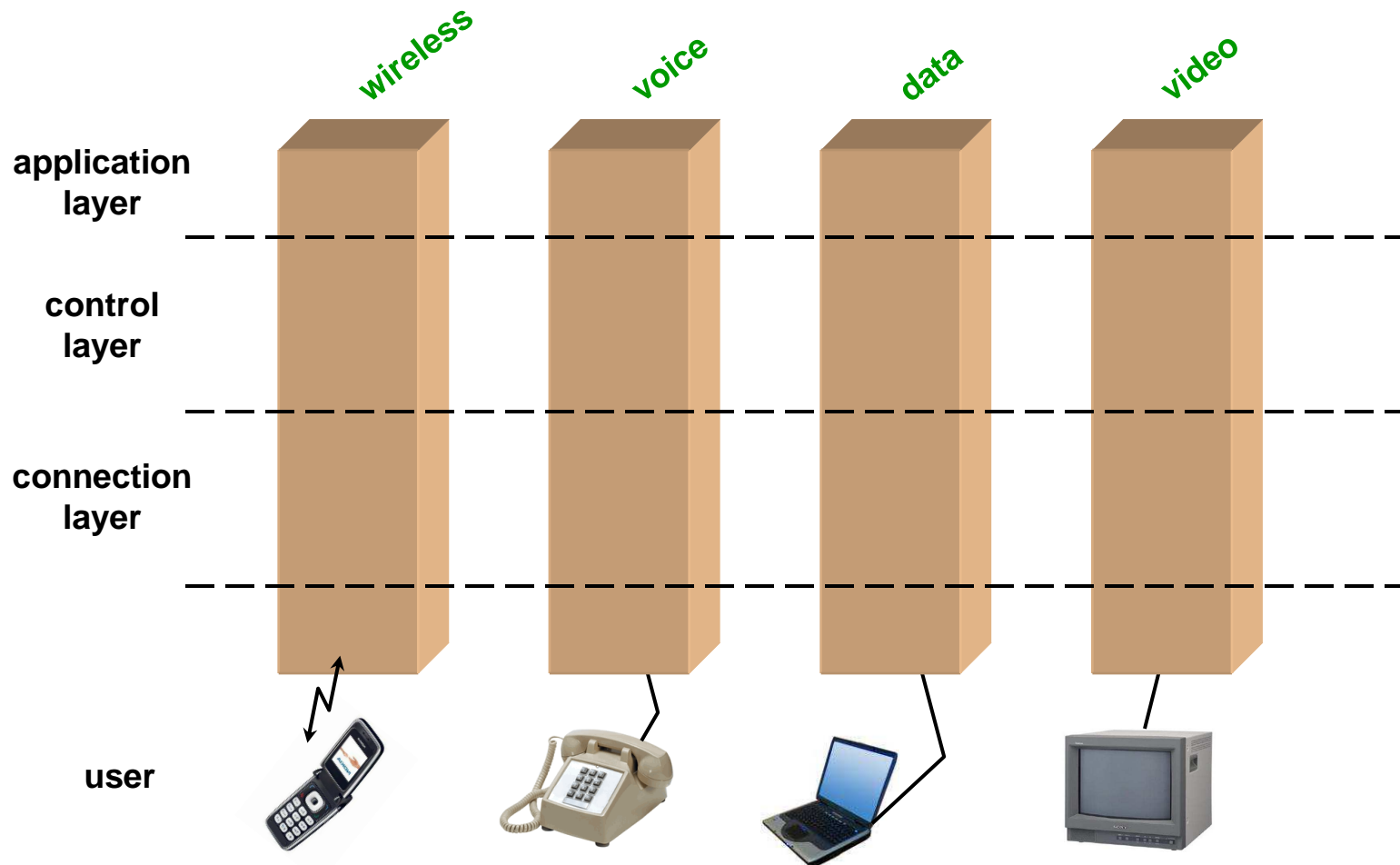
- Network Evolution to IMS
- IMS Benefits and Applications
- IMS Technical Overview
- Who's Playing in IMS
- Recommended Reading



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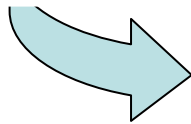
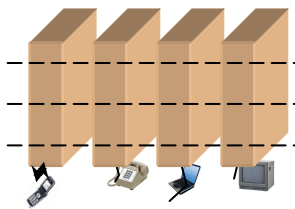
Yesterday's Network





