Implementation Guide

Bar Codes for Instant Tickets in the Lottery Industry

Version 1.0, June 13 2007

NASPL

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Bar Codes for Instant Tickets in the Lottery Industry

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Comments relating to the material contained in this document may be submitted to:

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Preface

North American Association of State and Provincial Lotteries (NASPL)

The NASPL Standards Initiative (NSI) was approved and funded by NASPL and the vendor community as a collaborative development effort with participation from the lotteries, gaming vendors, and retail associations. Project management and facilitation services for standards development and certification are provided by The Open Group in conjunction with NASPL.

The NSI vision is to provide an interoperable lottery environment that is based on a set of open Technical Standards, approved Best Practices, Certification and Verification programs that, when implemented, will improve the quality and integrity of the lottery environment, and will provide increased efficiencies, resulting in reduced costs and increased profit margins for lotteries, vendors, and lottery retailers.

The NSI mission is to establish a resilient organizational structure, set of processes, and procedures that will engage all constituents (lotteries, vendors, and retail representatives) in an environment of open discussion and cooperative development.

Further information about NASPL is available at www.naspl.org.

The Open Group

The Open Group is a vendor-neutral and technology-neutral consortium, whose vision of Boundaryless Information Flow™ will enable access to integrated information within and between enterprises based on open standards and global interoperability. The Open Group works with customers, suppliers, consortia, and other standards bodies. Its role is to capture, understand, and address current and emerging requirements, establish policies, and share best practices; to facilitate interoperability, develop consensus, and evolve and integrate specifications and Open Source technologies; to offer a comprehensive set of services to enhance the operational efficiency of consortia; and to operate the industry's premier certification service, including UNIX certification. Further information on The Open Group is available at www.opengroup.org.

The Open Group publishes a wide range of technical documentation, the main part of which is focused on development of Technical and Product Standards, Best Practices, and Guides. Full details and a catalog are available at www.opengroup.org/bookstore.

Readers should note that all published NSI Technical Standards and Best Practices, and any updates, in the form of Corrigenda, are available at www.opengroup.org/naspl/published.

1 Introduction

1.1 Purpose and Scope

This document is the Implementation Guide for Bar Codes for Instant Tickets in the Lottery Industry. It has been developed by The Open Group. This Guide is intended to help lotteries implement the Bar Codes for Instant Tickets in the Lottery Industry Technical Standard, hereafter referred to as the Technical Standard. The Technical Standard outlines the use of bar codes on Instant Tickets for tracking of inventory and use by retailer point-of-sale systems. The Technical Standard is intended to provide a standardized approach to bar codes within the lottery industry.

1.2 About This Document

The structure of this document is as follows:

- Chapter 1: Introduction

  This section introduces the document and describes the purpose and scope of the Implementation Guide.

- Chapter 2: Why Implement the Technical Standard?

  This section addresses the business rationale and operational issues that are driving the implementation of the Technical Standard.

- Chapter 3: How to Implement the Technical Standard

  This section provides a guide to implementing the Technical Standard.

- Chapter 4: Certification/Verification Process

  This section looks at what comes after the implementation of the Technical Standard, with a focus on moving toward formal certification/verification; that is, NSI Verification for lotteries and NSI Certification for vendors.

- Chapter 5: Contact Information

2   Why Implement the Technical Standard?

This section sets the operational context and describes the business drivers and objectives for implementing the Technical Standard.

Bar codes have been in use on instant tickets for many years. Currently, most of the existing bar codes are specific to a particular lottery or vendor. The bar code is proprietary in nature and used to validate a winning ticket. Bar codes are also in use at the pack or book level to track inventory. The Technical Standard establishes a format that can be used consistently by the lottery industry and also adds the dimension of the UPC bar code as a means to further bar code use to the retailer's point-of-sale system.

From a lottery point of view, there are three major, compelling reasons to implement the bar codes as outlined in the Technical Standard:

1. To provide better tracking of instant ticket inventory. The Technical Standard defines enough data to allow the bar code to track pack and ticket-level information without compromising the validation purpose of today's bar codes. This additional information will allow better tracking of inventory, even to the ticket level. Better tracking drives better controls, saving lotteries and retailers inventory losses.

