

THE HISTORY OF AUTOMATIC IDENTIFICATION

ID Systems- The Magazine of Keyless Data Entry

Augmented and Edited by David Allais – Rev F

1949

Bernard Silver and N. Joe Woodland file a the patent application “Classifying Apparatus and Method”, out of which comes the first machine-readable bar code, called the Bull’s Eye Code.

1951

Dr. David Sheppard develops the first practical optical character recognition (OCR) scanner. Within 20 years, over 50 companies and 100 different OCR readers will enter this new market.

1956

The American Bankers Association selects MICR as the standard machine language for check handling.

1961

The first bar code scanner is installed by Sylvania General Telephone on the Boston & Maine Railroad. The unit reads red, white, blue, and black bars identifying gravel train cars and commuter cars.

1963

The first scanner based on fluorescent light technology is developed by the Kellogg Company. The scanner reads over/under codes.

1964

Recognition Equipment, Inc. installs the first font-independent OCR reader at Fort Benjamin Harrison, Indiana. It reads ordinary typewritten characters.

1967

The Association of American Railroads adopts optical bar coding to monitor shipments in transit throughout North America. An ineffective label maintenance program will later derail the entire project.

1968

Computer Identics, the first company whose product line is based entirely on bar code, is founded by David Collins.

1969

The first helium-neon laser fixed-position scanner is developed by Computer Identics.

1970(a)

The first smart card patent is awarded in Japan to Dr. Kunitaka Arimura. Seventeen years later, the first major U.S. smart card program will be established by the Department of Agriculture for peanut farmers.

1970(b)

Motorola introduces the first portable radio frequency data collection (RF/DC) system.

1970(c)

Norand introduces the first handheld portable data terminal.

1971(a)

Jim Bianco of Control Module develops the PCP portable bar code scanner. The unit is the first portable to use a microprocessor (Intel 4004) and a digital cassette recorder. The cassette recorder produces a memory in excess of 500K, unique at the time. The scanner weighs in at 27 pounds.

1971(b)

The first European symbology, Plessey Code, is introduced by the Plessey Company in Dorset, England. Originally developed as a file tracking system for the Ministry of Defense, the bar code and reading system end up being used for library checkout.

1971(c)

Magnavox, unconvinced there's any real future for bar coding, sells General Atronics to Al Wurz, who renames the company Accu-Sort.

1971(d)

The first portable wand scanning unit, Norand 101, is developed by the Norand Corporation, signaling the advent of portable retail scanning and a brand new era for auto ID. It facilitates placing orders directly off the shelf, significantly reducing time spent ordering products.

1971(e)

REI introduces the OCR/S 2000. The system can process up to 24,000 documents per minute. Ear protection is required against the tremendous noise the machine makes.

1971(f)

AIM (Automatic Identification Manufacturers) is formed as a new division of the Material Handling Institute. There are four charter-member companies: Computer Identics, Identicon, 3M, and MEKontrol. Later, in 1986, AIM breaks off on its own with a membership of 85 companies. At the beginning of 1991, the group's ranks have swelled to 159.

1972(a)

Interleaved 2 of 5 is developed by Dr. David Allais of Intermec as a means of providing Computer Identics with a bar code that would provide more data in a smaller space.

1972(b)

NCR releases color bar code, developed for retail point-of-sale.

1972(c)

A Kroger Supermarket in Cincinnati installs the first retail bar code scanning system. Skeptical shoppers are urged to verify coded prices on a scanner set up in the aisle; 100 Green Stamps are offered to anyone finding a code that doesn't scan properly.

1972(d)

Intermec introduces the Plessey Bar Code Printer, the industry's first "demand" impact printer. While achieving superb bar code print quality, the unit is large, noisy and has an inflexible fixed format. Today's state-of-the-art Intermec printer, the Easycoder PM4I Thermal Transfer Bar Code Printer, is quiet, and features a totally flexible image format

1973(a)

The UPC bar code standard, created by George Laurer of IBM, is announced. When the Uniform Code Council opens its doors, 293 companies have their own UPC-issued codes.; By 2003 there are over 300,000.

