BBN and Computer Technology Timeline

1948

- Establishment of Bolt Beranek and Newman Inc. (BBN)

1958

- Purchase of BBN's first computer, an LPG-30, manufactured by the Royal McBee Company

1959

- Purchase of PDP-1 from the Digital Equipment Corporation (DEC); Serial #0 [??]

1960

- Design of a priority-interrupt system for the PDP-1.
- Development of Cyclops, an AI program for pattern recognition.

1962

- Public demonstration of computer time-sharing.

1963

- Demonstration of Data Dial, a modem to enable remote communication with computers by telephone.

1964

- Public demonstration of a computer-based communications system for the Massachusetts General Hospital.
- Development of MENTOR and the SOCRATIC SYSTEM, systems for computer-based mixed-initiative tutoring.

1965

- Development of TELCOMP, an interactive computer language.
- Development of the Grafacon, a tablet for scanning and digitizing graphic data.
- Publication of Libraries of the Future, a consideration of the implications of computer technology for future libraries, based on a project for the Council of Library Resources.

1966

- Creation of LOGO, a computer programming language designed especially for use by children.

1967

- Formation of Time Share Ltd., a subsidiary offering computing services in the UK.

1968

- Development of packet-switching protocols for the ARPANET

1969

- Launching of the ARPANET; demonstration of four-node network.
- Automation of odd-lot stock transactions for the Pacific Coast Stock Exchange.
- Grammatical analysis of English text by augmented transition networks.

1970

- Development of TENEX, a virtual-memory operating system for DEC computers.
- Demonstration of SCHOLAR, a computer-based system that modeled a Socratic tutor.

- 1971 Transmission of person-to-person email message using the @ sign.
- Implementation of SNDMSG and RDMAIL.
- Initial development of INTERLISP, an advanced list-programming language.
- Demonstration of LUNAR, a database system that answered natural-language queries about lunar rocks.
- Development of the Terminal Interface Message Processor (TIP) for the ARPANET.

1972

- Implementation of the Prophet system for biomedical research.
- Development of a geographically distributed facility for monitoring and control of a packet-switched computer network.
- Development of Semantic Network, a computer-based knowledge representation system.
- Development of experimental computer-based system to help teach speech to deaf children.

- Public demonstration of ARPANET at the International Conference on Computer Communications in Washington, DC.
- Transmission of email message via the ARPANET

1973

- Development of the Private Line Interface (PLI) to encrypt messages over the ARPANET, and demonstration of secure traffic over a packet-switched network.

1974

- Participation in the development of packet-satellite and packet-radio communications.
- Development of Sophie, a computer-based system for tutoring in electronic troubleshooting.
- Development of Pluribus, a symmetric multiprocessor packet switch on the ARPANET.
- Advancement of Linear Predictive Coding (LPC) for speech coding at 2,400 bits per second.

1975

- Implementation of TELENET, a commercial network service, that later became SPRINT.
- Development of Hermes, an electronic mail package.
- Demonstration of packet switching via radio transmission.
- Development of SpaceGraph, a virtual three-dimensional display.

1976

- Development of the Internet gateway switch.
- Demonstration of HWIM (Hear What I Mean), a speech recognition system incorporating language understanding.
- Development of Internet routers in collaboration with Stanford University and University College, London.
- Implementation of microprogrammable building block, later called the C/30, on the ARPANET.

1977

- Development of the Transmission Control Protocol (TCP) for Unix on a DEC PDP 11/44.

- Development of the KL-ONE knowledge representation system for use in expert systems.

1978

- Demonstration of Packet Radio Satellite communications over the Atlantic Ocean.
- Deployment of the BCR, an IP-based network encryption system allowing remote re-keying and dynamic access control.
- Demonstration of speech generation by computer using diphone synthesis.
- Development of BUGGY, a system for diagnosing and remediating procedural errors in arithmetic.
- Development of CLINFO, software for the National Institutes of Health, to aid in clinical research.

1979

- Development of the Jericho workstation, a 32-bit personal LISP and Pascal computer.
- Evaluation of computer assisted tomography (CAT scanner) technology for the National Cancer Institute.
- Development of Intelpost, an international packet-switched network for facsimile transmission.
- Development of a method for enhancing the quality of speech degraded by acoustic noise.

1980

- Implementation of the Wideband Packet-Switched Satellite System.
- Development of a network operations system for monitoring, controlling, and managing multiple packet networks under the UNIX operating system.