2. The addition of valid UPC bar codes. Valid UPC bar codes allow retailers to utilize their point-of-sale or POS system for ticket sales. The point-of-sale system can control price, fund collection, shift accounting, etc. In short, this additional bar code allows the lottery specialized product to be more consistent with the other products handled by retailers. All of the retailer's normal control systems can also control the sale of lottery instant ticket product.

3. The standardization that brings lottery product into alignment with other products sold by major or large retailers. Many large retailers avoid instant tickets due to the specialized training and largely manual processes involved. By standardizing with bar codes that will work on existing retailer point-of-sale systems, these larger chains can more readily sell lottery products.

3   How to Implement the Technical Standard

3.1   Read the Technical Standard

The Technical Standard was developed within the NSI Technical Standard Working Group and was subjected to a wide review open to all NASPL lotteries and NSI vendors. Following the review, it was approved by the NSI Steering Committee and ratified by the NASPL Executive Committee.

In order to implement the Technical Standard, you must read the Technical Standard. In particular, you should become very familiar with Chapter 2 in the current version of the Bar Codes for Instant Tickets in the Lottery Industry Technical Standard, which can be found at www.opengroup.org/naspl/published. The requirements specified in Chapter 2 of the Technical Standard must be adhered to as part of conformance to the Technical Standard. It is important to note that all of the prescriptive terms found in that chapter must be interpreted according to the definitions in Section 1.3 (Terminology) of the Technical Standard.

3.2   Implement the Technical Standard

The following is a roadmap on how to implement the Technical Standard. It is a guide and not necessarily mandatory, but will help with correct implementation of the Technical Standard within your organization. Practitioners should refer to the Technical Standard to understand what the mandatory requirements are. Practitioners may choose to explicitly follow the steps as outlined in this Guide, or they may choose to combine them or do them in a different order, depending on their particular circumstances. For example, some practitioners will already have in place procedures, templates, working methods, and technology (where appropriate) that will merely need to be updated to reflect the Technical Standard; others may need to create these from scratch. The approach to implementing the Technical Standard may also be influenced by where an organization currently is in the lifecycle of activities defined by the Technical Standard. Regardless of a practitioner's current state of readiness, following all the steps as written in their entirety in the order stated will provide a deterministic roadmap to successful implementation of the Technical Standard.

3.2.1   Familiarization and Commitment

This is the starting point to implementation. It is very difficult to implement requirements that are not understood or to which staff may object on the basis of "that's not how we do things here".

All staff that will be responsible for operating under the Best Practice or working with technology that incorporates the Technical Standard should familiarize themselves with the content of the Technical Standard. It is unlikely that each individual will understand every requirement initially. There are recourses that can help with this. Team meetings will help to

ensure common understanding and it is possible that a requirement which may appear obscure to one individual is clear to another. A group discussion at this stage can help to establish common ground for the changes that will need to be made to implement the Technical Standard and can feed into the next stage in the process – the Gap Analysis.

Most importantly, the familiarization exercise should be used to identify any requirements that need explanation or clarification. The first resource to be consulted should be the Technical Standard FAQ (see Section 3.3). If an issue remains, then the next resource is to contact the Technical Standard support contact. It is far more efficient for all concerned – both the practitioner and the Certification/Verification Authority – when a requirement can be implemented correctly the first time, rather than need corrective action after formal assessment. Spending the time to fully understand the Technical Standard before starting to implement it is likely to save time overall by avoiding the need for rework.

Finally, at a team meeting it will be necessary to remove roadblocks to implementation. Many of us become fixed in the way we approach our work and can be resistant to change. For the implementation to be a success, everyone responsible for operating in accordance with the Best Practice or working with technology that incorporates the Technical Standard needs to be committed to it. This may mean certain customs and practices or technical approaches have to be abandoned or modified. It is the business practice or technical manager's duty to ensure all staff affected by the Technical Standard are committed to making it work within their organization and in their day-to-day work.

3.2.2 Gap Analysis

The gaps are the differences between the way things have been done, and are currently done, and the requirements of the Technical Standard. A gap may be a requirement of the Technical Standard which is handled some other way, is only partly met, or may not be addressed at all in the current practice.

