W5YI

America's Oldest Ham Radio Newsletter

REPORT

Up to the minute news from the world of amateur radio, personal computing and emerging electronics. While no guarantee is made, information is from sources we believe to be reliable.

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In This Issue...

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FCC, NTIA, and Dept. of State Begin WRC-2003 Preparation

The United States is gearing up for their participation in the next World Radiocommunication Conference which is scheduled to be held in Geneva during the summer of 2003. It could also be held in Venezuela instead since that South American country has offered to host the conference.

WRC-03 will deal with many wide-ranging telecommunications matters ...among them, "third-generation" (Internet ready) cellular telephones, fixed services, mobile and fixed-satellite issues, high frequency broadcasting, satellite broadcasting, and various regulatory matters.

At issue is how the radio spectrum, a global, public and scarce resource will be used. The radio spectrum is in very heavy demand by virtually every country in the world. Decisions regarding its allocation and use are made at World Radiocommunication Conferences (WRCs) held every few years in an environment of global consensus.

More than 2,500 delegates from over 150 countries are expected to attend. It is noteworthy that more than two thirds of nations attending are part of the developing "third world." The politics of the "have" vs. the "have-not" countries are difficult. The developed nations are an easy target in the ITU's "one country/one vote" environment. The goal among developed countries is usually to facilitate "business." With the developing world, the issue is more over access to resources and power.

At the last WRC-2000, the United States delegation had 158 members, 113 of whom were from industry, representing 59 different companies.

The stakes at WRC's are very high, worth billions of dollars to both government and industry. As a result, the White House, Congress, State Department, the National Telecommunications and Information Administration and FCC are all involved. NTIA manages government spectrum, while the FCC regulates private sector radio and wireline needs – including the Amateur Radio Services.

Birth of telecommunciations regulation

The basic document controlling U.S. telecommunications is the *Communications Act of 1934* which also created the Federal Communications Commission as an independent governmental agency. The FCC's work must be done within a framework of international telecommunications agreements. The world-wide organization overseeing global telecommunications is the *International Telecommunication Union (ITU.)*

Electric signaling arrived in 1835 when Samuel Morse employed a chemical battery and a lever to send currents through a wire circuit. The original Morse machine printed code on tape. The word "telegraph" was coined to mean a device that could print patterns at a distance. It was derived from the Greek "tele" (far) and "graphein" (to write.) The discovery of the "ground return" circuit meant that only one wire would be needed.

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About 20 years before the ITU was founded, Samuel Morse ushered in the communication age by sending his first public "What hath God wrought?" message on May 24, 1844 over an experimental telegraph line between Washington and Baltimore.

Within ten years, the wires of the electric telegraph had spread to England and Europe and nations everywhere began establishing telegraph networks within their boundaries.

Need for International regulation

Wireline telegraphy, however, did not cross national borders and technical and operating standards varied widely from country to country. Some countries even had their own telegraph code to safeguard the secrecy of military and government messages. It was not unusual for messages to be transcribed at national borders and physically handed over to telegraph operators for retransmission over a neighboring telegraph network. By 1864, there were several regional agreements in force that provided for the interconnection of their networks.

A year later, the ITU was founded as the *International Telegraph Union* by some 20 European states in order to expedite the delivery of telegraph messages between countries.

The ITU is basically an federation of governments from countries around the world with each cooperating to achieve a global telecommunication standard. By agreement, the ITU adopts broad international regulations concerning the use of the radiofrequency spectrum. These general regulations provide a certain amount of national flexibility and application. They have the force of international treaty once ratified at the national level.

Allocation of frequencies consists of dividing the spectrum into a number of segments or frequency bands for the various radio services. These allocations are influenced by the properties of radio waves at different frequencies. The Amateur Service is indeed fortunate to have allocations in most bands, each with different propagation characteristics.

The ITU band plan divides the world into three geographical regions. Region 1 encompasses Europe, the Middle East and Africa, Region 3: Asia and Oceania (the South Pacific) and North, Central and South America make up Region 2.

World Radio Conferences

The 1865 Paris convention that established the ITU resulted in an international convention and a set of telegraph regulations. Following the invention of the telephone in 1876, the ITU drew up international legislation governing telephony. The invention of the wireless telegraphy by Marconi – the first radiocommunication – lead to the first International Radiotelegraph Convention in 1906. It was at this conference that the first regulations governing wireless telegraphy came into being. They are now known simply as the *Radio Regulations.* The first ITU frequency allocations were made in 1927.

In 1932 the name *International Telecommunication Union* was adopted to reflect added responsibilities. The ITU became a United Nations specialized organization in 1947 and its headquarters were moved form Berne to Geneva, Switzerland.

These meetings, originally called *World Administrative Radio Conferences* or WARCs used to be held every ten or twenty years and covered all radio services. In recent years they have been held more often – about every two or three years -- and have limited agendas. WARCs are now known as *World Radio Conferences* or WRCs.

International Amateur Service regulations

The ITU defines the amateur service as *"A radiocommunication service for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest."*

The international guidelines that deal with the Amateur and Amateur-Satellite Services are contained in Article 32 of the 1994 and earlier editions of the *Radio Regulations,* which was renumbered to Article S25 at WRC-95.

WARC-92 agreed that the general scope of future conferences should be established four years in advance. Accordingly, before WRC-95 adjourned, Resolution 720, "A Preliminary Agenda for the 2000 World Radiocommunication Conference," was adopted. Item 2.2 was: "Consideration of Article S25 concerning the Amateur Service and the Amateur-satellite Service." Due to a full agenda, consideration of S25 was carried over the WRC-03.

Consideration of new Amateur Radio guidelines are now on the agenda for the 2003 World Radio Conference. Last summer, at WRC-2000 (Istanbul, Turkey) the ITU scheduled the 2003 session (WRC -03) for a period of four weeks from 9 June to 4 July 2003.

Actually, the ITU's entire international Amateur Radio regulations are not very long. They spell out the purpose of the Amateur Service, the type of communications allowed, the need to identify your station, brief technical requirements and who may be a ham operator.

