**Strand 2 – Key technological advances and innovations for each decade**

**1900 – 1910**

1904 - John Fleming perfected the Electronic Rectifier (Diode) or Fleming Valve, used to amplify a weak current and detect the spark-generated radio waves of the time. <http://www.ece.umd.edu/~taylor/Electrons3.htm>

1907 – Leo Baekeland invented the first synthetic (non-petroleum based) and named it Bakelite. This freed the plastics industry from its sole dependence on petroleum by-products as raw materials. <http://inventors.about.com/library/inventors/blbakerlite.htm>

1908 – Elmer Sperry, who founded eight different companies and was responsible for over 350 patents, invented the electric gyrocompass for use in metal ships. His device, known as “Metal Mike”, was adopted by the United States Navy for use in American naval vessels in 1911 and it played a major role in naval strength during World War I. <http://inventors.about.com/library/inventors/blgyroscope.htm>

1908 - The first geiger counter was a gas filled device invented by J W Geiger while working with Ernest Rutherford. Geiger’s device was the first real-time detector of radiation and ancestor of the scintillation crystal detectors that are used today. <http://www.xrfcorp.com/technology/radiation_detection.html>

1909 - Percy E. Ludgate developed an analytical machine, or program-controlled mechanical calculator. <http://comjnl.oxfordjournals.org/content/14/3/317.abstract>

1910 - Lee de Forest developed a vacuum tube (triode) that enabled the airing of programs from New York's Metropolitan Opera House and opened the possibilities of the radio broadcasting industry. <http://www.pbs.org/wgbh/aso/tryit/radio/earlyyears.html>

**1911 – 1920**

1911 – Charles Kettering invented the first electronic ignition for automobiles. <http://inventors.about.com/library/inventors/blignition.htm>

1913 – Thomas Edison publicly displayed the first talking motion picture in the form of the Kinetophone. This device attempted to combine the action of a film with the sound of a phonograph cylinder and is thought to be the precursor to “talkies” (motion pictures with sound). <http://inventors.about.com/library/inventors/bledison_timeline.htm>

1915 - Pyrex was co-invented by Eugene Sullivan and William Taylor in New York City. It was introduced to the American public in the same year as clear ovenware by the Corning Glass Works Corporation. <http://www.pyrexlove.com/history-of-collectible-pyrex/>

1917-The modern zipper was patented by Gideon Sunback. Sunback’s device, which he called a “Separable Fastener”, was not called the “zipper” until adopted by B.F.Goodrich as a fastener in rubber galoshes in the late ‘20s and early ‘30s. <http://inventors.about.com/library/weekly/aa082497.htm>

1919 – W. H. Eccles and F. W. Jordan develop the first flip-flop circuit design, making modern electronics possible. These circuits have two stable states and can store information and change states to respond to two inputs and send to two outputs. <http://trillian.randomstuff.org.uk/~stephen/history/timeline-INVENT.html>

1920 – Earle Dichson invented the modern band-aid simplifying the treatment of small wounds and lowering infection rates of patients with wounds. <http://inventors.about.com/od/bstartinventions/a/bandaid.htm>

**1921 - 1930**

1922 – Dr. Frederick Banting discovered insulin as a treatment for diabetes. <http://inventors.about.com/library/inventors/bldiabetes.htm>

1926 – Robert Goddard invented the first successful liquid-fueled rockets. This led to speculation about the possibilities of outer space exploration. <http://inventors.about.com/od/gstartinventors/a/Robert_Goddard.htm>

1927 – Philo Farnsworth invented the first complete electronic television system with the help of his brother-in-law, a professional glass blower. <http://inventors.about.com/library/inventors/blfarnsworth.htm>

1928 – Alexander Fleming discovered penicillin. The discovery was made by Fleming when he observed the accidental contamination of a culture plate of Staphylococcus by some blue green mold, later identified as common bread mold, or Penicillium Notatum. <http://inventors.about.com/od/pstartinventions/a/Penicillin.htm>

1930 – Richard Drew patented scotch tape for the 3M Corporation. This is after he had developed masking tape for the same company several years earlier. <http://inventors.about.com/od/sstartinventions/a/Scotch_Tape.htm>

**1931 - 1940**

1931 – The first working electron microscope was developed by Max Knott and Ernst Ruska. The microscope can view items as small as individual atoms, about ten angstroms across. <http://inventors.about.com/od/mstartinventions/a/microscope_2.htm>

1937 - The photocopier was developed by Chester Carlson. <http://inventors.about.com/od/xyzstartinventions/a/xerox.htm>

1938 – The first working ballpoint pen was developed by Ladislo Biro. One can only hope that Mr. Biro patented his invention before introducing it to the business-oriented public. <http://inventors.about.com/library/weekly/aa101697.htm>

1938 – Tetrafluoroethylene polymers, also known as Teflon, were invented by Roy Plunkett. The material was not use with cookware until a reliable method to bond it to the metal surfaces was developed over twenty years later. <http://inventors.about.com/library/inventors/blteflon.htm>

**1941 – 1950**

1941 – The Z3, built by Konrad Zuse in his parent’s living room, is the first software-controlled computer. <http://inventors.about.com/library/weekly/aa050298.htm>

1942 - John Atanasoff and Clifford Berry built the first electronic digital computer. <http://inventors.about.com/library/weekly/aa050898.htm>

