

Skype: Restructuring the Telecom Industry

On January 25 2006, Swisscom's CEO Jens Alder left the national telecom operator. His successor, Carsten Schlöter, quickly started to understand the new structure of the telecommunication industry as he wondered about the challenges that the organization would face in the near future. Staring at the front page of the newspaper, one word especially caught his attention: Skype. The article explained the position of the Chinese government towards Skype's innovative product. Schlöter was immediately reminded that he would have to elaborate a strategy to deal with this new undesirable competitor.

Skype is a free software which allows transmitting voice over the internet using voice over internet protocol (VoIP) technology. One major benefit of using this technology is to significantly reduce the costs of phone calls compared with the traditional telephony. In addition to its lower prices, the quality of service of Skype's voice communications services approaches the quality of the conventional telephony systems. The combination of these two factors make Skype's business proposition very threatening to traditional telecommunications operators. Thus, Skype has triggered an authentic revolution in the telephony industry because it is significantly affecting the foundation and dynamics of the telecommunications industry.

1. Skype's Use of Technological Innovation

Skype's products used VoIP technologies. VoIP constituted a revolution in the telephony world. It was about to change the way telephony is perceived since it permitted the integration of voice, data and video on one converged network. This fostered the emergence of new services as well as simplified the management of end-user terminals.

Nonetheless, in order to dethrone the Public Switched Telephony Network (PSTN) telephony, VoIP had to address some weaknesses such as the quality of service.

1.1 Packet-Switched versus Circuit-Switched

Since its invention by Alexander Graham Bell in 1876 up until a fairly recent past, telephony has mainly been circuit-switched. It could be fixed with PSTN or mobile with Advanced Mobile Phone System (AMPS). The analogical systems are mainly comprised of PSTN and AMPS while the digital system use the Integrated Services Digital Network (ISDN) and Global System for Mobile Communications (GSM) technologies. To set up a communication between two entities, a physical circuit needed to be reserved and allocated until the end of

the conversation. It could not be simultaneously used by any third party willing to communicate, even during spare times. This adequately addressed the strong telephony's delay constraint but this mechanism led to a waste of resources. Given the scarce nature of bandwidth, this caused the cost of telephony conversations to be relatively high¹.

Unlike PSTN, VoIP used Internet Protocol (IP) based networks to convey voice packets between the communicating parties. IP is the protocol which regulates the exchange of information within the Internet. It is a packet-switched technology, which allows several users to share the same bandwidth at the same time through the use of complex algorithms. Therefore, this resulted in a more efficient usage of bandwidth, paving the way for cheaper communications given the low costs of internet connections.

1.2 Protocols Required with VoIP and P2P-VoIP

VoIP enabled voice packets to be conveyed in any IP networks regardless of whether it is the Internet, Intranets or Local Area Network (LAN). IP, which was primarily designed for data transfer, was not able to achieve this task alone. Many considerations relative to voice communication were far beyond the scope of IP functionalities. Special schemes were needed to convert voice's analogue signals to digital samples, to meet the time sensitive aspects of voice communications and to ensure calls establishments and tear-down. Exhibit 1 describes these extra technical requirements. These functions and protocols were partly or fully implemented in the components of a VoIP network such as the software client phone applications, the media gateway, the signaling controllers, the fixed and mobile VoIP phones².

One essential concept throughout this case is P2P VoIP. This referred to the application of Peer-to-Peer techniques to IP telephony. P2P VoIP was a more distributive way to transfer voice packets over the internet without requiring a central server. This resulted in a quicker transfer of voice packets between the communicating peers. This hybrid technology was prone to work behind firewalls and NAT (Network Address Translation) gateways, which were the nightmares of conventional VoIP systems. It is to be noted that a server was still needed for authentication purposes. Skype pioneered this technology. It successfully replaced the central index server for locating users widely by distributed self-organizing P2P mechanisms, which were implemented on the user's end system. The main downfall was that its software did not interoperate with the software of the other market players based on open standards such as Session Initiation Protocol (SIP). The Internet Engineering Task Force (IETF) was currently working on a draft for a standard combining SIP and the Peer-to-Peer technology.

