ThinkTel

VoIP P2P: breakthrought technology, lot of hype (after Skype) but which business impacts at the end ?

Marco Salvadori, General Secretary

BB Biz Forum - Rome, Oct. 27, 2005

Agenda

■ **Inside VoIP technology and tricks**
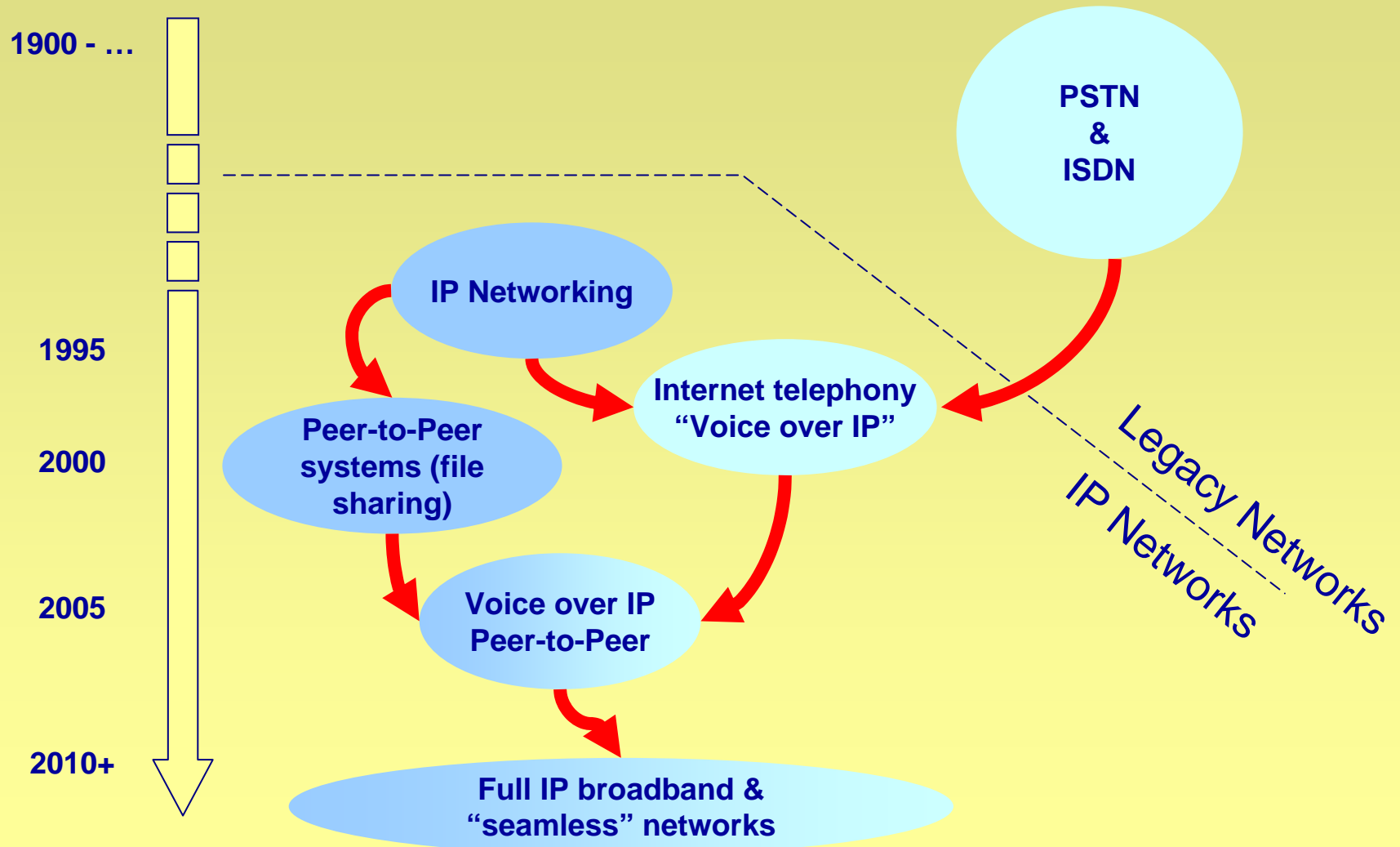
■ VoIP hype: Skype case

   - How it works
   - Traffic paths and trend

■ Which future for VoIP?

   - Business outlook
   - Regulatory issues

Internet telephony, nothing really new !
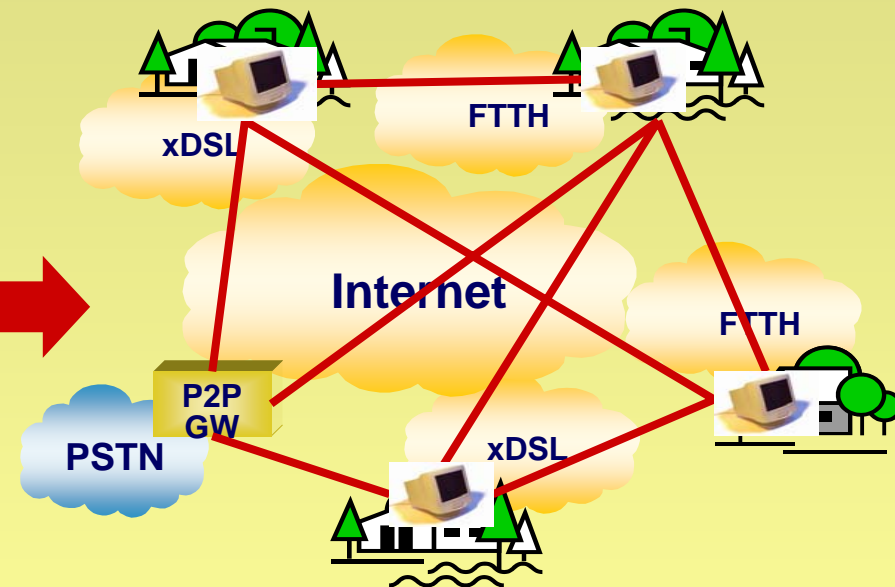

1900 - …

1995

2000

2005

2010+

PSTN & ISDN

IP Networking

Peer-to-Peer systems (file sharing)

Internet telephony "Voice over IP"

