Official Newsletter of the Palm Beach Packet Group, Inc

WHITE NOISE

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Facsimile & SSTV History

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Smoke and drum signals are believed to have been the earliest form of getting messages from one place to another. We owe development of FAX to a Scottish inventor, Alexander Bain, who was granted a patent for his creation back in 1843. And even now, after the invention of computers and electronics, Bain's original concept is still the basis for modern facsimile machines.

A FAX machine scans an image, whether it be text or a photo, by reading a very small area of the image at a time. The FAX machine decides whether the area it is reading is light or dark and assigns the area a number such as "0" for white and "1" for dark. Then the FAX transmits the number to a remote facsimile receiver (usually via telephone lines). The receiver makes a mark on paper corresponding to the area on the original image.

This process continues as the transmitting machine scans a series of small areas horizontally across the image, and transmits that information to the remote receiver. The transmitting FAX then scans the next lower line and so on until the entire image has been scanned, digitized, and transmitted.

Facsimile telegraph is one of the oldest telegraph techniques.

1843, 33 years before telephone and morse (CW) was used, Alexander Bain introduced his "Bain's Telegraph".
1848 Frederick Bakewell's shellac conducting roller
1860 the first facsimile between Paris and Lion with Giovanni Caselli's facsimile "Pantelegraphe"
1903 Arthur Korn demonstrates the first photoelectric telephotography
1913 Edouard Belin's Belinograph
1922 the first transatlantic facsimile services was provided by RCA.
1925 AT&T wirephoto
1926 RCA radiophoto
1926 Rudolf Hell introduced the Hellschreiber.
1927 first Siemens-Karolus-Telefunken facsimile between Berlin and other European Citys
1947 Alexander Muirhead's FAX
1958 Copthorn MacDonald (WOORX) introduced SSTV (Slow-Scan Television)
1960 first SSTV test transmissions in the U.S.A.
1971 Ham operators starting with facsimile transmissions in Germany
1972 First SSTV transmissions in Germany

The first users of facsimile were newspapers to transmit and receive photos from around the world. The next user of facsimile were the weather services around the world.

While Queen Victoria never actually said, "I'll drop you a FAX," she might well have done so if the history of telecommunications had taken a slightly different turn. The principle for facsimile transmission over wires was first patented as early as 1843, seven years after the invention of the electric telegraph, by Scottish psychologist Alexander Bain.

Bain himself never performed a FAX transmission, but it is clear from his patent application for "improvements in producing and regulating electric currents and improvements in timepieces and in electric printing and signal telegraphs," that his invention made facsimile transmission entirely feasible.

Bain's invention used two electric pendulums, one at each end of the wire. Each of the pendulums was made to oscillate synchronously over a rotating roll. The sender wrote the text of his message using an electrically conductive material, then wrapped the message round the roll. As the pendulum swung over the paper, the transmitting needle picked up impulses where there was text, but no impulse where there was a gap in the text. At the other end of the line, the receiving needle made marks on photosensitive paper corresponding to the signals from the sending needle, thus reproducing the text being transmitted.

Proof that Bain's principle was sound was eventually provided by Frederick Blakewell, an English physicist, who demonstrated a working facsimile machine at the World Exhibition of 1851, the largest exhibition of new technology ever held. His device was based on the same principle as Bain's design, also using rotating cylinders and stylii for recording and writing. So Queen Victoria could indeed have sent a FAX, had she been so inclined, when she visited the exhibition in the huge Crystal Palace!

Fax machine commercialized

However, it is a far cry from merely demonstrating a device at an exhibition to making it into a commercial success. The honor of designing the first FAX service in actual use goes to Giovanni Caselli, an Italian abbot, born in Siena in 1815, who turned his hand to science and was, by 1849, editing a scientific magazine. In 1856 he claimed

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that he had developed a device, which he called a "pantelegraph," that could send facsimiles of images and text.

Caselli received enthusiastic support from the French emperor, Napoleon III, who personally visited Caselli's workshop in 1860. He ensured that Caselli had access to the telegraph lines he needed, and a commercial FAX service was inaugurated in Paris in 1865. It transmitted pictures and text between major French cities for some five years. A Pantelegraph Society was also founded in order to promote the new invention, which attracted extensive and enthusiastic press coverage at the time. When Caselli succeeded in opening a regularly working FAX connection between Paris and Lyons, he was awarded the Cross of the Legion of Honour by Napoleon III. There still exist fully legible copies of letters sent by facsimile during this period, and a few contemporary facsimile machines are displayed in French museums.

After Caselli's FAX service achieved worldwide renown in the 1860s, he was invited by King Victor Emmanuel of Italy to demonstrate the FAX machine at a world exhibition in Turin. He also made successful experimental FAX transmissions between London and Manchester, and a company was founded to start regular services. However, it was swept away by the bank crisis of 1864.

