

# Lottery Insights

March 2006

Volume 7 • Issue 3



## NSI

### BAR CODE LAUNCH PAGE 10



**West Virginia Lottery  
Unveils Plans for 20th Anniversary  
Page 13**



**Turning Coal Into Candy Canes**  
**Learning From Christmas 2005**  
**to Improve Lottery Profitability in 2006**  
**Page 32**



## NSI Launches Bar Code Technical Standard

In October 2002, the North American Association of State and Provincial Lotteries (NASPL) approved the creation of a standards initiative - the NASPL Standards Initiative (NSI)-which is dedicated to the adoption or creation of Technical Standards, Best Practices, and Certification Programs. The NSI effort was created to further lottery integrity, security, interoperability, and profitability.

NASPL with the help of The Open Group has launched its first Technical Standard and second initiative within NSI. Lottery jurisdictions and industry vendors can now certify against the Bar Code Technical Standard.

### Bar Codes for Instant Tickets in the Lottery Industry

Universal Product Code (U.P.C.)

#### Introduction

The Uniform Code Council (UCC) manages the standards for the Universal Product Code (U.P.C.) and the assignment of UCC Company Prefixes. Until now, some lotteries have been using the U.P.C. to include certain lottery information at variance with the standard retail use of the code.

The U.P.C. is a numerical system that uniquely identifies thousands of different vendors/suppliers and millions of different items that are warehoused, sold, delivered, and billed throughout the retail and commercial segments of the distribution channels. The U.P.C. provides an accurate, efficient, and economical means of controlling and tracking the flow of goods through the use of a product identification system.

#### Objectives

The objectives for defining a base U.P.C. standard are:

- To ensure a uniform implementation of the retail bar code across the lottery industry
- To allow retailers operating in multiple lottery jurisdictions to obtain identical data from all instant tickets sold
- Migration and adaptation to account for new technology at the point-of-sale (POS)

### Increased Sales of Instant Tickets at Existing Agents

The end-value benefit is to increase sales at existing lottery agent sites. This will be accomplished by introducing U.P.C. bar code standards that provide the definition and capability for retailers to be able to extract and interpret the same information from their POS system, regardless of which jurisdiction the store is in. In turn the standard will improve accounting and inventory methods in a way that reduces the time agents must spend on these support processes. It also increases the time they can spend on marketing and sales.

### Revenue Generation through Increase in Number of New Agents

Currently there are many retail chains and independent stores that do not sell lottery tickets. If the selling, inventory, and accounting processes were made more seamless, more of the non-participating retail establishments would agree to participate in lottery sales.

### Improve Lottery-Retailer Customer Service Relationships

Most lotteries are facing challenges in their ability to offer additional financial compensation to retailers. Enhanced customer service appears to be one vehicle available to improve the retailer-to-lottery relationship. An alternative way is to offer tools that reduce the cost and improve the accuracy of selling lottery tickets.

### Decrease Training Time for Retail Employees

The workforce turnover in the typical instant ticket retail outlet is approximately 130 percent per year. This equates to an average employee turnover rate of eight months. The burden of constantly training new employees can be greatly reduced if widespread use of the U.P.C. information on the ticket can effectively reduce the transaction of selling the instant ticket to a simple bar code read at the POS device or lottery terminal. Relieving the burden of constant training could potentially attract new retailers.

## Definition

The following elements define the U.P.C. Technical Standard:

- All lottery instant tickets must include the standard U.P.C., which is a U.P.C.-A (data carrier) carrying a UCC-12 data structure.
- The UCC-12 comprises the UCC Company Prefix, an Item Reference, and a Check Digit.
- The UCC Company Prefix varies in length from six (6) to ten (10) digits.
- The Item Reference varies from five (5) digits to one (1) digit.
- The length of the UCC Company Prefix plus Item Reference is always 11 digits.
- The U.P.C. bar code should not have the Price Point substituted for the Item Reference.

## Recommended Usage

The U.P.C. bar code uses the UCC Company Prefix assigned to each company, coupled with an Item Reference to identify each of the company's products. The combination of these eleven digits, plus a Check Digit, forms the 12-digit number, which uniquely identifies one and only one item.

## Rationale

Statistical analysis of the survey results shows that at least three quarters of lotteries currently include a U.P.C. bar code on their instant tickets.

The most common standard employed for the U.P.C. bar code on instant tickets is the 12-digit all-numeric code that uniquely identifies the company/product combination. We can say with statistical confidence that over 50 percent of lotteries that have a U.P.C. bar code will make use of the 12-digit standard.

We can be confident that, in addition to the Lottery ID and Game Number, minorities of lotteries also include Price Point information in the Item Reference.