It is recommended that, in the case of a Best Practice, a current project and/or a recently completed project, or, in the case of a Technical Standard, the current technology, be used as the basis for the gap analysis. The gap analysis is an internal informal method to establish to what extent the Technical Standard is currently applied, and to what extent existing custom and practice and/or technology must change to implement all the requirements of the Technical Standard.

Requirements Checklist as a Tool for Gap Analysis

Gap analysis is most readily approached by a compliance matrix between each Technical Standard requirement on the one hand, and the way things are currently done on the other.

In the case of a Technical Standard, this would be a matrix of the requirements and the current technology (hardware or software programs) that is currently being deployed. In the case of this Technical Standard, the lottery will need to decide which of the three possible implementation paths is taken:

- Implementation of the lottery-specific bar code as detailed in the Technical Standard

- Implementation of the UPC and lottery-specific bar code

- Implementation of the integrated UPC/lottery-specific bar code

This choice will drive the requirements for the lottery as outlined in each appropriate section of the Technical Standard. From these, a specific Requirements Checklist can be complied by the lottery.

For each requirement listed in the Requirements Checklist, the practitioners should determine which of the following categorizations apply. At this point in time it is not necessary to consider whether the requirement is categorized as "must", "should", or "may" in the Technical Standard; that will come later in the process.

1. **Compliant**: The practitioners believe that the processes or technical approach they normally use comply with the Technical Standard requirement and they have documents, records, or technology in which the requirement is instantiated.

2. **Partly-compliant**: The practitioners believe they meet the spirit of the requirement but they omit some of the detail or they do it in a slightly different way.

3. **Non-compliant**: They do not do it.

In addition, for every requirement the practitioner should determine if (as applicable):

1. It is realized in planning documentation and/or standard templates.

2. It is realized in project records.

3. It is realized in technology.

Finally, the practitioner or technical manager should note the status of each requirement marked partly-compliant or non-compliant.

- If its status is "must", then this is a deficiency that has to be corrected for the organization's implementation of the Technical Standard to be compliant.

- If the status is "should", then the practitioner or technical manager should treat this as a strong recommendation to implement; however, if the practitioner or technical manager has a compelling reason to use an alternative method of meeting the requirement, this will not necessarily be a barrier to compliance in the future. It should be noted, though, that rationale such as "at the moment that requirement may just not be the way it is done in custom and practice" is not in itself a compelling reason to depart from the Technical Standard.

- If the status is "may", then implementation is optional and the practitioner or technical manager might want to decide whether implementation is desirable or not.

By methodically going through each requirement in this way, it should be possible to identify the areas where the Technical Standard is not currently followed and whether there are documented processes, templates, or technology (if applicable) that need to be created or modified to ensure that the Technical Standard is followed in future projects.

3.2.3 Implementation of the Technical Standard

This section focuses on how to implement the Technical Standard requirements with an eye to being ready to apply to the formal validation program.

As mentioned above, there are three possible approaches for implementation of the Technical Standard by a lottery, as follows:

- Implementation of lottery-specific bar codes

- Implementation of lottery-specific and UPC bar codes

- Implementation of the integrated UPC/lottery-specific bar code

In all three cases, the lottery needs to consider both the printed bar code(s) on the ticket as well as the bar code equipment utilized by the lottery to read or scan these bar codes into lottery systems. Another key factor in implementation is the current capability of retailer point-of-sale bar code equipment, which comes into play during the discussion of the integrated UPC/lottery-specific bar code.

3.2.3.1 General Considerations

One issue with all bar codes on instant tickets is space on the ticket. Bar codes consume space that marketing wants for product information. Two bar codes take up more space, and more information requires bigger bar codes. This space war is the first issue that will need to be addressed in implementation. Get the lottery's marketing and ticket design personnel involved in the implementation from the beginning so that there is no surprise when the requirements for space become reality.

3.2.3.2 Lottery-Specific Bar Code

There are two aspects of implementing the lottery-specific bar code, as follows:

- Technical Implementation

- Logistical Considerations

Technical Implementation

The technology involved with handling bar codes has become common-place. Bar codes and bar code readers are everywhere and utilized in most tracking applications. This technology is also growing and expanding as new capabilities are brought to market. The technology breaks down into three components from the lottery's point of view, as follows:

- Bar code encoding and printing

  This is simply the means by which the data defined in the Technical Standard is represented as a physical bar code on the ticket. There are many ways to encode this information and beyond the scope of this document to detail. Information on bar code encoding can be found via any search engine utilizing the key words "bar code encoding". The lottery's instant ticket vendor will also have input into the encoding decision. Most

vendors have several formats they can produce and will help the Lottery understand some of the implications of the encoding choice.