Success shortlived

Even the Emperor of China heard about the pantelegraph and sent officials to Paris to study the technology. The Chinese realized the advantages of the FAX principle for text written in Chinese, which, with its thousands of ideograms, created insuperable problems for the conventional telegraph. However, the negotiations between Peking and Caselli petered out without yielding fruit.

Sadly enough, Caselli's invention was introduced at a time when the World had started to invest heavily in conventional telegraph services. The French telegraph authorities, for example, apparently disfavoured Caselli's FAX principle and instead promoted development of the already dominant Morse telegraph system.

In the minds of the public, the pantelegraph was associated exclusively with the transmission of images. The advantages of also using it to send text were only dimly perceived in the 1860s.

The Pantelegraph company in Paris did little to improve the situation, making only feeble efforts to promote its services. Convinced of the superiority of its technology, it was content to wait for investors to appear. None did, however, and the Pantelegraph company was eventually squeezed out of the market - an early example of how a new and superior technology failed to gain a foothold because an earlier technology was already established. Caselli's invention subsequently fell into disuse and he died a disappointed man in Florence in 1891.

Modest progress

The FAX made progress nevertheless. Dr Arthur Korn, a German scientist, invented the principle of photoelectric reading in 1902. By 1910 newspapers were regularly sending and receiving pictures between major cities in Europe. In 1922, Dr Korn managed to transmit images between Europe and the U.S. by radio. In the U.S. of the Roaring Twenties, the FAX was expected to become a common household appliance and millions of dollars were spent on developing it. However, the anticipated breakthrough did not occur, and it was not until the 1960s that the FAX machine spread from the offices of the leading newspapers to become a familiar item of equipment in other business sectors.

Electronics companies, meanwhile, were preoccupied with other, seemingly more glamorous, inventions, such as television, and it was some time before FAX machines became mutually compatible and reasonably priced. In 1970, there were no more than 50,000 facsimile machines in the entire USA. But by 1948, the AT&T FAX system could be incorporated in a desktop FAX and transmit a 15 x 20 cm photograph in seven minutes.

Breakthrough at last

The Japanese state telecom was the pioneer in opening its lines to public FAX machines - not surprisingly, considering the advantages that the FAX machine offers for transmitting text in a language with as many letters as Japanese, a nightmare to write on a teleprinter. The Japanese were drawing the practical conclusions of what the Chinese emperor had realized almost a century earlier. This was the start of the brief but intense heyday of the FAX, which has radically changed our ways of communicating, only to be progressively replaced by direct communication between computers.

It is intriguing to speculate about the enormous consequences for business and news services, not to mention homes, that an early breakthrough for Caselli's pantelegraph might have had. With telephone lines already spanning the world, the technology for the FAX revolution was in place one hundred years ago. So it is not too far-fetched, after all, to imagine Queen Victoria FAXing off her order for Scottish salmon!

Sources: Telecommunications Museum, Stockholm; Musie des arts et mitiers, Paris. Ericson Connexion

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ANALYZE YOUR TELEPHONE LINE

FROM THE HUDSON LOOP

-- submitted by George Bowen, W2XBS

(kxkvi@delphi.com)

Are you wondering if your telephone line will accommodate the new 56K modems? Well, US Robotics (actually now called 3COM)has a BBS site where they will analyze your telephone line for56K compatibility and will give you the results of the analysis almost immediately.

You must use a modem speed of at least v.34 to call toll free 888.877.9248. When asked for first-name/last-name log-in information, respond as follows:

FIRST NAME: LINE
LAST NAME : TEST

The analysis will begin immediately and you may get the response: "This line will support X-2" (which is US Robotics' 56K protocol and which means the line will also support the 56K/Flex protocol) or some similar response, along with additional technical data and graphs regarding your telephone line analysis.

Give it a try -- this free service works very well!

APRS UPDATE

Bill Manley KB4XE

Last month *White Noise* carried an article "To QSY Or Not To QSY" addressing the proposed moving the APRS VHF operating frequency as requested by AMSAT. The proposal was championed by Steve Dimse K4HG and endorsed by TAPR.

Since then, in an action of the board of directors, the ARRL has also endorsed the move. The following is quoted from *The ARRL Letter Online Volume 17, Number 4 (January 23, 1998):* The ARRL has "endorsed the APRS/Manned Space "APRS QSY Activity compromise as a way to share frequencies in the two-meter band to minimize interference between APRS activities and

communication between Earth and manned spacecraft. The League also pledged a donation of up to $500 to support the APRS QSY initiatives."