Voice over IP Peer-to-Peer

Full IP broadband & "seamless" networks

Legacy Networks
IP Networks

Source: M. Dècina, 2005

VoIP success is related to architecture shift from Client-Server to Peer-to-Peer

Client-Server VoIP Model
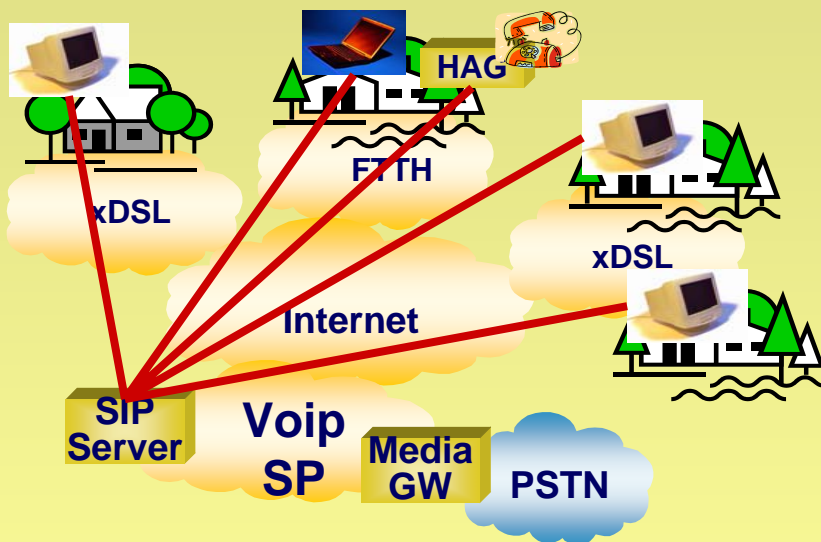
P2P VoIP Model

- SIP (and H323) based VoIP
- Need of centralized servers for user registration and call handling
- Significant investments to deploy resources and ensure "telephone" quality

- Peer-to-Peer overlay network
- Proprietary protocols
- No centralized servers (except login and directory)
- Marginal investments … **SO FAR**

Source: ThinkTel, 2005

P2P sharing systems have set footprint and VoIP technology is more and more reliable

P2P sharing's popularity
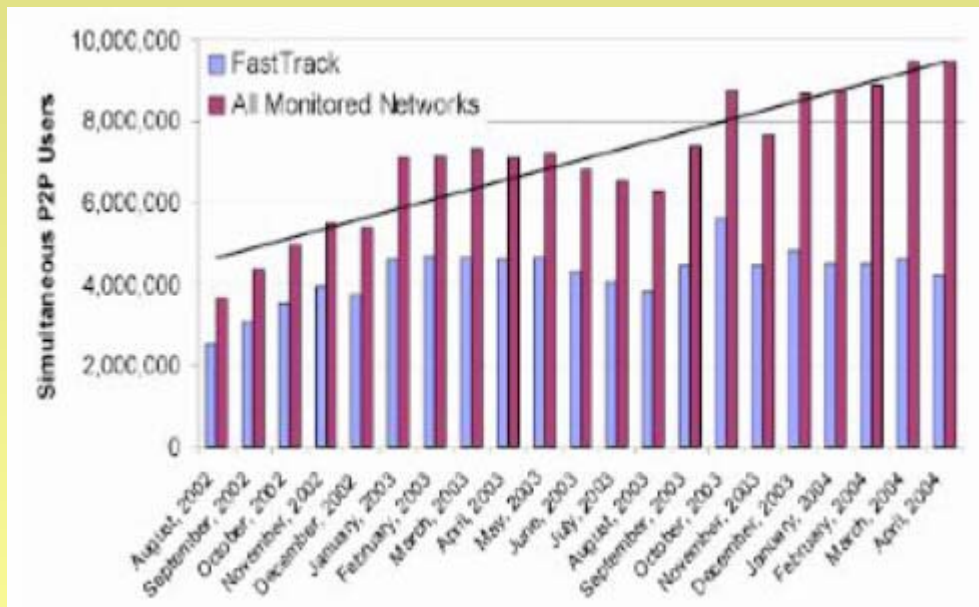
- Easy to install: plug & play SW
- Easy to use: self configuration and search
- Community belonging sense
- Low costs of deployment and high scalability

Source: ThinkTel, 2005

P2P VoIP pluses

- Client based, no "magic box"

- Increasing sound quality due to:
  - more performing codecs
  - higher bandwidth availability

- Seamless and worldwide login

- Good security (if encryption)

- Wide availability of VAS
  - interconnection to PSTN
  - unified messaging services
  - …

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Skype case at a glance

- Proprietary SW and protocol
- Free of charge client SW: 170 M downloads
- Trendy community: 55M users
- Free of charge traffic within the community
- POTS quality, strong privacy
- Discounted long haul call: 1.2 M users (SkypeOut)
- Expanding VAS offering:
  - "SkypeIn" geographical number
  - "Voicemail"
  - new locations / point of presence
  - …

September 12, 2005 – eBay Inc. has agreed to acquire Skype Technologies for approximately $2.6 billion, plus potential performance-based consideration

The year's ICT deal !

Source: ICT Consulting, 2005

Skype has hybrid P2P architecture
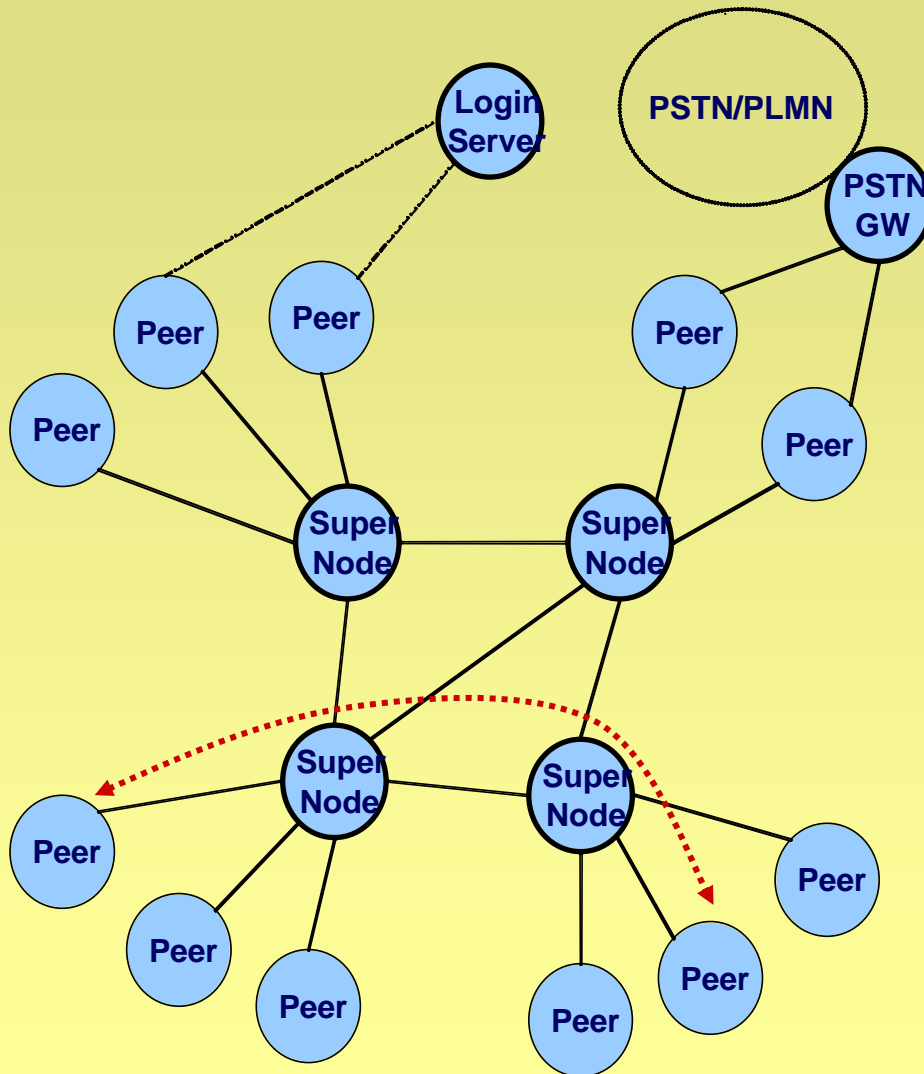
Super Nodes

