

# Proposal For Project to Develop A New Standard

## Limited Use PICC Packaging Standard

### 1 Source of the Proposal Standard

#### 1.1 Title:

Limited Use Proximity Integrated Circuit Card (PICC) physical framework.

#### 1.2 Date Submitted:

November 30, 2004

#### 1.3 Proposer:

The members of INCITS B10.5 with the support of INCITS B10 members.  
(Major contributors: Three Point Consulting Inc., Walt Bonneau, and the Port Authority of New York and New Jersey)

### 2 Process Description of the Proposal Standard

#### 2.1 Project Type:

Development of an ANSI standard using the INCITS fast track process.

#### 2.2 Type of Document: (D)

Standard

#### 2.3 Definition of Concepts and Special Terms:

The Limited Use (LU) PICC shall have physical characteristics according to the requirements of the card type ID-1 with modifications to the thickness and construction materials specification. This specification in all cases uses the ID-1 "X" and "Y" dimensions of approximately 84mm x 53mm with ISO 7810 specified tolerances of +/- 0.02mm. In addition, the thickness shall adopt the ISO/IEC 15457-1 & 3 Thin Flexible Card specifications were applicable. The modified thickness specification recognizes and classifies two distinct types as follows:

Type: **LU\_ID-1M** (Identification Card Modified) with a thickness (z) of:  
400um (0.40mm) +/- 20um (0.02mm)

Type: **LU\_TFC.1** (Thin Flexible Card) with a thickness of:  
270um (0.27 mm) +/- 20um (0.02mm)

#### 2.4 Expected Relationship with Approved Reference Models, Frameworks, Architectures, etc:

The development of this standard will have a foundational relationship with ISO/IEC 14443, ISO 7810 and ISO 15457-1 & 3 and possibly ANSI/INCITS B10.5 and B10.1 for standardize packaging of contactless smart cards or PICCs. In addition, this specification is founded in the Port Authority of New York and New Jersey's RIS 3.5 Part-2 document.

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### **2.5 Recommended INCITS Development Technical Committee:**

B10 – Identification Cards and Related Devices with subgroup B10.5 and possibly B10.1

### **2.6 Anticipated Frequency and Duration of Meetings:**

To follow B10's meeting schedule including B10.5 and B10.1. In addition, meetings such as the technical Sub-working groups as required by the committee.

### **2.7 Target Date for Initial Public Review (Milestone 4):**

February 2005.

This project proposal is a candidate for the INCITS fast-track processing and therefore upon INCITS EB receipt and approval, this work may be categorized as Milestone-5.

### **2.8 Estimated Useful Life of Standard:**

Smart Card/PICC technology continues to progress in terms of new and exciting products to fulfill the growing demands made by various industries even though smart cards/PICCs have reached only the early stages of maturity. This proposal standard defines a core set of physical dimensions and construction specifications in support of cost effective PICCs products. The implied low cost PICC packaging derived from this new standard should apply to various market users of PICCs including: The Public Transit Industry, Security and Financial industries. This proposed standard further accomplishes electronic media fare ticketing where and alternative to low cost magnetic ticketing is desired or required. The public transportation and Security industries have historically exhibited a 10-12 year lifecycle, at times longer. Therefore, this standard is expected to be stable for at least 5 years; with minor modifications, should achieve five additional years.

## **3 Business Case for Developing the Proposal Standard**

### **3.1 Description**

The smart card market is expanding into all aspects of application including: Ticketing, ID and financial value card products. The limitations set by the existing ISO 14443 standard offering only an ID-1 format of 30 mils using only plastic materials for construction. Further, this existing ID-1 standard no longer addresses the growing market demand for a shorter lifecycle/duration, temporary or limited use low cost PICC solution. The this proposed standard provides for several card types that range from thin to thick with a wide use of construction materials making available multiple cost targets and applications. Having multiple cost options or targets also increases market application potential and greater chance of acceptance in large markets. The Limited Use proposed standard provides for increased application and use by providing nearly the same flexibility in card packaging standards as with the magnetic standards while maintaining the basic ID-1 X and Y format. This is necessary to ensure that there is still a degree of uniformity maintained for tooling and distribution handling of these LU card products by machines.

This proposed standard should be considered as a supplementary standard to ISO 14443 Part-2 and 3 as well as an extension to ISO 15457 Parts 1 and 3.

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The candidate standard is based upon the Port Authority of New York and New Jersey's (PANYNJ) Regional Interoperability Standard for Electronic Transit Fare Payments (RIS) version 3.5, Part 2 dated August 2004. This document was developed by the PANYNJ with review and contribution by the UTFS-APTA (American Public Transportation Association) WP-1 transit industry committee. The document is considered stable. A Proof of Concept (PoC) system involving actual hardware and a RIS compliant software for use in a transit fare ticketing application was developed and executed to validate the effectiveness of such LU packaging and available integrated circuits to validate the practical aspects of this standard. This PoC tested two different LU PICCs with four different CIDs or PCDs having a pre-selected set of public transit fare product types. In addition, independent test were ran on these LU PICCs by a Transit Agency using off the shelf distributing vending machines with no issues of concern to report.