- Reading the bar code by lottery systems

    The lottery systems must be capable of reading or scanning the lottery-specific bar code. This may require bar code equipment upgrades; however, most modern bar code readers have the capability of reading multiple types of bar codes. The limiting factor is often the support software that handles what is scanned. If the lottery plans to utilize existing equipment, the capabilities of that equipment will be the limiting factor in the decision on which encoding method to use, as described above. If new technology is being deployed, then the specifications for the encoding methodology will be used to purchase the new equipment.

- Support in the instant ticket management system

    Keep in mind that changing the bar code on the ticket requires that the supporting systems have the capability to deal with the new codes and the resulting information. The Technical Standard expands the amount of information included in the lottery-specific bar code. This can be an issue for older instant ticket management systems. While most of the information included in the lottery-specific bar code exists in most instant ticket management systems, the information may not be accessible as a single block of data. This may require a mapping exercise with a resulting application that translates transactions between the instant ticket management system and the bar code technology. In short, involve your instant ticket management provider in the plan for implementing the Technical Standard.

Logistical Considerations

The logistical concern in implementing a new bar code is the existing inventory of the older bar codes. The lottery system must support both bar codes during the transition. This is not a huge constraint; it simply must be accounted for in the transition. Most lotteries have extended periods for ticket validation. Dual support must continue throughout this final stage of instant ticket management.

3.2.3.3   Adding a UPC Bar Code

Properly implemented UPC bar codes do not contain information about the product to which they are attached. Rather, they provide a means to uniquely identify the product so that support systems can access information about the product. This uniqueness must be universal in nature, so an organization exists which registers companies that utilize UPC bar codes and provides the guidelines for proper bar code use. At the time of writing of the Technical Standard, this organization was known as the Uniform Code Council. The name has changed and is now called GS1, but the function with regard to UPC is the same. Adding a UPC bar code requires three steps, as follows:

- Registering with GS1 (formerly the Uniform Code Council)

    GS1 is an international organization that is charged with maintaining UPC bar codes, among other things. In the context of this Technical Standard, the primary function is to provide the Company Prefix used in the UPC Bar code. The prefix is necessary to ensure

that the implemented bar codes are unique and do not interfere with other bar codes. The information for a lottery to obtain their Company Prefix can be found at www.gs1us.org (for US lotteries) and www.gs1.org (for international lotteries).

- Identifying inventory items

    As mentioned earlier, the UPC bar code is a representation of a unique number so that products can be identified in a world full of products. The Company Prefix defines a range of possible codes for use by the lottery. The product portion, or Item Reference, is used to uniquely identify a product. In the case of lotteries, the identifier is an instant ticket or scratch game. In short, each instant ticket game will need to have a unique number assigned to it so that, when combined, the lottery's Company Prefix becomes a one-of-a-kind number in all of the UPC bar codes in the world. Fortunately, the Item Reference is maintained by the company and does not need to be registered with GS1.

- Utilizing a valid UPC bar code format

    Finally, the UPC bar code needs to utilize a specialized format. This format is very common and easily recognized since UPC bar codes exist on just about every packaged product for retail sale. The instant ticket vendor will be responsible for printing the bar code on the ticket. The size and positioning discussion covered above needs to be considered.

3.2.3.4   *Integrated UPC/Lottery-Specific Bar Code*

This code combines the lottery-specific and UPC bar codes into a single bar code and will require all of the implementation considerations outlined in the sections above. Additionally, the integrated bar code utilizes newer bar code technology to include more information into the bar code on the instant ticket. The Technical Standard includes the integrated bar code approach for future consideration and goes into some detail of the current constraints in implementation in Section 2.3.7. The concept is very attractive, but there are issues.

The primary issue is the large amount of existing point-of-sale equipment that cannot handle the newer style of bar codes. This is changing, but is still a real limitation in the use of an integrated bar code.