In addition the proposal is being openly discussed on the internet with minor dissent. In fact, many sites are ready to QSY now, and some evidently already have.

PALM BEACH PACKET GROUP MEETING JANUARY 7, 1998

OPENING AND REPORTS

PRESIDENT DOUG (WB4KGY) OPENED the meeting @ 21:36 hrs. stating the no smoking policy in county buildings. Introductions of members/guests were made. (More about that later).

Treasure's report was given by MARVIN (KD2CK). The reports was not complete, due to not having complete bank records available. The complete report will appear in future issue of "WHITE NOISE".

Technical Committee report. DOUG (WB4KGY)

1. Switch continues to work well since being converted to FPAC last month.

2. Palm Beach Packet Group has put away another year. A moderately busy year.

A. Early in the year we lost our Treasurer Joe (N4JOA) due to pressing issues in personal business. Marvin (KD2CK) stepped up to the plate and filled in the position.

B. In early August Terry (W5JFM) resigned as editor of WHITE NOISE. More work responsibilities and living in Cincinnati made continuing the position difficult.

C. Our equipment survived the year without lightning damage.

D. Switch equipment was relocated to a new room. Thanks again for all who helped.

E. The club had the best HAMFEST ever!!!!!

F. Convert from ROSE code to FPAC in November.

OLD BUSINESS

WHITE NOISE was not mailed till 14th of January due to the holidays.

Three packet books are available for check out from the PBPG library. See KE4GUM.APRS book now available.

Thanks to all the outgoing and welcome to all the incoming Officers.

The members are asked to suggest any Alias for the new system.

Handout of:

ROSE switch / NODE'S lists.
ROSE / FPAC users guide.

NEW BUSINESS

Board of Directors Meeting this month if possible.

HAMFEST:

Arcadia Jan. 24th.
Miami Feb. 7/8.
Orlando Feb. 14/15

ADJOURN / BREAK /WORKSHOP

Due to inclement weather, our scheduled speaker was unable to make the meeting. Fortunately however we had a distinguished visitor from Port Angeles Washington. One of the most beautiful spot in the world. GIL (W7LG) was visiting in South Florida. He has been an active Amateur Radio Operator for many years. Rumor has it that he may have been one of the first radio operators to have received Marconi's 1st. transoceanic messages. He was a delightful person to visit with and had some great stories from early Radio Daze. He was gentleman in every respect, and gave credibility to the old adage that "The apple doesn't fall far from

the tree". Gil (W7LG) is our president's Doug (WB4KGY) DAD !! And we haven't even met his MOM yet !

MEETING WAS ADJOURNED @ 23:15 hrs.

Respectfully Submitted,
Wm. H. Rabun (KE4GUM)

TREASURE COAST PACKET GROUP MINUTES

Jan. 10, 1998

The meeting was opened by the Vice President Joe, K1VAO, at 9:32 A.M. The minutes of the previous meeting were read by the Secretary, Ladd,W2KGV, and approved on a motion by Andy,W8BIX, and a second by Bill, N4XEO. The Treasurer, Andy, W8BIX, reported of a Balance of $1399.69 which was accepted on a motion by Bill, N4XEO, and a second by Ladd,W2KGV.

OLD BUSINESS: The secretary read a draft of a letter that will be sent to users of the Stuart Switch, urging them to join, and support TCPG. Joe, K1VAO, assisted by Ladd, W2KGV, will make a list of users for this purpose. This proposed action met with the approval of those present.

TECHNICAL COMM: Bill, N4XEO, reported that since the installation of atone controlled remote switch at the site, he no longer needs to travel some 40 miles round trip to reboot the 2 meter port.

Bill also offered possible explanations for the noise bursts that cause interference to the reception of packets. He also announced the field trip to the switch site after this meeting.

He also explained the proposed FPAC program to be installed at the switch site, which will enhance the system. He expects a computer from the Tampa group after they have configured it, for about $ 50.

A 9600 baud site will be set up in Vero by Tom. N4LRV, and Bill, N4XEO.another 9600 TNC will go to Okeechobee site, giving us 3 sites to enhance forwarding. The meeting adjourned at 10 AM to visit the site.

Respectfully submitted, Ladd Sajor, W2KGV, Secretary

ARTICLES FOR *WHITE NOISE*

The Palm Beach Packet Group accepts articles from other clubs and individuals wishing to have them published in the *White Noise*. This is offered as a gratis service for those not otherwise having publication services at their disposal. Article content should be amateur radio related, including all operating modes, applications including computer, experiences, announcements and reports of meetings. Advertising is not accepted.

We reserve editorial privileges regarding content, spelling, punctuation and structure as well as the decision to publish or not. Articles can not be returned.

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