The Proposal Document is intended to serve as a foundation for product development, validation, and procurement specification.

### 3.2 Existing Practice and the Need for a Standard:

The transit industry is rapidly moving to PICCs that do not conform to any known standard for packaging in order to fill market demand. This has cause a significant problem in handling uniformity. Each vendors has elected to design there own Limited Use low cost PICC with specifications that are not conducive to existing handling equipment. In addition, customers desiring this technology have become confused over the decision to select a given format that is not standardized. The results have limited the market acceptance for PICCs and created less than desired market press for the overall smart card industry.

Since there is no standard defining a PICC packaging alternative to ID-1 30 mil thickness, this proposed standard is requested.

For the most part, systems implemented today use a single type of PICC and supplement this PICC with a lower cost less capable magnetic card product. Unfortunately this forces the system into supporting two totally different types of card products. Further this prohibits the conversion to a 100% solid-state card-handling device. It is obvious that substantial cost is added to a system that must support two different types of electronic media. Since several new transit systems are attempting to migrate toward LU PICC electronic fare systems, and require interoperability not only between various PICCs but their handling equipment, this is standard is needed immediately.

Specifics of the Proposed Standard include but not limited to:

- *Limited Use card materials*
- *Physical Specification*
- *Antenna Material*
- *Irradiation*
- *Dynamic Bending Stress*
- *Dynamic Torsional Stress*
- *Static Electricity*
- *Operating Temperatures and Packaging*
- *Storage Environment and Packaging*
- *Outline Geometry*
- *Operating Limited Use Lifecycle*

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### 3.3 Implementation Impacts of the Proposed Standard

#### 3.3.1 Development Costs:

There will be no foreseen cost to INCITS for this activity. Cost for development of the new standard will be part of the normal committee participation expenses.

#### 3.3.2 Impact on Existing or Potential Markets:

Standardization of a wider offering of PICCs should not impact the market place if such a proposed standard is made available in the very near future. There are presently no known Limited Use installations in the United States. Having this standard available soon would prevent a USA company or agency from installing a non-standard bearing Limited Use card system. Even though some foreign suppliers of technology will need to make modifications to their product offerings, a standards approach will save the transit industry alone substantial implementation costs. Further, PICC manufacturers are often confused by the mixed messages they receive on what product to build next. A standard would minimize the manufacturers' decision process that requires an investment of millions of dollars into a product that may not be usable by multiple agencies or customers. In addition, integrated circuit manufacturers will also benefit by seeing increased volume orders giving them the opportunity to advance the supply chain for such circuits that will enhance this industry.

#### 3.3.3 Cost and Methods for Conformity Assessment:

Conformity assessment (i.e., validation and performance), against the Proposed Standard should be done by nationally accredited test laboratories, using procedures and test requirements that have been derived from the standard. The testing laboratories may use these test methods and procedures as a starting point. The National Voluntary Laboratory Accreditation Program (NVLAP) should accredit these laboratories. The accreditation must be open to independent commercial laboratories.

#### 3.3.4 Return on Investment (ROI):

The millions upon millions of dollars expended each year to build "one of a kind" smart cards as well as dual technology capable systems would be minimized. The standardization of the Limited Use PICC requirements and the ability for one agency to share electronic fare media with another would save millions in operating expenses and system integration charges. An even more important, ROI would be improved by reduced time spent by just the tens of millions of transit riders in North America that must acquire separate electronic media in order to travel to and from work each day. This is not only expensive for the patron but also for the issuing agency.

### 3.4 Legal Considerations:

#### 3.4.1 Patent Assertions:

At the time of this Proposal Standard of submission, the proposers do not know of any patent infringement claims.

#### 3.4.2 Dissemination of the Standard:

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The proposers will provide the INCITS Secretariat with a PDF file of the Proposed Standard for dissemination to the INCITS committee, INCITS Executive Board and for public review. The proposers retain editorial rights until the Proposed Standard is approved as an American National Standard, at which time the document will be transferred in accordance with INCITS policies.

See section 3.1 for the published document set to be provided. This document set may also be obtained at the web site: [www.panynj.gov/ris](http://www.panynj.gov/ris) referring Part-2.

### 4 Related Standards Activities

#### 4.1 Existing Standards:

ISO/IEC14443, ISO7810, ISO15457, and RIS3.5 ANSI Proposed Standard  
INCITS B10.5 technical reports and pending standards documents

#### 4.2 Related Standards Activity:

ISO/IEC/JTC 1 SC17/WG8/WG1 projects for new and revised standards. Liaison to be made through routine B10 activities including: B10.1 and B10.5.

#### 4.3 Recommendations for Close Liaison:

Liaison accomplished between B10.5 and B10.1

### 5 Units of Measurement used in the Standard

#### 5.1 Related measurements:

Metric System in the following units: meters (um, mm, M), kilos and grams and temperature in C°. In consideration of legacy measurements there are references to US measure of mils or 100ths of an inch.