The placement of the bar code is on the rear of the ticket in the majority of cases, although the exact placement on the rear of the ticket varies from lottery to lottery. We can be confident that few if any lotteries place the U.P.C. bar code on the front of the ticket.

Despite the majority of lotteries including a U.P.C. bar code on their instant tickets, we can infer from statistical analysis that very few lotteries actually scan the U.P.C. bar code on their lottery terminal, though the Game Number is invariably duplicated on the lottery-specific bar code which the majority of lotteries do scan.

The driver for including the U.P.C. bar code on the ticket is for the convenience of those retailers who choose to scan the U.P.C. bar code. Some large retail chains have a policy of always scanning the U.P.C. bar code; others do not. The proportion of retailers that do use the U.P.C. bar code is impossible to infer statistically from the survey data, but the Working Group representatives believe that it is a small minority.

Clearly in the case of an integrated U.P.C. and lottery-specific bar code, the lottery and the retailers would have access to all the U.P.C. data on scan, and duplication could be illuminated. Statistically few if any lotteries consider that the existing U.P.C. standard can convey useful additional information to that which the standard requires. Likewise, few cite any reason - such as printing cost of ticket space - as an impediment to including the U.P.C. bar code on instant tickets.

## Lottery-Specific Bar Code

In addition to the U.P.C. printed on each of the instant tickets, almost all lotteries make use of a lottery-specific bar code that is imaged on the back of the ticket, and is specific to each lottery.

This bar code currently contains proprietary and secure information that is encrypted and which allows for the validation and accounting of each instant ticket within an instant game.

This bar code also allows the instant ticket printer to inventory all tickets delivered to the lottery.

Unlike the U.P.C. bar code described above, the lottery-specific bar code is different for every ticket in the game and is "imaged" using a high-speed ink jet imager rather than "printed" by conventional printing methods.

The content of this information - which is in addition to that provided on the U.P.C. bar code - is standardized in a way that allows the definition of the fields and specific elements to be standardized, so that certain fields can remain proprietary and others can be standardized and open for purposes of improving processes such as accounting and reporting.

## Objectives

The objectives for defining the additional information to be included on a lottery-specific bar code are:

- To ensure a uniform implementation of the lottery-specific bar code across the lottery industry
- To increase the information content of the lottery-specific bar code
- Migration and adaptation to account for new technology at the POS and lottery terminal

## **Business Drivers**

### **Increase Lottery Effectiveness**

The end-value benefit to lotteries specifically is the ability to include additional useful information in the bar code, such as ticket length, pack size (quantity), or other items. This information would be especially useful with Instant Ticket Vending Machines (ITVMs) for tracking, loading, and reporting. Furthermore, this bar code could increase efficiencies through automation in return processing (warehouse and field), inventory control, distribution control, and accounting.

### **Reduced Costs of Terminal Equipment**

Currently there is considerable variation between the format and content of the lottery-specific bar code and the uses for the information it contains. Further, there are differences in the bar code symbology used such that not all terminals are capable of reading all the bar code variants. Vendors must therefore develop multiple variants of terminal equipment to meet the specific needs of each lottery. A standard lottery-specific bar code would provide vendors with the opportunity to reduce the engineering required to address each bar code variant. This means reductions in development effort and economy of scale of manufacture. The consequent cost savings for vendors could be passed onto the lottery in the form of reduced equipment cost.

### **Greater Freedom-of-Choice in Procurement**

Currently there is considerable variation between the format and content of the lottery-specific bar code and the uses for the information it contains. Not all terminals are capable of reading all the variants of codes. This means that vendors who want to compete for system upgrade or re-equipment procurements for a lottery jurisdiction that they do not serve must redesign existing hardware and software applications to the specific bar code in use. The incumbent vendor does not have these costs to the same degree. The effect of this is to favor the incumbent supplier and thus to restrict the lottery's choice in procurement. If vendors can base their design on a single standard for the lottery bar code that will apply across all lotteries, the "playing field is leveled" allowing lotteries the opportunity to multi-source from multiple suppliers. The improved competition can drive innovation and provide downward cost pressures.

### **Reduced Printing Costs**

While ticket formats may continue to vary between different lotteries, a single standard for the lottery bar code will provide some economy-of-scale and may avoid printers having to re-tool to print for different lotteries.

### **Standard Application Design**

The benefits of standardization for hardware equipment

also apply to the applications that make use of the data presented by lottery terminal equipment. It would be possible for the equipment supplier's software developers to assume a standard data content and structure enabling a single general bar code content application to be made portable across all lotteries. This will reduce the time needed to develop the software for different lotteries and would standardize the testing process when lotteries make bar code content changes. Furthermore, it enhances the opportunity for third-party software developers to design portable software applications and components broadening the choice lotteries have in procurement and facilitating suppliers re-use of software components and libraries. The resultant cost savings could be passed on to lotteries.