1.3 Main Challenges Facing VoIP

VoIP had some weaknesses that needed to be resolved as the technology was rapidly expanding. Some of these pitfalls stemmed from the fact that IP's primary motivation was data transfer while others had their origin in the vendors' failure to comply with the standards. The main flaws of VoIP were³:

¹ http://fr.wikipedia.org/wiki/P2P_VoIP

² <http://www.tldp.org/HOWTO/VoIP-HOWTO-7.html>

³ <http://www.voip-voice-over-ip.com/knowledge>

- **Quality of service:** Despite having substantially improved over the recent years, VoIP had to match the quality of service offered by traditional telephony. The delay remained a critical issue which the IETF was working on. The addition of techniques such as Echo Cancellation, Packet Prioritization (giving priority to voice packet) and Forward Error Correction enhanced the overall quality perceived by the end users.
- **Interoperability:** For VoIP to become common among the users, products from different vendors needed to operate with each others. For this purpose, standardization efforts were being undertaken mainly by the ITU and the IETF. The most popular of this standard was H.323 standard.
- **Security:** This problem was mainly due to the fact that VoIP packets were conveyed through the Internet; they were therefore exposed to security attacks ranging from tampering to masquerading. The L2TP (Layer 2 Tunneling Protocol) and SSL (Secure Socket Layer) protocols addressed this problem.
- **Integration with the PSTN:** As VoIP and PSTN had coexisted for a few years, they appeared as a single network to the end user.
- **Scalability:** VoIP systems needed to be flexible enough to grow to large user market and allow a mix of public and private services.

2. Skype – The Company

“I knew it was over when I downloaded Skype,” Michael Powell, chairman, Federal Communications Commission, explained. “When the inventors of KaZaA are distributing for free a little program that you can use to talk to anybody else, and the quality is fantastic, and it’s free – it’s over. The world will change now inevitably.”
-Fortune Magazine, February 16, 2004

2.1 Skype’s Background

The history of the company began in August 2003 when investors from Luxemburg decided to invest 19 millions on the promising idea of Niklas Zennström and Janus Friis, who also were the creators of KaZaA, a peer-to-peer (P2P) music and multimedia file sharing application. They have thus benefited from their expertise in the P2P technologies and have identified another business opportunity by deciding to develop Skype, a combination of P2P and internet telephony technologies using VoIP. A short biography of the founders can be consulted in Exhibit 2. The company has been headquartered in Luxembourg, but its research and development (R&D) activities were based in Tallinn in Estonia, where 150 engineers were working on Skype’s development and future applications.

Skype was a proprietary software whose aim was to allow its users to make unlimited voice calls. Skype’s mission was to provide a simple, reliable and friendly communications tool. Its use was for users to communicate with friends, families, and colleagues more flexibly and at lower costs than ever imagined previously, using VoIP. In order to run Skype on his personal computer (PC), a user simply needed to navigate to skype.com, download the program, install it and turn his headsets and microphone on. He was then already ready to make phone calls; the installation process was very simple, the program was very easy to use and the interface was user-friendly.

2.2 Skype's Growth and Market

Since its release in August 2003, Skype has quickly become a big success. Skype has encountered particular success in countries where the domestic telecom network was inefficiency such as in Morocco, Poland and Brazil. In the more developed countries, Skype initially mainly attracted computer literate users. Nonetheless, after only 8 months, in April 2004, it had already reached more than 5 millions users around the world, 20 millions in February 2005 and 70 millions in November 2005. The growth rate was phenomenal and can be visualized in Exhibit 3. The company's income also grew significantly and reached €70 billions in 2005. This expansion was not expected to stop and it was estimated that the annual income of the company would have reach about €250 billions by the end of 2006⁴.

Each week, 1 million people were downloading Skype and the software has been downloaded about 400 millions times in the world, which was considerably more than KaZaA⁵. Another fascinating aspect was that this success occurred without any kind of formal advertising; it has been built on viral marketing. Skype offered an alternative in communications that no one else was matching. Users were no longer tied up to one operator. The power of the Skype's network increased with the number of its users who were making free unlimited calls over the Internet. As its customer base increased, the interest of new potential users also increased. Users talked about Skype with friends, colleagues and relatives, who also did the same, which resulted in a rapid growth of Skype's reputation. As its success increased, the media also began to report about Skype. This contributed to increase the customer base even more in return. This accomplishment has been built around three main elements that have made this product very appealing: rapid proliferation of broadband, low cost of service and fairly good quality of voice.