1981

- Completion of ILIAD (Interactive Language Instruction Assistance for the Deaf) to assist hearing-impaired and language-delayed individuals in speaking English.
- Construction of the 128-parallel-processor Butterfly computer.
- Development of the Terminal Access Controller (TAC) for the ARPANET.
- Development of RS/1, a commercial software package for data processing, from the Prophet system.

1982

- Development of a microcomputer version of the Chemical Substances Information Network (CSIN).
- Development of DIAMOND, a multimedia message system using speech, graphics and text.
- Development of STEAMER, a knowledge-based and graphics-oriented system for training operators of steam-propulsion systems.
- Development of IRUS, an advanced system for understanding unconstrained English text.
- Start of contract to build and operate the worldwide Defense Data Network for the Department of Defense.

1983

- Establishment of BBN Communications to build the communications infrastructures for major commercial customer networks, including MasterCard and MCI.
- Development of Cronus, a heterogeneous, distributed computer operating system.
- Development of TRIO, a real-time, continuous speech-recognition system integrated with an expert system for computer-assisted training applications.
- Assistance to the U.S. Department of Commerce in developing a commercial standard for electronic mail.
- Selection of RS/1 software by Industrial Research and Development as one of the 100 best new products of the year.

1984

- Development of DataProbe, an interactive graphics workstation for data analysis.
- Publication of Quill software tools for teaching writing skills to children.
- Demonstration of automatic detection and recognition of high-interest, underwater transients at operationally significant ranges under DARPA Slingshot program.
- Development of automatic phonetic recognition of continuous, unrestricted speech.

1985

- Development of SIMNET (Simulation Network) to interconnect microcomputer-based combat vehicle simulators on a common network.
- Demonstration of DESIGNetSM, an expert system to facilitate the design of computer networks.

1986

- Formation of BBN Advanced Computers, Inc., a subsidiary to develop and market the Butterfly and other computers based on BBN's parallel processing technology.
- Establishment of a mail gateway between the Computer Science Network (CSNET) and the Japan University Network.
- Development of QUEST (Qualitative Understanding of Electrical Systems), an intelligent tutoring system using qualitative reasoning and a progression of increasingly sophisticated models to teach basic principles of electricity.
- Operation of NSFNET, a system of regional networks connected over a backbone network, for the National Science Foundation.
- Introduction of RS/Explore and RS/Discover, expert-system software products for data analysis and experimental design.
- Award of contract from the National Cancer Institute for decision aids and an expert system to increase the accuracy of interpretations of mammograms in cancer diagnosis.
- Implementation of a speaker-verification system to control access by recognizing a speaker's voice.

1987

- Design and demonstration of the Monarch-based computer architecture with average speeds 1,000 times faster that those of the Cray supercomputer.
- Achievement of 98 percent word-recognition accuracy with 1,000-word resource management tasks and complex grammar with Byblos, BBN's high-performance, continuous speech recognition system.
- Development of ISIS (Interactive Speaker Identification System), enabling speech processing for radio channels and telephones.
- Development, with the University of Southern California, of JANUS, a natural-language system for understanding and generating English in interfacing expert systems and databases.
- Development of wideband satellite network and Butterfly-based voice funnel for national teleconferencing of the Internet Advisory Board.
- Development of a computer-enhanced high-school curriculum for teaching probability and statistics.

1988

- Transformation of Prophet, the NIH's national computing resource for life sciences research, from a central, time-shared system to a distributed system available on high-performance workstations.
- Development of KREME, a knowledge representation, editing and modeling environment.

- Installation of SpaceGraph, a virtual 3-D display, in the Naval Underwater Systems Center in Newport, RI.
- Development of Parlance, a commercial system for an English interface to a relational database-management system.
- Development of the Automated Network Management system to monitor packet switches, Internet and LAN gateways, UNIX hosts, and packet radios.

1989

- Creation of the New England Academic and Research Network (NEARnet), a regional data communications net operating at speeds up to 10 megabits per second using microwave and leased communication links.
- Development of the Defense Simulation Internet to carry data, voice, image, and video traffic used in military intelligence, operations, planning, and logistics in simulations and exercises.
- Development of Spokesman, a natural-language generation system.
- Development of BBN/Slate, a commercial product merging document conferencing and DIAMOND multimedia document handling.
- Installation for DARPA of the Terrestrial Wideband Network for multimedia conferencing.
- Development of SPROCKET, an object-oriented development environment for simulating intelligent agents.

