SECURE TECHNOLOGY ALLIANCE

FEBRUARY 2019

SECURE TECH TALK

A quarterly newsletter for members and friends of the Alliance

Executive Director Message

The Alliance has been focused for years on the phone side of the mobile wallet. Quietly, the real revolution is the digital payments ecosystem that the phone has unleashed into the world. The building blocks that began with smart phones with the first NFC chips, then the secure elements, then tokenization, then biometrics authentication, and now omni-channel payments processing, have brought this digital commerce market to a whole new dimension. I write about this in my letter this quarter.

Click to Read Letter ...

In This Issue:

On the Web:

Feature Webinar:

U.S. Payments Forum Webinar: Mobile and Digital Wallets – Strategic Considerations for Issuers

The final webinar in the U.S. Payments Forum mobile and digital wallet "lunch and learn" webinar series will cover **strategic considerations for issuers**. The webinar is scheduled for Feb. 21st, at 2pm ET; registration is available at: https://register.gotowebinar.com/register/3089908444440419330.

Click to Read More …

Feature Article:

Biometric Payment Cards

This month's article is a preview of the soon-to-be-published Secure Technology Alliance Payments Council white paper, "Biometric Payment Cards." The article describes a specific implementation – one that incorporates fingerprint capture, template storage, and matching on the payment card itself.

Click to Read More …

Upcoming Event:

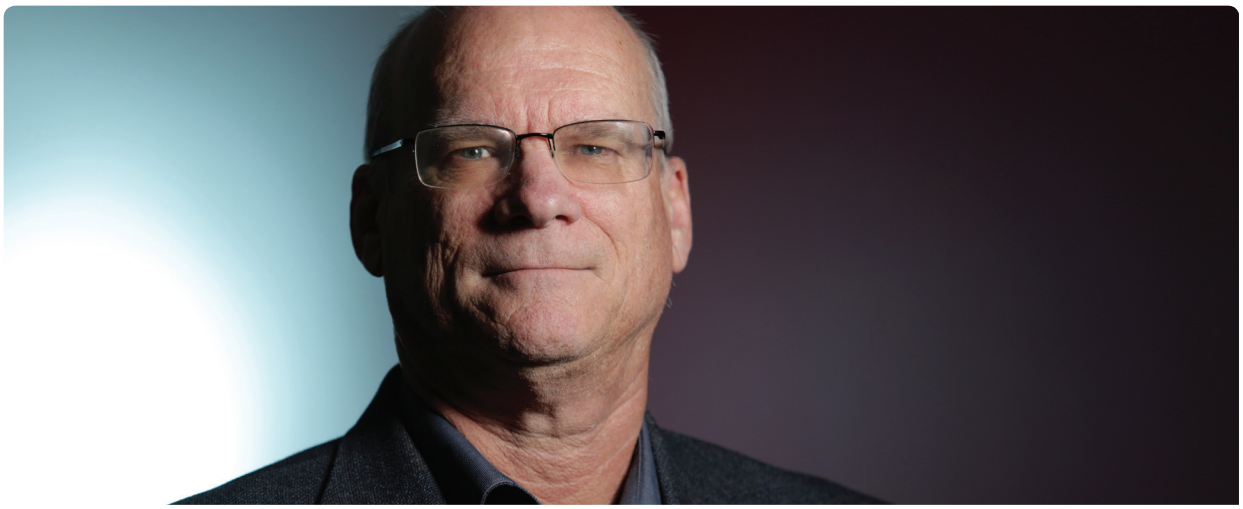
Payments Summit 2019

Phoenix, AZ, March 11-14, 2019

2019 Payments Summit Agenda

We have an excellent agenda set for the 2019 Payments Summit in Phoenix, AZ. The Payments Summit will kick off the opening-day with plenary keynote sessions featuring industry experts of leading payments transaction infrastructures: EMV chip, mobile, retail, digital and transit payments, and identity and authentication in payments. On the second and third day of the Payments Summit, four separate educational tracks with over 100 speakers will cover current and future payments solutions, technology, and transportation payments.

Click to Read More …



Mobile Wallets: Yesterday's News

Dear Members and Friends of the Alliance,

For more than a decade, this organization has been focused on the NFC-enabled smart phone as the payments device for the future. We have witnessed the rise and fall of many different iterations of a mobile payments ecosystem rooted in the NFC smart phone that emulates the radio frequency signals of a payment card with contactless (or radio frequency) transmission capabilities. Sure, brands like Apple, Google and Samsung and their technology partners have invested hundreds of millions of dollars in developing the technology and marketing their mobile wallets to consumers, but what has really changed? In the U.S., the share of mobile NFC transactions remains in the low single digits percentagewise compared to cards.

