

# Why Are Global Platform Standards Important?

## White Paper

**BLUE BAMBOO**

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## Introduction

### The Problem – Proprietary Product Architectures

Transaction terminals are also known as credit card terminals and POS (point-of-sale) terminals, whose market and business structure have remained relatively fixed for twenty years and is ripe for change. The terminal industry is dominated by a small number of companies with proprietary product architectures and relatively high priced terminals.

Proprietary architectures increase the cost of development to the terminal owner.

- No application portability between architectures
- Expensive development tools
- Specialized programmers

However, the most significant cost to the customer is the complete dependency on a single vendor.

### The Opportunity - New Markets

The traditional credit/debit market is maturing in the more developed countries requiring more features (see new requirements below) or a lower price point to expand the market at the low end. For the less developed countries, where much of the future growth will evolve, lower cost is essential to expand the markets. The card associations have a direct incentive to promote lower cost terminals, since the increase in retail stores with terminals means an increase in transaction revenue to them. The price range for a desktop terminal is \$200 to \$500 with an average of \$300. The price range for a wireless terminal is \$400 to \$1,000 with an average of \$600. Although these prices may seem relatively low, to millions of small retailers in developing countries these prices are prohibitively high. Thus, there is a huge untapped market for terminals in the developing world if the cost can be sufficiently reduced.

### The Solution – Open Standards

The industry is aggressively moving to set new and open architecture standards at the application level of the terminals and move away from the proprietary development environments of the larger companies. Examples of these initiatives are the EMV (Europay, MasterCard, and Visa) standards established in 1999 and the more recent 2003 GP/STIP initiative (Global Platform and Small Terminal Interoperability Platform). The GP/STIP is an industry group dedicated to the creation of a Java based standard to facilitate the development of multiple applications and encourage the portability among GP/STIP compliant equipment. These initiatives will result in several benefits to include a much faster, cost efficient certification process which has been one of the greatest barriers to new entrants in the market.

New STIP/GP standards will help users develop applications in an open environment. The end result of this process will be to stop the use of proprietary architectures and facilitate the development of common applications across product platforms. This in turn will change the terminal industry, breaking the link between the terminal hardware and software.

### Why GLOBALPLATFORM?

The following white paper explains what is GLOBALPLATFORM and its terminal specific standard STIP (Small Terminal Interoperability Platform).

#### The Standard for Smart Card Infrastructure

GLOBALPLATFORM is the leading, international smart card association, responsible for creating and advancing interoperable technical specifications for smart cards, acceptance devices and systems infrastructure. It is driven by a cross industry member base comprising over 50 organizations.

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Since its formation in 1999, the GLOBALPLATFORM Specifications have become recognized by the world-wide smart card industry as the standard upon which to base smart card infrastructures, thanks to a finely tuned balance of technical superiority and business justification.

The specifications offer backwards-compatibility and allow adopters the opportunity to grow revenue by capitalizing on either the single or multiple-application smart card model.

By providing these specifications on a royalty-free basis, GLOBALPLATFORM actively promotes world-wide acceptance of standards and encourages a universal approach to the development of smart card infrastructures, as this facilitates their deployment, decreases time to market and accelerates the adoption rate of smart card technology in different industries around the globe.

At present, GLOBALPLATFORM technology is being used across Europe, North America, Asia and Australia by many bodies, including government departments, issuers, payment card organizations and telecommunication companies, to implement a range of smart card programs. Current programs range from city/ID/health card projects to enhanced credit/debit cardholder loyalty schemes which also offer post-issuance download capabilities.

GLOBALPLATFORM's technical committees have defined requirements and technology standards for smart cards, card acceptance devices and back-end systems, creating a foundation for future smart card growth. As of January 2002, there were in excess of 20 million GLOBALPLATFORM smart cards in circulation across the world and an additional 200 million GSM cards that utilize GLOBALPLATFORM technology for Over-The-Air (OTA) application download. Current estimates for 2004 predict the number of GLOBALPLATFORM smart cards in circulation to exceed 70 million and GSM cards 600 million. These figures are expected to increase significantly over the next few years.

Operating on a not-for-profit basis, GLOBALPLATFORM funds its on-going technical work and the marketing efforts of the organization with funds raised from membership fees. GLOBALPLATFORM is a fully independent and democratic organization with our strategic priorities defined by an elected Board of Directors.

With a Member base of more than 50 leading issuing and technology enterprises, GLOBALPLATFORM is backed by an active forum from the financial services, mobile/telecom, government, security, identification and other sectors across North America, Europe, Asia and Australia. This cross-industry representation facilitates the development of a platform that supports the needs of stakeholders involved in all aspects of smart card deployment. Additionally, it offers confidence and trust from an authoring group that balances technical superiority with business justification.

