



**3rd Facilitation Meeting for WSIS Action Line C5
“Building confidence and security in the use of ICT’s”**

22nd May 2008 GENEVA

**VOICE OVER IP (VoIP)
Presented by
Graham Butler
President & C.E.O
Bitek International Inc
www.bitek.com**



**World Summit
on the Information Society**



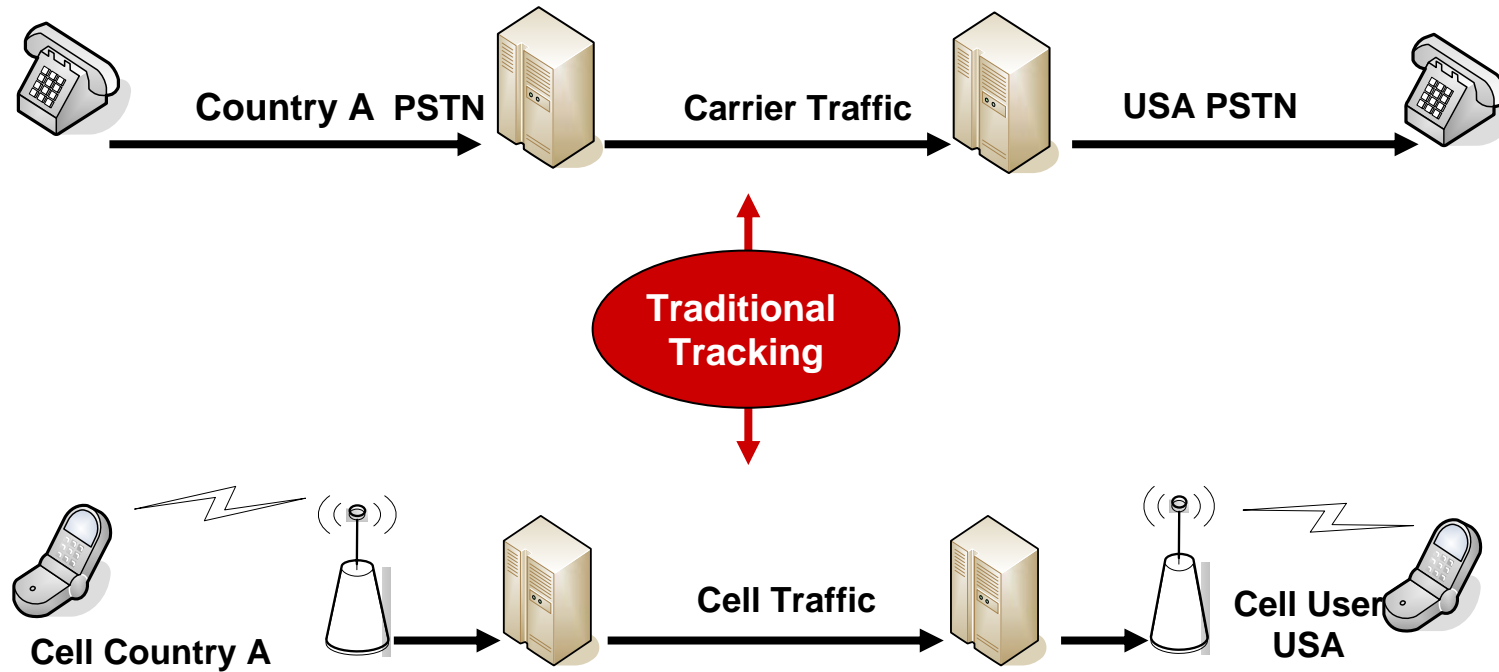
Why is VoIP not considered within Cybersecurity ?