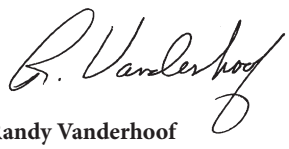
Perhaps the biggest change ahead has to do with the mobile side of the mobile wallet. Mobile payments aren't about the mobile device any longer. Payments are rapidly moving beyond the smart phone; look at the popularity of Apple watches and Garmin fitness trackers. Paying by simply tapping your phone was supposed to be faster and more convenient than pulling a card out of your wallet, but what may be faster and easier than holding your phone is simply turning your wrist towards the terminal to pay.

As cars become more connected to Wi-Fi and wireless data networks, you will soon be able to fill up your tank, order ahead for your favorite hot beverage, park on the street, and drive up to your local fast food restaurant which already knows your favorite "happy meal combo," and return home. All this without touching your phone or your wallet to pay. Consumers are surrounded by smart cars, smart homes, smart TVs, and smart retailers. They don't even think about their smart phone, except maybe to snap pictures and post them on Instagram to celebrate their smart life!

The Alliance has been focused for years on the phone side of the mobile wallet. Quietly, the real revolution is the digital payments ecosystem that the phone has unleashed into the world. The building blocks that began with smart phones with the first NFC chips, then the secure elements, then tokenization, then biometrics authentication, and now omni-channel payments processing, have brought this digital commerce market to a whole new dimension.

I am proud of the Secure Technology Alliance and its members for being a part of this mobile payments journey. I'm equally excited to usher in the next generation of "mobility" payments. I invite new members to come join the ride.

Sincerely,



Randy Vanderhoof
Executive Director, Secure Technology Alliance
rvanderhoof@securetechalliance.org

2019 Payments Summit Agenda

We have an excellent agenda set for the 2019 Payments Summit in Phoenix, AZ.

The Payments Summit will kick off the opening-day with plenary keynote sessions featuring industry experts of leading payments transaction infrastructures: EMV chip, mobile, retail, digital and transit payments, and identity and authentication in payments. The opening day keynote presentations and discussion panel topics reflect the depth and breadth of the payments trends and issues impacting the U.S. market. They include:

- **Tap to Pay Momentum in the U.S.** – Dan Sanford, Visa
- **Digital Transformation in the Payments Industry** – Krista Tedder, Javelin Strategy & Research
- **Moving Money Fast, Safe, and Easy Using P2P** – Laura Weinflash, Early Warning
- **Understanding Faster Payments and Faster Settlement Trends** – Gene Neyer, ICON Solutions
- **A Playbook for Digital Identification, Authentication, and Payments** – Moderator: Nick Norman, Consult Hyperion; Panelists: Andrew Shikiar, FIDO Alliance; and Walter Beisheim, Project Verify
- **Future of Transit Payments** – Moderator: Brin Owen, Jacobs Engineering Group Incorporation, CH2M; Panelists: Robin O'Hara, LA Metro; Tina Morch-Pierre, DART; Carol Kuester, Metropolitan Transportation Commission; David deKozan, Cubic Transportation Systems; and Jennifer Dogin, Mastercard
- **U.S. Payments Forum Panel – A Multi-Stakeholder View of Fraud in Retail Payments** – Panelists: Robin Trickel, American Express; Steven Cole, Worldpay; and Manish Nathwani, SHAZAM

On the second and third day of the Payments Summit, four separate educational tracks with over 100 speakers will cover current and future payments solutions, technology, and transportation payments. To see the full agenda of topics that will be covered, visit: https://www.stapayments.com/#agenda.

The Payments Summit is the premier industry event covering all things payments, including FinTech, EMV chip technology, mobile wallets, NFC, contactless, open transit systems and more. This event marks the second year that the Secure Technology Alliance and the U.S. Payments Forum are combining the Payments Summit with the U.S. Payments Forum All-Member Meeting. If you've not yet registered, do so today, and ensure your spot at the most comprehensive gathering of card and payments professionals than ever before. Register now, if you haven't already!