They are established after acceptance test by Skype

They have public IP address

They offer storage, processing and bandwidth
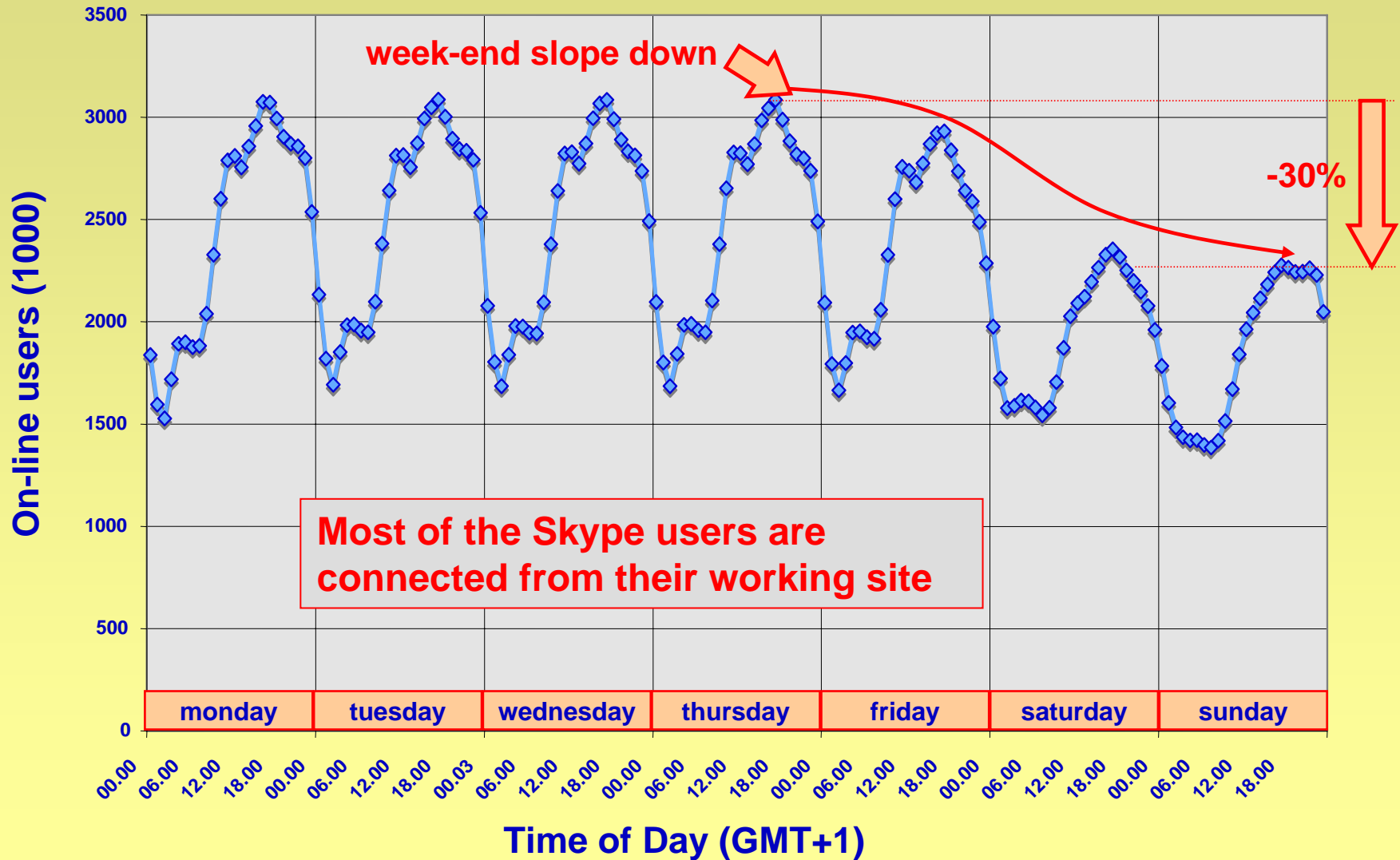
Each Serves ~200-300s Peer Nodes