At a 1947 meeting in Atlantic City, the ITU agreed that Morse proficiency should only be required when amateur operation took place on frequencies below 1000 MHz (1 GHz). At WARC-59, the 1959 World Administrative Radio Conference dropped this level to 144 MHz. A further reduction was made at WARC-79 to its present 30 MHz level. It is interesting to note that the Morse code requirement has been relaxed at every international conference capable of doing so.

Article S25.5 and S25.6 specifies qualifications and the fact that operators must be Morse proficient in order to operate on the HF ham bands. They read:

S25.5 § 3. 1) Any person seeking a licence to operate the apparatus of an amateur station shall prove that he is able to send correctly by hand and to receive correctly by ear, texts in Morse code signals. The administrations concerned may, however, waive this requirement in the case of stations making use exclusively of frequencies above 30 MHz.

S25.6 2) Administrations shall take such measures as they judge necessary to verify the operational and technical qualifications of any person wishing to operate the apparatus of an amateur station.

On November 9, 1988, a decision was made by another world-wide organization, the London-based *International Maritime Organization* that would eventually lead to ending Morse code communications on the high seas. The advent of satellite and automatic digital technology had now superceded Morse code communications. The IMO replaced Morse with a new long-range *Global Maritime Distress and Safety System* (GMDSS.)

Recognizing that manual telegraphy was no longer important to the safety of life on ocean-going vessels, the U.S. Coast Guard discontinued monitoring the 500 kHz distress frequency completely in 1995.

The Radio Regulations do not specify any particular Morse code proficiency level for Amateurs which means administrations are free to adopt any speed. Last year, the United States was among the first to reduce its highest code speed to 5 words-per-minute. And one-by-one, nations around the world have been following our lead.

It is widely expected that the ITU nations will totally abolish the need for Amateur operators to be Morse code proficient at WRC-03.

International Amateur Radio Union

The Amateur Service is more or less represented at ITU conferences by the *International Amateur Radio Union.* The IARU got its start more than 75 years ago when American Radio Relay League founder, Hiram Percy Maxim, felt that since ham radio is international in scope there should be a global organization to promote and coordinate its needs. The organization was created in 1925 when representatives from 23 countries - mostly from Europe - met in Paris to adopt a constitution.

The structure of the IARU is very similar to that of the ITU in that the various national Member Societies belong to regional organizations that geographically match the ITU's three regions. One of these IARU regions conducts a conference each year with each country having one vote. The IARU is managed by an Administrative Council and an International Secretariat, the American Radio Relay League.

The Administrative Council consists of a President (which is provided by the ARRL), a Vice-President, a Secretary and two members from each of the three Regional Organizations. The IARU has no regulatory authority and does not vote at WRCs. It merely has "observer status" at the ITU.

In 1994 the IARU CW Ad Hoc Committee concluded that while Morse code remains essential for radio amateurs using the bands below 30 MHz: "Any changes to Article S25 that may be desirable in the next decade or two, must be considered now. On that basis, the Committee has concluded that S25.5 should be removed as a treaty obligation of administrations." The IARU Region One and Three Conferences held in 1999 and 2000 also agreed.

WRC-2003 Amateur Service agenda items

Besides the possible revision of the basic guidelines for the Amateur Service contained in Article S25, WRC-03 could also revamp the Amateur and Amateur-Satellite terms and definitions contained in Article S1. The conference will also examine the formation of Amateur station call signs in order to provide flexibility for administrations and consider realignment of amateur and broadcasting bands around 7 MHz on a worldwide basis. This long-standing problem was identified at WARC-92 which called for realignment at a future conference. The International Amateur Radio Union supports a "harmonized"' worldwide 300-kHz allocation in the vicinity of 7 MHz.

WRC-03 will review the adequacy of HF broadcasting allocations from approximately 4 to 10 MHz and the replacement of an earlier commitment for HF broadcasters to shift from double to single-sideband AM ... with digital modulation.

Two satellite items could also impact ham radio. WRC-03 will consider new allocations for non-geostationary, non-voice mobile satellites (the so-called "Little LEOS"') below 1 GHz, as well as spectrum above 1 GHz for feeder links and a new Earth Exploration-Satellite (Radar) Service in the 70-cm (420 to 470 MHz) band.

FCC Forms Advisory Committee

The FCC's new WRC-03 Advisory Committee met for the first time on January 30 at FCC Headquarters in Washington. A WRC-03 Web site has been set up at <http://www.fcc.gov/wrc-03> along with a mailbox for the committee, wrc03@fcc.gov.

The Advisory Committee provides an opportunity for interests outside the federal government to develop and debate U.S. draft proposals for possible adoption by the FCC, the National Telecommunications and Information Administration and the U.S. Department of State. Most of the Amateur issues have been assigned to the WRC-03 Advisory Committee's *Informal Working Group 6.*

CUTTING EDGE TECHNOLOGY

Hello, this is your washing machine calling! An Italian white goods manufacturer, Merloni Elettrodomestici has developed a washing machine with an internal cellphone that communicates with the company. This Internet-connected washing machine can be controlled with a mobile phone or via the Internet by accessing the device's own Web page.

It scans the washing instructions of clothes and automatically connects to the Internet to find out the right soap to use and the correct temperature for the water. It also can download upgraded software from the world wide web. You can even call your washing machine to find out what it is doing (it sends back a text message) or to give it special instructions.

It employs the new WRAP (Web Ready Appliance Protocol) that networks domestic appliances to allow information to flow from one digital domestic appliance to another, and in turn from the appliances to the outside world.

The new generation of "Wrap inside" household appliances are able to communicate through the electricity network with power line modems that require no additional wiring. For more info check out: <www.margherita2000.com>.

CityNet of Silver Spring, MD has a new faster and cheaper way to deploy high speed "broadband" capablity to multi-tenant commercial and residential buildings. They are installing the "last mile" of fiber optic cabling inside eight-inch sewer lines.

It eliminates the greatest obstacle to the deployment of broadband Internet and data services since city streets do not have to be ripped up to lay fiber optic cable.