### **Timeliness of Adoption**

It is not anticipated that any lottery will modify its pre-existing ticket systems to align with this standard, unless they perceive that the benefits outweigh the costs. Rather, lotteries may more likely choose to require adherence to this lottery-specific bar code standard for their next procurement cycle, or alternatively move to an integrated U.P.C. and lottery-specific bar code in accordance with this standard. The vendor representatives who worked on this standard expressed a potential willingness on behalf of their organizations to conform to the lotteries' wishes in this respect.

### **Rationale**

In the vast majority of cases (statistically almost 80 percent) the current lottery-specific bar code on most instant tickets is in the form of an Interleaved 2-of-5 bar code.

Over 90 percent of lotteries currently encode inventory and ticket validation information within the lottery-specific bar code. In practice, the bar codes are scanned for QA purposes during the manufacturing and distribution process and are also scanned at the retail lottery terminal for ticket winner validation. In this manner, the bar code information may be typically used for validation or stock control purposes, though other uses are possible. This is a distinct bar code from the retail-related U.P.C. bar code and retailers do not ordinarily scan it at the POS device.

Flatbed scanners may not be able to scan this code; normally, only the lottery terminal scans the bar code. Standardization of the code should bring possible benefits to lotteries in standardization of lottery terminal hardware and lottery software applications.

We can statistically infer from the survey results that all current additional lottery-specific information could be contained within 24 digits for the vast majority (80 percent of lotteries), though in practice we could expect that this

*(Con't Page 23)*

(NSI From Page 12)

will be the case for all lotteries. However, statistically almost 75 percent of lotteries could encompass all their current data in 22 digits or more.

Taking each field in turn:

- The majority (just fewer than 75 percent) use three (3) digits in their lottery bar code for the Game Number. One of the respondent's uses four (4) digits and the U.P.C. representation of Game Number (Item Reference) is five (5) digits, so a recommendation of five (5) digits will in all probability suit all lotteries.
- The majority (just fewer than 75% percent) use six (6) digits in their lottery bar code for the Pack Number. One of the respondents uses seven (7) digits, so a recommendation of seven (7) digits will in all probability suit all lotteries.
- All those who responded to the survey question use three (3) digits for the Ticket Number, so that is the recommendation.
- The statistical majority of lotteries use eight (8) digits or below for the Validation Number, but two of the respondents use nine (9) digits. A recommendation of ten (10) digits will probably meet all the current lotteries' needs.
- There is no statistically significant consensus for the number of digits for the Price Point, but no one reported using more than three (3) digits.
- The most popular number of digits used for a Check was two (2), but three (3) digits should satisfy at least 80 percent of lotteries. Given that one (1) digit is also included in the U.P.C. bar code, a further two (2) digits should be a safe recommendation.
- Additional fields to render the standard independent and capable of future evolution are a Format ID field to define the standard variant selected showing how the standard is formatted in the bar code. This will also permit some trade-off between the lengths of the Validation Number field and the Check Digits field if desired. A four (4)-digit field is recommended for the Format ID.

We can be confident that most, if not all, of the lotteries use the current lottery-specific bar code for Validation and Activation. A further use for the majority of lotteries is Return Processing (Warehouse) and Inventory Control. Other uses include Accounting, Distribution Control, Reporting, Order Packing, Delivery Confirmation, Settlement, and Return Processing (Field). A simple majority of all survey respondents have such a use, but there is an insufficient number to imply any universal use across the population of lotteries as a whole. However, when asked about future usage, the majority of respondents cited Accounting, Distribution Control, Delivery Confirmation, and Return Processing (Field) as desirable.

## Future Directions

Due to the limited space on instant tickets, it is expected that the lottery-specific bar code standard will not change significantly in the future, unless it is accompanied by the ability to capture and scan data in a reduced space format using technology such as Reduced Space Symbology (RSS) or some other form or new technology that allows more data to be stored, read, and interpreted - see Section 2.3.

## Integrated U.P.C. and Lottery-Specific Bar Code

### Introduction

It is possible that future technologies will converge on an integrated U.P.C. and lottery-specific bar code that can be scanned by both the lottery terminal and the retailer's POS device. In principle, such a bar code could be scanned only once to meet the needs of both the lottery and the retailer, but there are security and other technical barriers to this level of integration.

At this point in time, this Technical Standard does not presume an underlying bar code technology for an integrated bar code containing retailer and lottery information. However, RSS has been identified as one possible bar code technology that would meet the needs of the Technical Standard.