They route encrypted calls

They execute "NAT" of private IP addresses

They exploit P2P protocol

Source: ICT Consulting, 2005

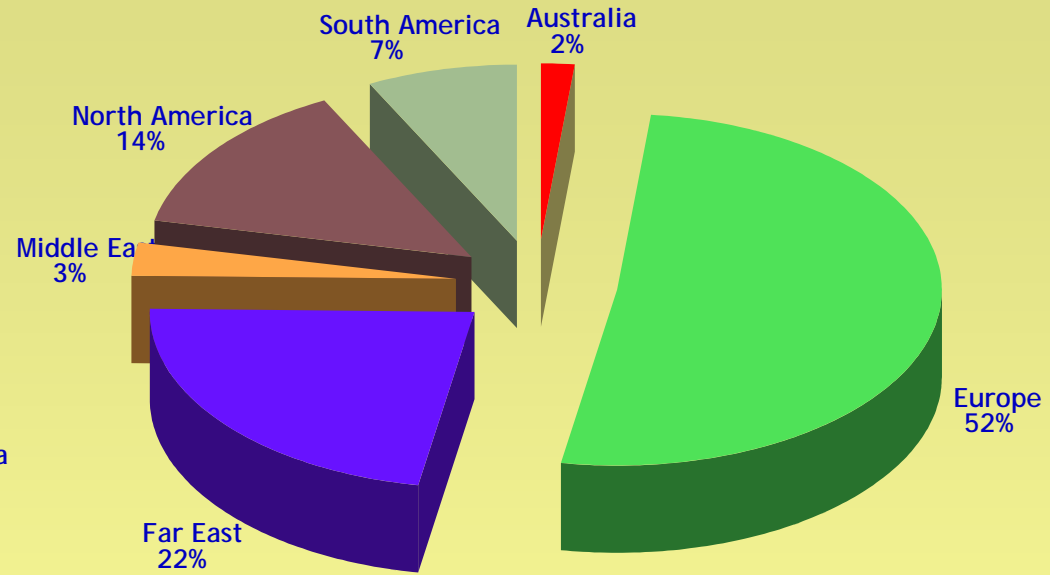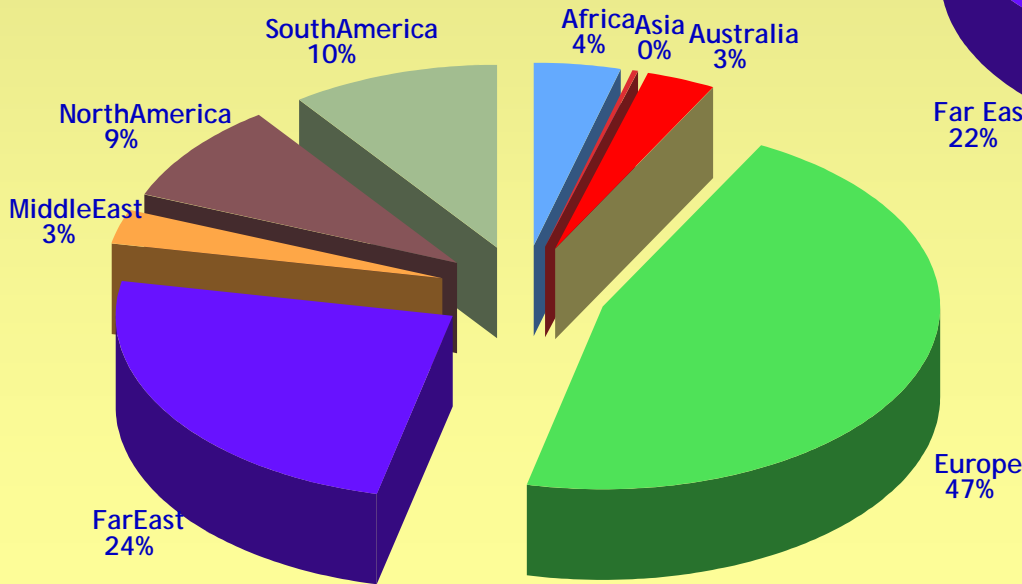# Skype worldwide users on-line along the week

Source: ICT Consulting, Sep 2005

Skype users distribution highlights popularity mainly in Europe and Asia

Peer Map by World Region

(Estimated by "ICT Consulting" super-node on 22nd of August, 2005)

Peer Map pie chart:
- SouthAmerica 10%
- NorthAmerica 9%
- MiddleEast 3%
- FarEast 24%
- Africa 4%
- Asia 0%
- Australia 3%
- Europe 47%

User Map pie chart:
- South America 7%
- Australia 2%
- North America 14%
- Middle East 3%
- Far East 22%
- Europe 52%

User Map by World Region

(reported by http://eurotelcoblog.blogspot.com referring official data received from Niklas Zennstrom)

Source: ICT Consulting, Sep 2005

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Skype users' growth continue with no slowdown…