By using the sewer system, CityNet says it can gain access to the basements of thousands of buildings, spanning the so-called "last mile" that separates individual buildings from the fiber networks.

The stainless steel fiber optic cable conduit is installed inside the sewer line by SAM (Sewer Access Module), a computer-driven robot equipped with cameras.

Laying fiber through the sewer system also benefits cities by supplying lease revenue for municipalities.

Sony has a new robot dog named "AIBO," an acronym for **A**rtificial **I**ntelligence **R**o**BO**t. Sony says AIBO (which means "companion" in Japanese) is not a toy. Instead it is a true companion with real emotions and instincts. With loving attention, it can even develop into a more mature and fun-loving friend.

Like any human or animal, AIBO goes through the developmental stages of an infant, child, teen and adult. Daily communication and attention determines how AIBO matures. The more interaction you have with AIBO, the faster it grows.

Sony's purpose in developing AIBO is to bring humans and robots closer together. Sony does this by creating an artificial being as close to a living creature as possible. Cost with software and accessories, around $2,000. <www.aibo.com>.

It pays to keep records. Companies that develop and install audio and visual equipment for large companies report that they are recording increasing numbers of requests for detailed information on how their older installations work. As companies merge and are bought out, staff members who know how to use the video projectors, audio distribution systems, remote controls, etc., are transferred or laid off. Documentation may not be available or difficult to locate. New employees therefore don't know how to operate the equipment, and their only option is to contact the manufacturer.

Hold the game; I'll be right back. – Sports bars and grills are beginning to install televisions, in the form of flat-panel liquid-crystal displays (LCDs), over the urinals in their restrooms. The TVs are lightweight, easy to mount, and are easier to protect against vandalism. The full-color monitors provide customers with football and other sports programs at (literally) all times, so they don't miss anything.

EMI can be a good thing. A special type of radio receiver can detect problems inside an electric motor. Bad bearings and worn brushes can create sparks, as well as RF waves. The Radar Engineers Company makes a device called the Model 246 EMI Sniffer that's designed to listen for interference generated by troublesome motors. This can help technicians take devices out of service before severe failure occurs, and also allows for preventive maintenance.

Goodbye, steam catapults! The Navy's next generation of aircraft carriers, the CVNX class, won't use steam as the primary method of launching aircraft. They'll use a linear electric motor over 300 feet long to fire planes that weigh as much as 100,000 pounds into the sky at speeds over 130 knots. This is the same technique used in the newest generation of roller coasters.

Can you carry 150 music CDs? Now you can with Creative Labs' "Nomad Jukebox." The 6-gigabyte hard drive-based audio recorder/player can digitally store up to 150 compact discs. It's portable, connects to other devices through a standard Universal Serial Bus port (using MP3 recording format), offers special effects, fits in one hand, and runs from just four AA batteries. The Nomad Jukebox looks like a portable CD player with an alphanumeric display.

Monitoring fluids with radar. Radar waves are absorbed by some materials, and reflected by others. A material's dielectric constant determines how much of the RF signal will be reflected. Water and oil reflect radar signals very well; fluids with dielectric constants even higher reflect radar signals even better than that. Moving fluids affect the frequency of the RF beam received back at the radar's transmitting site. This means that industrial applications can use radar to monitor fluids that are too dangerous (too acidic, too hot, etc.) for people to handle directly. Fluid densities and velocities can be tracked with radar signals.

Using RF theory to design computer circuits. Rambus is a system of exchanging digital data among devices inside a computer. It's a very rigid, tight protocol that depends heavily on precise timing. All printed-circuit board traces on the eight-bit data bus must be of exactly the same length. All connector pins on all devices connected to the Rambus must have identical spacing. Data can be transferred on both the rising edge and the falling edge of the clock signal. Data lines must be designed according to RF behavior, with proper terminations on each end. Bus speeds in the hundreds of MHz can be reached this way.

Fuel cell benefit. Many companies are trying to develop fuel cells to operate consumer electronic devices. One such fuel cell, which runs from methanol, offers the benefit of a constant output voltage for a given load. Unlike conventional batteries, the output voltage of a fuel cell doesn't gradually decrease. It remains relatively constant until its energy is depleted.

Why travel when you don't have to? Videoconferencing continues to gain favor with large companies be-

cause the third-largest expense in the business world, after payroll and information services, is travel. Airfare, hotels, meals, ground transportation, etc., all pile up. Other employees suffer when a particular individual isn't in the office, too, because information and decisions aren't available.

The ideal electronic environment. Walk into an average telecommunications facility or switching station and you'll find the ambient air temperature and humidity are just about the same from one location to another. Electronic devices cannot be too hot or too cold if they are to operate properly. Humidity must be constantly maintained, too. Corrosion caused by too much moisture in the air accounts for over one-quarter of all electronic equipment failures. But if the air is too dry, electrostatic discharge (static electricity) becomes too much of a problem. Standards regulate levels of relative humidity; 50% is a good balance for proper electronic operation.

Changing fluid densities with magnetic fields. Magnetic rheological control, or rheonetics, is a technology that's been around for almost half a century. It relies on a fluid's magnetic particle content to change its viscosity, or thickness, according to a magnetic field applied to it. The technique is ideal for changing the damping constant of mechanical systems; it can change the performance of shock absorbers, for example. A fluid can be as thin as water one moment, but can suddenly change its consistency to that of molasses. Magnetic fields make the tiny metallic particles in the fluid line up to form a complex matrix. The latest advances in rheonetics have worked out solutions to the particles wearing out over time, and keep the particles from settling in the fluid.

EMERGING COMMUNICATIONS

Study finds competition in local telephone market is 'All Talk, and No Savings' "Indeed, local phone bills are higher, rather than lower, for consumers who use minimum service." says the *Consumers Union*, the organization that publishes the non-profit *Consumer Reports.*

They marked fifth anniversary of the *Telecommunications Act of 1996* by saying the landmark law, "...has clearly failed to deliver the benefits that Congress and the White House promised consumers."

"The legislature should not lower long distance 'access' charges and permit phone companies to turn around and make up for it by raising prices on residential services or by adding or increasing surcharges on bills." Most of the local phone service market still belongs to seven regional Bell monopolies which since 1996 have shrunk to four due to mergers.

