



The Electronic Product Code (ePC)

Nearly everyone who has ever made a purchase at a store over the last 25 years or so knows what a U.P.C. -- the Universal Product Code -- is. That bar code points to the basic information about that product (physical description and price) stored in the store's computer database. If there are 100 boxes of Magic-O cereal on a store's shelf, each will have the exact same U.P.C. on it.

The Electronic Product Code (ePC) has been called a U.P.C. on steroids. It can tell the difference between box 1 and box 100, or 1,000 or 1,000,000. It is encoded on a tiny RFID chip that contains up to 96 bits of information including a 40-bit serial number that identifies that particular product to a network containing a unique document of detailed information on that one box of cereal. Now you know where that particular box came from, where it was produced, when it was packed and shipped, when it arrived in the store and more. It provides coveted true item-level tracking by serving as an electronic birth certificate.

The ePC system was researched and developed by the Auto-ID Center, a partnership between almost 100 global companies and five of the world's leading research universities; the Massachusetts Institute of Technology in the U.S., the University of Cambridge in the UK, the University of Adelaide in Australia, Keio University in Japan, and the University of St. Gallen in Switzerland. The Center is dedicated to designing, building, testing and deploying a global infrastructure -- a layer on top of the Internet -- that will make it possible for computers to identify any object anywhere in the world instantly. That infrastructure will contain the EPC, the specification for cheap tags and cheap agile readers, Object Naming Service or ONS that will resolve the numeric EPC to the document location, Product Mark-up Language or PML (a new eXtensible Markup Language or XML) and Savant software technology.

Through studying ePC and its uses, the Auto-ID Center has so far determined that no one frequency is best for all applications, and most applications still require engineered implementation. Consequently, three different classes of tags are being developed: UHF Class 0 (860-930MHz with fixed ID), UHF Class 1 (860-930MHz with 96-bit write once, read many (WORM) memory), and Class 2, which has a larger memory.

The end result of this technology application streamlines and enhances the supply chain process in myriad ways, from reducing out-of-stock situations while lowering inventories, to reducing shrinkage and counterfeiting, to processing returns and recalls. If you know the status and location of each and every unique unit, the exercise simply becomes picking the right fruit out of the barrel instead of grabbing the whole barrel.

Development of the ePC and its attendant processes have the support of an impressive body of companies and organizations, from retailers and suppliers like Coca-cola, Unilever, Kraft Foods and Wal-Mart, to founding sponsors like the Uniform Code Council (UCC), which recently merged with RosettaNet, a nonprofit focused on implementing standards for online supply chain transactions. UCC is the standards body that created the original U.P.C. scheme.

With the ePC system poised to pass from its research to commercialization phase, the Auto-ID Center transferred its work to the Uniform Code Council (UCC) and EAN International, which administer the U.P.C./EAN bar code system and many other industry standards. The UCC and EAN formed AutoID Inc. to administer the ePC project.

Visit www.autoidcenter.org and www.uc-council.org for more information.