About 17.2M estimated active users at end of Semptember

+22.5%
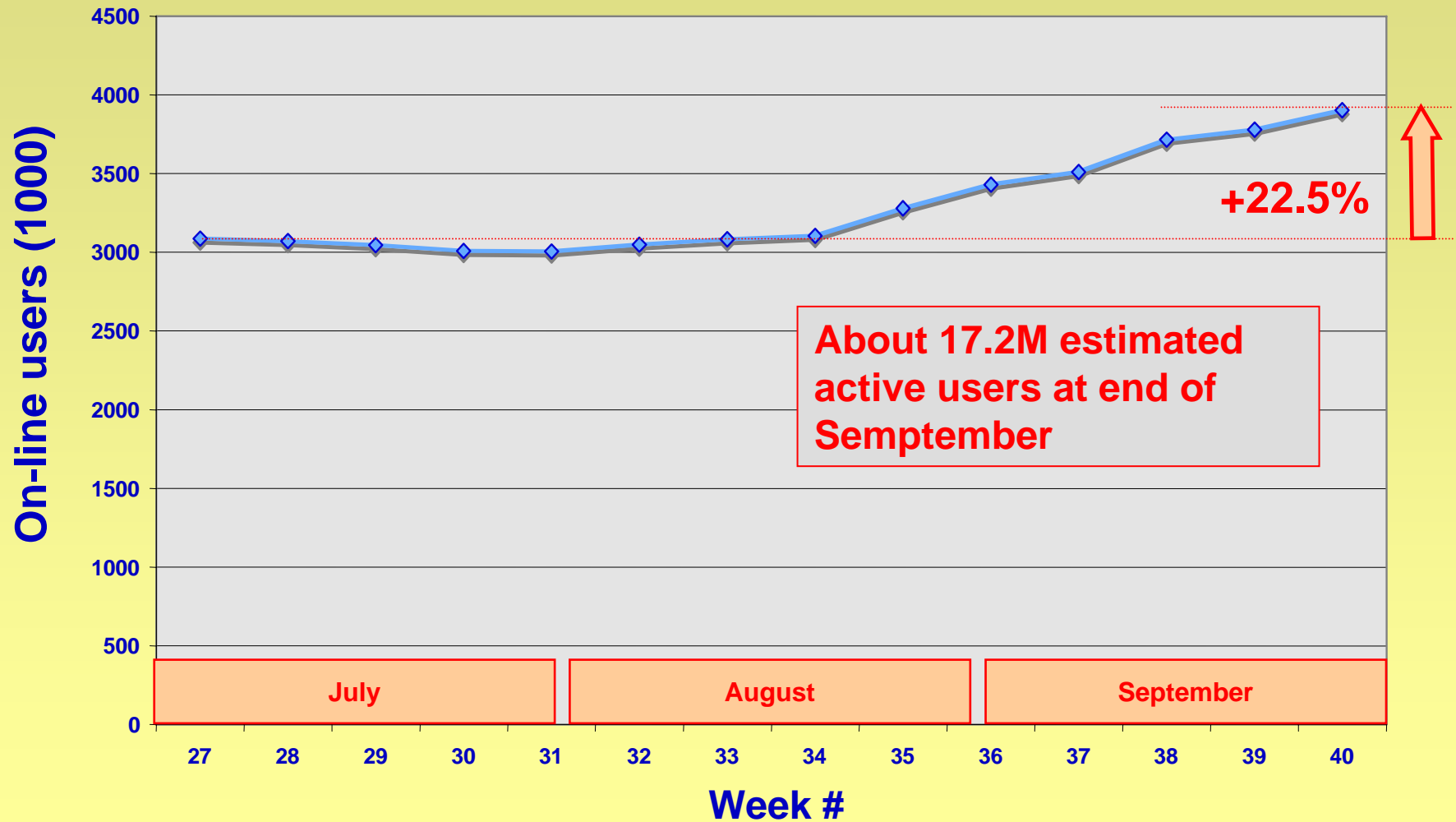
Source: ICT Consulting, Sep 2005

… as well as minutes BUT …
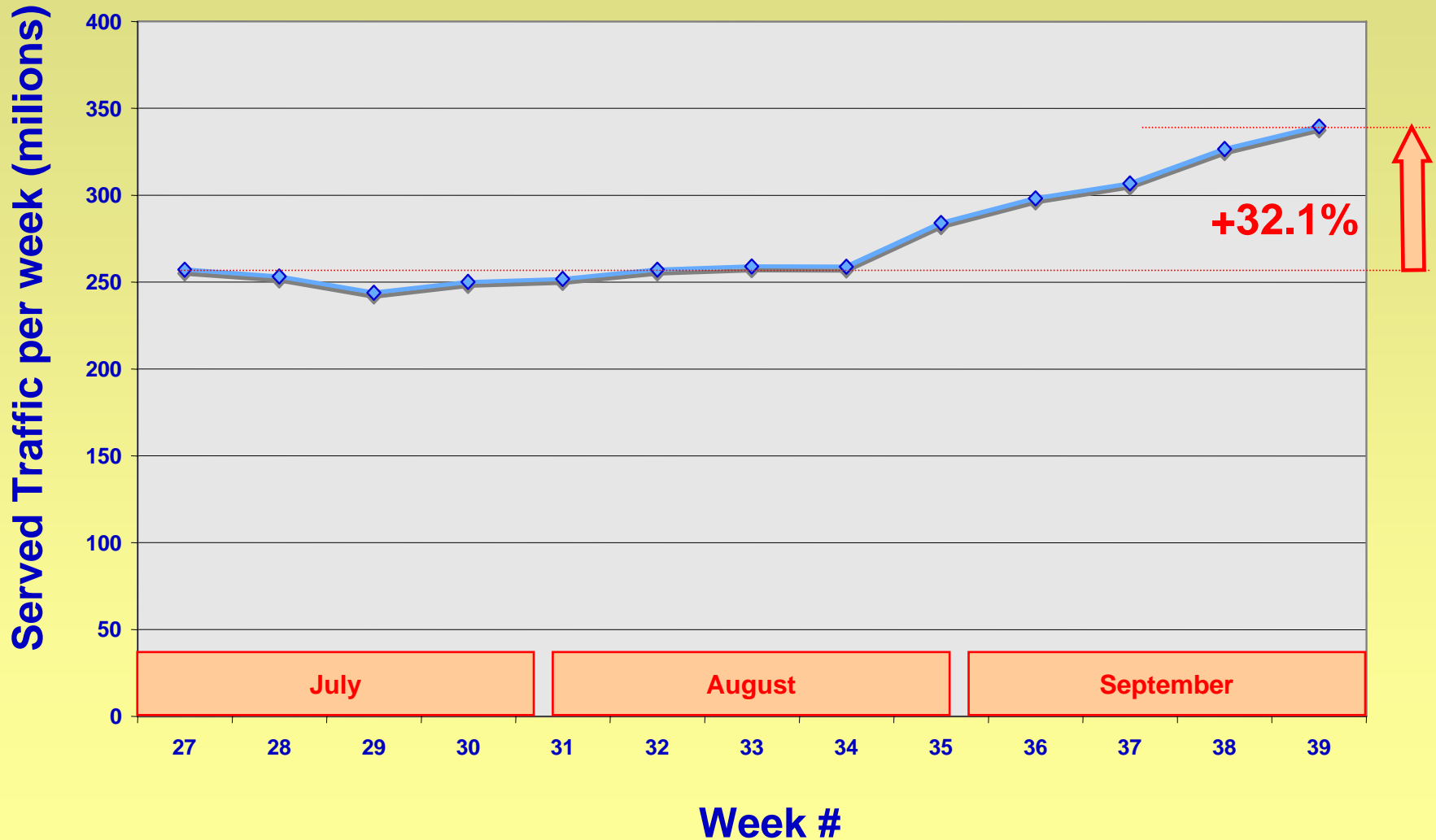
Source: ICT Consulting, Sep 2005

… Skype shows serious growth limits

- To offer "acceptable" voice QoS, Skype exploits today two types of charge-free Resources
  - Super Nodes Resources
  - Residual free Bandwidth on Internet Backbones

- Skype has serious limitations to grow by keeping the above free assets. Today (September 2005) Skype manages about 1-2 million of simultaneous telephone calls in the Internet. Each Super Node routes about one hundred encrypted calls.

- If the number of calls grows, Skype will be forced to
  - Route and pay for QoS (especially, delay) guaranteed Internet routes (i.e., IP/MPLS routes)
  - Give very stringent performance requirement to establish Super Nodes, and/or provide for powerful Skype owned Super Nodes (i.e., network Routers/Gateways)

