Modelli e Strategia per l'e-Business II – Prof. Emilio Paolucci

Luis Germán Benavides - info@luisbenavides.com

Fernando Taliberti – taliberti@e-creare.com.br

Strategy Models for the Mobile Industry with

the Rise of Wireless VoIP

EXECUTIVE SUMMARY

The way people communicate has evolved for thousands of years, but in the last 10 vertiginous continuous innovations have passed before our eyes, an evolution without precedents. The explosion of internet presents today a totally new way of communicating. But how do business models of modern and old companies react to these changes? The scope of this paper is to describe today's panoramic view of voice business models having as a vertex Skype, one of the leaders of this industry today.

This study will try to understand how turbid the industry is by analyzing the different players and their interactions, the different efficiencies of networks and how Skype is managing its competitive advantage and sustaining it by creating lock-in effect. Certainly direct competitors will not sit and wait while all their customers run away, in fact they have been moving to models such as FMC, mobile telephony, VoIP offers. In the other hand other players that have realized the high potential hidden bellow the top of the iceberg. Some of them are FON and WiFi/WiMAX providers.

The most interesting business model, which is focused here, is Skype's. The extremely low marginal costs and viral marketing allow them to promise free telephony forever. As their slogan says, creating a huge network in a record time basing revenues in premium services, endorsement and hardware sales. The document analyzes which models could be applied in a future where Wireless ISPs could combine with hardware (telephones) powered by Skype to provide service similar to cellular telephony. Why ebay bought Skype? What will happen with traditional telephony? Could cellular telephony disappear? Would it be an evolution or a revolution?

Finally, a comparison of the business models is made and it is stated how synergies or convergence could be managed, and if regulation should influence or stay away the road. This new ecosystem could lead to very innovative services such as radio syndication, new advertising/marketing models, micro-payments, and even parallel ecosystems that are hard even to imagine.

1 Introduction

Internet is changing the scenarios for the telecommunications industry. Data corresponds to a growing percentage of the overall traffic and many companies bet that it is where the future of the industry lies.

However a specific technology brought by internet may be responsible for a more dramatic change than it has ever been for that industry: VoIP. The possibility of using the internet to make voice calls at no marginal cost may even be disruptive for the traditional telecom industry, but that is something that strategy will define.

VoIP is spreading explosively, but people are still not prepared for such a disruptive change. Even if some providers have created handsets that imitate those currently in use making an evolutionary transition, for most of the people is hard to imagine and understand its operation. However lots of work is expected to take place here in order to reach a critical mass of users and converge in a common VoIP protocol. For example, an alternative is to contract a VoIP service provider which provides VoIP lines and regular handsets to connect to it where users don't even notice they are using VoIP technology. This kind of offering is also growing fast in leading markets such as the US. Providers like Vonage and Time Warner combine internet access and telephony in a packet which is sold in a subscription basis.

This model is currently the one mostly adopted by companies, also. According to an analysis made by Avaya (Russell Shaw, 2005) within companies, the number of VoIP lines installed yearly by companies worldwide overcomes the number of conventional lines which is an explicit sign of the coming changes.

Another type of technology is also developing fast and promising to reduce barriers for the use of VoIP: Wireless Networks (LANs and WANs). WiFi technology has gained amazing popularity and became a market standard. It allows only short distance networking up to now. WiMAX is another technology that will provide a wider range to Wireless LANs (or WANs). The spreading of this kind of Wireless network is giving VoIP mobility. WiFi is being supported by a growing number of mobile devices such as PDAs, Smartphones and even Cameras. With a WiFi enabled PDA or Smartphone it is already possible to make VoIP calls without the need of a computer or a headset, thus enabling a faster spreading of VoIP usage.

Will VoIP enter the scene as another complementary for the industry or will it manage to be disruptive? What would be the business models that could allow it to be profitable and disruptive simultaneously?

The understanding of the industry traditional model and how it may change under the influence of VoIP will be the base to the study of these questions.

Skype, the leading VoIP software in number of users (according to Skype.com, over 280 million downloads and +6 million simultaneous online users), will be taken as a case study, in order to understand whether there is a profitable business model in providing de capability of making

free calls through VoIP and the perspectives this model brings to the traditional telephony industry.