U.S. Payments Forum Webinar: Mobile and Digital Wallets – Strategic Considerations for Issuers

The final webinar in the U.S. Payments Forum mobile and digital wallet "lunch and learn" webinar series will cover **strategic considerations for issuers**. The webinar is scheduled for Feb. 21st, at 2pm ET; registration is available at: https://register.gotowebinar.com/register/3089908444440419330.

Recordings are available for first three webinars in the series that covered the mobile wallet landscape, security technologies and strategic considerations for merchants. There's still time to participate in all four webinar sessions and in short online retention assessments. If you complete the assessments with passing grades, you will receive a certificate of participation from the U.S. Payments Forum and a registration discount for the 2019 Payments Summit. The deadline for completing the assessments is March 1st.

Updates from the Alliance Industry Councils

Access Control Council

- The Access Control Council elected its 2019/2020 Steering Committee to lead the Council. Members elected to the Steering Committee were: Mark Dale, XTec, Inc.; Tony Damalas, SigNet Technologies; Christophe Goyet, IDEMIA; Derek Greenland, Lenel; Daryl Hendricks, GSA; Mike Kelley, Parsons; Stafford Mahfouz, JCI TYCO/Software House; Roger Roehr, Integrated Security Technologies; Steve Rogers, IQ Devices; Adam Shane, LEIDOS; Mark Steffler, HID; Lars Suneborn, ID Technology Partners; Bill Windsor, DHS; Mike Zercher, Secure Element Solutions. The Steering Committee is now electing its officers
- The Council has two active projects, implementing the electronic version of the GSA PACS playbook and developing guidance to compliment the NIST SP 800-116 v2 publication. The Council is also discussing comments on the next generation TWIC data model

Identity Council

- The Identity Council hosted its fourth webinar, Identity on a Mobile Device: Mobile Identity Proofing in Higher Education and Airport Wayfinding Use Cases. Speakers for the webinar were: Tom Lockwood, NextgenID; Chris Runde, American Association of Airport Executives; Mark Sarver, Biometric Signature ID; and Randy Vanderhoof, Secure Technology Alliance
- The Council is now electing its 2019/2020 Steering Committee and continues work on a white paper on the mobile identity landscape

Internet of Things Security Council

- The Internet of Things (IoT) Security Council is currently developing statements of work for two projects: a white paper on IoT ecosystem security and a webinar series on key topics in IoT security

Mobile Council

- The Mobile Council held its third interactive web briefing, Mobile in Transit, on December 12, with David deKozan, Cubic Transportation Systems, presenting. Briefing recordings are posted on the Mobile Council's members-only collaboration site

Payments Council

- The Payments Council will be holding an in-person meeting at the 2019 Payments Summit in Phoenix, AZ. The meeting will be on Tues., March 12th, from 12:30-1:30pm MT
- The Council is finalizing a new white paper on biometric payment cards. The white paper will provide a high-level description of biometric payment cards to educate issuers on functionality and benefits