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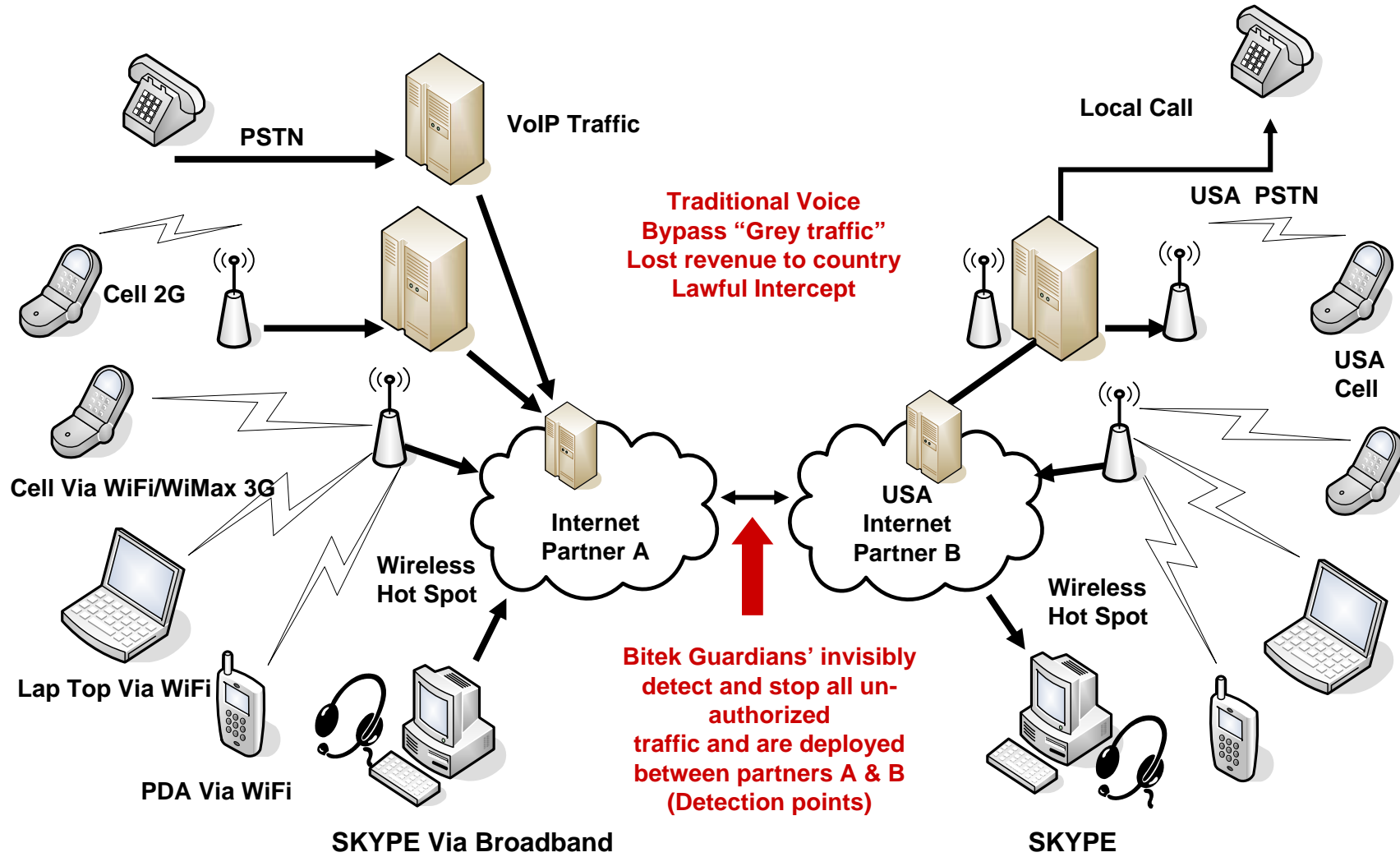
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Traditional Telephony Example Country A - USA



The World Today: Changes and challenges in communications

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- Detailed records are individually searchable
- Actual IP address initiating the call/event
- Actual IP address receiving the call/event
- Actual Mac address initiating the call/event
- Actual Mac address receiving the call/event
- Actual telephone number initiating the call/event
- Actual telephone number receiving the call/event
- Actual email address initiating the call/event
- Actual email address receiving the call/event
- Time the call/event was initiated & disconnected
- Geographic location of IP addresses/suspect produced in some cases through registries
- Selectively filtering to allow “identified as authorized” and “disconnect identified as unauthorized” VOIP traffic on a call-by-call basis
- VoIP Recording & tracking by key words?
- IM Traffic control



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- In today's climate, Information & Security are critical
- The ability to regulate, intercept & Control VoIP technology is a key weapon against modern threats
- Operators, Regulators & Security organizations' need the tools to address VoIP based communications issues, such as:
 - National Security (P2P)
 - Lawful Intercept
 - Grey Traffic Bypass
 - Illegal Websites (URL Blocking)
 - IP VPN's
 - Encryption