Niklas Zennström, Skype co-founder (BusinessWeek Online JANUARY 6, 2004), said he doesn't expect Skype to replace traditional telephony. He also says supporting emergency calls is not a future in the plans of Skype's high management. In terms of quality of service, VoIP and specially Skype rely on the bandwidth of the caller/called. As current internet protocols do not provide a preference for voice or streaming media, VoIP quality may be jeopardized by concurrent bandwidth consuming applications or users.

Up to the moment, VoIP is used mainly by whom, or in situations in which reliability is not so critical. However, the many issues on the use of VoIP are being solved quickly, allowing VoIP's performance to grow quickly.

That places VoIP as an emerging technology that is potentially disruptive as the graph bellow represents.
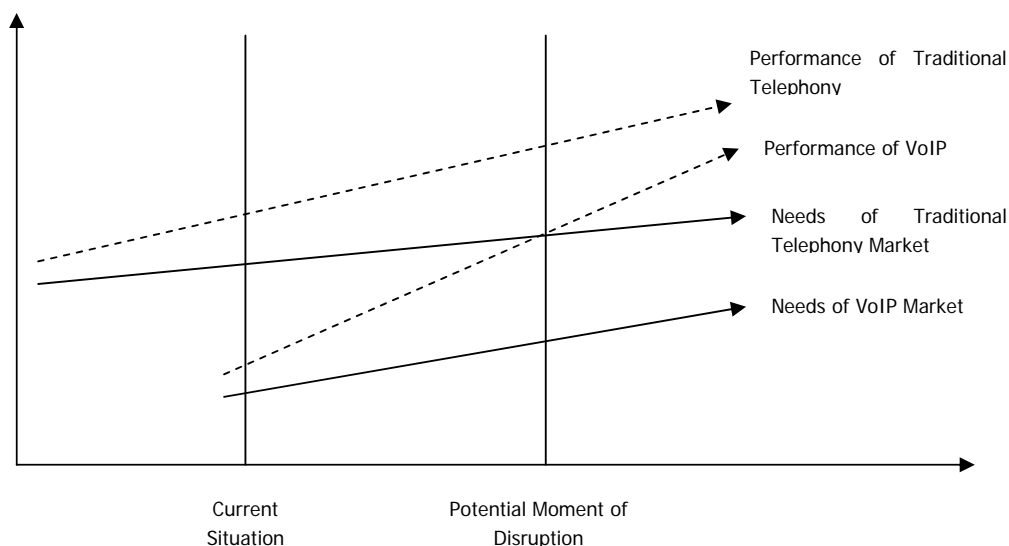
The graph can be realistic if performance is considered as a combination of cost effectiveness and accessibility or ease of use. In that sense traditional telephony is not getting more accessible or easy to use as fast as VoIP is doing. By the other hand, the way traditional telephony is gaining cost effectiveness frequently includes using VoIP itself. That being said, VoIP promises to be disruptive in some way, at least for the traditional circuit switching technology itself.
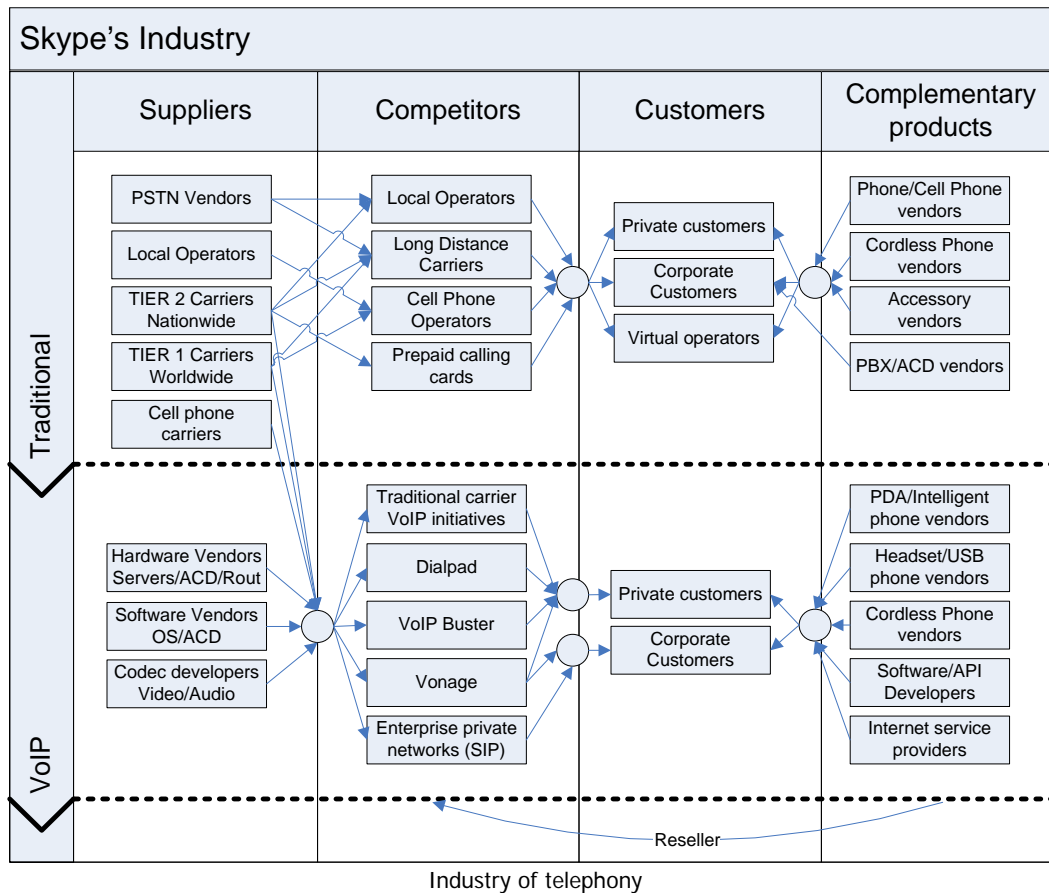
This study will aim on understanding what kind of disruptions it may bring and how.

