

## **VoIP: Clicks, Calls and the New Telephony Infrastructure**

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**Summary:** The implications of mainstream adoption of VoIP as an alternative to traditional phone service are significant for consumers, advertisers, telcos and the Internet mega-brands that are quickly transforming into diversified media and communications providers. Expansion of call tracking, increased proliferation of pay-per-phone-call (PPCall) and the degradation of the listings database are some of the potential long-term effects of VoIP penetration. Estimates for adoption in the U.S. and Europe range from roughly 12 million to more than 20 million users by 2009.

In realistically assessing VoIP's outlook, one needs to consider what would motivate mainstream consumers to adopt it at the expense of traditional phone service (i.e., price, features). Another factor to consider is that VoIP requires a broadband connection and thus depends on further proliferation of high-speed access. Regardless, VoIP is no longer the stuff of IT trade publications; it is an emerging alternative telephony infrastructure. The question is, how far and how quickly will it penetrate?

Suddenly, and somewhat strangely, Voice over Internet Protocol (VoIP) is front-page news. The announced purchase of Luxembourg-based VoIP provider Skype Technologies SA by eBay, the launches of Google Talk and AOL's TotalTalk, and the earlier acquisitions of Teleo by Microsoft and PC-to-phone service provider Dialpad by Yahoo! have created a climate of publicity and speculation about the rollout of next-generation telephony services and new or expanded ad models built on VoIP networks.

Although widespread consumer adoption of VoIP still faces hurdles and may effectively be years away, several weeks ago VoIP carrier Vonage quietly announced it had surpassed 1 million subscribers. That figure has doubled in the past six months, making the company the largest VoIP provider in the U.S. Just before that, Vonage announced a plan to file for a US\$600 million IPO. Now, in the wake of the Skype acquisition, the company may be shopping itself as a takeover target. Rupert Murdoch's News Corp., which has been on an Internet buying spree and reportedly discussed purchasing Skype, may seek to acquire Vonage.

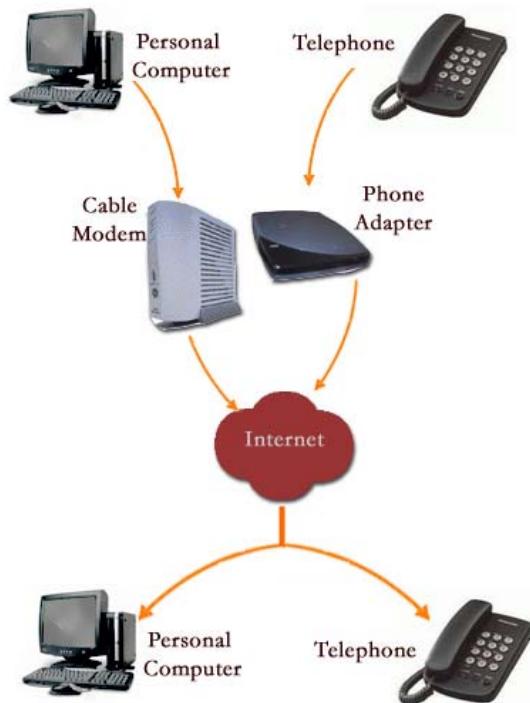
Fueled in part by intense competition, the VoIP landscape is quickly turning into a land grab. And the technology – originally created and marketed for enterprises – has begun to find traction in small business and consumer markets.

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## VoIP 101

Though it may be unnecessary to explain VoIP, a basic overview will help establish a context for the rest of this discussion. The simple definition of VoIP is an information or telephony infrastructure that allows users to make calls with a broadband Internet connection instead of an analog phone line. Some VoIP services only allow users to connect with others on the same service (e.g., Google Talk). However, other VoIP providers enable calling both into and out of the system (e.g., AOL's TotalTalk). Some services require a USB VoIP phone or headset that plugs directly into the user's computer, while others employ a traditional phone with an adaptor that connects to the user's broadband Internet connection.