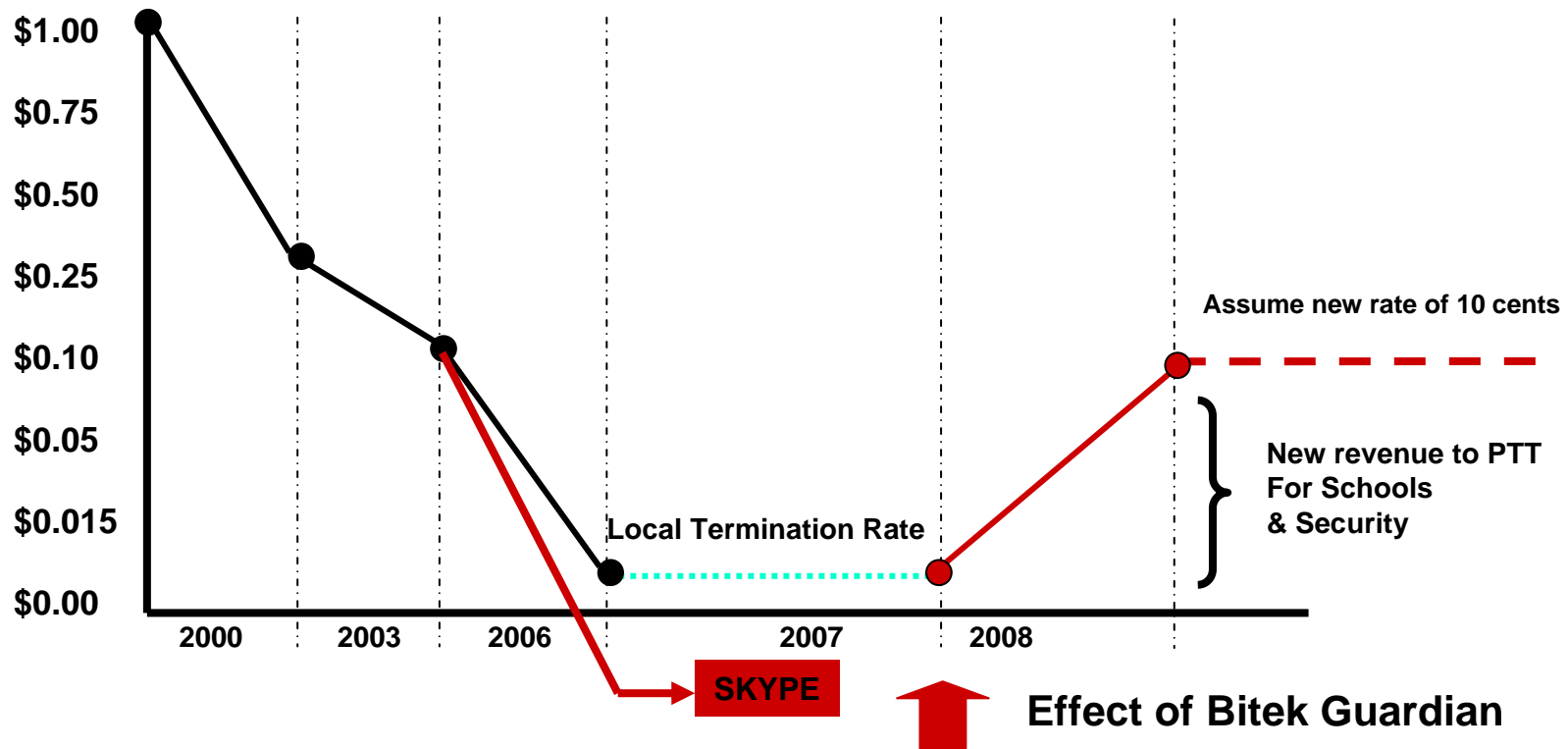
Growth of VoIP to create an estimated PSTN loss of \$100 billion p/a

Reverse Declining Call Rates



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Wholesale rate decline in VoIP traffic each Country