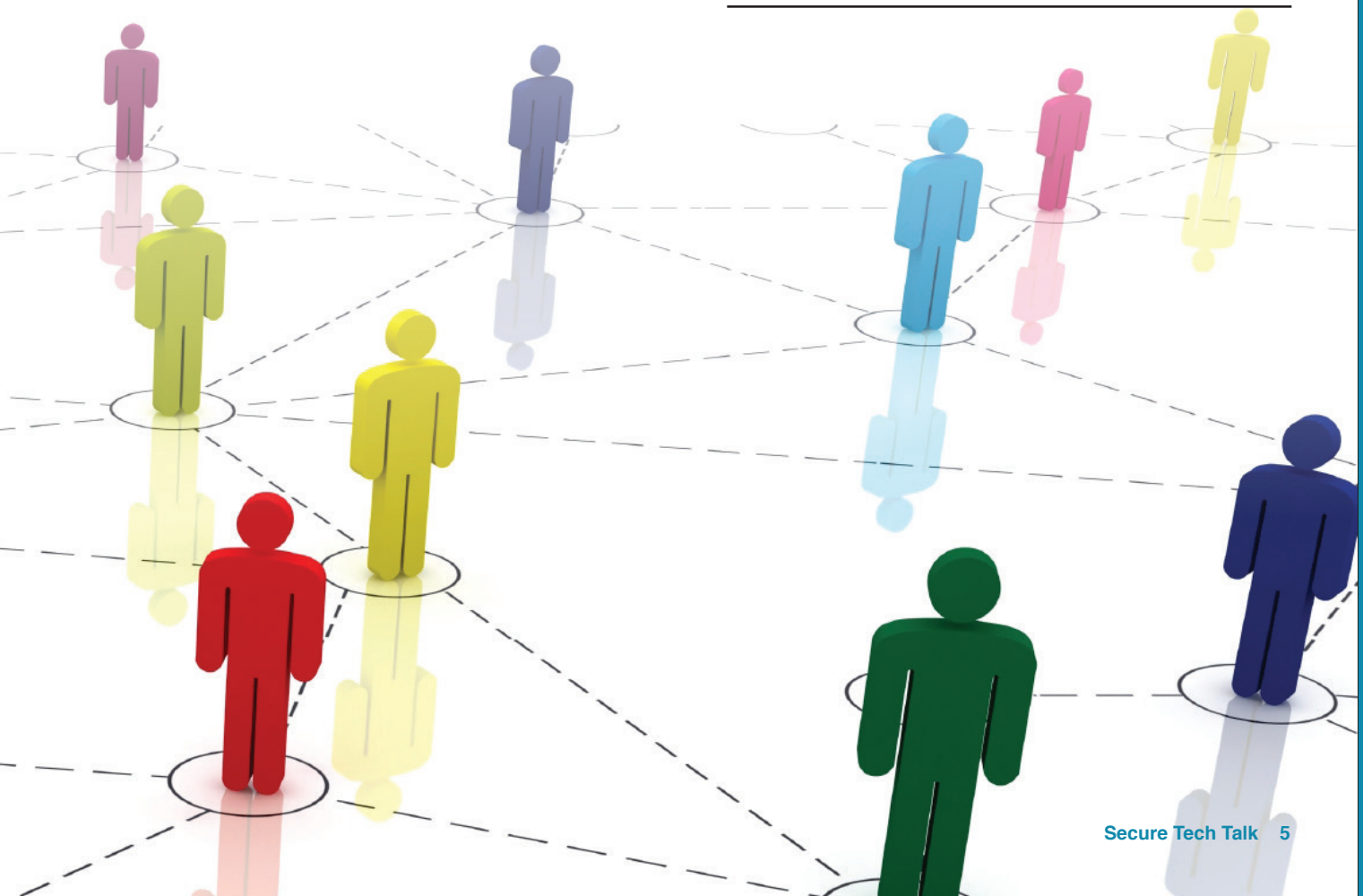
Transportation Council

- The Transportation Council will be holding an in-person meeting at the 2019 Payments Summit in Phoenix, AZ. The meeting will be on Wed., March 13th, from 5:15-6:15pm MT
- The Council Steering Committee has updated the Council charter to expand activities in promoting the adoption of interoperable payment systems for transit, tolling, parking and evolving mobility services and technologies. The Council will discuss 2019 projects during the in-person Payments Summit meeting

Other Council Information

- Secure Technology Alliance members are now able to request guest participation in U.S. Payments Forum projects. The list of active Forum projects is available on the Alliance member web site. If you would like to participate in one of the Forum projects, please contact Cathy Medich. A list of active Secure Technology Alliance Council projects is also available to promote cross-council participation
- If you are interested in forming or participating in an Alliance council, contact Devon Rohrer

Alliance Members: Participation in all current councils is open to any Secure Technology Alliance member who wishes to contribute to the council projects. If you are interested in forming or participating in an Alliance council, contact Cathy Medich.



Biometric Payment Cards

The payment industry continues to push for payment authentication methods that improve on traditional methods while minimizing disruption to the card manufacturing process. With this in mind, some card vendors, technology suppliers, and solution providers are redefining what could become the next standard for payment technologies with cards—biometric authentication. Biometrics has always provided a way to address multifactor authentication, fulfilling the "who you are" factor requirement and working in conjunction with "what you have" (a card) and "what you know" (a PIN).

This month's article is a preview of the soon-to-be-published Secure Technology Alliance Payments Council white paper, "Biometric Payment Cards." The article describes a specific implementation – one that incorporates fingerprint capture, template storage, and matching on the payment card itself.

What Is a Biometric Payment Card?

New developments are opening the door to a new type of payment card, a biometric card that relies on the prevalent user-to-mobile authentication technology—fingerprints—for authentication. Such a card can change the way cardholders authenticate themselves for a payment transaction. Although the implementation models differ, new technologies enable on-card template matching and storage in the secure element, battery-free operation, and fast transactions.