2 Industry Analysis

The traditional and VoIP industries are pretty much overlapped to be studied as separate things. The figure bellow shows the different players and how do they interact in the different stages of the supply chain.

Industry of telephony

The traditional phone companies have a hierarchical and geographical organization; World, Country, City and in some cases more intermediaries between being tier 1 the NAPs (Network access points) where countries interconnect to each other and tier 2 the NAPs where different fixed and mobile operators interconnect. This structure involves many players making it cost/inefficient. E.g.:

Call from fixed user country A to fixed user country B:	Caller A - PSTN local city A– national carrier country A – international carrier – national carrier country B – local PSTN city B – Called B
Internet caller country A to country B:	Caller A – Internet – Called B

And the most important, the network use between callers A and B in the second option is free of charge (apart from the internet access). Even though the termination of calls to fixed or cell-phone networks from the internet represent interconnection costs normally charged in a per/use basis. The cell phones solve this problem in a nationwide point of view interconnecting only to local PSTNs, but the high costs of network pull prices up.

The competence has all colors and flavors using traditional networks, cell phone networks, WiFi/WiMAX networks, private corporate networks and internet, or different combinations of them. The most relevant key success factors of Skype are: a large number of users creating network externalities, high quality, privacy/security and developers offering complementary products.

From a simplistic point of view, the market could be considered the same, users who want to communicate, limited by the actual penetration of internet and social change slowness. This is a competitive advantage of traditional carriers who have grown progressively with people in a non disruptive way, but is a non sustainable advantage as time passes and people evolve pushed by technology. Some of the traditional operators have realized that and have invested in mobile telephony and a little group of visionaries have invested in Fixed Mobile Convergence (FMC), for example Telecom Italia with the "Unico" offering (La Stampa Web, 30/5/2006).

Finally the complementary products as now are being standardized don't create any lock-in effect within users. In the other side, Skype move was not in the standardization of devices/software but becoming itself a standard platform certainly locking-in software developers as well as users fostering new economies of scope.

2.1 Potential New Players

The mentioned surging technologies may bring new players to these industries as well as new business relationships. The business model for new players is providing internet access through Wireless LANs and WANs. Some visionaries are already surging based on this business model. FON is an example of company that aims on providing Internet Access through WiFi hotspots by creating a network of users that also act as distributors through their own WiFi routers. With the arrival of broadband Wireless WANs such as the ones WiMAX may enable, however, this kind of ISP will become very similar to Mobile Carriers. As a consequence regulation may play a role that could favor these well established carriers.

Either way as demonstrated in "The Rise of Wireless VoIP" (Benavides, Domene & Taliberti, 2005), the demand may pull the providing of this kind of service which can be provided by Mobile Carriers themselves, or even by Fixed Phone Carriers.

