

## Google's Expanding Telecommunication Service

In the pre-Internet days, if a US company wanted telephone service, one's choice was easy—AT&T, Ma Bell, and to some either the home of the Young Pioneers or the DeathStar. If you are interested, the “official” history is available on the “new” AT&T's Web site at <http://www.corp.att.com/history/history1.html>.

In 1982, Federal Judge Harold shattered the AT&T monopoly. AT&T had evolved into a government regulated monopoly, and spoilsports like William McGowen, MCI Communications Inc. wanted a piece of the expanding telco money pie. Prior to the court ordered break up, AT&T provided about 80 percent of U.S. telephone service.

AT&T was a diversified monopoly. In addition to its residential services, AT&T operated a think tank and a manufacturing operation. As I recall, prior to the break up, plugging a non-Western Electric device into the AT&T system required a degree in electrical engineering or an AT&T-trained specialist plus an electrical engineer. Plug and play was not a concept widely supported by the “old” AT&T.

AT&T was a monopoly for most telephone users. Third-party hardware was not an option for either consumers or some organizations. There were pricing allegations about AT&T's charges. Even the 1968 Federal Communications Commission ruling to allow customers to connect third-party equipment to telephone lines did not cause AT&T to move with much alacrity.

Then the Judge Green decision enlivened the US telecommunications sector. In late 1982, I was working on a project at Bell Labs' Piscataway IBM facility. People in nice clothes entered the IBM MVS TSO computer area and used electrician's tape to split the facility into two parts. I was standing on the side of the work area that was owned by the seven Baby Bells. The people on the other side of the tape belonged to the hobbled AT&T. My next paycheck was issued by Bellcore or Bell Communications Research, an entity owned by the seven Regional Bell Operating Companies or RBOCs.

At the time, I was not sure if a break up of the Bell monopoly was a good idea. I had lived in other countries, and I had experienced lousy telephone service on a couple of continents. To establish a dial up connection in the United Kingdom, one had to pre-arrange with British Telecom to get special access codes. Then a technician had to configure the telephone line to allow me to hook up my 1200 baud Texas Instrument's Silent 700. Voice calls were often hit and miss. AT&T may have been a monopoly, but the system worked. The Western Electric equipment was durable if not the most innovative gear available in the 1980s. Most people did not know that complex software made long distance dialing and local exchange handoffs speedy and reliable. The task of keeping the systems synchronized kept quite a few AT&T and Bellcore engineers busy. A common code base for switching, routing, and other pieces of the voice data puzzle reduces costs and points of failure.

Ultimately I felt that the technical and financial benefits of the “old” AT&T made the monopoly in my opinion a good idea. I used the phrase “natural monopoly” in my articles and speeches to describe how information systems want to hook up, merge, and coalesce into a single, integrated entity. Most people thought that I was wrong.

In the 1980s, telephone service emerged as a lubricant of personal and business activity. The break up of the “old” AT&T hastened the modern digital era. In my view, other countries have moved further and faster with certain telecommunications services. In Aarhus, Denmark, high speed connections make wireless access pervasive and plentiful. In Harrod's Creek, Kentucky, where I have my office, the only pervasive wireless connection is in my office. My broadband pokes along at 1.5

megabits per second. The connection I used in Aarhus in November 2008 was a free WiFi link that served up 5.0 megabits per second from the hotel lobby.

Economies of scale apply to certain types of infrastructure-centric services. In Harrod's Creek, Kentucky, I don't have a choice about water, power, or cable TV service. I get water from the Louisville Water Co; power from Louisville Gas & Electric; and a television feed to the hollow from Insight Communications.

Competition doesn't exist because power, water, and cable TV seem to fall into the category of "natural monopoly." In today's economic climate, I don't think Harrod's Creek will sprout an alternative power generation, water, or cable television vendor. Once the infrastructure is in place and works reasonably well, the would be competitor faces a formidable barrier. A savvy entrepreneur will look elsewhere to generate revenue.

Enter Google. Several established players, including AT&T, Sprint, and Verizon. Mobile vendors in a dog fight for subscribers. Internet telephony like Skype and Vonage. Assorted start ups.

The most interesting development for me in the last month or two is Google's Voice service. In March 2009, Google made available a service that offers users a single telephone number and a bevy of features. Google's interest in telecommunications, mobile devices, and on-the-go search reaches back to the company's earliest days. Few know that Sergey Brin is the inventor of one of Google's patents filed in February 2001, "Voice Interface for a Search Engine" US7027987.