The *Consumers Union*, joined by the *Consumer Federation of America*, said the anniversary offers little to celebrate as a handful of huge companies continue to monopolize the cable TV and local telephone industries. Since the act became law on February 8, 1996, cable rates have risen nearly three times faster than inflation. To correct the law's shortcomings, the two organizations said policymakers must stop "abusive" cable pricing practices, and open up new avenues for cable competition.

"Cable monopolies have saddled consumers with huge rate increases and sought to impose their closed business model on the broadband Internet by making it nearly impossible for outside companies to offer Internet services over the monopolies' cable lines."

In a new report entitled ***"Lessons From the 1996 Telecommunications Act,"*** CU and CFA said "The law's failure stems predominantly from the fact that the major providers of cable and local phone service chose to merge rather than compete. The problem has not been too much FCC action, but too little."

Another CU/CFA report, entitled the *"Disconnected, Disadvantaged and Disenfranchised"*, is based on a national survey that found 47% of those surveyed do not have access to the Internet at home. The "disconnected" are much more likely to be lower income, older and minority households.

"People of every age, income and race are concerned that technological advances are widening the gap between rich and poor and fear that the information revolution will leave many behind."

Approximately 93% of those without access believe that computer skills are vital, 83% believe that understanding technology is critical to success, and 84% believe that children learn more when they have access to technology. Half said they did not know what the Internet is or how it could help them. <http://www.consumersunion.org/telecom/telecom.htm>

Glossary of Telecommunication Terms -- The communication of facts and ideas depends upon a mutual understanding of terminology. This is particularly true in the rapidly growing field of information technology, in which there is a continuing need for a comprehensive source of agreed-upon technical terms and definitions.

On Feb. 2, 2001, the *American National Standards Institute, Inc.*, (ANSI) approved the "Telecom Glossary 2000" as an official "American National Standard." It is the first update in five years.

The document is composed of terms and accompanying definitions that address the disciplines of: telephony, National Security/Emergency Preparedness, National Information Infrastructure, spectrum sharing, radar, radio communications (including HF radio), television (including UHF, VHF, cable TV, and HDTV), facsimile, networks (e.g., intelligent networks, open network architecture, ISDN, broadband ISDN, and network management), fiber optic communications, communications security, data processing, premises wiring, photonics, and telegraphy.

The new Telecom Glossary 2000 enhances the previous standard by adding new terminology and by eliminating government-specific material and obsolete terms. The final product is a Web-based, 8000-entry, hyperlinked, search-engine equipped document (rather than a paper document) so that the resulting standard will have wider distribution and greater accessibility. <http://www.its.bldrdoc.gov/projects/telecomglossary2000>.

Cell phones affecting social behavior. Why would novelty stores sell fake cellular telephones? And why would people buy them? One reason may be that many people perceive a cell phone as a status symbol. Psychologists have noted an increase in the number of men taking fake cell phones into bars and restaurants. Fake devices are cheaper than the real thing, and just placing them on the table or pretending to use them calls attention to the fact that "Hey, I've got a cell phone."

If you have a computer and are paying ANYTHING for long distance telephone calls, you are paying too much! As compression techniques improve so will the clarity and quality of Voice-on-the-Net (VON) phoning. At present, some Internet calls are best described as being "cellular-quality." Passable, but then they are totally free.

As a general rule, the faster the connection, the better the quality. While you need a PC to make the calls, the person on the other end needs only a traditional telephone set.

You probably already have the system requirements necessary for Internet calling. You simply need a sound card, speakers, Internet connection and a browser. You can use DSL, cable or a 56K Internet connection. (28.8K will work, but not as well.)

It is best to use a headset to eliminate echos and feedback since computer speakers and microphones were designed for one-way communication. Their use often results in voice echoes and transmission delays. There are even wireless headsets on the market.

Internet phone calls rely on software that compresses your analog voice into digital packets which are sent over the Internet. When the packets arrive at the other end, they are reassembled and turned into an analog signal that the other person can understand.

The largest two free Internet phoning providers are the advertising-supported Net2Phone.com and Dialpad.com. Commercial messages pop up on your monitor as you are talking. The small fee to terminate the call to a regular telephone is covered by the banner ads.

Needless to say, traditional phone companies aren't too excited about free long distance calling. But they are seeing the handwriting on the wall. AT&T, for example, quietly has taken more than 30 percent stake in Net2Phone. And Net2Phone is working with Microsoft on a TV set-top-box that will allow high speed calls over your cable television. America Online's new Netscape 6 browser comes with Net2Phone already built in. And Internet portal Yahoo offers it as part of their Yahoo Messenger service. (Net2Phone is also the one we use.)

Dialpad.com says they have the easiest Net phoning service. Apparently so, since more than 12 million people make free, long-distance calls over this advertising-supported service. That is nearly half of all VON users.

Yahoo! lists Dialpad as the best Internet phone service. There's no software to download. The Web-based service employs a Java applet which is cached on your PC. You sign up, enter a number, and talk. Domestic calls are free, no matter how long you speak. Frequently called numbers are saved to your phone book and you can jazz up the interface with "skins" which alter how the phone looks.

PC Magazine gave Dialpad its "Editors' Choice" award. Headquartered in Silicon Valley, California, the firm was founded by three Asians, Sangsu Oh, Hyunduk Ahn, and Wongyu Cho

Deserving a special mention is Hot-Telephone.com (also advertising supported.) They not only allow unlimited free, web-based, "PC to phone" service to any domestic telephone but to 14 other countries as well. Just log in, dial and start calling. In addition to U.S. calls, you can call free to Australia, Canada, Denmark, France, Germany, Hong Kong, Italy, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland ...United Kingdom.

There are also other free VON services around. Among them are iConnectHere.com (formerly "DeltaThree"), I-Link TalkFree, freewebcall.com ...and a host of others. A good resource to learn more about Internet phoning is the Computer Telephony Depot: <www.ctdepot.com>

Industry insiders say the Internet Telephony industry is destined to become the primary carrier of Voice traffic. Some users worry that the FCC could impose per minute access fees and charges on Internet phone companies such as paid to the local phone companies that complete the calls. We don't think it will happen.