- Another important issue about Skype is the legal tapping capability

Source: ThinkTel, ICT Consulting, 2005

Agenda

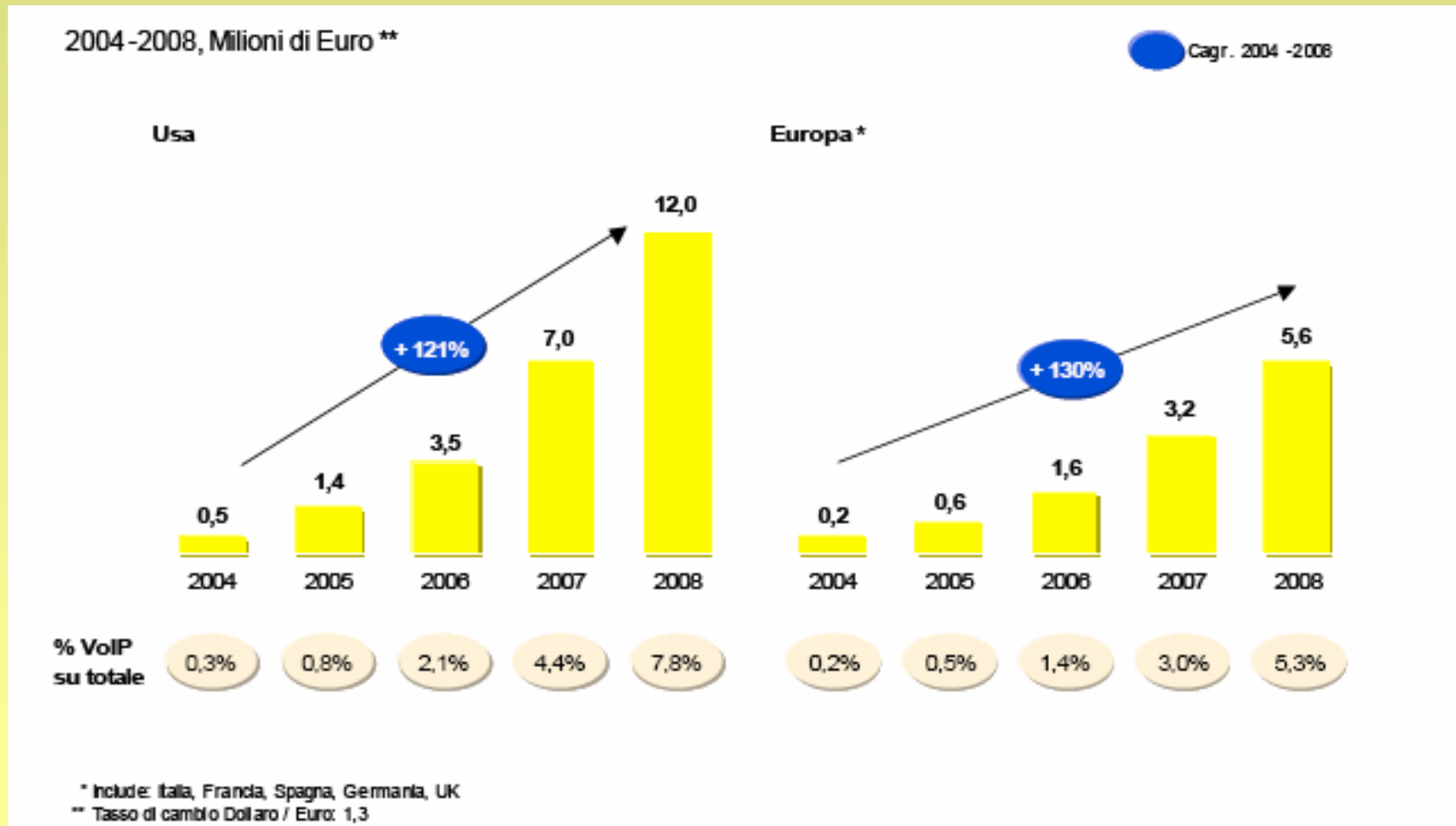- **Inside VoIP technology and tricks**

- **VoIP hype: Skype case**

  - How it works
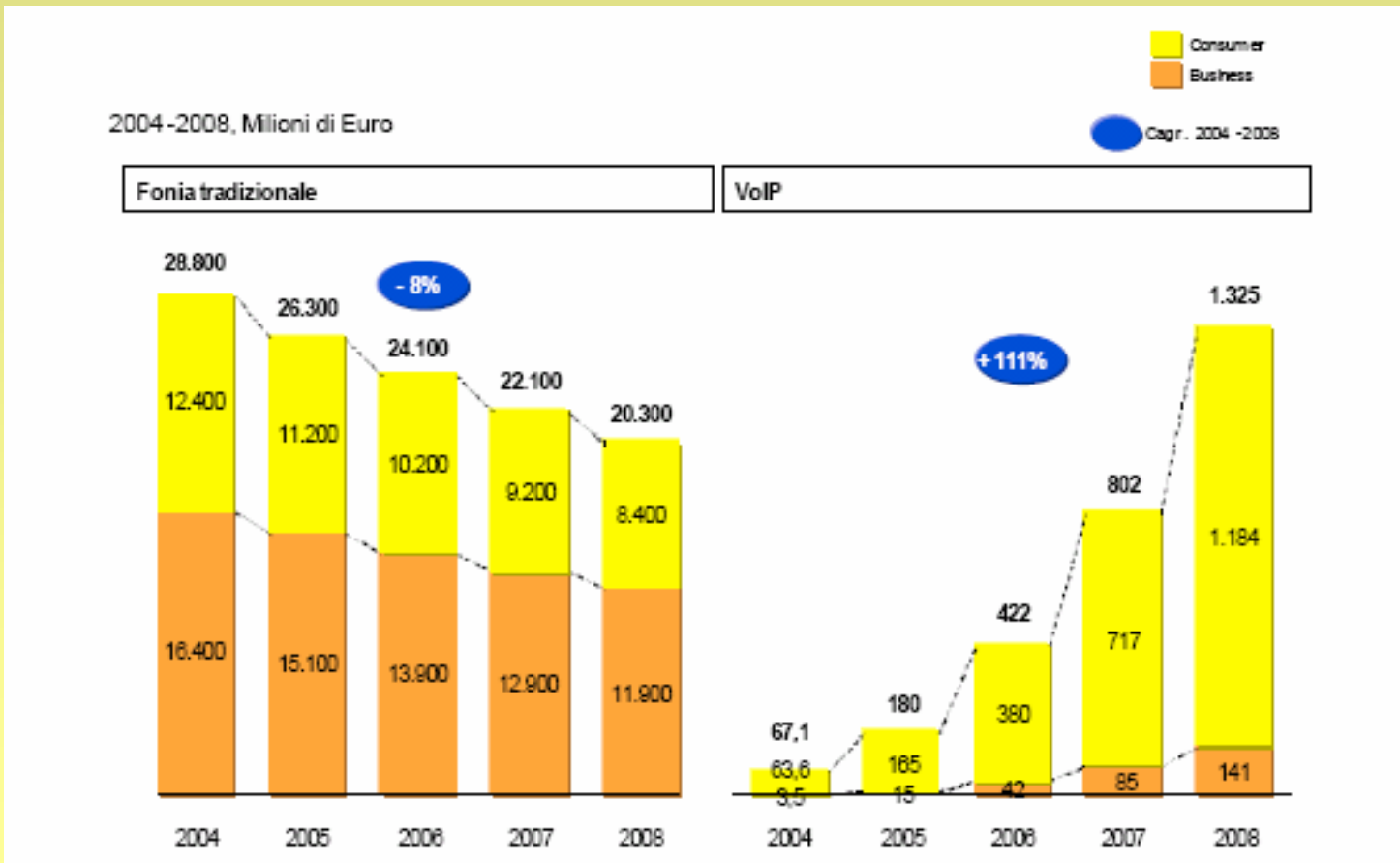 - Traffic paths and trend