Google's telephony capabilities are a combination of Google inventions and acquisitions like Grand Central, purchased in mid 2007. Grand Central offered a software system that made it easy to use one number as a single point of contact. Miss a call and the Grand Central software would function like an answering machine. Grand Central also behaved like the secretaries from the 1950s. The system would transcribe the voice mail and send an email notification that a voice mail had been left.

A year went by. Grand Central fell off my radar. In 2009, I received a notice that my Grand Central account was active. In March 2009, Grand Central emerged, rebranded as Google Voice. Google was officially a telephony company.

Google Voice goes beyond Skype, the free and low cost calling service now owned by the struggling eBay. Google Voice was a "smart" application, delivering a range of useful services running on the Google infrastructure which consists of several dozen data centers and more than 900,000 servers.

The original Grand Central single telephone number service is the core of the suite. When a call comes to a user, the user can take the call, route it to voice mail, record the call, and perform other functions such as getting a transcript of the caller's voice mail sent via email. The system offers SMS features and low cost international telephone calls. A call to London, England, costs \$0.02 per minute. The fee is low enough to go down smoothly and in line with Google's micropayment approach which makes economic gold when offered to Google's large user base.

Unlike the "old" analogue AT&T, Google Voice is all digital, all the time. As a result, the service can be deployed within other Google applications and made available via Google's application programming interfaces for Apps, the Gphone, and possibly the OneBox API used by licensees of the Google Search Appliance. Making a Google application telephone aware amounts to cutting and pasting code snippets. I can envision a shared spreadsheet within Google Apps with an icon that activates a conference call among the parties with whom the spreadsheet has been shared. One click, conference call.

As good as Google Voice is, there are some drawbacks to the system. If you sign up for Google Voice, you will get a new telephone number. Your contacts will have to be notified of this number. Google's free and low cost services will generate a magnetic attraction for some users. At this time, Google is rolling out the service in the US. Other countries for now are blocked out of the services.

Unlike the Dodge ball flop, another \$50 million plus acquisition, Grand Central has grabbed the attention of Googlers. Google Voice is in the nether world of a beta test. Most people won't be able to access, learn, and use the system. Google emailed Grand Central invitations, but I lost mine. The email arrived, and I had assumed that Grand Central was one of the casualties on Google's information superhighway. But the service is available to some testers, the roll out will grind forward. By the time you read this, Google Voice may be widely available.

The service is free and offers low cost international calls. But Google can at any time begin charging for these services either by the transaction or some other metric such as the number of mapped phones, emails, or calls. A cost surprise may take place. A user like me could quit Google Voice service but that could be a hassle, mean phone downtime, and probably spending money to set up a comparable system.

An interesting question is, "What's the impact of Google Voice?" As its competitors know, Google hit a public relations and marketing communications home run. Journalists, pundits, and analysts world wide are talking about the service. One analyst told me that "with Google Voice, Google has demonstrated that it can roll out fresh services."

I agree.

A second impact is that the pressure waves released by Google Voice will pulse for months, maybe a year or more. Google Voice may force established telcos and competitors like Microsoft and Yahoo to respond. Even Google's connections at Apple may fray as a result of Google Voice.

If I were starting a new venture, the appeal of Google Voice is difficult to ignore. I could, for example, get one mobile phone, no landlines. Each employee or contractor would be asked to use the system to keep tabs on company related business. Cost is a powerful lure, but the convenience of making the shift is magnetic.

Google has been widening its lead in Web search. Some research firms suggest that Google's share of the Web search market is over 80 percent. Google has to look to other market sectors for revenue. I think Google Voice is one interesting initiative. Google's array of communication services makes it difficult to ignore the company's designs on telecommunications.

But Google may have time to become the 21<sup>st</sup> century's reincarnation of the "old" AT&T. Regulators are not organized to deal with a company like the upstart Google. Telcos know what Google is doing, but unable to respond to Google's voice service. Google is not AT&T yet. The firm has not been able to exploit the surge in usage in social search. Even though Google lacks a Facebook.com and Twitter.com product, Google is beginning to look more and more like the original Bell telephone organization. Voice, data, and information are now available from one source that seems to be coalescing into a single-source, data utility.

Stephen Arnold, March 19, 2009