## VoIP Alternatives



Source: FCC (2005)

## Anticipated Growth and Adoption Issues

It's almost a guarantee that enterprises will be the first segment to widely adopt VoIP (for voice, call centers and conferencing). But considerably more significant than the enterprise market is the broader consumer landscape. To that end, there are a wide range of recently issued predictions for VoIP adoption and revenues. The following is a brief survey of some of those forecasts for U.S. and European consumer markets:

- TeleGeography Research Group estimated there were 2.7 million U.S. VoIP subscribers in the second quarter of 2005, compared with 440,000 one year earlier. The firm forecasts VoIP revenues will rise to US\$3 billion within two years.
- Forrester Research predicts the number of U.S. households using VoIP will reach 2.78 million in 2005 and 12.25 million by 2010.
- Telecommunications research firm ATLANTIC-ACM forecasts the U.S. VoIP market will be worth US\$20.4 billion by 2010.

- The Gartner Group estimates current VoIP revenues are US\$1.9 billion and projects they will reach US\$9.5 billion by 2008.
- In-Stat predicts VoIP integration into cable telephony will result in 22 million cable U.S. telephony subscribers by 2008.
- The Telecommunications Industry Association projects there will be 26 million VoIP access lines in the U.S. by 2008.
- Analysys market research predicts France, Italy and Sweden will lead VoIP adoption in Europe, with the U.K. lagging.
- IDC estimates 27 million households will adopt VoIP by 2009. The firm expects 22 million European subscribers by 2008, generating US\$7 billion in revenues for service providers.

The anticipated range of U.S. consumer VoIP subscribers is thus roughly 12 million at the low end and 27 million at the high end over the next four to five years. Across Europe, the numbers are almost comparable, with similar estimates of VoIP subscribers in the mid-20 million range by 2009.

It is all but certain the most aggressive of these forecasts will not come to pass in the predicted time frame. Indeed, a number of obstacles to broad consumer adoption must be acknowledged. In Europe, government regulation is often perceived to be a primary barrier to VoIP growth. By contrast, the barriers to U.S. consumer adoption generally surround product ignorance and/or concerns about transmission quality and availability of emergency services (i.e., 911).

A recent survey by Harris Interactive found that, of the 1,006 Americans polled, 20 percent think VoIP is a "European hybrid automobile," and 10 percent believe it's a "low-carbohydrate vodka." A striking 87 percent overall got the answer wrong, even after being given four choices including the actual definition.

Another VoIP-related Harris survey of 500 U.S. consumers found 52 percent were resistant to VoIP because of concerns about sound quality. In that same survey, roughly 62 percent of respondents were hesitant to switch to VoIP because it might not support 911 calls. In fact, on its Web site, the U.S. Federal Communications Commission (which does not regulate VoIP) cautions consumers about the potential deficiencies of VoIP:

- Some VoIP services don't work during power outages, and the service provider may not offer backup power.
- Not all VoIP services connect directly to emergency services through 911.
- VoIP providers may or may not offer directory assistance/White Page listings.

In assessing VoIP's outlook, one also needs to consider why consumers would adopt VoIP at the expense of their traditional phone service. There are two broad reasons: price and enhanced services.

This document won't review in detail all the pricing plans and service options offered by existing and emerging VoIP providers. Some VoIP clients, such as Google Talk, offer free calling to other users in the system, while others, such as Vonage, allow calling across the public switched telephone network (PSTN) under flat rate unlimited local and long distance dialing plans averaging roughly US\$25 per month.

Free or low-cost calling is a powerful incentive to adopt VoIP. Yet it's unclear whether it will be a sufficient incentive to overcome consumer inertia, especially if traditional telcos were to lower prices and institute competitive calling plans to prevent VoIP defections.