3.2.4   Validation Ready Steps

In becoming validation-ready, it is helpful for the practitioner to have an understanding of what is required during the certification or verification process as it will help to prepare more effectively for validation. For the Bar Codes for Instant Tickets in the Lottery Industry, the current validation procedures call for validation of the bar code(s) utilized and the capability of the equipment utilized to handle bar codes.

In the case of the bar code on the actual ticket, most lotteries will specify the use of a compliant bar code that has been certified as compliant by their instant ticket vendor. If the current vendor does not have an NSI-compliant bar code, then the bar code(s) specified by the lottery can be verified as compliant for the specific use of the lottery. For equipment, most lotteries will purchase equipment that has been certified compliant with the Technical Standard. If existing equipment is being utilized, a validation process will be required to ensure the existing equipment is compliant.

This Validation-Ready period is, in a sense, preparation for these future assessments, and during that period, practitioners should be attempting to determine whether they have met the Technical Standard requirements and whether they are ready to apply for the formal validation process. You can find the link to begin validation here:

3.3   Corrigenda, Interpretations, & Frequently Asked Questions

Often, during implementation, practitioners will have questions that others have asked before them and for which there is already a response in the Frequently Asked Questions (FAQ) document, which can be found at www.opengroup.org/naspl/conformance/docs/faq.html.

If the questions and answers are not in the FAQ, the practitioner should submit their questions as follows:

- For questions about the Best Practice or Technical Standard:
  nsi-specifications@opengroup.org

- For questions about the certification or verification process:
  naspl-cv-auth@opengroup.org

In addition to the FAQ, it is worth noting that once an NSI Best Practice or Technical Standard has been published, changes may be needed from time-to-time. Change requests may occur when, for example:

- The relevant Working Group raises issues about the Best Practice or Technical Standard.

- An ambiguity or inconsistency is discovered when implementing the Best Practice or Technical Standard.

- The certification process results in approved interpretations against the Best Practice or Technical Standard.

- Changes in technology or operations at the lottery, vendor, or retail sites affect the Best Practice or Technical Standard as it was originally defined.

There is a documented process called the Corrigenda Process for dealing with change requests and updates to the Best Practices and Technical Standards. That process can be found at www.opengroup.org/naspl/published.

It is important that practitioners are aware that this process exists so they can check for any existing updates or interpretations they should know about while implementing the Best Practice or Technical Standard, and conversely if they have any questions during implementation, they know there is a process in place for resolution.

4   Certification/Verification Process

Once your organization has started implementing the Technical Standard, your IT Manager should familiarize him/herself with the certification/verification processes, though of course you will not be able to register for certification/verification until you have completed the implementation and have determined that you are validation-ready.

The first step in the certification/verification process is for the IT Manager to visit the NSI Certification/Verification website at www.opengroup.org/naspl/conformance/cert. All of the NSI Best Practices, Technical Standards, and Certification/Verification Documents are available online and accessible from this website, including: Certification/Verification Policies, Conformance Requirements, Conformance Statement Questionnaires, Certification and Trademark License Agreements, Fee Schedule, Frequently Asked Questions, and User Guides.

The next step in the certification/verification process is to read the Guide to NSI Certification/Verification and the Supplement that applies to the Technical Standard you will be certifying against. These documents should be read thoroughly prior to attempting to certify a best practice or technology as they describe the program and the process in its entirety.

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

- The **NSI Certification/Verification Policy and Supplements** define the policies that govern the operation of the NSI Certification/Verification program. These policies define what can be certified, what it means to be certified, and the process for achieving and maintaining certification/verification.

- The **NSI Certification/Verification Agreement** covers the terms and conditions of the certification/verification service.

For more details on the certification/verification process, please refer to the Certification Guide, available at www.opengroup.org/naspl/conformance/cert.

If you have additional questions, please contact the NSI Certification Authority at naspl-cv-auth@opengroup.org.

5   Contact Information

For further general information on the implementation process, please contact either of the following:

- Andy White (awhite@nasplhq.org)

- Norm Day (n.day@opengroup.org)

For questions about specific requirements of the Technical Standard or the certification/verification process, please contact:

- naspl-cv-auth@opengroup.org