On the other hand, one negative aspect of Skype was that for some, it carried the bad reputation of KaZaA, perceived as an illegal software that was full of spywares. Nevertheless, the success of KaZaA was an advantage for Skype when looking for investors. On September 12 2005, Skype was bought by eBay for 2.6 billion US dollars for strategic purposes⁶. eBay.com was the well-known world's online marketplace portal in which buyers and sellers came together and trade almost everything. eBay was built on the same concept of cyber-community; thus eBay considered Skype as an opportunity to offer innovative services, such as pay-per-call, which allowed eBay users to communicate vocally while negotiating by clicking on a specific button. From Skype's perspective, the deal allowed it to find some synergies and to consolidate its position as a serious company.

3. Skype's Business Model and Product Features

3.1 The Business Model

The first service offered by Skype was based on PC-to-PC calls. This service was entirely free and the goal was to build a user base as large as possible in order to later benefit from network effects. Skype's objective was to attract users and then exploit opportunities offered by this situation to develop the more lucrative features.

⁴ http://www.pcinpact.com/actu/news/Un_logiciel_pour_bloquer_les_appels_de_Skype_en_Ch.htm

⁵ http://challengestempsreel.nouvelobs.com/business/chall_2643_STRATEGIE.html

⁶ <http://www.zdnet.fr/actualites/internet/0,39020774,39261753,00.htm>

Skype decided from the beginning that PC-to-PC calls would be free but that calls to and from a PC and a regular phone would not. For this purpose, it developed SkypeIn and SkypeOut⁷. Exhibit 4 illustrates these basic Skype features. SkypeIn allowed to receive calls from traditional phones to a PC whereas SkypeOut allowed Phones-to-PC calls. These two products were the two products on which Skype aimed to generate revenues. In order to encourage users to use Skype, rates were much lower than the telecom operators' fares. To use SkypeOut, customers had to acquire conversation credits under a prepaid form or vouchers. On the other hand, to be able to run SkypeIn, one had to pay a fix subscription of a duration of either 3 or 12 months. It is to be noted that Skype also exploited a third source for revenues. As such, Skype sold accessories that could be used with the software, such as cyber phones and PC headsets. However, this business provided only a minor contribution to Skype's revenues, which mainly came from SkypeOut and SkypeIn.

The main strength of Skype's business model was that its costs were very low. There were no distribution costs, as the product could be downloaded via the web. There were no marketing expenses, as its success was based on viral marketing. Furthermore, there was no need to build an infrastructure as it used an already established communication network, the internet. The main costs came from the R&D department. Nonetheless, the Engineers were working in Estonia, a low-salary standards country, allowing the company to also generate a lot of R&D savings. Due to its low cost internal structure, Skype was able to be extremely competitive by setting very low prices for its services. This was one of the keys to its success.

3.2 Skype Features

3.2.1 Skype Out

The first version of SkypeOut was released on June 15, 2004. This feature allowed a Skype user to call his contacts who are using traditional landlines or mobile phones. That meant calling anyone, anywhere in the world at local rates. The main fact about Skype's rates was that it did not matter where a user was calling from; the only important issue was where he was calling to. For example, living in London and calling a friend next door cost the same as living in Beijing and calling a friend in London. Users could go online and buy communication credits for \$10.

Rates were divided into two parts. For some popular destinations, a unified rate of only **\$0.02** per minute, called the SkypeOut Global Rate was charged. Unless it was specifically mentioned, the SkypeOut Global Rate was only valid for calling regular landline telephones; calls to mobile phones were more expensive. To other destinations, different rates applied. The coverage is great as almost any destination in the entire world could be called with SkypeOut.

3.2.2 Skype In

SkypeIn allowed Skype users to receive calls dialed by regular phone subscribers to regular phone numbers on their computers. SkypeIn also allowed users to subscribe to numbers in the United Kingdom, U.S.A., France, Hong Kong, Denmark, Finland, Norway and/or Sweden. The cost was **\$40** for a 12 month subscription or **\$13** for a 3 month subscription. With SkypeIn beta, released on March 10 2005, users could get their own regular phone number. Therefore, if regular operator callers who were not using Skype wanted to call a Skype user

⁷ <http://www.skype.com>

by dialing a regular number, they could still receive the call in Skype. For example, if a user had a Chicago-based SkypeIn number but he was living somewhere in the suburbs of Paris, his Chicago friends could just dial his SkypeIn number and his Skype on the other side of the world have started to ring. The user's friends were only paying whatever their phone company was charging them for making a phone call to Chicago. Of course, customers from everywhere in the world could call a SkypeIn number but if a user's SkypeIn number was in the United States and that they called from another country, they paid the international rate. And if a customer had contacts in several countries, he could get up to 10 SkypeIn numbers. SkypeIn made calling their friend who was using Skype much easier and less expensive for the users' contacts who were not necessarily connected to the Internet or who were not computer literate.