COMPUTER INFO

There will be no let up in e-mail marketing! "The e-Marketing Report" says the dominant Internet application is e-mail ...even more popular than the Web. The 160-page report (which cost $545!) also says 61 percent of medium to large companies use e-mail as a marketing tool and another 23 percent are considering it. The cost is less than one-third of U.S. postage. So if you contact a firm or buy by e-mail, you can expect to get follow up e-mailings from them.

There are 96.6 million e-mail users (43.8% of the population) aged 14 and older and growing. According to Forrester Research, marketers will send more than 200 billion e-mails by 2004 with most "out sourcing" the mailing to professional e-mailing companies. Most unsolicited e-mail (spam) comes from small firms ...those with which the recipient has had no previous relationship (not medium or large) businesses.

Instant dog tags. The Vetscribe engraver, made by Axxess Technologies, is used by many veterinarians to quickly create engraved ID tags for pets. The countertop device contains both an engraver as well as a computer. Not only can pets be identified if they are lost, but they can also carry a permanent record of their immunizations and registrations.

You can never have too much RAM. Random-access memory is the fastest type of storage inside a computer. That's because it's all electronic, and doesn't depend on the fast (but not fast enough) data delivery rates from outside sources, such as hard drives. Microseconds collect in the aggregate to really slow down a computer's performance, especially when there's not enough RAM to hold all the data in a computer program and it must be temporarily stored on the hard drive.

That's why the more RAM you have, the faster your programs will run. 128 megabytes of RAM used to be the standard, but it's now becoming the norm to have 256 MB. Computer- Aided Drafting (CAD) workstations now often have 512 MB of RAM or more.

Planetariums now use supercomputers. The newest, largest planetariums operate powerful supercomputers to create breathtaking astronomical images. No longer do dozens of trays of 35mm slides need to be kept in a storeroom; bulb failures are a thing of the past. Digital television projectors receive images through fiber-optic cables, and the images are generated by parallel-processing mainframes that can hold terabytes of information.

When it absolutely, positively has to get lost. For service companies that depend upon fast receipt of replacement hardware to repair industrial and computer systems, every day that a replacement part is late costs lots of money. Best Flight uses real-time software to track performances of airlines and flights, and from that determines which upcoming flight between specific cities has the best possible chance of delivering a part in the shortest amount of time.

Good, Cheap, or Fast; pick any two. The latest technology studies say that 40 percent of all business/-commerce downtime is caused by faulty software. It can affect just about anything: long-distance telephone networks crash because of a bug in a software update; Internet service providers that inadvertently keep computers from logging on; radio networks can't communicate because of improper channel-hopping algorithms; airplanes unable to land on time...

Computers talk to each other more than we do. By next year, estimates say that digital data will make up half of all local telephone traffic, and 80% of long-distance telephone traffic.

The downside of Linux. The computer operating system known as Linux, designed by software engineers as an alternative to Windows, is fully documented and the information on exactly how it works is freely available to anyone.

One problem with that, however, is that any hacker who wants to break into a Linux-based Internet site or database knows all of the security holes and can create havoc much more easily. It's already happened.

America's most wired big cities. Here's how the ten largest metropolitan markets rate in their race to go digital.

1 = % of households with a PC.
2 = % of households with Internet access.
3 = Average hours spent online per month.
4 = % of adults purchasing products online.

PC, Internet Penetration

City	1	2	3	4
New York . .	59%	50%	6.03	49%
Los Angeles	59%	50%	5.03	41%
Chicago . . .	58%	46%	5.26	50%
Wash. DC . .	66%	57%	6.34	58%
San Francisco	72%	66%	6.16	58%
Philadelphia	59%	49%	5.39	48%
Boston	66%	59%	6.15	45%
Detroit	60%	48%	5.30	45%
Dallas	62%	54%	5.33	47%
Houston . . .	61%	49%	5.37	44%
US Average	**59%**	**56%**	**7.19**	**47%**

Another computer virus "worm" spread through Microsoft's Outlook e-mail program on Windows computers has been unleashed. This Anna Kournikova Virus - also known as the VBS/SST@MM virus - poses as a digital (.jpg) photo file of the Moscow-born teenage tennis star. "Worms" automatically send copies of itself to people on your address book. The virus, which appears to have originated in Europe, has a subject line of "Here you have," "Here you go" and "Here you are" followed by a smiley face. Attached is "AnnaKournikova.jpg-.vbs" and carries the message "Hi: Check This!" If you receive such a message, don't open it; delete it immediately. A Dutch youth has claimed responsibility.

Wearable crime-scene computers under development. To speed up the amount of time it takes to collect crime scene evidence, and to better collect vast amounts of information, forensic scientists are working on development of a wearable crime-scene computer. It will allow digital photography and tagging of samples. All information can be instantly uploaded to a central laboratory computer for remote examination.

New computer lingo officially becomes part of the English language. About 10% of the new words included in the latest edition of The American Heritage Dictionary are related to computer technology. Words such as "applet" and "zine" are now a part of the American culture. The Internet allows for such rapid communication that dictionary publishers must struggle to keep up.

Speaking of dictionaries, what English words are NOT on the Internet? Some researchers say over 98% of the English words in the dictionary have now been officially registered as Web site names. Many original words had "e-" or "I-" tacked on in front, such as e-business and i-commerce.

Say good-bye to all those cables that connect your PC to various peripheral hardware. There are now three wireless standards. **IrDA** uses "line-of-sight" infrared. **Bluetooth** wireless connections, available by midyear, use 900-MHz frequencies. And the new **IEEE 802.11B** wireless networking standard.

Parents in training can now use digital babies. RealCare Baby, an "infant simulator," is a very realistic doll that contains an internal microcomputer. It's meant to teach new parents what caring for an infant is really like, and mistakes can be made with no harm to a real child. The computer keeps track of feedings, diaper changes, and more. Teachers working with these parents-in-training can change parameters with a remote control and use the computer data to point out areas of improvement.