On the services side, VoIP calling offers the potential for e-mail and mobile phone integration and generally provides more call-management options than are possible through conventional/PSTN phone service. These types of enhanced services will certainly be appealing to early adopters and, quite possibly, the next generation of users given its overall immersion in and affinity for new technology.

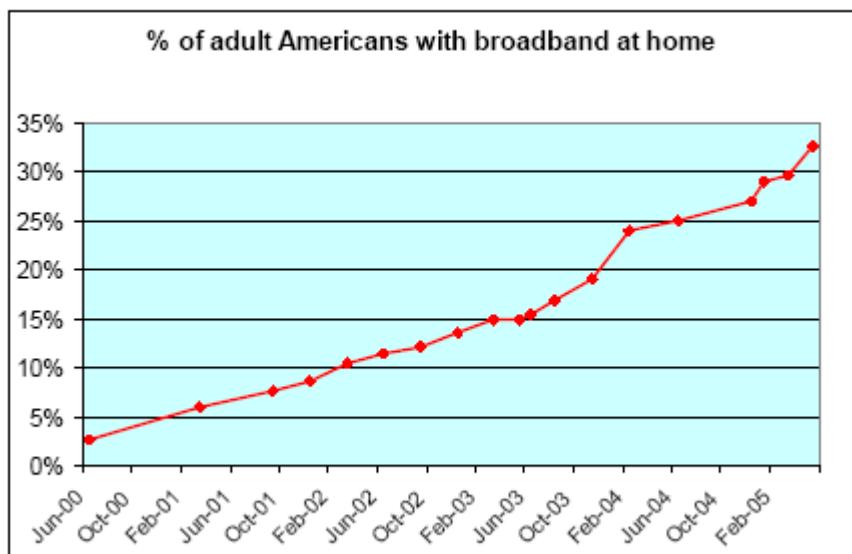
While price or enhanced services, by themselves, might not motivate mainstream consumers to switch, the combination could prove a compelling value proposition to many. VoIP might also get a boost if "pushed" to the market by cable companies or DSL providers in product bundles (e.g., Internet, TV and voice). The latter is the most likely driver of mainstream consumer VoIP adoption.

### **VoIP Contingent on Broadband Penetration**

Another factor to consider in assessing the outlook for VoIP is that Internet telephony travels over a broadband connection. According to U.K.-based broadband research firm Point Topic, there are 176 million global broadband lines, which represents growth of 16 percent from the 2004 total of 152 million. The firm's data reflect that worldwide broadband growth has shifted from Asia to Europe, where there is less high-speed saturation.

In the U.S., the rate of broadband growth has slowed according to several sources. Most recently, The Pew Internet & American Life Project issued a report that takes a generally bearish look at the immediate future of broadband in the U.S.

### **Pew's View of the U.S. Broadband Adoption Curve**



Source: Pew Internet & American Life Project (2000–2005)

The report asserts that 53 percent of U.S. Internet households now have a broadband connection. (There are a range of numbers in the marketplace; The Kelsey Group found 57 percent household adoption in February 2005.) In addition, Pew asserts that 32 percent of the adult U.S. population does not use the Internet at all and that virtually all the pent-up demand for high-speed access has now run its course. Accordingly, the

report argues there will be dramatically slower growth for broadband absent structural or government policy changes to promote further adoption.

While the evidence does suggest slowing growth, The Kelsey Group disagrees that broadband has run its course in the U.S. There are too many private, competitive and public policy factors that favor continued broadband penetration. However, growth may indeed proceed more slowly in the U.S. market over the next several quarters.

As suggested above, an antidote to slowing growth may be so-called "triple play" bundles from both cable companies and, increasingly, telcos such as Verizon and SBC. Thus, competitive dynamics, aggressive marketing and price declines could spur additional high-speed Internet adoption in the near term.