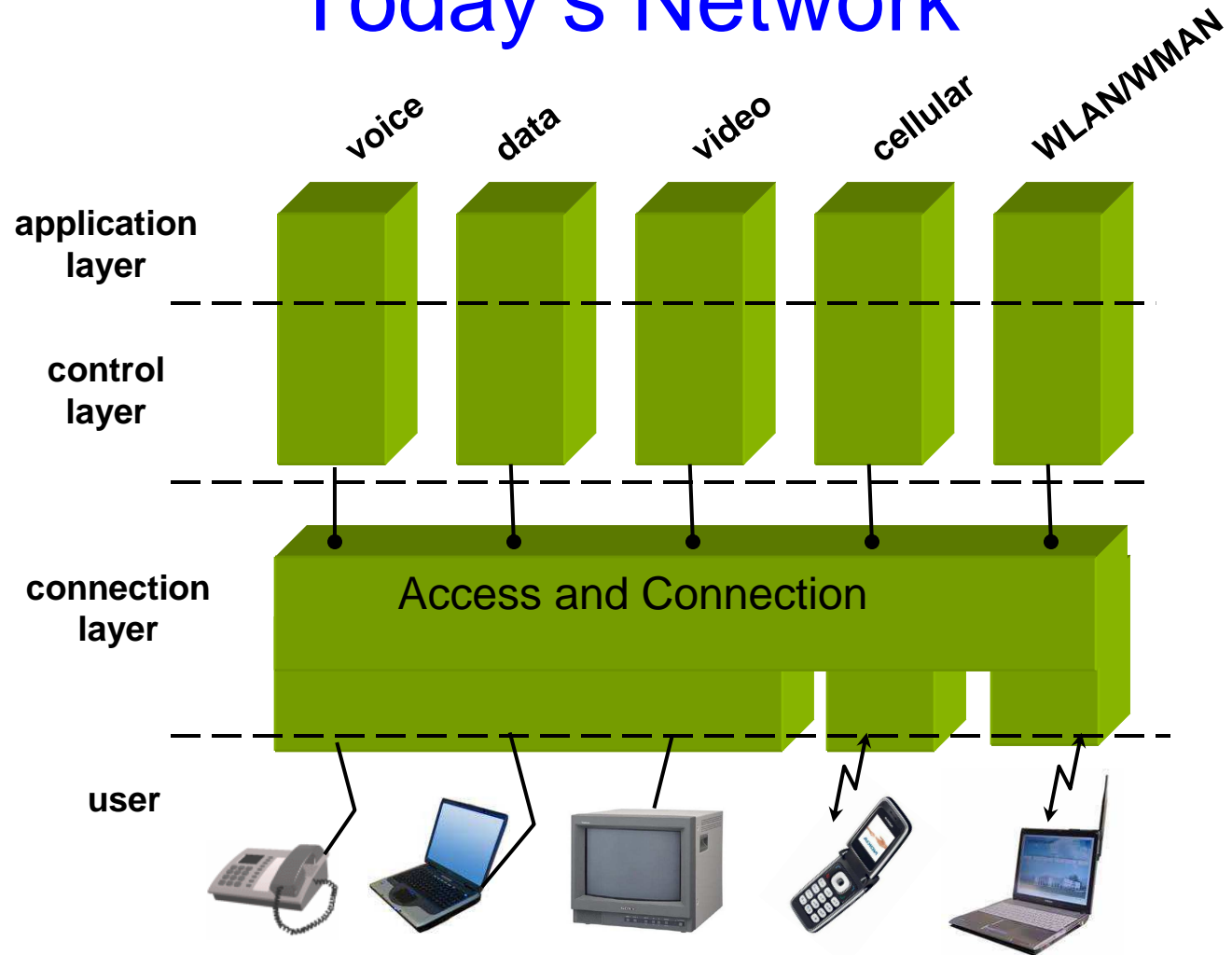
Today's Network

Yesterday's Network



Characteristics of Today's Network

- *Some access-level commonalities*
- *Separate control*
- *Bundled services*
- *Emergence of WLAN technology*





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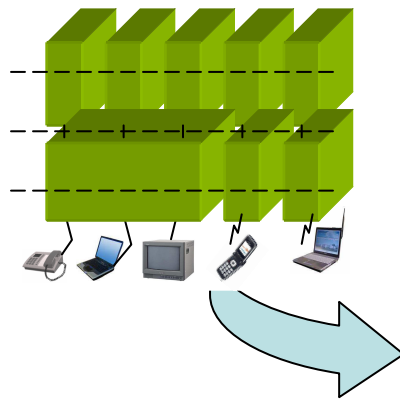
Evolving Trends

- Mobile telephony, SMS, and Instant Messaging have been widely adopted
- Mobile devices are becoming much more sophisticated and powerful
- Traditional telecommunications is decreasing as a percentage of overall consumer wallet, while media and entertainment are showing accelerating growth
- End users want to be able to access services anytime, anywhere regardless of device, location and network
- Mass market adoption of applications is inhibited by today's delivery model