#### **What is GLOBALPLATFORM ?**

Driven by over 50 cross-industry Member organizations, GLOBALPLATFORM is the leading, international association, focused on establishing, maintaining and driving the adoption of standards to enable an open and interoperable infrastructure for smart cards, devices and systems that simplifies and accelerates development, deployment and management of applications across industries delivering benefits to Issuers, service providers and technology suppliers.

These specifications are known as the standard for smart card infrastructure, thanks to their balance of technical superiority and business justification.

GLOBALPLATFORM Specifications are available royalty-free and have been adopted in Europe, North and South America, Africa, Asia and The Pacific by many public and private bodies. Currently, there are over 20 GLOBALPLATFORM -based smart card implementations world-wide and more than 50 million GLOBALPLATFORM compliant cards in global circulation.

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GLOBALPLATFORM is an independent, not-for-profit organization and its strategy is defined and prioritized by a Board of Directors.

#### **When was GLOBALPLATFORM created?**

GLOBALPLATFORM was launched in October 1999, and the first All Member meeting was held in November 1999.

#### **What does GLOBALPLATFORM do?**

GLOBALPLATFORM brings together organizations with an interest in single and multiple application smart card deployments to obtain cross-industry agreement on a common global infrastructure. It develops, maintains, promotes and drives common specifications for smart cards, devices and systems used by Issuers across all industries and markets, and is equally relevant to single and multi-application smart card Issuers. The organization promotes cooperation across all industries and geographies while allowing solution providers to develop competitive or unique product capabilities.

#### **What are GLOBALPLATFORM'S objectives?**

The primary objective of the organization is to establish, maintain and drive adoption of standards and specifications to enable an open and interoperable infrastructure for smart cards, devices and systems to simplify and accelerate the development, deployment and management of applications across industries and geographies. GLOBALPLATFORM develops models and conventions needed to facilitate cross-industry application loading and management, such as backend card systems, security, key management and application deployment.

#### **Why join GLOBALPLATFORM?**

- Influence global standards to provide consistency with the strategic direction of your company
- Ensure your company's opinion is expressed
- Provide a voice for your company in the development of open and interoperable specifications for smart card infrastructure
- Establish working relationship with potential partners
- Learn from other leading industry experts
- Have access to a sophisticated Members only website, which is used as a key communications and resources tool
- Enjoy Members preferable terms on some GLOBALPLATFORM tools

#### **Aren't there smart card organizations already in place?**

There are a number of organizations focused on particular smart card opportunities. However, currently there is no organization focused on establishing standards for interoperability across the entire smart card infrastructure and that can support multi-application smart card schemes. GLOBALPLATFORM fills this void by establishing a cross-industry forum that truly reflects the needs of these various businesses globally.

#### **What industries have adopted GLOBALPLATFORM technology?**

The Financial industry was the first to adopt GLOBALPLATFORM technology, however many other industries since then have also noted the benefits of GLOBALPLATFORM's standards and have implemented our specifications. These industries include Mobile/Telecom, Government, Public Healthcare, Retail and Transit. For further information about the benefits to each of these industries and a summary of real life implementations, please visit <http://www.Globalplatform.org>.

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#### **What are the GLOBALPLATFORM specifications?**

The GLOBALPLATFORM Specifications represent a set of cross-industry technical specifications, which can be used to develop secure and flexible smart card systems. They include card, terminal and back-office systems specifications. Together, these components define an easy-to-use smart card infrastructure upon which standardized applications can be added. The GLOBALPLATFORM Specifications work across different technology platforms, enabling smart card Issuers to choose between suppliers and application developers while providing a core security and card management technology.

#### **Who owns and controls the GLOBALPLATFORM specifications?**

Originally defined by Visa, (known previously as Open Platform), the GLOBALPLATFORM Specifications have evolved into cross-industry specifications for the complete smart card infrastructure. The GLOBALPLATFORM Specifications are now owned, managed and developed by GLOBALPLATFORM. The future direction of the technology is defined by the Membership and GLOBALPLATFORM's independent Board of Directors.

#### **Are there any conditions in using GLOBALPLATFORM specifications?**

No. There are no restrictions in implementing and using any of the GLOBALPLATFORM specifications.

#### **Are there any fees for using GLOBALPLATFORM specifications?**

No. There is no licensing fee to implement and use any of the GLOBALPLATFORM Specifications. They are available for royalty free download from [www.Globalplatform.org](http://www.Globalplatform.org)

#### **What are the benefits of GLOBALPLATFORM technology over other platforms?**

GLOBALPLATFORM technology is open, scalable and offers well defined standards of interoperability at the card, device and system level interfaces. As a consequence, smart card deployments utilizing GLOBALPLATFORM technology allow Issuers to protect their investment in infrastructure by allowing you to expand your business by adding/altering applications.