### Objectives

The objectives for defining the additional information to be included on an integrated bar code are:

- To ensure a uniform implementation of an integrated lottery and retail bar code across the lottery industry
- To increase the information content provided by the integrated U.P.C. and lottery-specific bar code
- Migration and adaptation to account for new technology at the POS and lottery terminal

### Business Drivers

#### Improved Data for Retailers and Lotteries

Currently the U.P.C. standard does not allow for information in addition to the UCC Company Prefix and Item Reference for each item. There are other aspects of lottery-specific information that may be of use to retailers in their accounting practices were that information made available to them by means of a scan at the POS. An integrated U.P.C. and lottery-specific bar code could be read by the retailer's scanner, enabling unencrypted information - such as Game Number, Ticket Number, etc. - to be used by the retailer, which would be particularly beneficial in providing accounting information that could automate the inventory, distribution, and re-ordering processes. The ability to scan in elements such as Price Point would increase ease-of-use and would decrease time and effort spent by the retailers

and lotteries on accounting and reconciliation efforts. The increased ease-of-use may also increase the number of retailers selling lottery tickets, which in turn would increase sales, benefiting retailers, lotteries, and vendors.

### **Opportunity for Integration of Retail and Lottery Accounting, Resulting in Increased Sales**

While there may be fundamental security and other concerns that would need to be addressed, in principle, an integrated U.P.C. and lottery-specific bar code gives an opportunity for a single scan at the POS to meet all the needs of both retailers and lotteries. This could be achieved by means of a standardized interface between the lottery terminal and the retailers' POS or in a utopian vision putting the lottery applications on the retailer's back-office systems and dispensing with the lottery terminal altogether. Clearly, whatever level of integration is achieved, it will have direct business benefits in the form of reduced sales costs for retailers through ease-of-use. Integration will result in increased sales and sales incentive, a benefit which could also translate into an increased number of retailers signing up to sell lottery tickets. This increase in sales would benefit lotteries, retailers, and vendors.

### **Bar Code Online Survey Introduction**

One of the initial tasks of the NSI Working Groups was to ensure that requirements for the Technical Standards and Best Practices are complete and that they address the actual needs of the lottery business. It is important that we establish a linkage between the business, lottery, vendor, retailer, and user needs and standardization requirements.

The strategy used to ensure that the proposed Technical Standard is aligned to real business needs was to fact-find the common practice for instant ticket bar codes and their use, and to draw up comprehensive data. This data was then used to identify common and best practices. This common and best practice was used to form the basis of the Technical Standard.

To this end, an online web survey was made available on The Open Group/NASPL web site and all 48 NASPL lotteries and the NSI Retail Council were invited to complete the survey.

The response from retailers was good and sufficient to provide a comprehensive picture of instant ticket bar code format and usage.

The approach was not to make subjective assumptions based on the data that resulted from the survey. Rather objective, repeatable mathematical statistical methods were used to refine the data to represent known facts for the complete set of operating lotteries in NASPL, with a specified level of confidence in accuracy. This was then used to

directly define the basis for the Technical Standard.

Survey Results from the Bar Code Online Survey can be reviewed in Section A of the Bar Codes for Instant Tickets in the Lottery Industry located on the NSI website: <http://www.opengroup.org/naspl/>

### **Bar Code Certification**

The first step in the certification process is to read the Guide to NSI Certification and Supplements. This document should be read completely prior to attempting to certify a best practice or technology as this document describes the program and the process in its entirety.

The following documents should be read and understood prior to certification, since you will be required to agree to them during that process:

- The NSI Certification Policy and Supplements define the policies that govern the operation of the NSI Certification Program. These policies define what can be certified, what it means to be certified, and the process for achieving and maintaining certification.
- The NSI Certification Agreement covers the terms and conditions of the certification service.

The significant highlights of the certification process are outlined below; further information can be found in the Guide to NSI Certification and Supplements.

- The NSI Certification Program is administered on behalf of the NASPL Standards Initiative (NSI) by its designated Certification Authority, The Open Group.
- Your organization will be granted a license to use the trademark in connection with your business practice or technology when your business practice or technology meets all the requirements for certification as defined in the NSI Certification Policy and Supplements and your organization has formally agreed to all the required terms.
- You must enter into a Certification Agreement for each business practice or technology registration. A certified entity is subject to re-certification on a periodic basis as stated in the NSI Certification Policy and Supplements.
- All business practice or technology information supplied to the Certification Authority will be treated as confidential as required by the Certification Agreement.

The Certification Authority may, from time to time, request proof that your business practice or technology remains in compliance with the requirements outlined in the conformance requirements as stated in the NSI Certification Policy and Supplements.

For details on the Certification Program visit the NSI Certification Web Site at <http://www.opengroup.org/naspl/cert>.