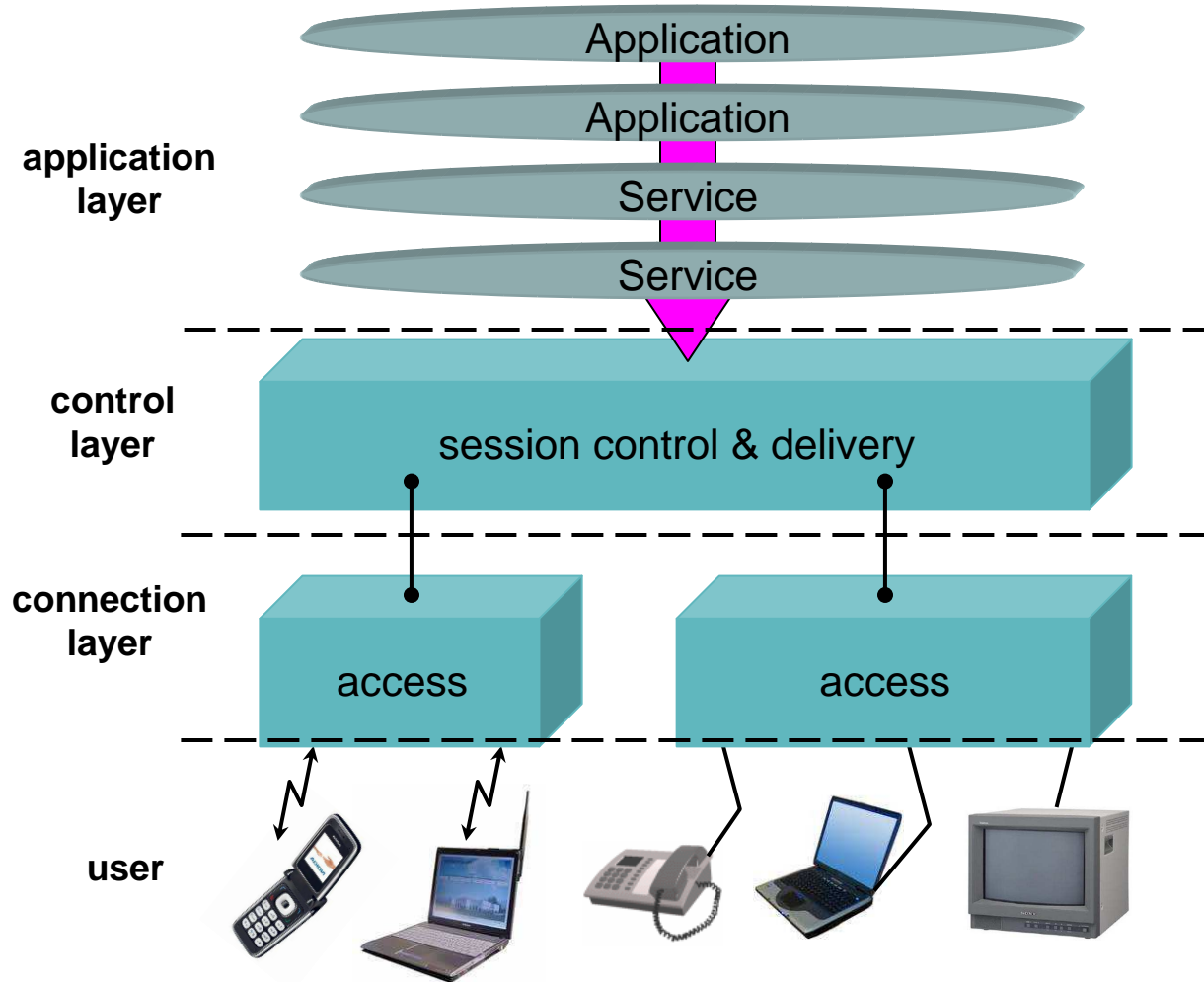
Tomorrow's Network – IMS

Today's Network



IMS - Life After the "Bit-Pipe"

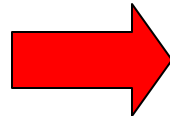
- Common control for access types & services
- Common services
- Apps become access type independent
- Vertical "stove-pipes" replaced by Horizontal functions
- IP based





Benefits of IMS

- Interoperability with diverse networks
- Enhanced Service Integration
- Better Service Interaction
- Access Independence
- Common Functions
- Standards Based



Applications,

Applications,

Applications

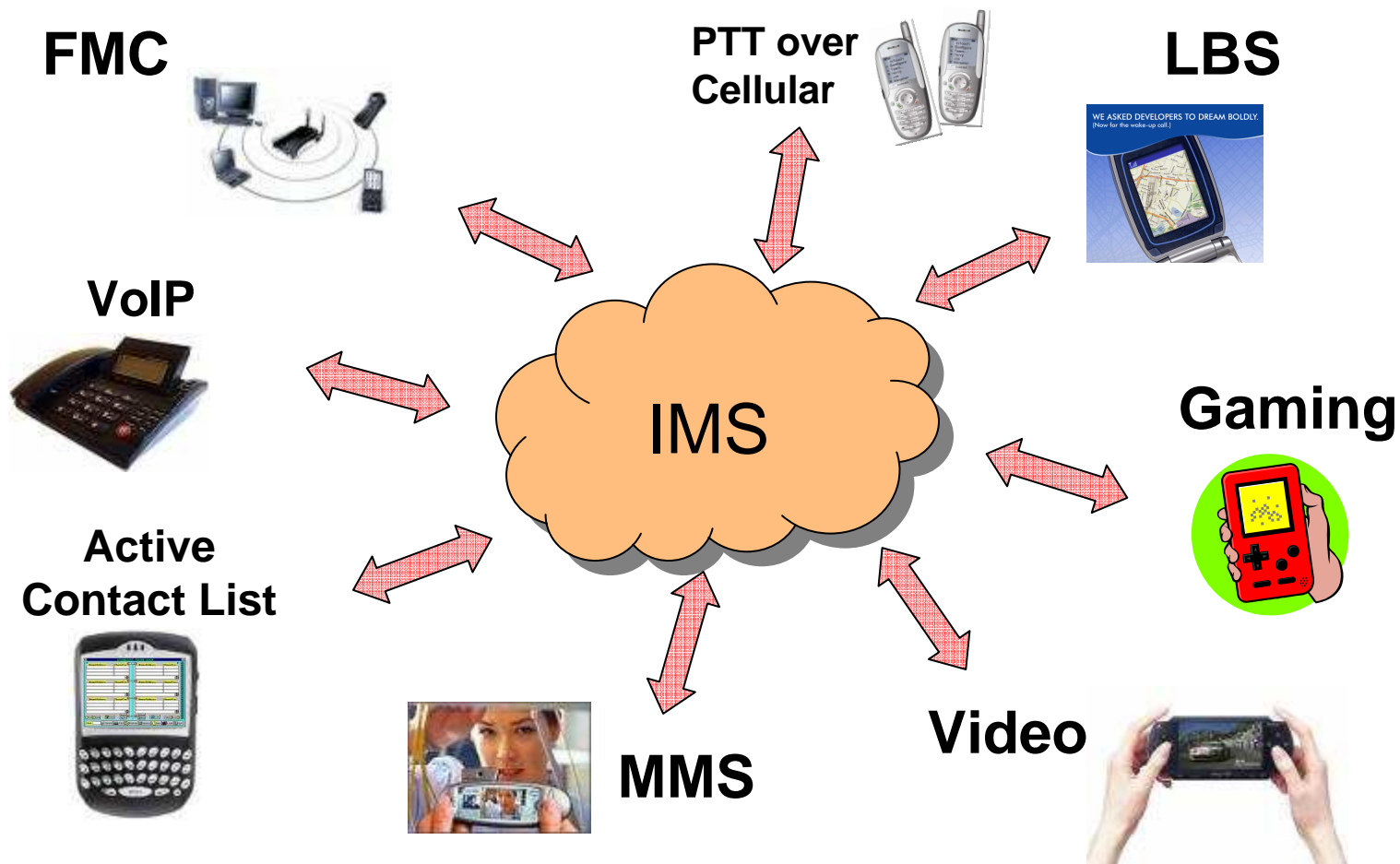
More, Better, Faster!!