### **IM an On-Ramp to VoIP**

With few exceptions, the entry point for VoIP technology has been through integration with popular instant messaging (IM) services. All the major search engines/portals now have IM clients that offer VoIP: AOL, Yahoo!, MSN and Google. Voice is a feature that complements the IM medium and may enable consumers to gain comfort with VoIP – essentially take it for a test drive before making any larger commitments to such telephony.

"You have to expose [VoIP] in a way that makes sense to people in order for them to give it a try and then decide if they like the experience and develop a comfort level with it," said Brooke Richardson, lead product manager for MSN's communication services division. "IM is a place that has a great set of customers already using it and a place where people are connecting with each other in real time."

### **IM Market Share (U.S.)**

Provider	Users (millions)
AOL	48.4
MSN Messenger	23.3
Yahoo! Messenger	21.6

Source: comScore Networks (July 2005)

Introduction of VoIP over IM clients allows providers to leverage their installed customer bases to market the service. "We have 63 million users worldwide in Yahoo! Messenger, so it's a great way to get people exposed to this great feature and to start creating some buzz around it," said Terrell Karlsten, Yahoo!'s public relations manager for communication products. "As we look ahead, we really see opportunities to leverage our VoIP platform across the entire Yahoo! network. We think we're really well-positioned for this given the fact that we have all these great online services, including Yahoo! Music, Yahoo! Mail and Yahoo! Search. And we're looking at making voice a platform that is omnipresent across all consumer online experiences. Yahoo! Messenger is the tip of the iceberg."

Though voice-over-IM pricing plans haven't been disclosed by providers, there will be some experimentation at the beginning stages of product rollouts. Subscription models will likely prevail for consumers who use it to talk to friends and family, while advertisers will probably pay for calls.

"We definitely see that we could have a hybrid business model around calling services. If you are using the functionality as part of IM, such as talking to friends, it might make sense to have some sort of subscription or transaction associated with it," said MSN's Richardson. "But when you look in the context of search, ideally that would be a free call for the consumer; and we'd be able to monetize it through ad sales."

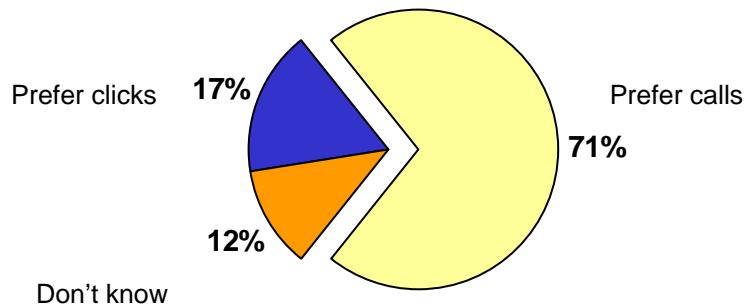
Putting aside the ultimate pricing model(s), VoIP, as mentioned, would potentially allow the integration of voice or telephony across a range of applications: e-mail, search, mapping, directory and so on. One of the potential effects of VoIP integration is that users could click to call anywhere a phone number appears online or on the desktop as easily as they might click a link to a Web site.

### **VoIP and PPCall**

The implications for PPCall are immediately apparent. On the back of the VoIP infrastructure, PPCall could become as pervasive as the pay-per-click model generating 40 percent of online ad revenues today. The differences between "click to call" and PPCall, as well as the more general distinctions between clicks and calls, could diminish or potentially disappear if a click is used to generate a call over a VoIP network.

There is a preference, especially among service-based small business advertisers, for ad and billing models that deliver leads via the telephone or integrate call tracking. While existing click-to-call offerings, in which users manually enter phone numbers, have met with limited success, the prospect of simply clicking an icon or phone number to initiate a call removes much of the friction in the current model. (Again, this essentially relies on the consumer being able to receive VoIP calls.) Calls could then be tracked and/or billed accordingly. As discussed at length in the recent PPCall White Paper, "Calls, Clicks & SMEs: Driving Leads from Web to Phone," calls and call tracking help "close the loop" between online advertising and offline transactions.