Figure 1 shows the main components of a dual-interface biometric card.

As in a traditional card, the secure element (SE) contains the EMV-compliant payment applications and is EMVCo certified. Unlike a traditional card, cardholder verification is performed directly on the card. The microcontroller unit (MCU) performs the biometric functions, such as extraction and, in some cases, matching, although in most biometric cards, matching and template storage are handled by the SE for security reasons. Storing templates and performing matching in the SE reduces the chance that templates or authentication communications will be compromised. The biometric system relies on the technology (hardware and software) that is used in smartphones, adapted to the specific requirements of a smart card (e.g., size, thickness).

Biometric cards can be powered by a magnetic field, which is provided by the payment terminal so that the card may not require a battery. The power management unit extracts power from the magnetic field and provides it to all components of the card. Usually one contactless antenna powers the power management unit and communicates with the SE. Most solutions support both contact and contactless interfaces for the biometric function, using a dual interface package.

In cases where the solution supports it, LEDs can provide visual feedback to the cardholder. Otherwise, feedback is provided by standard approval messages from the point of sale (POS) terminal.

How Are Cardholder Fingerprints Enrolled?

To ensure fingerprint matching, a card can store multiple biometric templates created from different orientations. Solution providers currently offer three different approaches to template capture and enrollment: on-card enrollment; enrollment at a payment terminal; enrollment at a bank.

On-card enrollment is managed entirely by the card components and could be done at any location. Templates are captured in the card's fingerprint reader and stored directly in the SE. A sleeve or NFC-enabled device provides power to the card for initial enrollment. Visual feedback is provided by the card, sleeve or NFC-enabled device, and the template is never captured by, stored on, or transmitted to a third-party device, reducing potential security risks.

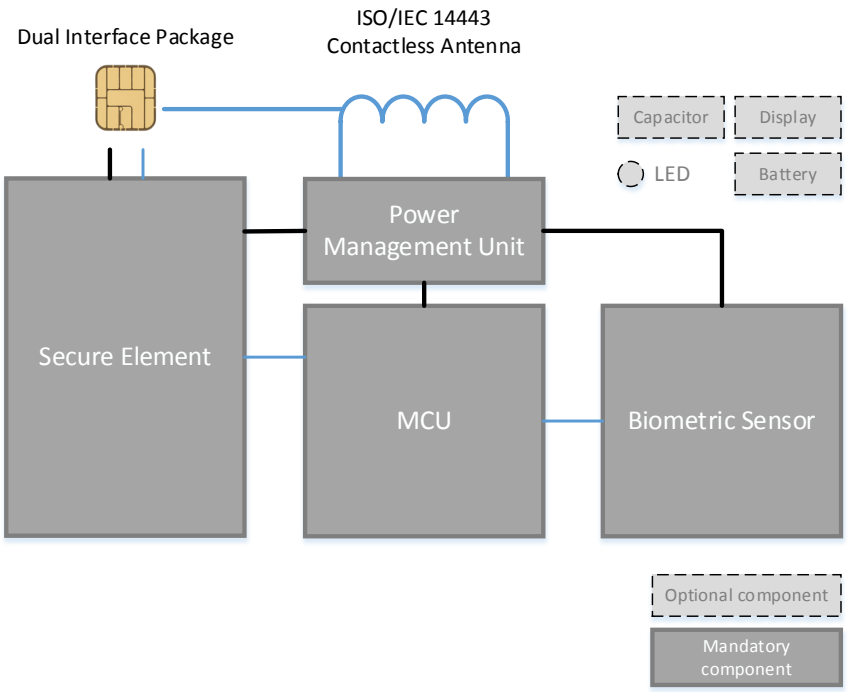
When enrollment takes place at a payment terminal, the first payment transaction requires the cardholder to enter a PIN on the terminal while touching the fingerprint sensor. Once enough information for the templates has been collected, the templates can be used for payment authentication. The user interface is provided by LEDs on the card.

Enrollment at a bank requires that the bank provide a specific enrollment terminal or tablet at the bank. An intermediate app transfers the fingerprint to the SE using secure messaging. The interface with the terminal or tablet can be contact or contactless.