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Some Popular IMS Applications



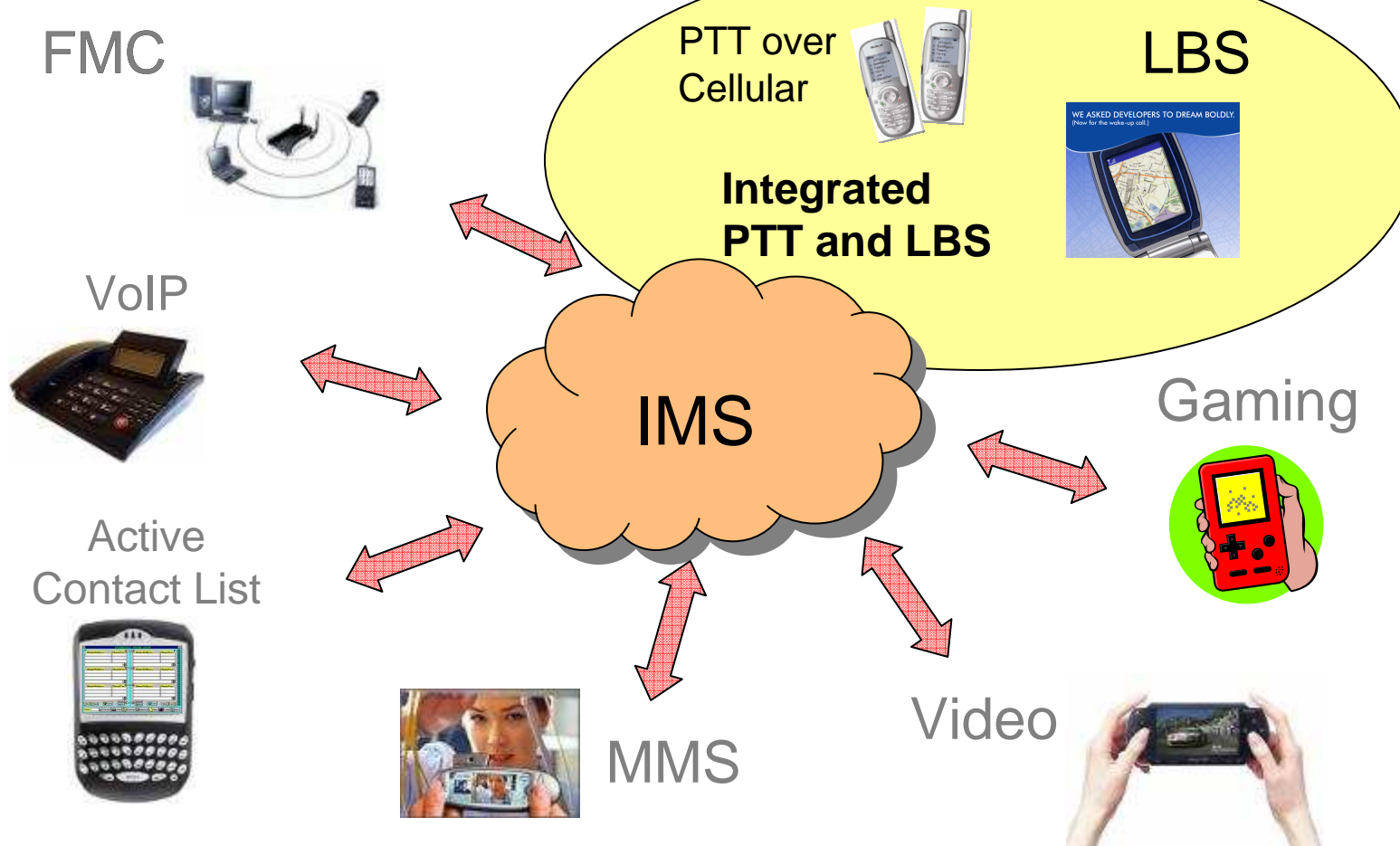
Bits....What, When, Where and How you need them!



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Example of Application Integration



Bits....What, When, Where and How you need them!