However, an exclusive Wireless WAN service provider with a simple "flat rate" billing model could be very cost effective. Considering that handsets would also soon be available for use with the new WWAN technology, they would become also Wireless VoIP suppliers, without having to concern about anything but Bandwidth and QoS. A VoIP software/service provider (such as Skype) would be responsible for promotion, marketing and other types of activities that Mobile Carriers execute today; activities which relevance would decrease with the increasing of their network effects. Considering 100% VoIP calls would be free, the greater the

percentage of VoIP users in the network, less need for promotions. Promotion and marketing, in that case could be limited to value added services which could have a different pricing.

How would it be possible for such a VoIP software provider to survive? That is something that will be answered based on Skype case study.

3   Skype Business Model

3.1   Current status

Skype's business model is based in the creation of a huge user base, which can benefit from the network effect, to offer premium services. How do they manage to grow this network of users? Their slogan "the whole world can talk for free, forever" indicates the value added by their tool to the users. VoIP calls between users (PC to PC) are free, and according to the founders will always be. The interesting thing about their business model in the creation of the network is that the cost of infrastructure of a new user is less than $0.01 due to the fact that the P2P platform distributes bandwidth and processing power to the computers connected to the network.

Skype, however, does manage to profit from its huge network of users. They do so it through paid "premium" services. 'Skype Out', the most popular, is the prepaid service that allows Skype users to make calls to fixed or mobile phones by low rates. 'Skype In' allows users to subscribe to a fixed line number that may receive calls from landline and mobile phones. 'Skype Zones', another subscription program, allows users to use WiFi hotspots around the world to use Skype. Finally, their 'Voice Mail' service is also a prepaid subscription service.

The network externality effect works for Skype as viral marketing that grants them very low marketing expenditures. Although most of their users are not 'premium services' users, Skype has more than one million 'Skype Out' active users, what is comparable to Vonage subscribers.

From a technological point of view, Skype is not exactly a leader, it was launched when the audio/video codec, P2P (Kazaa), VoIP services and Internet bandwidth where developed enough.
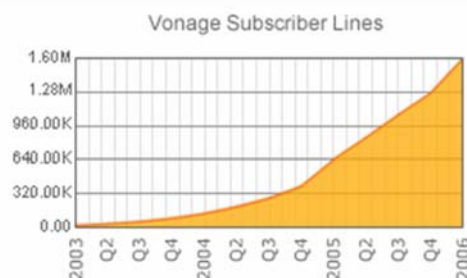

Source: www.vonage.com

Strategy Models for the Mobile Industry with the Rise of Wireless VoIP

The VoIP industry is "sharks water", virtually no barriers of entrance, strong suppliers, lots of substitutes and high rivalry. Within Skype's direct competitors are: Vonage, VoipBuster, Net2Phone, Dialpad, traditional long distance operators, cell phone companies among others. For the last years the price competition has been fierce and the quality is becoming a commodity. Why being a player in this industry? Market is enormous: virtually every internet user is a potential customer. In addition, it may cannibalize the telecom industries market in the near future.

How does it plan to be in a privileged position in this near future? The answer is through lock-in effect a strategy that reminds Microsoft's with windows. In November 2004, Skype made public its API creating a totally new "ecosystem" where different programmers and hardware producers could develop tools letting users benefit from them while merging them more into the "Skype thing".