- **Which future for VoIP?**

  - Business outlook
  - Regulatory issues

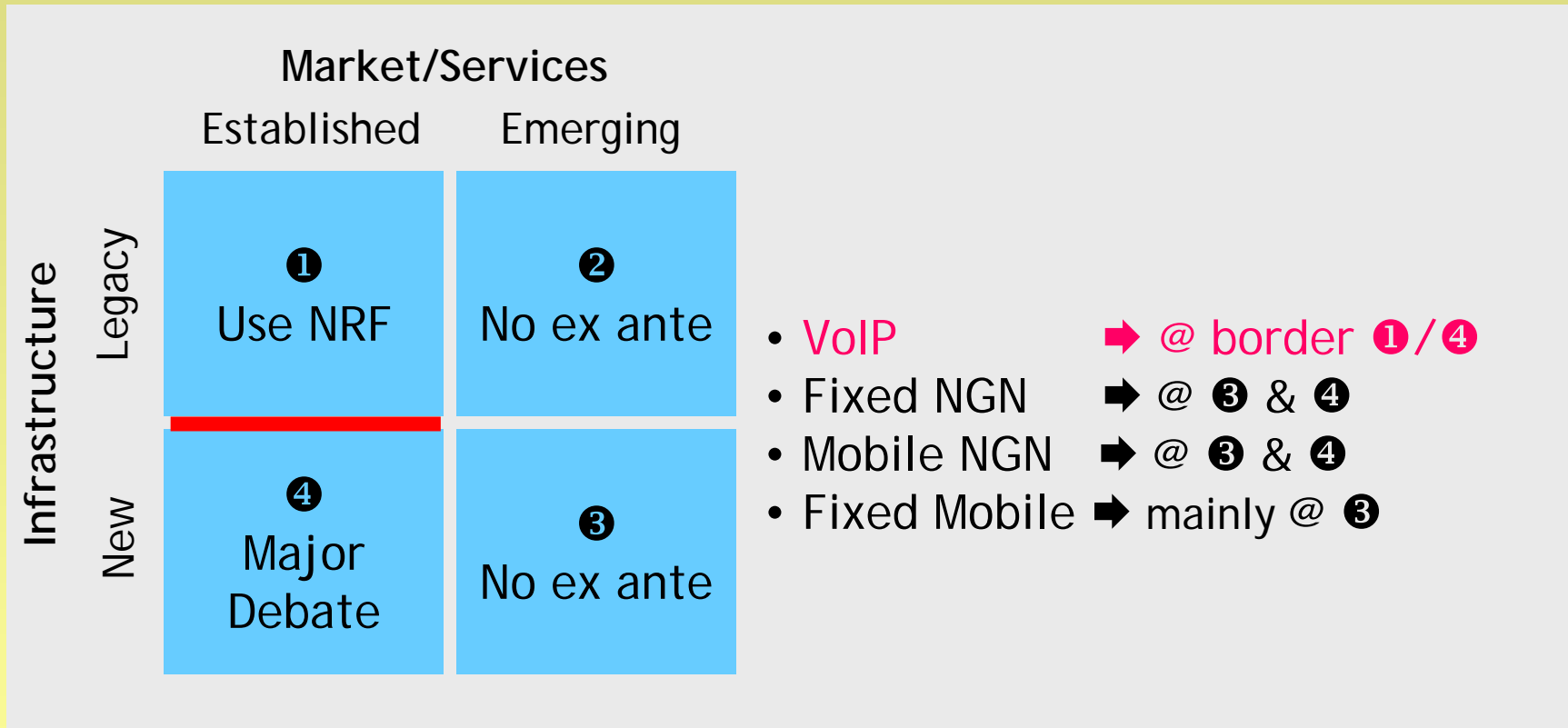# Despite impressive figures and trendlines …

Source: Ovum, July 2005

… industry analysts are quite skeptical of P2P take over the traditional voice, especially in the entreprise arena
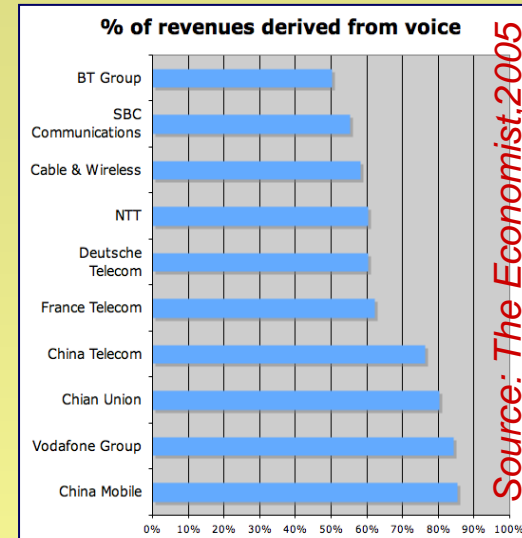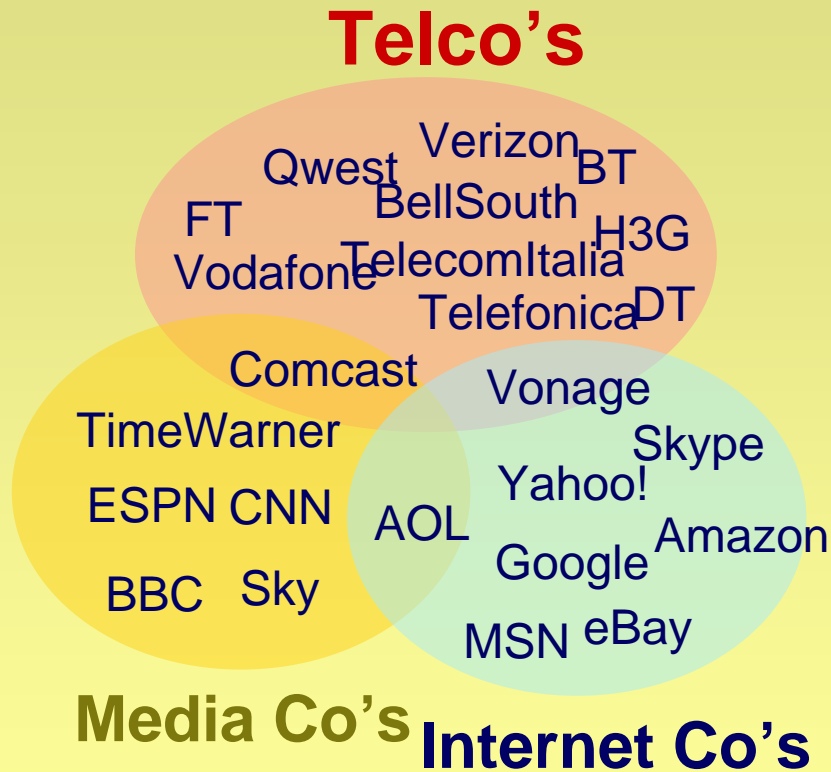

Source: Ovum, July 2005

Moreover VoIP sets open and complex regulatory issues

Market/Services

	Established	Emerging
Legacy	❶ Use NRF	❷ No ex ante
New	❹ Major Debate	❸ No ex ante

Infrastructure

- VoIP ➡ @ border ❶/❹
- Fixed NGN ➡ @ ❸ & ❹
- Mobile NGN ➡ @ ❸ & ❹
- Fixed Mobile ➡ mainly @ ❸

On August 5, 2005, FCC specified that interconnected VOIP providers (i.e. VoIP providers that interconnect with the PSTN) have to be considered "Telecommunication Carriers under CALEA" and then must facilitate wire taps (legal interception) within 18 months

Source: Ovum & Indepen, 2005

VoIP future: who's gonna take the risk?