1973(b)

Verbex, a wholly owned subsidiary of Exxon, develops the first voice recognition systems.

1973(c)

Recognition Equipment develops a handheld OCR reader for Sears, Roebuck. It is the first portable OCR scanner to be used for inventory control.

1974(a)

The first UPC-reading scanner is installed at Marsh's Supermarket in Troy, Ohio. Since only 27 items are as yet UPC-coded, the store creates its own database of prices. The first item scanned is a ten-pack of Wrigley's gum, priced at 69 cents. Marsh's price is actually 67 cents, as correctly noted by the scanner. Hundreds of people from as far away as Japan and Denmark come to see the unit in operation. Within a decade, nearly half of all supermarkets in the United States will have scanners. And in 1989, 17,180 grocery stores will be equipped with scanning systems, representing 62% of grocery stores nationwide.

1974(b)

Code 39, the first alphanumeric bar code symbology, is developed by Dr. David Allais and Ray Stevens of Intermec. Prior to Code 39, commonly used bar codes could only encode numeric digits plus a few characters.

1975(a)

The "golden chicken" and other pricing errors of random weight items prompt the STAC committee to the Uniform Code Council to develop a check digit for the four digit price field in the UPC symbol. In March 1976 the Board of Governors approved the use of this price check digit.

1975(b)

The supplemental symbol for UPC is announced for use on periodicals and paperback books.

1975(c)

Intermec introduces an enhanced impact printer which provides for three independent lines of text together with interpreted bar code. These printers support every symbology including Codabar, Code 39, Interleaved 2 of 5, Nixdorf Code, Plessey Code, and UPC.

1976(a)

The National Retail Merchants Association chooses OCR-A as its standard; ten years later they will switch to UPC.

1976(b)

Europeans adopt their own version of UPC. Called EAN, it stands for European Article Numbering.

1976(c)

In a major breakthrough for the sight-impaired, Kurzweil Computer Products introduces The Reading Machine, designed to scan pages of text and speak the words aloud.

1977(a)

George Goldberg publishes the first issue of *Scan* newsletter.

1977(b)

ABC (American Blood Commission) publishes specifications for its symbol using Codabar.

1977(c)

Two companies, Amtech and Identronix Research, are formed to explore marketable applications for RFID.

1978(a)

The first patented laser bar code verification unit, the Laserchek 2701, is introduced by Symbol Technologies.

1978(b)

A big leap forward in standards development comes when Bill Maginnis of Hunt Wesson Foods spearheads the Distribution Symbology Study Group.

1978(c)

The industry's first vehicle-mounted RF/DC terminal is introduced by LXE.

1980(a)

Sato introduces the first thermal transfer printer. The Model 5323 is primarily a UPC printer for retail applications.

1980(b)

The earliest non-military application of RF/ID occurs when Identification Devices develops RF/ID tags for the identification of farm animals. In the same year, a French company, Statec, develops a passive programmable transducer.

1981(a)

Bar code scanning and RF/DC are used together for the first time.

1981(b)

The first linear CCD scanner, the 20/20, is introduced by Norand.

1981(c)

Recognizing the significance of the 1200-page LOGMARS report to American Industry, the first issue of *Bar Code News* (the forerunner of *ID Systems*) rolls off the presses. The new publication is a 12-page newsletter with three charter advertisers and 3,000 initial subscribers. The May '91 issue of *ID Systems* is a 124-page magazine with 102 advertisers and 58,000 readers.

1981(d)

“Bar code or die!” seems to be the imperative issued by the Department of Defense to its suppliers. Henceforward, LOGMARS Code 39 bar code will be required on all incoming shipments.

1981(e)

Code 128, authored by Ted Williams, is introduced by Computer Identics.

1982(a)

In a landmark event, Symbol Technologies introduces the LS 7000, the first commercially successful handheld, moving-beam laser scanner. This signals the beginning of portable laser scanning. By July 1988, the company will have manufactured its 150,000th scanner.