INTERNET NEWS

New e-mail snooping technique allows access to your e-mail! If your e-mail software allows you to send and receive messages that look and act like a Web page, you are probably at risk.

An e-mail "wiretap" has been discovered in most versions of Microsoft Outlook, Outlook Express and Netscape 6 "Messenger"mail that allows added comments to a message to be forwarded to the originator.

To determine if the message is susceptible to spying, right click on the message to determine if it is HTML-based mail. By choosing "view source," you will be able to see any JavaScript code (which can be altered before sending) embedded in the message.

The ability also exists for an e-mail sender to change its contents each time the message is forwarded or for a company to gather e-mail addresses to be used for unsolicited advertising ("spamming.")

The security flaw can be deactivated by disabling the JavaScript programming language in the e-mail program. But even if the JavaScript feature is disabled, only you are protected. If a user disables JavaScript on his computer, someone else's unpatched system could make your comments public. The bottom line: Be very careful what you say online.

The loophole doesn't affect users who use Eudora or America Online's e-mail program or any Web-based e-mail, such as Hotmail, Excite Inbox or Yahoo! Mail. Microsoft said the newest Outlook Express 5.5 is not susceptible since it comes with the JavaScript feature defaulted to off.

The wiretapping bug was discovered and exposed by Internet privacy watchdog: <www.privacyfoundation.org>.

We understand that the **City of Los Angeles is in the early stages of considering taxing cable Internet service.** The *Los Angeles Cable Internet Tax* could end up costing customers an additional $4.00 per month or more!

DSL set to explode in popularity! Researcher IDC predicts that the worldwide market for DSL (high speed telephone) Internet access will increase from 4.5 million lines in 2000 to 66.4 million by 2004. The number of DSL subscribers will outnumber cable in 2003. The US currently accounts for over half of all DSL lines, and by 2004 these will have increased eleven-fold to almost 26 million.

The intelligent Networked Home and the "Internet everywhere" lifestyle is becoming a reality. The Yankee Group, a Boston consulting firm, projects that there will be 10 million internally networked U.S. homes within two years! Another research firm said that the home networking market will grow 60%, to $1.4 billion by 2003.

Home Director, Inc., (Morrisville, NC) markets a smart "residential gateway" that allows a range of broadband Internet services to be delivered and shared in the home through a single connection.

The firm was launched in January 2000 as an independent company by the former IBM Home Networking Solutions unit. It is funded by venture capitalists

along with Motorola, Cisco Systems and IBM. They hope to go public in the future.

Their "Network Connection Center" permits the telephone, video and Internet to be everywhere in the home. Consumers can securely connect their electronic devices, such as PCs, appliances, in-home cameras and security systems, to their phone service and high-speed Internet access. A built-in firewall protects the network from intruders.

It contains Motorola's SURFboard® internal cable modem to provide for whole-house distribution of data, video signals, and Net telephony. Users can connect multiple computers to share files, software, printers, and scanners, and to distribute cable, satellite, VCR and DVD video signals throughout the home. DSL is also networked through arrangements with telephone companies..

The Home Network Controller automated home management system controls lighting, security, and climate systems through a television, computer, or any device with a Web browser, either in the home or through a remote Internet connection.

Sears, Roebuck & Co. is the latest firm to partner with Home Director, Inc. Sears wants to tap into the emerging home networking market that is expected to explode in the coming years as more consumers want their home electronic devices to be linked to the high-speed Internet.

Home Director primarily targets home builders and developers. They go to so many trade shows and events all over the country, that they had to get a bus! The Home Director bus is networked so everyone can see how it works.

Installation of home networking normally adds $500 (for the "starter" pack) to $5,000 (premium system) to a new home's cost. They say they have sold about 20,000 installations. Visit their web site at: <www.homedirector.com>.

China is quickly joining the online world! Japan boasts 36 percent of Asia's Internet population. According to an Internet research firm, its share will shrink to about half (18.4%) by 2004 as users from the People's Republic of China swell to 17.4 percent of Asia's total. The report predicts Asia's total Internet population will surge from 49 million users in 2000 to 173 million in 2004, a 38 percent compound annual growth rate, increasing the region's share of the world's online population from 21 to 27 percent. Asian e-commerce revenues will increase ten-fold to $338 billion by 2004.

The blind can surf the Web. IBM has developed voice-synthesis software that allows people with poor eyesight to navigate the Internet. It uses different pitches of voice to differentiate between Web site information and address links. It can also speak data, tables and graphics.

An Internet company's plans to cut advertising costs during the Super Bowl were foiled by the National Football League. Rather than pay hundreds of thousands of dollars to produce a TV ad and pay even more to buy air time during the annual football extravaganza, Subjex.com (an Internet search engine company) tried to bypass the system. It had planned to entice fans at the game to display the company's Web site address on camera, with $1,000 per second going to the person who showed the Web address for the longest amount of time. But the NFL got wind of the scheme and threatened to throw out of the stadium anyone caught participating in the plan.

WASHINGTON WHISPERS

My robot can lick your robot. The *London Times* (newspaper) is reporting that according to a UK *Ministry of Defense* report, within 30 years, robots will be fighting wars. By 2030, "long-endurance remotely deployed systems" and "micro unmanned airborne vehicles" programmed with artificial intelligence will be able to gather battlefield information and make "intelligent judgements" about risks and the proper action to take.

Sen. Ron Wyden, (D-Ore.) an Rep. Christopher Cox, (R-Calif.) have introduced Internet Tax Freedom Act legislation into Congress that will extend the current tax moratorium on sales made over the Web until 2006 and banish Internet access taxes altogether. President Bush endorsed this plan during his campaign, the congressmen noted, and several high-tech industry groups also issued statements supporting the measure. The current Internet tax ban will expire on Oct. 21, 2001.

Under the present moratorium, additional states cannot collect taxes on goods delivered from out-of-state companies. A Congressional study last summer found that states and localities could lose up to $4 billion in revenues because of purchases made over the Web.