Telco's

Verizon
Qwest
BT
BellSouth
FT
H3G
Vodafone
TelecomItalia
Telefonica
DT

Comcast
Vonage
TimeWarner
Skype
ESPN CNN
Yahoo!
AOL
Amazon
Google
BBC Sky
MSN eBay

Media Co's Internet Co's

% of revenues derived from voice

Source: The Economist, 2005

BT Group
SBC Communications
Cable & Wireless
NTT
Deutsche Telecom
France Telecom
China Telecom
Chian Union
Vodafone Group
China Mobile

- VoIP will wipe out old style telephony
- Voice revenues will shrink dramatically
- Questions are:
  ⇒ how long will it take?
  ⇒ who's going to risk more?
  ⇒ which strategy for Telco's?

Source: M. Dècina, 2005

Backup

Peerio: pure P2P architecture for enterprises

A 'Popular Telephony' Application
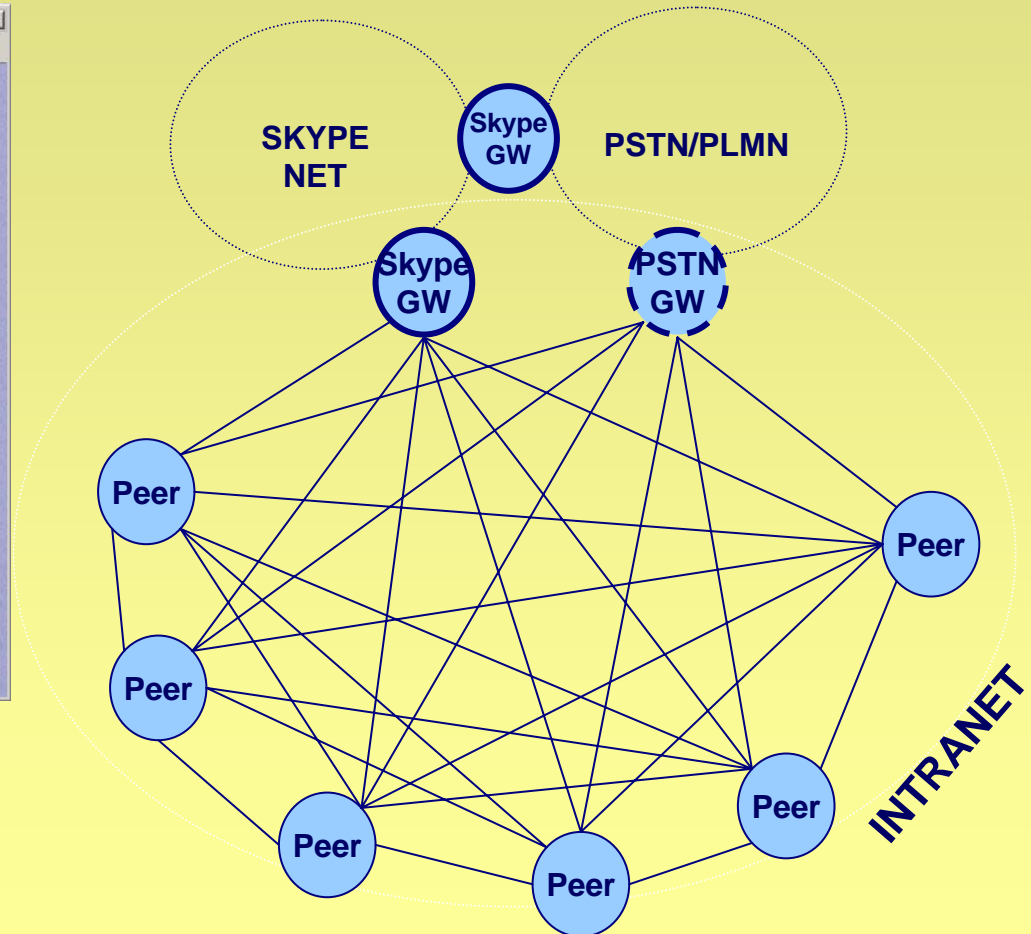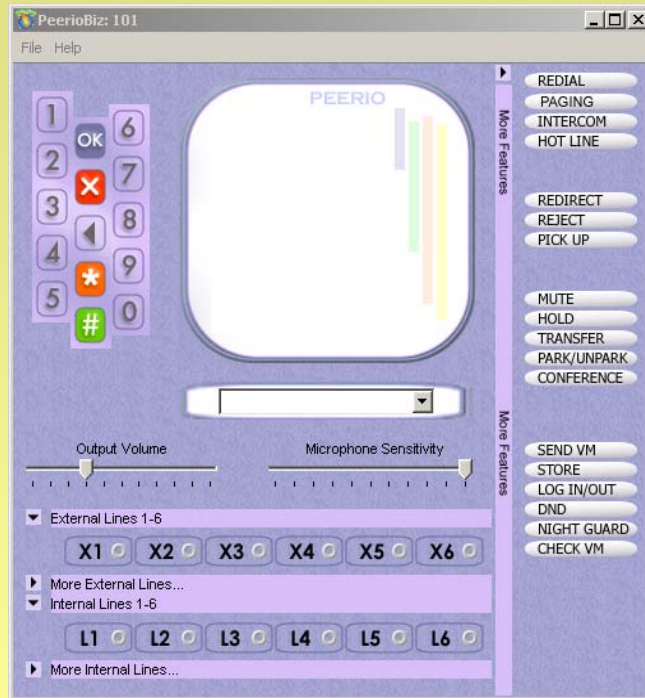
VoIP peer-to-peer for Enterprise Networks

Source: www.peerio.com

IPdrum: mobile Skype cable & SW

Personal Media Gateways

Source: www.ipdrum.com