3.2.3 VoiceMail

VoiceMail was also released on March 10 2005. This service allowed callers to leave voice messages on another call for Skype users who were not online or unavailable. This service could be purchased separately or could be bundled in with SkypeIn. For a small fee, **\$6** for 3 months or **\$15** for a year, a user could pick up messages when he was away or busy on another call and he could keep messages for as long as he wished. In fact, he did not have to be online at all for someone to leave him a message. Callers would be able to contact him whenever they wanted.

3.2.4 SkypeMessenger

Skype offered to its users the possibility of communicating with their peers through instantaneous written messages, similarly to MSN messenger. Since January 2006, with the release of Skype 2.0, it was also possible to make videoconferences by using a webcam.

4. Industry Analysis and Swisscom's Position

4.1 Industry Structure

In the VoIP industry, two major strategic pairs should be distinguished: on one hand, the software-based industry and, on the other hand, the hardware-based industry.

4.1.1 Software-Based Players

The software-based players have only developed software that exploited the user's own internet connection. They did not own any infrastructure and were inspired on Skype's model. In order to be competitive, they needed access to interconnection of incumbent telephone companies' network infrastructure.

This means that they were strongly dependent on them. Moreover, for using their services, the users had to subscribe to a broadband internet connection, provided by the same incumbent company or by a cable operator. Interoperability with already established telephonic network was a crucial issue for being attractive to the customers' eyes. Once they solved this problem, their adoption rate increased drastically. In this segment, Skype and its two major competitors, Vonage and Stanaphone, are the dominants actors.

4.1.2 Hardware-Based Players

The hardware-based players were mainly represented by telecom and cable providers. They used their own landline infrastructure through which they offered internet and VoIP services.

Their initial aim was not to provide VoIP services but, as they provided internet connections, they identified an opportunity for developing VoIP and reacted to Skype. Since they owned their own physical network, they were more independent compared to software-based players. From a technological point of view, they were purely VoIP based, and therefore less P2P oriented.

The typical actors in this segment were the telecom providers. They benefited from a long experience in the telephony business, especially the historical ones. They had a strong reputation in this domain and could profit from the trust that they had earned from their customers. In general, they already had a wide established base of customers who were using other services that they were already offering. Thus, they were in a strong position to make them switch to VoIP services, since these customers would only encounter small switching costs. In addition, they tended to package all of their services together, including telephony, broadband internet, cable TV and VoIP. However, their services could only be offered in a geographically limited area. In this category, the Swiss example was Swisscom, which was the national historical telephony operator. In addition, other major players on the Swiss market were Cable TV operators. They were in an ideal position to offer convergent services and VoIP could not be ignored. In Switzerland, both Swisscom and Cablecom (Swiss cable operator) were introducing VoIP services.

4.2 Skype's Direct Competition

4.2.1 Vonage

Vonage was a company which, similarly to Skype, provided telephone services through an existing broadband internet connection. It was launched in 2001 by Jeff Citron, who sold his previous company Datek, which was active in the online trading brokerage business, before taking on the challenge of VoIP.

It represented a cost-effective and high quality alternative to traditional telephony and it was a serious competitor for Skype. However, its services were only available nationwide in three countries: the United States, Canada and the United Kingdom. Nevertheless, due to “virtual numbers”, users were able to have a local number in countries worldwide⁸. These were secondary numbers, which ringed to the user's primary Vonage line.

Vonage's revenue model was a bit different from Skype's. For example, in the U.S., four basic plans were available. Two plans were for the business segment and the two others were designed for the private individual segment. Each plan consisted of a monthly subscription fee in exchange of which Vonage offered either limited or unlimited conversation time in the U.S. and in Canada. The time limitation depended on the price paid by the customer. The least expensive plan cost **\$14.99** a month and it corresponded to 500 minutes, while the most expensive, which was unlimited and intended for business users, cost **\$49.99**⁹. The calls to other Vonage users were free and the users could keep their existing phone number, which was one of Vonage's biggest advantages.