1982(b)

Dest Corporation introduces the first desktop electronic OCR document reader. The unit reads up to 250 pages per hour and costs less than \$15,000.

1982(c)

The first Scan-Tech is held in Dallas with 55 exhibitors present. No elaborate booths are allowed, so companies set up their displays on table tops. By comparison, over 280 companies will exhibit at Scan-Tech 91 in Dallas.

1982(d)

The first *Bar Code Manufacturers and Services Directory* is published by *Bar Code News*; 66 companies are included. In 1991 the *ID Systems Buyer's Guide* will list 660 auto ID firms.

1982(e)

The booklet *Bar Code Symbology* authored by Dr. David Allais is published by Intermec.

1983(a)

The first RF/ID system designed to identify dairy cattle for automatic individualized feeding is shipped to Babson Bros., of Oak Brook, Illinois.

1983(b)

ANSI MH10.8M becomes the first national technical standard for three bar code symbologies: Code 39, Codabar, and Interleaved 2 of 5.

1983(c)

The Automotive Industry Action Group (AIAG) adopts Code 39 as its industry standard. They are the first industry to use “field identifiers” to identify how the bar code symbol is to be used.

1984(a)

A UPC shipping container symbol identifying corrugated cartons of identical retail items is adopted and EAN publishes the same information as “Specifications for numbering and symbol-marking Despatch Units”.

1984(b)

After three years of industry effort, the Health Industry Bar Code Council adopts Code 39 as its first standard.

1984(c)

The bar code industry’s first introductory level text, *Reading Between the Lines*, by Craig K. Harmon and Russ Adams, is published.

1984(d)

The first Scan-Tech Europe is held in Amsterdam.

1985(a)

The Book Industry Systems Advisory Committee endorses Book Land’s EAN as the bar code of choice. By 1991, 98% of all books will be marked with bar code symbols.

1985(b)

FACT, the Federation of Automated Coding Technologies, is formed as a bureau of AIM. When formed, the group includes ten industries; in 1991, FACT will have 22 industry participants.

1985(c)

The first issue of *Automatic ID News* is published.

1985(d)

French banks order 16 million smart cards.

1986(a)

The first ID Expo, sponsored by *ID Systems*, is held in San Francisco, attracting 70 exhibitors and 1800 attendees. In 1991, exhibitors number 192 and attendees 7,775.

1986(b)

LXE introduces a system that accepts voice recognition as input to an RF terminal.

1987(a)

Now a four-color magazine with a circulation of 30,000, *Bar Code News* is rechristened *ID Systems*.

1987(b)

The first 2-D code, Code 49, is developed by Dr. David Allais and is introduced by Intermec.

1987(c)

The Center for Automatic Identification opens at Ohio University (Athens, OH) through the efforts of Professor James Fales. Cosponsored by AIM, its mission is to prepare professors to teach auto ID in the classroom.

1988(a)

Ted Williams of Laserlight Systems introduces the industry's second 2-D code, Code 16K.

1988(b)

The UCC, in coordination with EAN International, endorses Code 128 to encode supplementary information on shipping cartons (despatch units).

1988(c)

Data Matrix bar code is patented by Dennis Priddy US Patent 4,939,354 (filed May, 1988).

1988(d)

UPS Code (later renamed MaxiCode) is developed for United Parcel Service by consultants Don Chandler and Eric Batterman – U.S. Patent 4,874,936 filed 1988.

1989(a)

Teklogix introduces the first cellular RF system that allows an operator to move freely among cells without sacrificing data or frequency integrity. This enables an RF system to operate like a car phone.

1989(b)

FACT approves industry-wide data identifier standards.

1989(c)

EAN and UCC publish the UCC/EAN Application Identifier standard. This standard enables unambiguous interpretation of multiple types of data from Code 128 symbols and later from GS1 DataBar and Data Matrix.

1989(d)

In San Francisco, Scan-Tech 89 goes down in history as “ScanQuake.”