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Where2Talk - A Unique Clarity offering integrating Push-to-talk and Location Based Services



- View a Pal's location at-a-glance
- Obtain Map and Address of Pal's location
- Get directions to Pal
- Make PTT call based on where Pal is located
- Integrated presence indicates availability



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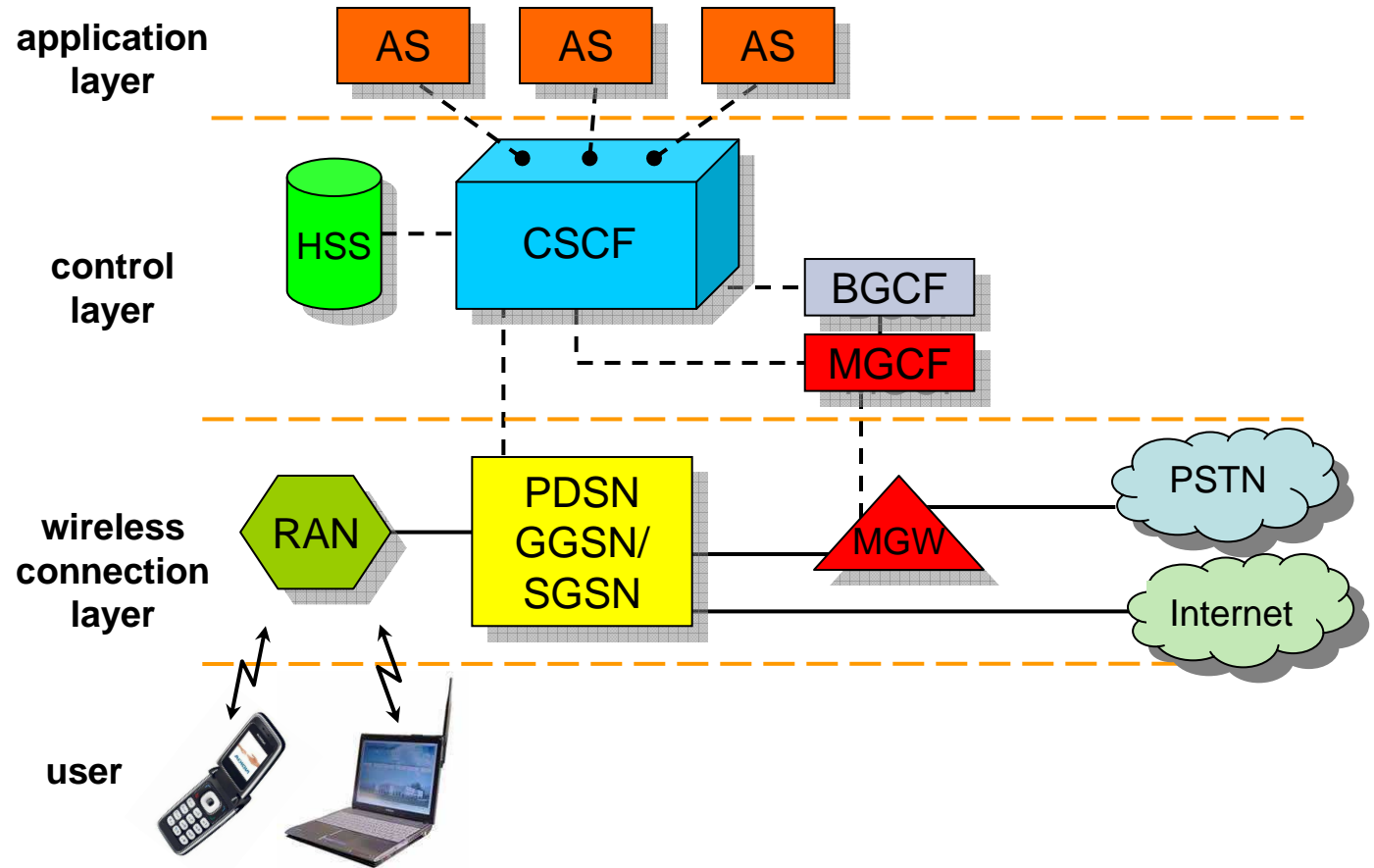
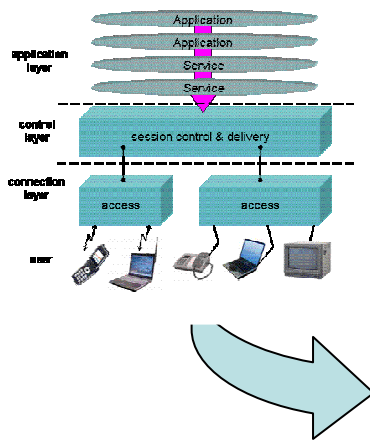
Where2Talk Console for standard PCs

- See location of all Pals on full color maps
- Make PTT call from the PC to selected Pals
- Dispatch addresses to mobile phones
- Full mapping capabilities: zoom, scroll, best fit
- Works on a standard PC

The screenshot shows the 'Where2Talk by Clarity Communication Systems' application window. The main map displays the Aurora, IL area with several pals marked: jerry (green), mark (red), nancy (red), and steve (red). The interface includes a 'Pals List' on the right with categories like 'everybody', 'friends', and 'workers'. Below the map is a 'Map Tools' section with various navigation icons and buttons for 'Show Pals Near An Address' and 'Rename Map'. At the bottom right, there is a 'Geo Call' section with 'Talk To Pals' and 'End Call' buttons, and a 'Call Status' section indicating 'Not on a call'.