⁸ http://www.vonage.com/no_flash/features.php?feature=virtual_phone_number

⁹ http://www.vonage.com/no_flash/products.php?lid=nav_products

4.2.2 Stanaphone

Stanaphone was Skype's other major important competitor. It inspired itself strongly on Skype with its very similar features, such as Stana-In and Stana-Out, which were respectively equivalent to Skype-In and Skype-Out. From the user's point of view, Stanaphone really seemed equivalent. Calls between Stanaphone users were free, and rates to other networks were very competitive¹⁰. The program could be downloaded for free on the internet and was available for different platforms.

When it was invented, Stanaphone was especially designed for Pocket PC users and had therefore remained focused on this platform for a certain time. Then, it became available for desktop PCs' Windows versions, but it was more specialized than Skype in the Pocket PC/PDA applications. However, it did not interoperate with Skype: Stanaphone users could not call Skype users, which was one of Stanaphone biggest weaknesses.

4.3 Historical Telecom Providers: Swisscom

Swisscom was created on the 1st of October, 1997. Previously part of the federal firm "Post, Telegraph and Telephone" (PTT), the post and the telecom part were divided yielding two distinct entities: Swisscom Group and Swiss Post. On January 1, 1998, following the liberalization of the telecommunications market in Switzerland and the European Union, Swisscom became a public limited company and on October 5, 1998, the Federal Council approved Swisscom's initial public offering.

In 2006, Swisscom encompassed 5 major entities¹¹:

- Swisscom Fixnet AG for fixed calls
- Swisscom Mobile AG for mobile calls
- Swisscom Solution AG for customer services, consulting and VoIP
- Swisscom IT services AG for IT solutions and outsourcing to companies
- Related businesses which included Accarda specialized in billing services, including the TV and Radio fees in Switzerland, and Swisscom Broadcast AG which was responsible for the nationwide transmission of radio and television programs.
- Swisscom Eurospot AG sets up and operated wireless local area networks (WLANs) at busy public locations across Europe

Since it was still partially owned by the Swiss confederation, Swisscom had a claim on the last mile linking. The connections were paid on a monthly subscription fee basis plus the cost per minute for each call. If the fixed telephony operator was not Swisscom, Swisscom still perceived the last mile fee, but the costs of the calls were charged by the other operator. Cablecom's infrastructure represented the only exception.

In Switzerland, the fixed telephony market was shared by 22 companies. The mobile market was mainly shared by three companies: Swisscom Mobiles AG, TDC Switzerland AG (known as Sunrise) and Orange SA (part of France Telecom). Cablecom GmbH was yet another player. Cablecom was initially a provider of analog TV. Nonetheless, Cablecom offered then not only TV and radio, but also internet access through broadband and fixed telephony, which did not use the last mile owned by Swisscom as well as prepaid mobile telephony.

¹⁰ <https://www.stanaphone.com/>

¹¹ <http://www.swisscom.com>

5. Reshaping the Industry: Strategies and Partnerships

5.1 Reaction and Partnerships of Incumbents

The incumbents of the telecom industry started to react to Skype's success by implementing various strategies to cope with Skype. On one hand, a radical measure was taken by the Chinese government to contain Skype's penetration in the Chinese market. In order to protect its revenues, China Telecom blocked the access to skype.com and added its users' names on a black list¹².

On the other hand, the German service provider E-Plus decided to open up to Skype and make a partnership with it, seeing them as a strategic partner. "E-Plus is the first mobile operator to partner with Skype, taking the first step to deliver Skype's vision of making Skype available over any network, including 3G. Now anyone with an E-Plus data flat-rate subscription will be able to enjoy the benefits of Skype's personal communications service when they are on the move in Germany", said Niklas Zennström, Skype CEO and Co-founder¹³. Thus, by becoming the first German provider to furnish the VoIP technology, E-Plus tried to develop its UMTS network and to translate fixed calls to mobile calls. This strategic move was directed against Deutsche Telekom, which had a fixed line service unlike E-Plus, which was only present in the mobile business.