### **SME Preference for Calls vs. Clicks**



Source: The Kelsey Group-ConStat (August 2005)  
Base: small business advertisers

"An example would be that you do a search for a local pizza place and, using click-to-call type functionality, the search results would have live links to the phone numbers so the customers could just click on a number and dial out to the pizza joint," said MSN's Richardson.

"We're carefully considering opportunities presented by VoIP technology to help businesses connect with interested customers," said Yahoo!'s Karlsten. "For instance, if you're on Yahoo! Autos and you see a car that you like and you want to get in touch with that owner, it might be easier for you to call that owner and engage in a click-to-call experience."

This same scenario is part of the impetus behind eBay's acquisition of Skype. In addition to seller fees, call connection (and associated bids/fees) between buyers and businesses could be a source of revenue for eBay, permitting the auction giant to

expand more fully into offline transactions. While e-commerce will gain this year, it remains a tiny fraction of U.S. retail spending (2 percent last year, according to the U.S. Commerce Department). eBay could also extend VoIP functionality across its growing range of classifieds properties.

But from a local-advertiser standpoint, The Kelsey Group believes the more widely PPCall (or call tracking-supported clicks) is made available and the simpler it is to adopt, the more small service-based businesses will adopt online advertising.

Among the major search engines/portals, only AOL offers PPCall ad distribution, which will undoubtedly soon change. PPCall does not depend on VoIP and will gain traction regardless of VoIP penetration. But VoIP penetration would make it more likely that PPCall, with its generally higher ad rates – Ingenio now cites US\$10 per call on average – would roll out more rapidly and widely across the major paid-search networks.

### **Making VoIP Consumer Friendly**

The acquisitions made within the past six months by Internet portals and search engines will accelerate VoIP integration and deployment. Microsoft's August acquisition of Teleo brings a reliable PC-to-phone calling technology to the MSN network for the first time. MSN Messenger already came with the ability for PC-to-PC calling, but the newly acquired technology will allow it to integrate PSTN calling as well.

"We've developed our own PC-to-PC [calling] technology, but we wanted to have PC-to-phone. We definitely see it as a logical progression about how people will use these types of services," said Richardson. "We really liked Teleo's PC-to-phone capabilities as well as their click-to-call technologies."

Yahoo!'s June acquisition of Dialpad similarly brings the company PC-to-phone capability – a key element in click-to-call and pay-per-click models – whereas the current version of Yahoo! Messenger only allows PC-to-PC calling.

"We're in the process of leveraging Dialpad's technology and services so we can scale PSTN [calling] capabilities to tens of millions of users," said Yahoo!'s Karlsten. "We've done a lot up to this point and built up a lot of great VoIP technologies in house, and I think Dialpad takes it to the next level."

In addition, the company hopes to market the service to people in the U.S. with family overseas. "I think this provides those folks with a really great solution to stay in touch with family members and friends in a cost-effective way," said Karlsten.

AOL recently launched its own VoIP offering, called TotalTalk. The service, accessible both via the new AIM Triton IM client and through an adapter that allows use of a conventional phone, has a suite of integrated communications features and, in contrast to its search-portal competitors to date, is positioned as a cheaper alternative to traditional phone service ("a quality phone service that is simple to use and affordable, with savings of up to 40 percent off monthly phone bills"). In other words, it's not a scary new technology; it's the familiar phone, just cheaper, more flexible and feature rich.

### **eBay + Skype = 'SkypeBay'**

The acquisition of Skype takes eBay beyond its successful core model into the telephony business. Some have argued this is a clear mistake. However, there are plenty of reasons that indicate eBay was smart in acquiring the VoIP provider. The price is quite another matter. The company will pay US\$2.6 billion in cash and stock plus additional consideration that could ultimately drive up the value of the deal to US\$4.1 billion.