IMS Components – A Simplified View



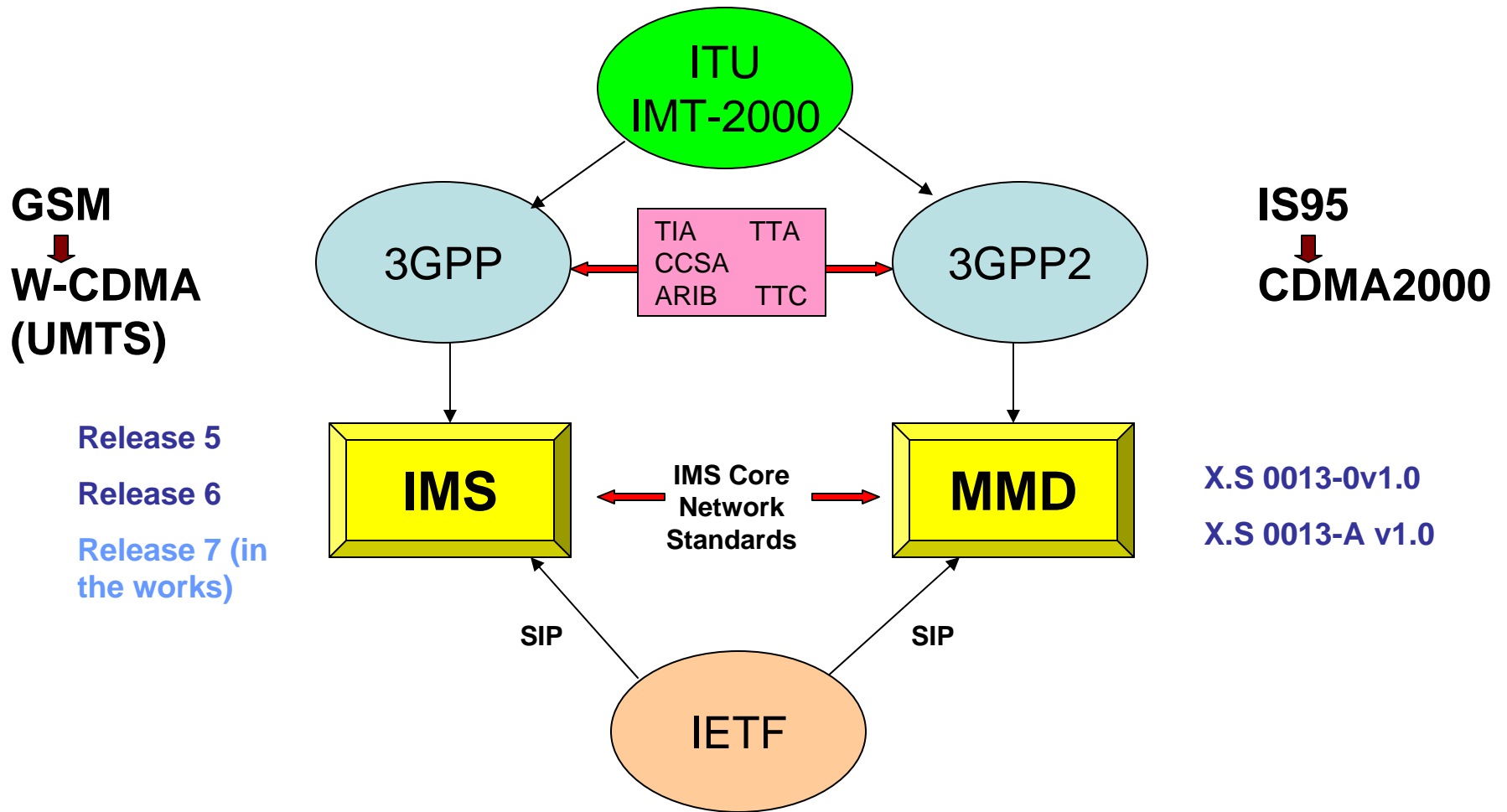


Protocols in IMS

- SIP, SIP, SIP...(Session Initiation Protocol)
 - SIP is a protocol that enables clients to invite others to a session and negotiates control information about the media channels needed for the session.
 - Textual and based on HTTP
- Diameter
 - AAA (authentication, authorization and accounting) protocol
 - Used for interfaces to databases in IMS
- Megaco/H.248
 - Media Gateway Control protocol
 - From IETF and ITU