The *National Retail Federation* opposed the bill noting that since many Internet sites and remote sellers are not located in a purchaser's state, they do not have to collect these taxes which creates an unlevel playing field for local brick-and-mortar retailers. "Now is the time for Congress to end this inequity," NRF said.

The *Information Technology Association of America* had a different view.

"The debate on Internet tax, or more accurately the taxation of remote commerce, is not about whether commerce should be taxed or not. The issue is in part about fairness, and in part about guaranteeing that taxing jurisdictions do not plunder interstate electronic commerce for their own benefit."

Official Atlantic hurricane names for 2001. Hurricane season in the north Atlantic normally runs from June through November, but you never know. When the first storm of the year becomes powerful enough to receive a name, it will be called Allison. Storms after that will be named as follows: Barry, Chantal, Dean, Erin, Felix, Gabrielle, Humberto, Iris, Jerry, Karen, Lorenzo, Michelle, Noel, Olga, Pablo, Rebekah, Sebastien, Tanya, Van and Wendy.

Watch the skies! The Japan Space Forum is monitoring low-earth orbiting chunks of space debris, such as old satellites and miscellaneous hardware from previous missions, by taking snapshots of the nighttime sky. Software automatically controls the narrow-field telescopes, compares recorded objects with objects already in the database, and instantly creates ephemera (orbital paths) of new objects. This helps protect large objects in orbit, such as the Space Shuttle and the International Space Station.

AMATEUR RADIO

The FCC has circulated the following bulletin to the Amateur Radio media: "We've had a rash of interference problems created by oscillating preamplifiers which are built into Winegard TV reception antennas, used primarily on RV's, campers, and motor homes. The oscillations generally appear in the 400 - 500 MHz range, and have caused interference problems to Public Safety, amateur, etc., at distances of several miles.

"Winegard recognizes the problem, and estimates that there may be as many as 40,000 defective units out there!

"They have agreed to replace any defective units at no charge. All the user needs to do is contact the factory at Burlington, Iowa, at (319) 754-0600. This includes RV owners, as well as RV dealers and repair shops which may have new, but defective, units still in stock.

"Winegard also proposes a pro-active program in which service technicians will visit the larger campgrounds, rallies and dealers around the country, actively looking for defective/radiating units in operation or on the dealer's shelves, and replacing them, again at no charge to the customer, regardless of the age of the unit."

Amateur Radio assists Gujarat, India Earthquake. The following report was e-mailed to us from Lion Ajoy - VU2JHM, president of Bangalore Amateur Radio Club (Post Box #5053, GPO, Bangalore, India.) Unofficial estimates put the quake death toll at around 30,000. He also sent us three photos.

"Bangalore Hams received the first information of a major earthquake in Gujarat on January 26th through HF radio. Getting volunteer Amateur Radio Operators into the region was a major problem.

"By afternoon the Bangalore Amateur Radio Club had gotten a team of five persons together to leave for Ahmedabad but they were unable to get donated air fare from Indian Airlines or sponsors to finance the trip. Bangalore is nearly 1,000 miles from Gujarat.

"The following day, the Government of Karnataka decided to send a medical team to Ahmedabad and allowed one ham radio operator (Sandeep Shah, VU3SXE) to be included in the team.

"On January 28, the medical team arrived at Gujarat and VU3SXE established an HF Link along with VU2LFA (Susheel of Hyderabad). More plane tickets were arranged for Sathyapal (VU2FI), Umesh (VU3BNH), Madhu (VU3MDD) and Patil (VU3NUT).

"Three more operators boarded a relief train taking drugs to the stricken area; Marcus (VU2VTM), Girish (VU3GDS), Prof. Muralidhar (VU3RLM) and Javeed (VU3JAK). The first reports of the widespread damage and needed help was relayed by Amateur Radio. By February 2nd, a total of 18 Indian ham operators had joined the team.

"Emergency communications concerning the movement of doctors, medical and relief materials as well as family welfare traffic were provided from remote places where there are phones still not working.

"This has become an practical exam showing our capability, preparedness in Disaster Management and anticipate that the Government and Non-Governmental organizations will support us by establishing, equipping, training such emergency Search and Rescue teams for such forecoming disasters as a part of our preparedness to face such unwanted calamities.

"The Government of India has now empowered every District in the Country with special provisions to utilize the Amateur Radio Service when such natural disasters as earthquakes, floods, cyclones and wide spread fire cause failure of normal telecommunication facilities."

The UK's Radiocommunications Agency has extended the 73kHz Amateur Radio allocation until 30 June 2003. (The RA is the UK's telecom regulator.) This is in response to a request from the *Radio Society of Great Britain* (RSGB). The allocation has been available to Radio Amateurs within the UK since April 1996 and was due to be withdrawn. British amateurs with full privilege licenses need to apply for a *Notice of Variation* to investigate Low Frequency propagation characteristics at 73 kHz. No further extensions will be allowed past June 30, 2003.

The annual fee for a UK Amateur Radio license is £15.00, about $22.50. There is no charge to those under age 21. Now the RA is allowing Amateurs aged 75 and over to renew their license without paying a license fee. Last summer the RA removed the restriction that UK amateur radio operators had to be 14 years old in order to hold a full privilege license.

FCC Amateur Radio Enforcement:

Jeffrey J. Pipenur WA8IKW (Vandalia, OH) has agreed to a settlement of his alleged intentional interference to ongoing 75 meter band communications. On Nov. 7th, the FCC notified Pipenur that future interference would result in license revocation. Pipenur has now agreed to have his General Class license modified to preclude HF operation (except on the 30 meter Amateur band) for a period of three years.

George A. Ashley W4FQF (Collierville,TN) has been warned a second time for alleged deliberate interference to ongoing 75 meter communications on 3.901 MHz. The first warning alleged 20meter interference. FCC said further incidents will result in license revocation and/or a fine. He was also asked to provide the FCC with information concerning his station equipment.

In response to an FCC letter, **Dennis M. Boyle KB9RRN (Greenwood, IN)** has terminated his uncoordinated repeater operation that infringed on simplex band plan frequencies. "...frequencies between 146.40 and 146.58 are generally designated for voice simplex operation."