#### **How difficult is GLOBALPLATFORM to implement?**

Implementing a GLOBALPLATFORM compliant smart card infrastructure is no more difficult to deploy than a proprietary solution. GLOBALPLATFORM Member companies are available to assist you in the implementation of their solutions.

#### **Is GLOBALPLATFORM technology customizable at all?**

Absolutely! GLOBALPLATFORM defines standards for the technology without inhibiting customization within the framework. GLOBALPLATFORM specifications define many options for Issuers to choose from, allowing a wide range of business models, and supporting a large variety of security as well as technical requirements.

#### **My smart card program is very simple with only one application – how would GLOBALPLATFORM benefit me?**

Even the Issuer of a single application smart card program can benefit from the adoption of GLOBALPLATFORM technology. For example, using a GLOBALPLATFORM compliant smart card permits the Issuer to multi-source vendors for the same application code. Also leveraging the back-office utilization of standardized card issuance and personalization systems (e.g. scripts for smart card personalization) allows the Issuer to multi-source card production (e.g. the flexibility to move production from one bureau operation to another) without additional costs. It also provides the issuer with a future-proof infrastructure that can be migrated to other (either mono or multi-application) smart card programs.

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### **What cards do your specifications work with?**

A GLOBALPLATFORM compliant device can work with any (GLOBALPLATFORM compliant or non-GLOBALPLATFORM) card as long as both comply with the application specific interface specifications, such as EMV or SIM. Similarly, a GLOBALPLATFORM compliant issuance or personalization system can work with any (GLOBALPLATFORM compliant or non-GLOBALPLATFORM) card as long as both comply with the application specific issuance or personalization specifications, such as EMV Card Personalization.

GLOBALPLATFORM Card Specification can be implemented on Java Card based cards or any other proprietary card operating system that allows dynamic memory management.

### **Can I use GLOBALPLATFORM technology with my own proprietary card?**

Yes. GLOBALPLATFORM technology is not only card technology. It provides an open standard in order to protect your investment and smoothly migrates to multi-applications, cards and services. You can decide to deploy GLOBALPLATFORM technology for device or for systems with your current card. However, by deploying GLOBALPLATFORM card technology as well, you will fully benefit from all the GLOBALPLATFORM advanced features.

### **What devices will your specifications work with?**

The GLOBALPLATFORM Device Specification can be implemented on STIP compliant devices or any other proprietary device operating system that allows dynamic memory management.

### **Will GLOBALPLATFORM technology save me money?**

With the ability to multi-source vendors and services, gaining flexibility and choice, an Issuer can make changes or move services without incurring additional costs. An Issuer is also provided with a future-proof infrastructure that can be migrated to other smart card programs which overall can save the Issuer money.

## **Why STIP?**

The STIP Consortium was founded to develop an interoperable platform specification for secure transaction devices, including, but not limited to, card accepting devices. STIP has been merged into GLOBALPLATFORM.

## **Mission**

The mission of the STIP Consortium is to specify a software platform that:

- supports multiple secure transaction applications on a terminal
- provides interoperability such that applications may run on a wide range of device types
- provides platform and application life cycle management
- can be implemented on small devices with limited resources typical of the card accepting environment.

## **Vision**

The following scenario illustrates the vision of STIP:

Imagine four devices:

- vending machine
- a low-end desktop POS terminal
- a high-end hand-held portable terminal with large touch-screen display
- a PC (with attached peripherals as required)

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And three STIP applications:

- an e-purse application
- a loyalty application
- a security/ID application

Also imagine the following:

- each application was written by a different developer and certified once by the organization responsible for the overall card based system.
- you are able to load and run any combination of the 3 applications on any of the 4 devices without modification or re-certification. You are able to do this using the existing download system for the particular device.
- the desktop and portable terminals have legacy credit/debit applications already installed which continue to run.
- The applications automatically adapt to the different display, keypad, and printer configurations. Further, the applications only provide the functionality appropriate for the type of device. For example, in a vending machine, the e-purse application might only do a simple debit based on the cost of the item dispensed, whereas the application may provide re-value on a desktop terminal.

### **What is STIP?**

STIP is an acronym for Small Terminal Interoperability Platform. The STIP Consortium is a grouping of secure transaction solution providers including terminal manufacturers, payphone manufacturers, smart card manufacturers and others, formed to define a Java specification for Small terminals and transaction oriented devices.

### **What are the objectives of the STIP Consortium?**

The principle objective of the STIP Consortium is to enable interoperability of applications. In other words, enable an application to run on a range of devices without modification, and to also allow an application to work with other applications potentially coming from different vendors. Java has been chosen to provide the microprocessor independence and the Consortium has defined a Java API to provide secure transaction and multi-application capabilities. The Consortium realizes that its API definition must also be commercially deployable and be accepted by device suppliers and customers, e.g. banks that may have strict security and performance requirements.