1990

- Development of the Dynamic Analysis and Replanning Tool (DART) for rapid modification and transportation feasibility analysis for time-phased force and deployment data; technology eventually used by the military during Desert Storm.
- Demonstration of a spoken language system incorporating speech recognition and natural language understanding running in real time on a commercially available workstation.
- Development of Physics Explorer, an instructional software system of interactive models for exploring the physical sciences.
- Development of Video Information Server, a network library of still and motion video sequences accessed by text-retrieval methods.

1991

- Development of PLUM, a text processing system for information extraction.

1992

- Development and beta testing of BBN/Prism software system for acoustic modeling and analysis.
- Development and demonstration of CADRE, a system for recognizing and responding to air traffic controllers as they say identification codes.
- Application of HARC, a BBN speech-recognition system, to air traffic controllers speaking aircraft-identification codes.
- Application of DART, collaborative planning technology, to Desert Storm.
- Receipt of DARPA's Outstanding Performance by a Contractor Award for DART (See 1990).
- Completion of the Air Travel Information System (ATIS), a DARPA-sponsored project demonstrating real-time integrated speech recognition and language understanding on workstations and enabling travelers to obtain flight information through a system dialog.
- Demonstration of Byblos (See 1987) as a software-only real-time, speaker-independent, large-vocabulary, continuous speech recognition system on a UNIX workstation.
- Implementation of Defense Simulation Network (DSN).
- Development of genetic-algorithm system for automatic construction of schedules.
- Recreation of key Desert Storm battle using BBN SIMNET facility.
- Study of acoustic reverberation at two drifting ice camps north of Greenland, using a ten-computer network.
- Receipt of EDUCOM's National Education Software Award by an NSF sponsored system, RelLab, for teaching relativity to high-school students.

1993

- Implementation in Boston and Worcester, MA, of the Cooperative Networked Community of Tomorrow (CO-NECT), a prototype school design program using computer and networked communications technology as part of a project-based curriculum.
- Demonstration of a large-vocabulary (20,000 words) continuous speech-recognition system in real-time on a commercial, off-the-shelf computer.
- Development of a secure email system for the Department of Defense.

1994

- Formation of BBN Planet, which became one of the largest Internet Service Providers.
- Development of BBN Internet Server, a full-featured, easy-to-manage server for school networks.

- Development of the MultiGigabit Router, the prototype for many of today's high-speed routers.
- Development of Identifinder, a system for finding named identities in multi-lingual text.
- Development of the Hidden Understanding Model of semantics, which derives the meaning of a query from its sequence of words.

1995

- Development of Gigabit Satellite Network for the provision of OC-3/OC-12 (155Mps/622Mps) services via NASA's experimental Advanced Communications Technology Satellite (ACTS).
- Development of optical character recognition based on BBN Byblos speech recognition system. (See 1987).
- Development of Command Control Communications and Intelligence (CCCI) systems and architecture for video and communications for the new attack submarine.
- Development of the Voice-Activated Logistics Anchor Desk (VALAD), to permit logistics experts to obtain information using speech.
- Development of PINpaper, an intelligent agent to create a personal Internet newspaper from diverse electronic sources.

1996

- Formation of the Parlance Corporation, to use BBN's advanced speech recognition technology (See 1988) in its turnkey call routing service.
- Completion of development of the Certificate Authority Workstation for supporting several critical Defense Message System (DMA) functions, including secure messaging, certification hierarchy support, cryptocard management, and DMS certification creation and revocation.

1997

- Development of Distant Thunder, demonstrating the operational feasibility of autonomous multistatic active detection, classification, and localization of submarine targets using a field of acoustic sensors.
- Acquisition of BBN by GTE Corporation.
- Development and demonstration of Speak'n'Surf, a speech recognition and search capability system for use over the Internet.

1998

- Development of Rough'n'Ready, incorporating many speech and language processing technologies to extract information from speech and create indexed, searchable audio archives.
- Development of TravelXpress, a telephone fax-back information system for flight information.

1999

- Receipt of IEEE Corporate Innovation Recognition "For pioneering contributions to computer networking technology through the development of the first packed switches, the ARPANET Interface Message Processor (IMP), and Terminal Interface Message Processor (TIP)".
- Demonstration of advanced, fully mobile and secure internetworking for the Department of Defense under the Unmanned Aerial Vehicle On-Board Switch (UAV/OBS) program.

2000

- Development of email routing using topic identification technology.
- Development of Talk'n'Travel, an advanced dialog system for making travel plans, including flight, rental car, and hotel reservations.
- Merger of BBN Technologies' parent company with Bell Atlantic, forming Verizon.