The deal will bring to eBay Skype's rapidly growing revenues, which have increased from US\$7 million in 2004 to an estimated US\$60 million in 2005. eBay expects Skype's 2006 revenues to reach more than US\$200 million and operating margins to be 20 percent to 25 percent on a long-term basis. Skype also gives eBay an area of burgeoning growth in non-U.S. markets after its core business has arguably reached maturity. But, more fundamentally, the acquisition offers eBay the ability to provide "real-time" communications between buyers and sellers in its auction network. (Why the company couldn't buy or build this more cheaply is surprising.) This will apply particularly well to high-consideration product categories that require communication between buyers and sellers, such as automobiles.

eBay made explicit statements about its intention to adopt PPCall and implement it broadly using Skype. The press release announcing the acquisition said as much:

*The acquisition also enables eBay and Skype to pursue entirely new lines of business. For example, in addition to eBay's current transaction-based fees, ecommerce communications could be monetized on a pay-per-call basis through Skype. Pay-per-call communications opens up new categories of ecommerce, especially for those sectors that depend on a lead-generation model such as personal and business services, travel, new cars, and real estate. eBay's other shopping websites -- Shopping.com, Rent.com, Marktplaats.nl and Kijiji - can also benefit from the integration of Skype.*

Skype's integration with international classifieds Kijiji sites and eBay's growth markets overseas will provide potentially strong synergies given Skype's international subscriber base: 54 million members in 225 countries and territories. That subscriber base is reportedly growing by 150,000 users a day. eBay CEO Meg Whitman asserted that advertisers will pay between US\$2 and US\$12 per telephone call (depending on the vertical), adding that there are 1.9 billion daily searches carried out on eBay's network.

Speculation abounds regarding how eBay will fully realize the value of Skype; the price it paid is 68 times Skype's projected 2005 revenues. Another possibility is that in addition to facilitating transactions and monetizing calls on its own site, eBay could become a broker for PPCall distribution to the broader Internet, as it does with bundled clicks in its ProStores traffic generation products. Thus, it could offer a complete "solution" to small and medium-sized enterprises (SMEs): Web sites, integration into the eBay marketplace, search traffic and now calls.

### **Google Talk and Wi-Fi**

Google is the last of the big search players to join the VoIP party, with its much-publicized Google Talk IM launch in August. The product allows users with a Gmail account to make free calls to other open-source IM clients and Google Talk users. The precise "why" of Google Talk (beyond a me-too competitive move) and the product's future evolution are unclear. Possibilities include an enterprise version with conferencing by multiple users, PC-to-phone calling (and vice versa), PPCall integration into AdWords and other potential applications.

The company's recent test move to broker print ads in trade magazines comes with a feature to provide advertisers with a separate toll-free number and Web site that flows through Google's servers before being directed to businesses. This would help Google's clients track their ad spending and could be integrated with a potential future PPCall model.

Beyond this speculation, where Google Talk becomes more than just another IM/VoIP offering is in the context of the potential Google Wi-Fi network. The "blogosphere" is full of rumors about Google's purported ambitions – which company spokespeople have

formally denied – to build out a free, national Wi-Fi network. Google has, however, submitted a proposal as one of several bidders to build such a network in San Francisco, which is setting up free municipal wireless Internet access.

The Kelsey Group has speculated elsewhere about the full range of implications of a free Google Wi-Fi network (e.g., more precise location targeting). However, if some version of the rumors is true, this could drive adoption of Google Talk as a telephony service, especially if out/in calling were permitted. And where users are, advertising will inevitably follow.

### **Potential Impact on Directory Listings**

The lifeblood and the much-discussed differentiator of the directory product, online and off, is its content. Putting aside some of the guerilla tactics out there, most listings databases are in one way or another derived from telephone databases. Yet because of the proliferation of wireless phones, unlisted numbers and other changes in the marketplace, less than half of all phone numbers are now captured in the directory database.