1947 – The first transistor is invented, thus allowing electronics to become smaller in size and more powerful in capabilities. <http://inventors.about.com/library/weekly/aa061698.htm>

**1951 - 1960**

1951 – The first video tape recorder was invented by Charles Ginsburg. <http://inventors.about.com/library/inventors/blvideo.htm>

1954 – Optic Fiber was invented by Harold Hopkins and Abraham Van Heel. <http://inventors.about.com/library/weekly/aa980407.htm>

1958 – Jack Kirby and Robert Noyce invented the integrated circuit. <http://inventors.about.com/od/istartinventions/a/intergrated_circuit.htm>

1959 – Jack Kirby and Robert Noyce both invented the microchip. <http://inventors.about.com/od/istartinventions/a/intergrated_circuit.htm>

**1961 - 1970**

1964 - The computer language BASIC (Beginner’s All Purpose Symbolic Instruction Code) was invented by John Kenemy and Tom Kurtz. <http://inventors.about.com/library/inventors/blbasic.htm>

1965 - James Russell invented the compact disk. <http://inventors.about.com/od/qrstartinventors/a/CD.htm>

1967 – The first hand-held calculator was invented. It could perform the four basic math functions, had no memory, and had to remain close to a power source (outlet) for continuous operation. <http://inventors.about.com/library/inventors/blcalculator.htm>

1968 – Douglas Engelbart invented the computer mouse. The prototype looked more like a wooden box with a large ball inside, connected to electgronics by several cables. <http://inventors.about.com/library/weekly/aa081898.htm>

1969 – The first internet, the ARPANET (Advanced Research Projects Agency Net), was invented for exclusive use by the American Military. <http://inventors.about.com/library/weekly/aa091598.htm>

1970 – Alan Shugart invented the computer floppy disk. The first disk was the size of a phonograph record and was encased in a stiff paper jacket. <http://inventors.about.com/od/computersandinternet/a/FloppyDisk.htm>

**1971 – 1980**

1971 – James Ferguson invented the first liquid crystal display (LCD). <http://inventors.about.com/od/lstartinventions/a/LCD.htm>

1971 – Faggin, Hoff, and Mazor invented the first microprocessor. <http://inventors.about.com/od/mstartinventions/a/microprocessor.htm>

1972 - The Word Processor, Wordstar, was invented by Seymour Rubenstein and Rob Barnaby. <http://inventors.about.com/od/wstartinventions/a/WordStar.htm>

1973 - Robert Metcalfe, in conjunction with the Xerox corporation, invented the Ethernet (local computer network). <http://inventors.about.com/library/weekly/aa111598.htm>

1975 – The first laserjet printer was invented. <http://inventors.about.com/library/inventors/blcomputer_printers.htm>

1976 – The ink-jet printer was invented. <http://inventors.about.com/library/inventors/blcomputer_printers.htm>

1979 – Seymour Cray invented the Cray Supercomputer. <http://inventors.about.com/od/cstartinventors/a/supercomputer.htm>

**1981 – 1990**

1981- Bill Gates perfects MS-DOS for IBM and its personal computers. <http://inventors.about.com/library/weekly/aa031599.htm>

1981 – IBM marketed its first PC, the IBM 5100. <http://inventors.about.com/library/weekly/aa031599.htm>

1981 - The first GUI-centric computer (graphic digital interface unit), the Xerox 8010 Star information System, was released for public consumption. <http://toastytech.com/guis/star.html>

1983 – The Apple Lisa, the first personal computer to use GUI, was invented. <http://inventors.about.com/library/weekly/aa043099.htm>

1984 – Steve Jobs invented and marketed the first MacIntosh computer. <http://inventors.about.com/library/weekly/aa051599.htm>

1985 – Microsoft introduced the first Windows program (Windows 1.0), originally called Interface Manager. <http://inventors.about.com/od/mstartinventions/a/Windows.htm>

1990 – The World Wide Web (WWW), Hypertext Transfer Protocol (HTTP), and Hypertext Markup Language (HTML) were all perfected by Tim Berners-Lee. <http://inventors.about.com/od/bstartinventors/p/TimBernersLee.htm>

**1991 - 2000**

1993 - The first Pentium processor, the 60 MHz “P60”, was marketed by the Intel Corporation. <http://www.google.com/#q=pentium+processor+history&hl=en&prmd=ivns&tbs=tl:1&tbo=u&ei=qflNTcboDYP7lwez7ZQX&sa=X&oi=timeline_result&ct=title&resnum=11&sqi=2&ved=0CHIQ5wIwCg&fp=3bd0fef49d2d0f86>

1995 - The computer language, Java, was invented by James Gosling. <http://inventors.about.com/od/gstartinventors/a/James_Gosling.htm>

**2001 - 2010**

2003 – Toyota introduced the hybrid car. <http://inventors.about.com/gi/o.htm?zi=1/XJ&zTi=1&sdn=inventors&cdn=money&tm=357&gps=143_126_1012_167&f=11&tt=2&bt=0&bts=0&zu=http%3A//www.time.com/time/2003/inventions/invprius.html>

2005 – YouTube, the information social network, was invented by Steven Chen, Chad Hurley, and Jawed Karim. <http://inventors.about.com/od/xyzstartinventions/a/YouTube.htm>