Skype current offering
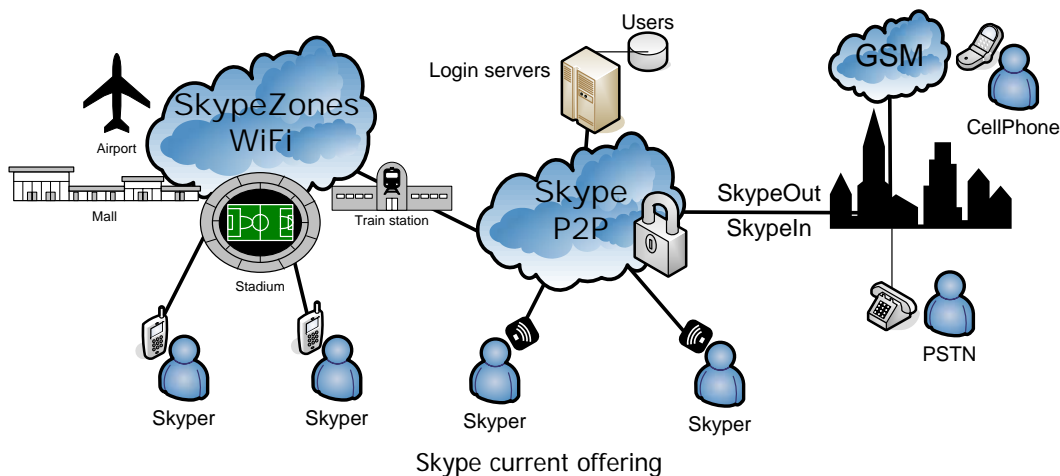
That way, Skype keeps a small number of employees. Development is strongly delegated to third parties who pay royalties. In some case, developed solutions are incorporated to Skype's basic version. That is how they started supporting conference calls, and other valuable features. The majority of the employees (about 250 by the middle of 2006) are focused in business activities.

Skype has three lines of revenue. The first one is with the Skype In/Out, SkypeZones (delivered in partnership with tier1 Telcos and Boingo respectively) and VoiceMail services. Revenues from this source come directly from the end user. The second line is the "Skype certified program" that makes software/hardware developers pay an endorsement in order to be trusted by Skype users stating the safe interoperability and correct operation of the device/software. The third one is actually selling this vendor Skype-certified-products through its website.

Skype is managing to profit from its advantage of this model. The network effect created is being enough to hold competitors of the same type (such as VoIPbuster). However, with

Skype's current model, with its user base growing to its limits, the company would not be able to keep profiting. That is why they have already started moving toward the future.

3.2   Models for the Future

Skype's Co-Founder Niklas Zennström doesn't speak explicitly about the future business model for the company. The recent acquisition by eBay for 2.6 billion dollar is also not clearly explained to many analysts. Both companies talk about the synergies they can generate, but Skype's potential may go much further.

Within the clearest advantages publicly declared are Cross-marketing, reduction e-commerce friction and pay-per-call services. Having a high stack of customers joining the two networks and making marketing campaigns of possible complementary products, giving the possibility to concrete affairs by putting ebay users in contact through Skype and an innovative "new-business" that yahoo and google have already made some tests with, that is to give the possibility, from the internet, to put in contact customers searching for products and services and the sales departments of companies charging them in a per call basis, which is definitely more effective for companies than being charged per click basis.

Guedes (2005) suggests that a potential business model for Skype in a future where most of the telecom users are Skype users is licensing its software for hardware makers, the way Microsoft did. Customers today may have Skype software for free in their PCs, and even in their PDAs or Smartphones. However these are not embedded versions. That means users mind they are using Skype and have to make some effort to make it work. Some partnerships are already being made and WiFi telephones are entering the market with embedded versions of Skype. That indicates Skype could become a kind of operational system for VoIP phones, a type of device that promises to become very popular in a world with broadband Wireless WANs with significant coverage. Steve McGeown, director of product management at Sandvine, believes in this model and in the success of Skype powered phones. He says: "these handhelds would be the customer's primary purchase since service would be essentially free."

One of McGeown beliefs was that Skype could profit by selling other premium services such as videoconferencing for business, a capability, however, already incorporated to the basic – free - version of Skype.

According to Zennström "if Skype can get just a sliver of the people who download its software to pay, it will generate profits because they have no cost per additional user." So many kinds of premium services may be created. Innovation will be critical here, and the company is getting used to hear the critics and suggestions of the users and quickly incorporating them into product upgrades.

If Skype succeeds in turning the telecom industry upside down by turning a service into a product (which allows voice to transit through an internet connection, this one provided as a service), it may create the lock-in effect not only in the users, but also for the handset manufacturers which could be pushed to pay a maintenance fee for the software. From the point of view of innovation management, Skype is trying to become an industry standard and that is something it does not hide. In its recruitments page it searches for teams that "should

be the driver that will help Skype become the largest Internet Communications Company as well as the standard for Internet communications."

Skype Zones is already a step in that direction. Skype might even make users that were not previously internet users (as a big percentage of current cell phone users) and act as sales representative of Wireless WANs Service Providers, something not far from what is being done through Skype Zones today.