According to the FCC, at the end of 2004 there were 178 million landlines in the U.S. and 181.1 million wireless subscriptions. And there are more than 1.5 billion mobile users around the globe. Unlike many consumers, small businesses typically want to be found. Currently, the majority in the U.S. receive their phone service, where basic listings information is initially collected, from telco providers.

The implications of wireless and the explosion of new VoIP services, which will likely be adopted more rapidly by business customers than consumers, are clear: diminished listings content captured by telco service providers and thus made available to their directory subsidiaries. Clearly there are ways to compensate, but those methods are often logically challenging and potentially costly. But the absence of non-advertiser listings in the printed directory would likely diminish its perceived value by consumers.

One of the more vexing, if indirect, challenges to the database comes from cable companies, which are aggressively competing with telcos to provide VoIP-based phone service as part of a triple-play bundle. Telcos have been compelled to develop Internet Protocol Television (IPTV) partly to combat this threat. SBC, for example, plans to market AT&T's CallVantage VoIP service more aggressively after it completes its acquisition of the company. SBC will also add other features in line with this triple-play notion, including notifying customers of incoming calls and allowing them to talk through their television sets.

While these integrated features make telcos' IPTV/VoIP services fairly compelling and potentially competitive versus stand-alone VoIP (i.e., Google, AOL, Yahoo!, MSN), voice revenues will inevitably decline. Telcos will either be forced to market their VoIP services or lower their PSTN prices in order to remain competitive.

If telcos prevail in this competitive land grab, the erosion of the listings database might be slowed or arrested. However, what is more likely is a greater fragmentation of the marketplace and the need for directory publishers to become more creative – sooner rather than later – about how they gather and maintain listings content in view of the inevitability of that fragmentation.

### **The Bottom Line: Prepare Now for VoIP Adoption**

VoIP is no longer the stuff of IT trade publications; it is an emerging alternative telephony infrastructure. The central question is, how far and wide will it penetrate and how quickly? Most third-party projections cited in this document are probably too aggressive, and there may be unforeseen roadblocks that slow or limit adoption (e.g.,

regulation). And if PSTN prices are sufficiently lowered to compete, consumers may be disinclined to switch to VoIP.

Yet as VoIP is demystified and competition continues to accelerate among cable companies, telcos and Internet-based providers, there will be increasing awareness of the product and growing price competition. Consumer and SME adoption of VoIP will depend on how aggressively it is marketed and how much it mimics the familiar look and feel of conventional phone service; pure IM-based calling will be for early adopters.

Telcos are faced with an unpleasant choice: "cannibalize" traditional voice revenues by aggressively marketing VoIP to thwart cable companies or lower PSTN prices to retain customers. Inaction will cede the VoIP business to competitors. This is a slightly different version of the dilemma that Internet Yellow Pages and newspaper publishers face in trying to get advertisers to migrate to their online products.

Regardless, directory publishers should prepare now for the fragmentation and further degradation of the listings database. There are no easy solutions; but if there is an area of common interest among directory publishers, this is it. Though the listings issue is hardly new to the industry - there has already been plenty of confusion from the rapid development of the competitive local exchange and wireless businesses - the potential mainstreaming of VoIP further raises the stakes. The Kelsey Group expects the Yellow Pages trade associations to come together to begin the process of laying out both regulatory and business options to ensure base listings remain as complete and comprehensive as possible.

For search/portal sites, as well as Internet directory publishers and newspapers, widespread dissemination of a VoIP telephony infrastructure will enable click-to-call and PPCall functionality to be widely deployed either as an adjunct to or a substitute for clicks. The enhanced tracking capabilities it affords will allow for better and more integrated online-offline campaigns and online campaign measurement.

Depending on where one sits, VoIP is either a powerful enabling technology that opens a world of options and new opportunities or a threat to cash flow and established business models. Either way, the technology has gained a foothold and needs to be factored into thinking about the future of telephony and the relationship between calls and clicks online.