5.2 Swisscom's Dilemmas and Strategic Meeting

Carsten Schlöter had scheduled a special meeting with a single point on the agenda: How to react to Skype's success and threat? He and other senior officers of Swisscom had to establish the appropriate strategy and implementation to counter and limit Skype's growth at the expense of the national operator. He had to determine whether Skype would have constituted a disruptive technology and to establish proper dimensions of merit in order to assess the situation. How should Swisscom react? Should they band Skype? On the other hand, should they try to make a partnership with them? What would be the consequences of such strategies on their current business? What would have been Skype's next move? How could Skype's innovation be perceived: disruptive, sustaining, radical or incremental? How would evolution in Skype's technology affect the mainstream market of Swisscom? And what would be those evolutions? Schlöter knew that actions needed to be taken immediately but which one was in Swisscom's best interests for the long term?

¹² http://www.pcinpact.com/actu/news/Un_logiciel_pour_bloquer_les_appels_de_Skype_en_Ch.htm

¹³ http://www.skype.com/company/news/2005/skype_eplus.html

Exhibit 1: Extra Protocols with VoIP

In order to convert voice's analogue signals to digital samples, to meet the time sensitive aspects of voice communications and to ensure calls establishments and tear-down, the following functions and protocols are needed

- CODEC (Coder-Decoder): This component was responsible for converting back and forth between analogue waveforms and digital information that is required prior to sending it over IP networks. Its functionalities encompassed the AD (Analogue to Digital) and DA (Digital to Analogue) conversion functions as well as the compression and the encryption functions.
- RTP (Real Time Protocol) and RSVP (Reservation Protocol): IP protocol was not primarily devised for voice transmission. It could not neither rely the safe transmission of voice packets neither their timely delivery between the end users. Two protocols were added on the top of this latter: RTP and RSVP allowing for VoIP communications a quality of service approaching the one experienced over the traditional telephony network.
- Signaling Protocols: These protocols were designed to replicate the traditional telephony SS7 (Semaphore Signaling 7) functions into IP networks. They were responsible for both the setup and the tear-down of the calls. The most popular protocol of this family was the ITU-T H323, which had the ability to handle both point-to-point and multipoint communications. But the overwhelming domination of H.323 has been questioned since several major players in the industry among which Cisco and Microsoft have adopted a new protocol, SIP, which appeared to be less complex than H.323.

Source: <http://www.voip-voice-over-ip.com/knowledge>

Exhibit 2: Founders Biographies

Niklas Zennström, CEO & Co-founder

Niklas Zennström, a Swedish citizen of 38 has a dual degree in business and MSc Engineering Physics, computer science from Uppsala University in Sweden. He spent his final year at University of Michigan, Ann Arbor.

He started his professional career at Tele2, when there were only 23 employees. Now the company is the leading consumer oriented pan-European telecom operator present in 23 countries. Niklas served in various business development roles including launching and being responsible for European Internet Service Provider business get2net and as CEO of the everyday.com portal.

Niklas later co-founded and served as CEO of KaZaA, the world's most downloaded Internet software to date with more than 370 millions downloads.

After that Niklas founded and served as CEO at Joltid, a software company developing and marketing peer-to-peer (p2p) solutions and p2p traffic optimization technologies to companies.

Niklas' newest venture is Skype, the Global Internet Telephony company founded in 2003 based on peer-to-peer principles. When Niklas is not creating new cutting edge disruptive businesses, he enjoys sailing, skiing, outdoor activities and traveling. Niklas is happily married.

Janus Friis, Co-founder

Janus Friis, a Danish citizen, 28 years old, is co-founder of Skype, the Global Internet Telephony Company™ based on Peer-to-Peer (P2P) technology, which he launched with Niklas Zennström in 2003. Before discovering his entrepreneurial streak with Niklas, Janus began his career at the help desk of CyberCity, one of Denmark's first ISPs, prior to working at Tele2, the leading consumer oriented pan-European telecom operator, where he met Niklas.

Janus and Niklas had a meeting of minds and worked together at Tele2 to launch get2net, another Danish ISP, and the portal, everyday.com.

After this, the partnership decided to leave Tele2 and co-founded KaZaA, the company responsible for the world's most downloaded Internet software to date with more than 370 million downloads.