Zennström believes Skype will not substitute cell phones or landlines, however, if it manages to become a standard, these forms of communication would be used "as the fax is used today", he predicts. In this scenario, Skype would be entering its early majority part of the adoption curve when landline and cell phones would be by the end of their S curve, as the picture below illustrates.
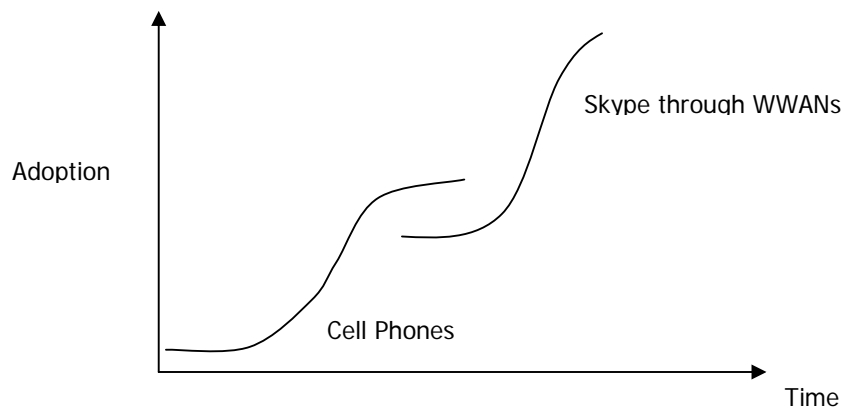
S Curves for the Scenario of Skype through WWANs as standard

Is it too soon to say it is a realistic scenario? Yes. Skype is doing well in growing its network of users and creating lock-in, but big players may play very hard to avoid this scenario, also because it is a scenario were the end customer wins, and the telecommunication industry as it is today, looses. Barriers to copy and to substitution are not significant and Skype's main protection against a fierce reaction of Telecom players is that to create a representative competition they should cannibalize their own revenues, what requires a lot of courage.

However, some operators are acting as visionaries and are already partnering with Skype to try to enjoy the first mover advantage. That is the case of the German e-Plus that offers Skype over UMTS in an original partnership.

As mentioned before, one of the three lines of revenues from Skype is sustained directly from end users (users paying Skype). The other two are based on commissions and royalties, what means they are also viable in a future where users won't be paying by calls, neither by software, but only by hardware, which should/might have the software embedded.

While it is still very difficult to predict, two main possibilities could grant Skype a profitable future. The first, as said, is becoming a standard and being paid by everyone that uses it. The

other is becoming a strong brand and keep being able to use it to sell products compliant or complementary to this standard (be it Wireless WAN access or hardware to use Skype).

4   Business Models Comparison & Perspectives

As Zennström says, a Skype based telecommunications model is very different from the traditional one. It is not only for the technology, a field in which VoIP in general and specially Skype as a Peer to Peer solution (by being based in a Do It Yourself model) are demonstrating to be much more efficient. Business reasons are even stronger for Skype's co-founder. In his vision, the appealing of being able to talk for free overcomes every marketing effort from telecom operators. And not having to spend money on marketing supports an efficient business models where the customer at the end of the day doesn't have to pay the costs of "being acquired" himself.

For such a model to be disruptive to the currently dominant one, however, it will need either help from a smooth regulation, allowing the spreading of new WWAN players, or from some outrageous players with little to loose and a lot to win as first movers (as did e-Plus). In other words, either a new network infrastructure will have to be created, or some players may choose as strategy changing from mobile carriers to Wireless Internet Service Providers just to arrive earlier in a market that may be the only one in the future. In the latter case, such players would slowly pull other players to the same situation and reduce margins drastically.

Still such providers could choose to charge for connection services as they do today, by minutes, and micro-economic models teach us that the market may want it (not everybody desires or has need for a flat price service). Dial Up is still popular in the United States (30.61% of home connectivity by march/2006 according to WebSiteOptimization.com) and that is a sign that models may change slowly and not disruptively. That option, however, brings the need of more complex billing and increased operational costs.

4.1   Where do the Internet Models Fit?

So where do the promising models for the internet fit? ASP definitively is not to be found in this vision of the future (on what concerns voice traffic). In fact, users would be "insourcing" all the voice activities needed, excluding the routing service that the internet does by nature. Being able to talk for free would be a consequence and a cause of that (no billing, no control, no exclusive access for voice and no concern with quality other than ISPs). Having a device connected through wireless broadband, however, would enable many models based on ASP, that would include running every kind of applications online, from editing text to more complex ones. Some of such services could be paid.