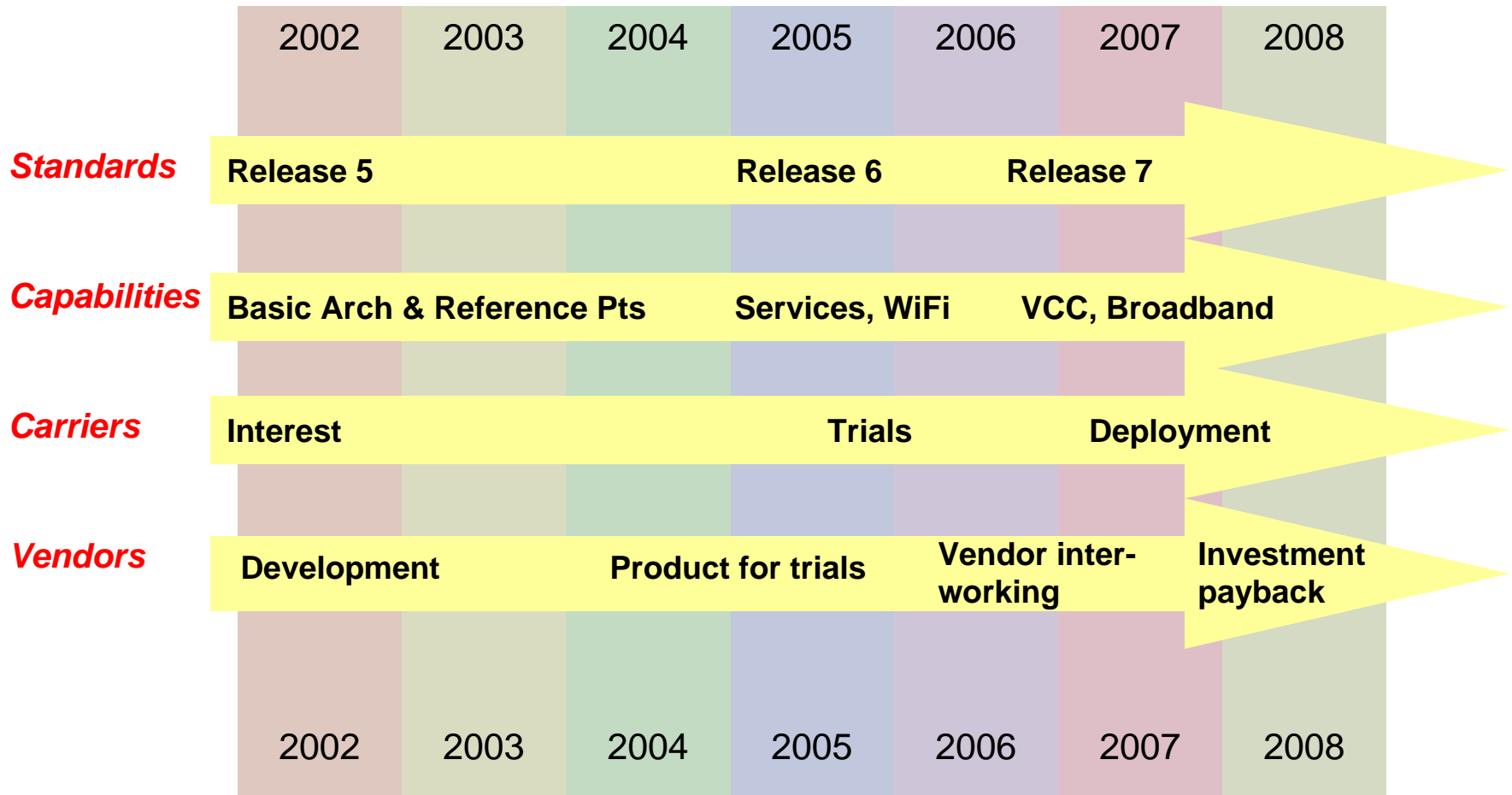


IMS Standards





Where is IMS going? - A timeline





Who's Playing in the IMS Space?

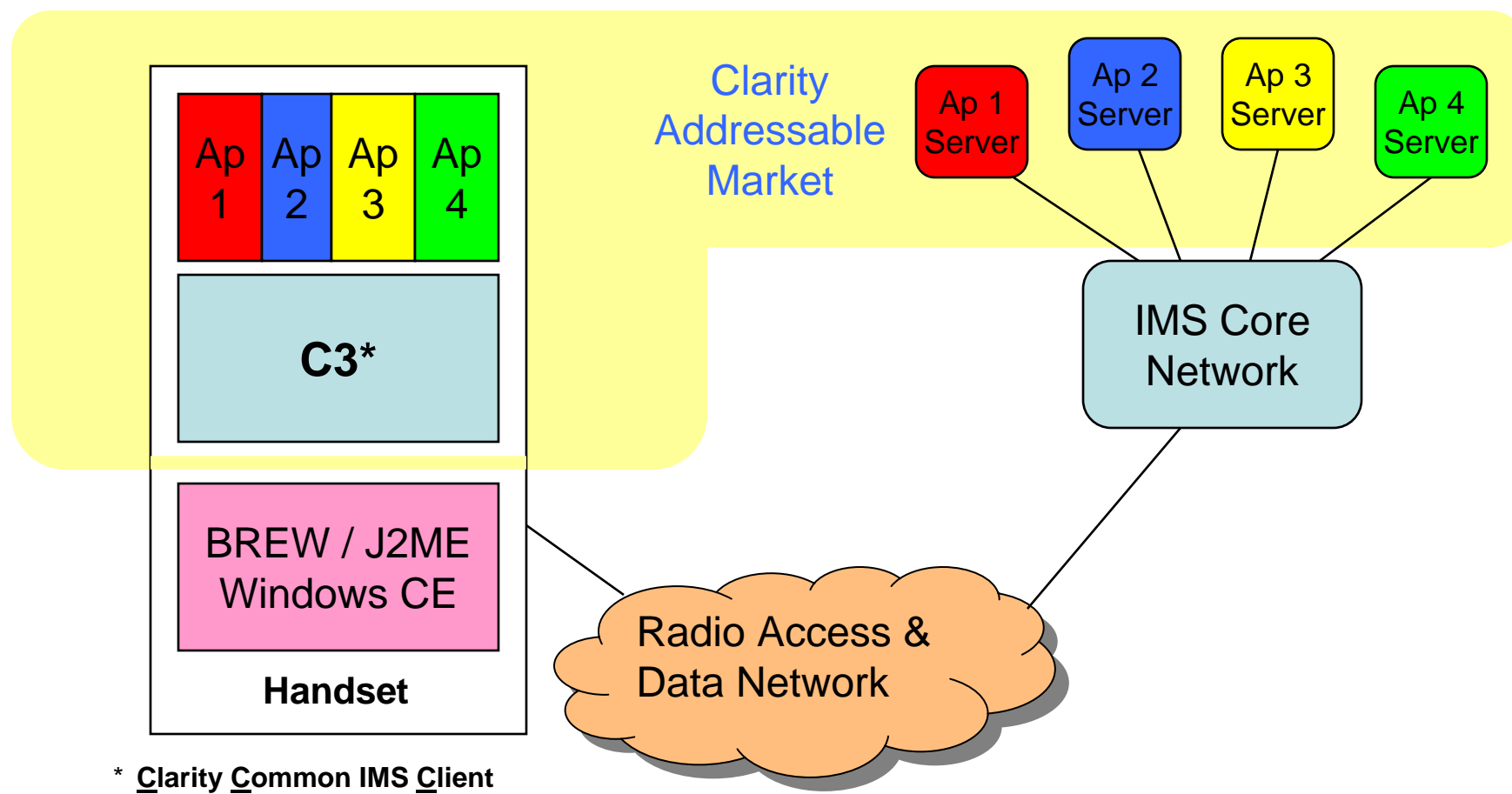
TYPE OF COMPANY	IMS STRATEGY	EXAMPLE PROVIDERS
Major Telecom Equipment Manufacturers	"Top to Bottom" strategy that covers all aspects of IMS, typically focusing on convergence theme.	Alcatel, Ericsson, Huawei, Lucent, Motorola, NEC, Nokia, Nortel, Motorola
Computing Platform Providers	Use IMS to break into new opportunities; partner with incumbents to provide hardware and software platforms	BEA, HP, IBM, Intel, Radisys, Sun
Application and Server Specialists	Use IMS to build stronger position in telco/wireless application space, generally via partnerships	Bridgeport, BroadSoft, Clarity, NewStep, Persona, Personeta, Ubiquity
Client Software Providers	Fill important gap in IMS specs for handset software	Clarity, Ecrio, OpenEra, SIPquest
Signaling Vendors	Build on signaling incumbency to create better links between IMS and legacy networks.	Tekelec, Ulticom