THE NATIONAL COST OF VoIP BYPASS

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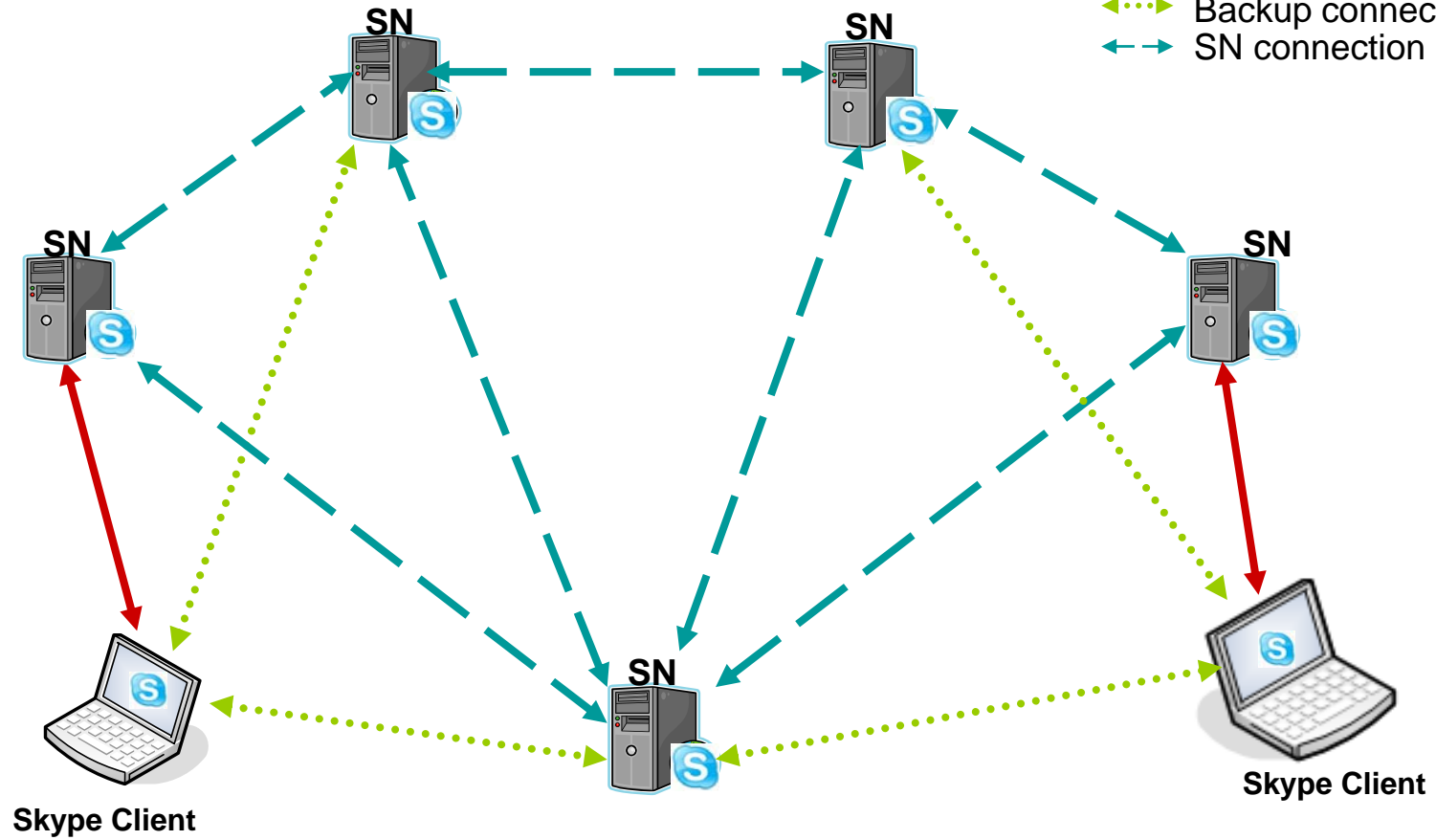
How does Skype work?

- Skype connects to users by randomly generated TCP or UDP ports; if one is blocked, it will find another. Even Ports 80 & 443
- Skype mimics Microsoft Server exchange secure authentication, protocol making its identification almost impossible
- Skype is always on and continually communicates with its Super Node
- Skype uses considerable bandwidth regardless of call status
- Skype Super Nodes are deployed behind Firewalls in Locations that use the most bandwidth

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Skype Architecture

- SN** Super Node
- Active connection
- Backup connection
- SN connection



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Skype launches mobile app for 50 handsets

- Not surprisingly, having its petition dismissed by the FCC chairman is not slowing Skype's ambition in the mobile market
- Skype is now offering a beta client of its VoIP calling software for some 50 handsets
- The client will include Skype to Skype calling, Skype In, Skype out, Group chat and presence. The company is launching the service in eight initial markets (one of which is the U.K.); Australia, France and Germany
- However the USA, has been excluded from the beta launch so far

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- **Protocol Application Module VoIP**

- **SIP Based**

Vonage, MSN Messenger, WindowsLive Messenger, YahooBT-Yahoo, SIP Communicator, GizmoProject, FWD.Communicator, SJPhone, Packet8, Mediarling, BuddyTalk, Dialpad Chamaleon, Lycos, SIP User Agent, X-Lite, X-Pro-Vonage, MrTalk, PacPhone, Peerio, VoIP Buster, VoIP Cheap, PhoneGaim, sipXphone, Ekiga (old GnomeMeeting), KCall, Kphone, Linphone, Minisip, OpenWengo, Cockatoo, Freeswitch, Yate