### **What is the current status of the STIP effort?**

The STIP Consortium has met regularly since its establishment in April 1999, and progress is consistent with original expectations. The first release of the API (v1.0) was made in April 2000. The release 2.0 in April 2001 was the first mature release. The new release 2.1 published in May 2002 consolidates the advances of release 2.0 and provides a new view on the specification widening the scope of STIP. The new release distinguishes a STIP Core Framework Technology from various "profiles" that can be defined around this core technology. In addition to the core technology API, STIP 2.1 provides a comprehensive set of service APIs that can form the basis of most profiles. A number of member companies are working on STIP implementations and the development of various STIP applications (or Stiplets) is underway. Most members are focusing on STIP v2.1 implementations.

### **Who are the members of STIP?**

For information on the full-time active members of STIP, click <http://www.stip.org/aboutstip.htm>. Shera, Blue Bamboo's parent company, has been the member of STIP for over three years.

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### **What types of devices can STIP be implemented on?**

The STIP API is designed to provide high level of functionality and performance on devices with limited resources. The secure transaction capability of the API lends itself to EFTPOS terminals, payphones, parking meters, vending machines, mobile phones, PDAs and the like.

### **What types of applications does STIP support?**

The STIP API is focused on providing secure transaction capability in a multi-application environment but non-secure transaction applications can be supported too. Some of the secure transaction applications that can be supported are EMV, CEPS, ISO8583, APACS, Mondex, Proton, Visa Cash, Loyalty applications and Secure Id applications.

### **What is STIP's relationship to other industry initiatives and standards?**

A guiding principle of the STIP Consortium is to work with, rather than compete, with other industry initiatives. For example, the STIP Consortium works with GLOBALPLATFORM ([www.Globalplatform.org](http://www.Globalplatform.org)), FINREAD ([www.finread.com](http://www.finread.com)) and J Consortium ([www.j-consortium.org](http://www.j-consortium.org)) on certain aspects of interoperability. The STIP technology is now the basis of GLOBALPLATFORM Device Framework as it is the basis of FINREAD API. The STIP Consortium recommends the use of JEFF format defined by J Consortium. (<http://www.stip.org/faq.php3>)

## **Blue Bamboo with STIP / GLOBALPLATFORM**

### **Blue Bamboo is a GLOBALPLATFORM specific supplier**

Blue Bamboo has developed an architecture that is optimized to support GLOBALPLATFORM, which has all the required characteristics: incorporated global platform EMV and GP/STIP technology, multi-application capable, alternate power source, wireless connectivity, high processing speed, increased security and low cost. Not only are these terminals significantly more affordable, they are faster, more secure, easier to certify, and easier to develop multi-applications for.

Using state-of-the-art technology Blue Bamboo has created a superior product at a substantially lower price, which is why they are already in demand before mass production has even started. How did Blue Bamboo do this? It came from the engineering prowess and vision of one of the fathers of the terminal industry – Mr. Jerry Crosetti. After being in the terminal industry for almost 20 years, four-year R&D with more than \$3 million dollars of investment and over 100,000 hours of engineering, Mr. Crosetti saw the need for an affordable, open architecture and high performance terminal.

Shera International, Blue Bamboo's parent company, is the full membership of GLOBALPLATFORM. (<https://www.Globalplatform.org/showpage.asp?code=whoweare>). Shera International is also STIP consortium member with over three-year membership (<http://www.stip.org/aboutstip.htm>). Jerry Crosetti, President Shera International / Blue Bamboo said: "Shera is dedicated to providing truly superior solutions in the GPD/STIP arena. Shera's terminal products are the first in the industry to be designed from the bottom up, both hardware and software, optimized for the STIP/JEFF environment." (<https://www.Globalplatform.org/membershipquotes.asp>) Leveraging Shera's technology edge, Blue Bamboo dedicatedly markets feature-rich and exceptionally affordable POS terminals and peripherals worldwide.

Blue Bamboo's first product, a GLOBALPLATFORM standards-based, wireless terminal – H50, is the most affordable terminal in its class, while boasting the ability to support multiple applications, as well as portability and great power management. The H50 supports the Java-based Small Terminal Interoperability Platform ("STIP" or GLOBALPLATFORM) standards for easy application development. The unique H50 implementation of the GLOBALPLATFORM standards and its

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proprietary hardware design ensure superior performance: the Blue Bamboo terminal is faster than typical Java-based POS terminals. Even resource-intensive encryptions (such as 1024bits RSA private key encryption) take less than one second.

For more information on Blue Bamboo, call +86 21 5308 4181 ext 319, or email [sales@bluebamboo.com](mailto:sales@bluebamboo.com) or visit [www.bluebamboo.com](http://www.bluebamboo.com).

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