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Clarity IMS Client Strategy



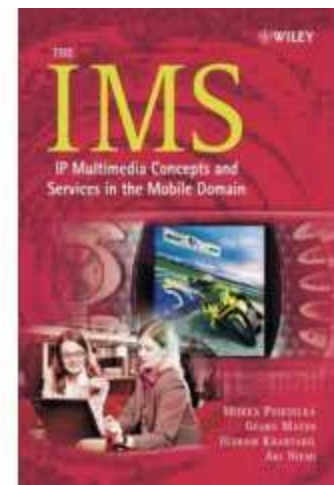
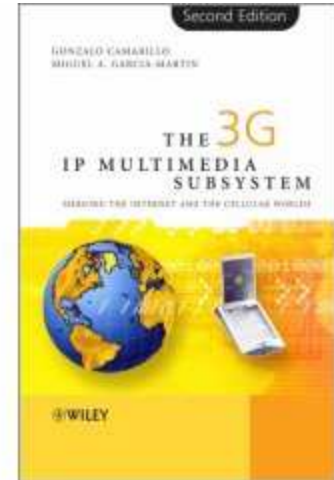


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A Few Good References:

- The 3G IP Multimedia Subsystem (IMS): Merging the Internet and the Cellular Worlds, Second Edition (Hardcover) by [Gonzalo Camarillo](#), [Miguel-Angel Garcia-Martin](#)
- The IMS : IP Multimedia Concepts and Services in the Mobile Domain (Hardcover) by [Miikka Poikselka](#), [Georg Mayer](#), [Hisham Khartabil](#), [Aki Niemi](#)





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Some IMS Acronyms

3GPP: 3G Partnership Project for GSM and W-CDMA

3GPP2: 3G Partnership Project for CDMA2000

AAA: Authentication, authorization and accounting

AS: Application Server

BGCF: Breakout Gateway Control Function

CDMA: Code Division Multiple Access

CS: Circuit Switched

CSCF: Call Session Control Function

I-CSCF: Interrogating CSCF

P-CSCF: Proxy CSCF

S-CSCF: Serving CSCF

DSL: Digital Subscriber Line

EDGE: Enhanced Data for Global Evolution

FMC: Fixed Mobile Convergence

GGSN: Gateway GPRS Support Node

GPRS: General Packet Radio Service

GSM: Global System for Mobile communications

GUI: Graphical User Interface

HSS: Home Subscriber Server

IETF: Internet Engineering Task Force

IMS: IP Multimedia Subsystem

IP: Internet Protocol

ISP: Internet Service Provider

IVR: Interactive Voice Response

LAN: Local Area Network

MAC: Medium Access Protocol

MGCF: Media Gateway Control Function

MGW: Media Gateway

MMD: Multi-media Domain

MRFC: Multimedia Resource Function Controller

MRFP: Multimedia Resource Function Processor

MS: Mobile Station

MVNO: Mobile Virtual Network Operator

PDF: Policy Decision Function

PDSN: Packet Data Serving Node

POC: Push-to-talk Over Cellular

PS: Packet Switched

PLMN: Public Land Mobile Network

PSTN: Public Switched Telephone Network

QOS: Quality of Service

RAN: Radio Access Network

SGSN: Serving GPRS Support Node

SGW: Signaling Gateway

SIM: Subscriber Identity Module

SIP: Session Initiation Protocol

SLP: Subscription Locator Function

UE: User Equipment

UMTS: Universal Mobile Telecommunications System

VOIP: Voice Over IP

WLAN: Wireless Local Area Network