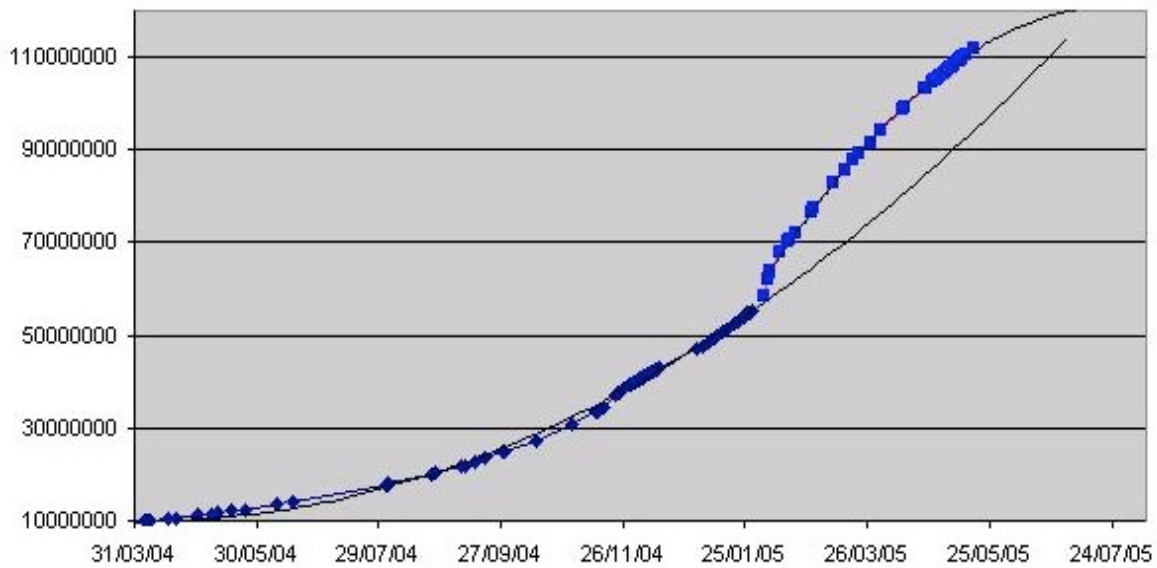
From the success of KaZaA's P2P technology the duo co-founded Joltid, a software company developing and marketing P2P solutions and P2P traffic optimization technologies to companies.

Janus is also co-founder of Altnet, the world's first secure P2P wholesale network promoting commercial content to millions of consumers and integrating the full value chain of promotion, distribution, and payment of digital content, including being the world's largest issuer of DRM licenses. Additionally, he is responsible for setting up Bullguard.com, a security software company.

When Janus is not devising new concepts for state-of-the-art disruptive technology he enjoys skydiving, pool, martial arts and winter sea-bathing.

Source: <http://www.skype.com/company/founders.html>

Exhibit 3: Number of Downloads

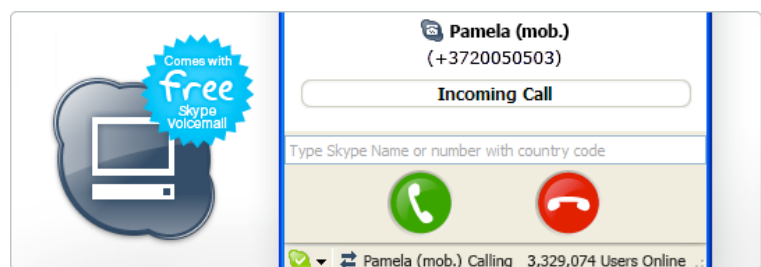


Source: <http://www.skypejournal.com/blog/archives/images/20050512downloads.jpg>

Exhibit 4: Skype's Features

SkypeIn

Calls made on computers dialed by regular phone subscribers to Skype phone numbers.



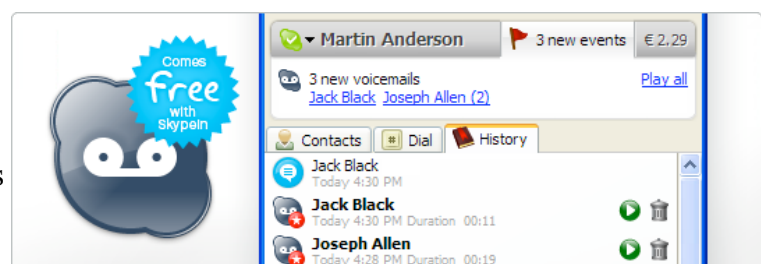
SkypeOut

SkypeOut allowed a Skype user to call, from his computer, his contacts who use traditional landlines or mobile phones.



VoiceMail

This service allowed callers to leave voice-mail messages for Skype users who were not online.



Source: <http://www.skype.com/products/>

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