James W. Dale KE4TEW (Tampa, FL) has had his Amateur license renewed for a full 10 year term. He had previously received a one year "short term" renewal due to complaints about his operation.

Darwin Networks, Inc., (Louisville, KY) has been notified that their Part 15 2.4 Ghz wireless Internet access devices are causing interference to Amateur Radio systems. "Operators of Part 15 devices are required to cease operation should harmful interference occur to authorized users..." Since their Internet access devices are not classified as a Part 18 ISM (Industrial, scientific and medical) device, Darwin Networks was instructed to advise the FCC within 10 days what action it is taking to eliminate the harmful interference in the Dallas area.

James H. Davis W6IBD (Concord, CA) has been warned by the FCC to stay off the W6CX repeater system as requested by the Mt. Diablo Radio Club. "We do not require them to convert the repeater to a closed system in order to ensure compliance..." [with their request] "as a result of failing to follow operational rules set forth by the licensee/control operators...."]

Chuck Bishop, President of the Arkansas Repeater Council (Conway, AR) was advised last fall by the FCC that the coordination of the AC5RU/-KD5CYA repeaters was unclear and that the issue "...might best be dealt through mediation and dispute resolution at the ARRL." Complaints have been received alleging operators affiliated with the KD5CYA repeater and the Arkansas Repeater Council may be causing interference to the AC5RU repeater system. "...deliberate interference to the AC5RU system will not be tolerated," FCC said.

Jeffrey S. Sanborn KB1DLJ (Windham, ME) has been warned by the FCC that it has information that he has been playing music on the W1QUI repeater even after this activity was brought to his attention. "...further incidents of such operation will result in enforcement action ...including license revocation, monetary forfeiture or both."

NEW REPUBLICAN LED FCC SIGNALS CHANGE

Commissioner Michael Powell, the son of Secretary of State Colin Powell, is the new FCC Chairman. He will oversee the administration's direction on telecommunications matters. Powell takes over at a crucial time when regulators are trying ensure competition as the Internet, telecommunications and cable industries all converge.

Powell believes conversion from analog to digital technologies make it difficult for the FCC to regulate along traditional lines. For example, wireline telephone calls are heavily regulated, moderately regulated when wireless and totally unregulated when traveling over the Internet.

Like his father, Mike Powell wanted to make the military his life's career. But it was cut short by a devastating automobile accident in 1987. A jeep in which he was riding spun out of control and landed on him, breaking his pelvis. After a long rehabilitation, Mike Powell graduated from Georgetown University Law School and became a telecommunications lawyer.

He joined the Clinton administration in the U.S. Justice Department's antitrust division and served as chief of staff to Assistant Attorney General Joel Klein, a Democrat who moved aggressively to block big mergers and initiated the Microsoft antitrust lawsuit. The 37-year-old Michael Powell, a moderate Republican, was appointed to the FCC by Clinton in November 1997.

He replaces outgoing Chairman Bill Kennard, a Democrat who resigned from the FCC on Jan. 19 -- the day before Republican President George W. Bush took office. Powell does not need to be confirmed by the Senate since the president can designate the chairman from a sitting commissioner.

A Powell-led commission is expected to bring a more business-oriented approach to the agency, compared to his predecessor's regulatory-oriented approach. He has already voiced apprehension about the wide array of regulations facing broadcasters, telephone companies, cable operators and Internet Service Providers.

The *Telecommunications Act of 1996* sought to bring competition to the industry. So far it hasn't worked and has only resulted in large companies getting larger as they merge among themselves.

The new FCC is expected to be a "hands off" Commission. Instead of shaping markets, the Powell-led FCC is expected to let the marketplace determine its own destiny. Powell also is in favor of restructuring the Commission along functional rather than industry lines.

Before leaving, Kennard expressed his concern about a more business-friendly FCC under the new Administration. He feels that approach will translate into policies that will benefit incumbents rather than innovation among new entrants.

Kennard's concerns are well founded. Powell's record at the FCC shows he is more restrained about regulating industries that, like technology, constantly change.

Powell opposes regulation of the Internet since restraining computer-related information services would undermine innovation. One of Powell's first initiatives will be to push for the expansion of high speed broadband Internet access to homes and small businesses.

Powell enjoys cordial relations with House and Senate leaders. The Powell appointment drew high praise from key lawmakers especially from Rep. Billy Tauzin (R-La.), chairman of the U.S. House Commerce Committee which oversees the agency. Tauzin often criticized Kennard's policies and direction and believes Powell "...understands the benefits to consumers of aggressive competition in the marketplace and ...will work with Congress to complete the task of deregulating the telecommunications industry."

Powell agrees. He thinks Congress and the White House should decide whether and how to promote such social entitlement programs as school and library Internet connection subsidies, community low-power FM radio stations and online connections that address the so-called 'digital divide' ...the disparity between the computer 'haves' and 'have nots.' "Congress and the people's representatives can debate it any way they want to and my job principally is to implement what they choose." he said.

That sounded good to *National Association of Broadcasters* president Eddie Fritts. He called Powell "an outstanding choice." The NAB frequently differed with Kennard, most recently over his plan to create hundreds of community-run non-profit low-power broadcast stations. Powell has voiced his doubts about LPFM.

Still more FCC slots to open

Shortly after Powell became FCC Chairman, Commissioner Harold Furchtgott-Roth, a Republican, and Susan Ness, a Democrat, announced they would not be seeking reappointment to additional terms. Furchtgott-Roth's term expired June 30, 2000. Susan Ness' term expired on June 30, 1999 and was renominated by President Clinton for a second five year term. But the Senate refused to hold hearings on her reappointment. She was given a one year "recess appointment" by Clinton to keep the Commission intact until Congress could act on her replacement.

The five commissioner FCC is typically split three to two in favor of the ruling political party. The Furchtgott-Roth and Ness announcements now leaves President George W. Bush with three slots to fill on the FCC. And with Democrat Gloria Tristani's term expiring on June 30, 2003, President Bush will be able completely revamp the FCC during his tenure. The Bush administration indeed has the potential to totally change the direction of U.S. telecommunications policy.