1989(e)

The first edition of *The Bar Code Book* by Roger Palmer is published. Over 50,000 copies of this book are sold as it goes through five different editions.

1990(a)

The American National Standard on Bar Code Print Quality, ANS X3.182, is published. This specification will later become ISO/IEC 15416.

1990(b)

Spread spectrum radio communication products are introduced to the auto ID market.

1990(c)

PDF 417, Symbol Technologies' 2-D code, is introduced. This symbology will be published by AIM in 1994.

1991(a)

The tenth-anniversary issue of *ID Systems* is published. Circulation passes 58,000 mark.

1991(b)

Ted Williams introduces Code 1, the first non-proprietary matrix bar code. AIM published it in 1994.

1991(c)

Results of the Bar Code Data Integrity Test at Ohio University are published.

1991(d)

Accu-Sort patents a “Scanner to combine partial fragments of a complete code” known commercially as DRX. This technique enables conveyor based omnidirectional laser scanning of bar code symbols that are substantially under square.

1992(a)

AIM directors approve the sale of ScanTech to Reed Exhibition Companies.

1992(b)

Intermec develops high speed reading of randomly-oriented Post Net (height modulated) symbols. This is the first commercial vision-based scanner, and over 10,000 are subsequently shipped to the U.S. Postal Service.

1993(a)

Jerome Lemelson licenses his portfolio of bar-code related patents to 12 Japanese auto companies for \$100 million.

1994(a)

QR Code is introduced by Nippondenso. The primary inventor is Masahiro Haro of Denso Wave, Inc.

1994(b)

The Quality Specification for the UPC printed symbol is published by the Uniform Code Council, thus legitimizing verification of UPC symbols.

1994(c)

The first 360 degree countertop retail scanner is released by Spectra Physics.

1994(d)

Intermec introduces the world's first hand-held omnidirectional scanner based on vision technology at Scan Tech.

1994(e)

The ISBT 128 standard is adapted for labeling blood, tissue, and cellular therapy products, replacing ABC Codabar. ISBT is the International Society of Blood Transfusion.

1995

US DOD contracts with SAVI for applying active RFID to cargo containers, wherein each tag encodes a manifest of the container's contents.

1996(a)

Data Matrix is substantially enhanced by the AIM TSC to include version ECC 200 and is published as an AIM standard.

1996(b)

MaxiCode is published as an AIM standard.

1996(c)

ISO/IEC JTC1/SC31 is convened to focus on global standardization for data carrier symbologies, data content structures, and conformance. UCC agrees to serve as Secretariat. This committee has issued more than 40 ISO standards as of 2010.

1996(d)

Header and syntax for 2-D bar codes is published as MH10.8.3. This enables unambiguous interpretation of non-retail 2-D symbols.

1997(a)

Punched Cards to Bar Codes, a compilation of over 270 different bar code symbologies is authored by Ben Nelson.

1997(b)

The RSS (subsequently renamed GS1 DataBar) family of small linear bar code symbologies is developed by Ted Williams for the Uniform Code Council.

1997(c)

Aztec code developed by Dr. Andy Longacre is published by AIM International.

1997(d)

QR Code is published by AIM International. Subsequently it is published as ISO/IEC 18004 in 1999.

1997(e)

The first joint meeting of the EAN Management Board and the UCC Board of Governors occurs in Chicago, beginning a new age of global standardization.

1997(f)

The inaugural meeting of the AIDC 100 takes place in Philadelphia, naming 60 charter members.

1998

The UCC and EAN International jointly announce specifications for Reduced Space Symbology (RSS) and composite symbology. RSS is renamed GS1 DataBar in 2008.

1999(a)

RSS symbologies and EAN.UCC Composite are published by AIM international.

1999(b)

The twenty-fifth anniversary of the Universal Product Code is celebrated at the Smithsonian Institution's National Museum of American History.

1999(c)

The UCC announces the creation of the Massachusetts Institute of Technology Auto ID Research Centre, with seed funding provided by the UCC, Procter & Gamble and the Gillette Company. The Auto-ID Centre develops the Electronic Product Code concept”

1999(d)

Code 93i, developed by Sprague Ackley, is published by AIM.