Syndication was not mentioned also. However, it is something that operators increasingly do today and could also be the answer for the profitability of a player playing a role like Skype's.

Putting content or even ASP-alike services and selling this package to many different users may be something desirable and even critical in such a scenario.

For example, a type of syndication such as internet radio distribution could become a technology pushed innovation. As stations bandwidth grows linearly with the number of listeners, high scale broadcasting becomes unmanageable. Skype network, using the advantages of P2P could push this need of Bandwidth to a very low level changing deeply the barriers of entrance, freedom of speech, press freedom, advertising etc. Offering customized musical content is also something that could be done on the fly in a P2P model. "Skypecasts" could be considered as a first step in these matters.

What could be a plus in terms of content would be a must in terms of hardware + services. That means that putting together Wireless ISPs and hardware makers could also be seen as a kind of "syndication" that should/could be done by the player playing the "role of Skype". Could it be done by the ISPs themselves? Yes, and if they are the former cell phone operators it is even likely, since they will keep looking for added value services that may keep higher margins.

5 Conclusion

It's quite clear that a new vertiginous but evolutionary change in communications is to come. Different players in the industry in the competition side have to be aware of the incredibly high potential Skype has to disturb their market and should plan carefully their strategies rolling their sleeves and getting into the game. Suppliers as well should notice that importance and power they currently enjoy may be also disturbed by the growth of Skype or by the model of telecommunications it represents.

Not all is bad news and awareness, the road can be very prosperous for the hardware/software vendors who manage to position themselves in the market meeting customers' needs constantly receiving feedback from them and anticipating in a proactive manner to problems. These players will also take a big slice of the pie.

Further investigation should be done in the actual evolution of the response plans of Telcos and how could they impact internally their rigid structures. That way, it may be possible to identify if the stronger trend sounds like "if you can't beat him, join him" or like "I'm still powerful enough to beat him".

6 Bibliography

BENAVIDES, L. ; DOMENE, J. ; TALIBERTI, F. (2005). **The Rise of Wireless VoIP.** Master in E-Business and ICT for Management – Politecnico di Torino, Turin, Italy

GEDDES, Martin, "RE-FORMAT YOUR SKYPE BUSINESS MODEL?". **Telepocalypse**. DECEMBER 18, 2005.
HOF, Rob (2005), "Why eBay Is Buying Skype", **BusinessWeek Online**, September 12, 2005

NEEDLEMAN, R. "Skype Economics". **AlwaysOn** , April 2004

PULVER, J. "Skype co-founder Shared Product Roadmap @ VON Canada 2004", **The Jeff Pulver Blog** (http://192.246.69.231/jeff/personal/archives/000823.html), May 22, 2004

RODRIGUES, Jorge Nascimento, "The European Challenger of The "Old" Telco Business Model", **Gurusonline.tv.** February 2005

EISENMANN, T. **Skype.** Harvard Business School. March 28-2006

SCHULZRINNE, H., **INTERNET telephony or Internet TELEPHONY?**, June 13, 2004

SHAW, Russell, "What should be Skype's business model? I sort through the visions", **http://blogs.zdnet.com/ip-telephony/?p=598**, August 18, 2005

TAPIO, Antti - Helsinki University of Technology. **Future of telecommunication – Internet telephony operator Skype**, HUT T-110.551 Seminar on Internetworking, April 2005

WERBACH, K. (2005). "Using VoIP to Compete". **Harvard Business Review**. September 2005.

"As the Phone World Turns Part 5 – SkypeOut: Monetizing the Skype Network", http://blog.tomevslin.com/2005/04/as_the_phone_wo_4.html, April 27, 2005

"Phone Service the "Zero Cost" Way", **BusinessWeek Online**, JANUARY 6, 2004

"Telecom: ordini per 2,5 milioni di terminali innovativi in Europa". **La Stampa Web**. May 30th 2006.

"The Hype over Skype: Can It Go the Distance?". **Knowledge@Wharton**. September 7, 2005.

"US Broadband Penetration Nears 70% Among Active Internet Users – USCanadian Broadband Gap Narrows - April 2006 Bandwidth Report". **WebSiteOptimization.com**. April 2006.