- **H323 based**

NetMeeting, SJPhone, WebTalk, Open H323, CallGen323, Ekiga (old GnomeMeeting), Freeswitch, Yate

Over 90+ P2P Services



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- **SKYPE BASED** Skype SkypeIn SkypeOut
- **GOOGLE** GoogleTalk
- **NET2PHONE** Net2Phone
- **IAX** IAX Phone, Freeswitch, Yate, Kiax, Moziax
- **MEGACO, MGCP, SCCP, SKINNY, P2P SYSTEMS**
- **BITTORRENT** BitTorrent, ABC, AllPeers, Azureus, BitComet, BitLord, BitSpirit, BitTornado, Burst!, Deluge, FlashGet, G3Torrent, Halite, KTorrent, LimeWire, MLDonkey, Opera, QTorrent, rTorrent, TorrentFlux, Transmission, Tribler, Thunder, µTorrent
- **Direct Connect** Direct Connect, NeoModus, SababaDC, DC++, BCDC++, ApexDC++, StrongDC++
- **ARES** AresGalaxy, Warez P2P, Filecroc
- **eDonkeye** eDonkey2000, aMule, eMule, eMulePlus, FlashGet, Hydranode, iMesh, Jubster, IMule, Lphant, MLDonkey, Morpheus, Pruna, xMule
- **Gnutella** Acquisition, BearShare, Cabos, FrostWire, Gnucleus, Grokster, gtk-gnutella, iMesh, Kiwi Alpha, LimeWire, MLDonkey, Morpheus, Poisoned, Swapper, XoloX
- **Gnutella2** Adagio, Caribou, Gnucleus, iMesh, Kiwi Alpha, MLDonkey, Morpheus, TrustyFiles
- **FastTrack** giFT, Grokster, iMesh, Kazaa, Kceasy, Mammoth, MLDonkey, Poisoned
- **Napster** Napigator, Napster
- **Manolito** Blubster, Piolet
- **OpenNAP** WinMX, Utatane, XNap, Lopster, WinLop, Napster...
- **IM CHAT SYSTEMS**
- **OSCAR (AIM/ICQ), IRC, Skype, Yahoo!Messenger, Live Messenger, XMPP/JABBER**
- **Module E-Mail POP, SMTP, IMAP**

VoIP Security - What will change tomorrow?

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What about access to Emergency E911 and E999 services?

- VoIP calls do not connect to emergency services, E911
- Emergency response centers cannot track call details or caller locations
- Most P2P and VoIP operators today cannot comply to these requirements

Security Risks

- Encrypted P2P is a recognized threat to National Security
- Major US corporations are banning P2P to protect information/illegal data transmission
- Many Countries want to ban illegal VoIP for its involvement in terrorism and money laundering activities

VoIP providers must give access to 999 and 112



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- **Ofcom** today confirmed that from 8th September 2008, Voice over Internet Protocol (VoIP) services that allow users to make calls to normal national phone numbers **must also have the ability to connect to 999 and 112**
- **Ofcom** wants to ensure that users of mainstream VoIP services are not put in danger as a result of trying to call 999 or 112 using a service that does not offer them access. If consumers had to then locate an ordinary landline or mobile phone, they might face a delay of seconds or even minutes in getting through to the emergency services, which could prove critical
- The new rules follow research, where **Ofcom** found that as many as **78% of VoIP users** who cannot currently use their service to call 999 or 112 either thought an emergency call was possible, or did not know whether or not this was the case
- **CTO** (Commonwealth Telecommunications Organization) & **CANTO** (Caribbean Telecommunications Organization) are both in favor of regulation for VoIP

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- AT&T, in cahoots with 10 to 15 other incumbent carriers including BT, Deutsche Telecom, and NTT, is allegedly planning to launch a Skype killer
- Incumbents would offer a VoIP client that will work on incumbent broadband and 3G wireless pipes, using a backend to allow people to make free phone calls to anyone logged into it, similar to AIM, Yahoo, MSN, and Google.
- Maybe another way to think of this, is this would be the VSTN (VoIP standard telephone network) to the PSTN
- Anyway, the crystal ball says Skype-Killer will be launched in 2009, run on broadband connections and on top of 3G/4G wireless connections (which are, after all, broadband), extended to other mobile phones eventually, and be used as a hook to sell other services such as video

By Doug Mohney



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Thank you, any questions?

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