1999(e)

Data Carrier (Symbology) Identifiers are published as ISO/IEC 15424.

2000(a)

Code 128 is published as ISO/IEC 15417.

2000(b)

MaxiCode is published as ISO/IEC 16023.

2000(c)

EAN/UPC is published as ISO/IEC 15420.

2000(d)

Data Matrix is published as ISO/IEC 16022.

2001

PDF 417 is published as ISO/IEC 15438.

2002(a)

UCC and Electronic Commerce Council of Canada (ECCC) join EAN International as member organizations.

2002(b)

J-Phone (now Soft Bank Inc.) provides the ability to scan QR Code with mobile phones to access advertisements on the internet.

2003(a)

Wal-Mart announces their plan to implement RFID tracking in their stores and distribution centers.

2003(b)

The DOD issues a Memorandum entitled "Policy for Item Unique Identification (IUID) of Tangible Items" that made UID mandatory, requiring marking and tracking over 100,000,000 items using Data Matrix code.

2003(c)

With initial research on EPC coming to an end, EAN and the UCC establish a joint venture, EPCglobal to develop and oversee commercial and technical standards for the EPC Network.

2004(a)

EPCglobal releases a standard RFID air interface protocol in the Ultra High Frequency range. The standard's short name is Gen 2 (for generation 2) and it becomes rapidly accepted and implemented worldwide.

2004(b)

Following a 27-day patent litigation trial in 2002/3, U.S. District Judge Phillip Pro rules that Jerome Lemelson's bar code patent claims are invalid and unenforceable, thus ending the threat of major litigation that was hanging over all users of bar code.

2004(c)

The DOD published its final policy guidelines for the use of both passive and active RFID tags within its supply chain.

2004(d)

The U.S. FDA (Food & Drug Administration) publishes a rule mandating the bar coding of drugs.

2004(e)

ISO/IEC 15415 Bar Code Print Quality Test Specifications – 2D Symbols is published.

2005(a)

The name GS1 is launched for the former EAN International organization. The large majority of national organizations change their name to GS1 followed by country name, e.g. GS1 US.

2005(b)

Initial versions of a series of ISO standards (ISO/IEC 18000 parts 1, 2, 3, 4, 6 and 7) published which specifies the requirements for usage of the major global frequencies (air interfaces) for RFID (135 KHz, 13.56 MHz, 2.45 GHz, 860-960 MHz, and 433 MHz).

2006(a)

RSS (Reduced Space Symbology) becomes ISO/IEC 24724

2006(b)

Micro PDF is published as ISO/IEC 24728

2006(c)

Direct Part Marking (DPM) guideline is published as ISO/IEC 24720.

2007

The fifth edition of “The Bar Code Book” is published.

2008(a)

In a U.S. District Court summary judgment, the Veritec patent 5,612,524 is declared invalid, thus ending this threat of patent infringement against users of Data Matrix symbology.

2008(b)

Aztec Code is published as ISO/IEC 24778.

2009(a)

DotCode, developed by Dr. Andy Longacre, is published by AIM as ISS-DotCode.

2009(b)

GS1 celebrates the 35th anniversary of UPC.

2010(a)

January 1 is the sunrise date for GS1 DataBar on loose produce and coupons in U.S. retail.

2010(b)

The spirit of Scan-Tech is revived by the boards of AIM Global & AIM North America. The AIM Expo conference and tradeshow is to be held in Chicago November 1, 2.

2013(a)

ISO standard (ISO/IEC 18000 part 6 and associated parts 61 through 64) enhancing EPC Gen2 published which specifies the physical and logical requirements for a passive-backscatter, Interrogator-Talks-First (ITF) or tag-only-talks-after-listening (TOTAL) RFID system.

2013(b)

Series of ISO standards published for supply chain applications of RFID for products, packages, transport units, returnable transport and package items and freight containers (ISO 17367, 17366, 17365, 17364, 17363)