

New bar codes, new functionality

Martin Morrison - April 2009



A short history of bar codes for books

- The ISBN has always been encoded into one of the GS1 bar code types known as the EAN-13 bar code
- The first three digits of the encoded 13 digit number were always 978 to designate that an ISBN followed
- More recently 979 has also been added as a valid prefix for ISBN and the ISBN changed from a 10 digit number to a 13 digit number which now incorporates one of these two prefixes
- The EAN-13 bar code is scanned throughout the world in various retail outlets and the ISBN encoded in the EAN-13 sits happily alongside all other products that follow the GS1 number allocation rules
- The size of the EAN-13 bar code is a limitation on small products



Bar code scanning technology

- Early bar code laser scanners actually incorporated glass tubes filled with Helium-Neon gas and were expensive
- The development of solid state laser diodes driven by their use in CD and DVD players made bar code scanning much cheaper
- Linear imaging devices such as those used in fax machines and document scanners enabled an alternative method for scanning bar codes
- The big revolution in imaging devices has come, however, from the development of digital camera array sensors and in particular their use in mobile phones and this type of technology is seriously challenging the way in which bar codes will be scanned in the future



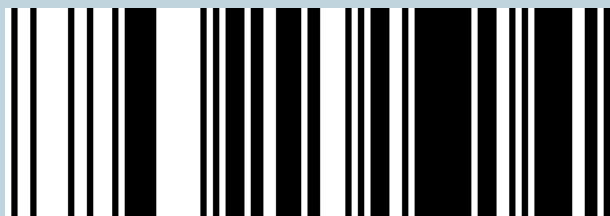
How have bar codes changed?

- The Universal Product Code (UPC-A bar code) from which the EAN-13 bar code was derived, first appeared in the 1970s
- These bar codes are still the main types used within the retail environment to identify single items



How have bar codes changed?

- Almost ten years ago a new bar code format was designed for use in the retail environment
- It was given the name Reduced Space Symbology (RSS) and was designed to occupy less space than the UPC and EAN bar codes
- One feature which helps reduce space is its ability to be stacked
- This 'new' bar code type has been renamed GS1 DataBar and is starting to be introduced on fresh produce items and has also been used for some time now in the US healthcare industry



Carrying additional data in the bar code

- In addition to the product identification it can be desirable to carry additional data about the product
- A further enhancement to the standard GS1 bar codes that has been adopted in a limited way by some US drug companies, enables batch and expiry data to be carried in a special multi-row bar code attached to the main bar code
- These bar codes were designed to be scanned with a scanning laser beam but it is necessary to scan each of the rows in order to decode



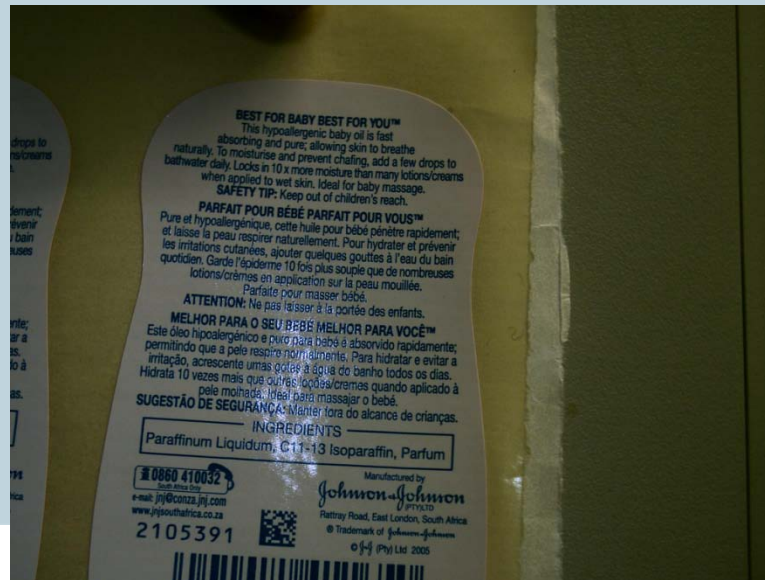
2D Matrix bar codes

- The introduction of imaging scanners has enabled the development of two dimensional bar codes that consist of a matrix of square elements and GS1 have now adopted one of this type of bar code that is called Data Matrix
- These 2D matrix bar codes are smaller than conventional linear bar codes and can also encode large quantities of data yet still remain relatively small in size



Applications for 2D matrix bar codes

- The European pharmaceutical industry is adopting the Data Matrix bar code in preference to any other
- Many companies have also started using Data Matrix bar codes for internal tracking purposes



Other matrix bar codes

- A popular 2D matrix code from Japan called QR code is being used as a method of linking internet enabled mobile phones to web sites



Looking to the future

- 2D matrix bar codes cannot be scanned by conventional laser scanners but many shops now use hand held imaging scanners
- Even supermarket checkouts may eventually move to imaging scanner technology
- An ISBN can easily be encoded in a 2D matrix bar code that is small enough to fit on the spine of a book and could therefore be scanned without even removing the book from its shelf