How Do Biometric Payment Cards Work?
A biometric card is used for payment as follows:

1. The payment terminal requests communication
2. The card SE starts up and replies to the terminal
3. The MCU is activated, communicating with the biometric sensor to perform image extraction
4. The image is evaluated, either in the SE or in the MCU, by comparing the saved fingerprint templates with the cardholder's fingerprint. Comparison in the SE is more secure than comparison in the MCU (nte that how pass/fail information is communicated is implementation specific)
   - If there is a match, cardholder verification passes (for example, an LED on the fingerprint sensor may glow green) and the SE performs the transaction
   - If there is no match, cardholder verification fails (for example, an LED on the fingerprint sensor may glow red). Either the transaction is rejected or an alternative cardholder verification method (CVM) is required, such as a PIN

FIGURE 1. COMPONENTS OF A BIOMETRIC CARD



BIOMETRIC CARDS CAN BE POWERED BY THE PAYMENT TERMINAL'S MAGNETIC FIELD, ALLOWING CARDS TO NOT NEED A BATTERY.

5. If the transaction is a contactless transaction and the match succeeds, the consumer device cardholder verification method (CDCVM) or other network-defined indicator is sent to the terminal and the indicator is sent to the issuer indicating the result of the biometric match
6. The issuer can then use this result in their authorization decisions

Biometric Payment Card Examples

Multiple global payment networks have launched biometric payment card pilots and initiatives.

Visa is piloting a new dual-interface (chip and contactless) biometric payment card with Mountain America Credit Union and Bank of Cyprus—the first pilot in the U.S. to test an on-card biometric sensor for use with contactless payments.[1] Visa is also participating in a pilot with Unilux Cards and Areeba in Dubai.[2]

Mastercard has piloted biometric payment cards in South Africa and Bulgaria. South Africa was the first market to test the biometric card technology. Two separate trials were recently concluded: one with Pick n Pay, a leading supermarket retailer, and one with Absa Bank, a subsidiary of Barclays Africa.[3] Mastercard has also announced biometric card pilots with the National Bank of Kuwait,[4] Fransa Bank, (Lebanon)[5] Intesa Sanpaolo (Italy).[6]

American Express launched two separate employee pilots for fingerprint cards in 2018. One pilot was focused on validating the user experience during fingerprint enrollment and payment transactions. The second pilot focused on validating the usability of different form factors (e.g., card with/without battery for fingerprint validation, with/without Bluetooth for enrollment, with/without NFC based enrollment).

JCB launched a pilot trial of the JCB Biometrics Card with fingerprint authentication in April 2018, involving JCB employees.[7] Once card users record their fingerprints using a smartphone or tablet app, they can make purchases using fingerprint authentication at merchants accepting JCB Contactless payments.

Conclusions

Biometric payment cards are now being showcased in pilots and proof-of-concept launches around the world. These early implementations have shown the feasibility and advantages of biometric payment cards, including: enhanced cardholder experience; increased cardholder confidence in the payment transaction security; additional risk management information to issuers for authorization decisions; and reduced the risk of fraudulent transactions.

Work on biometric payment cards is proceeding, but these are still early days. Product availability is in the early stages and standards are evolving, with specifications being written by industry standards bodies and the payment networks. Plus, it will take some time for all components of the authorization system to be fully enhanced. Issuers and merchants should contact the payment networks and individual solution providers for additional details on implementations.

References

[1] Fingerprint authentication moves from phones to payment cards, Visa

[2] Areeba to pilot fingerprint payment card, Finextra, April 16, 2018

[3] Thumbs Up: Mastercard Unveils Next Generation Biometric Card, April 20, 2017

[4] National Bank of Kuwait and Mastercard make GCC debut of pioneering biometric solutions, Zawya, May 14, 2018

[5] Fransabank and Mastercard Launch the First Biometric Card in Lebanon, Fransabank press release, July 25,2018

[6] MasterCard Set to Conduct 16 Week Trial of Biometric Bank Card in Italy, CBR, Nov. 15, 2018

[7] JCB Pilot of Japan's First Fingerprint Authentication Chip Card from IDEMIA, April 18, 2018

About this Article

This article is an extract from a soon-to-be published Secure Technology Alliance white paper, "Biometric Payment Cards." The white paper was developed by the Payments Council to provide a primer on biometric payment cards for issuers, issuer processors, payment networks and merchants.

Congratulations New Certificants

CSCIP/G

- Benjamin Globus, Securityhunters
- Ross Nelson, Securityhunters
- Vandy Hill, Department of Homeland Security*
- Steven Holt, Department of Homeland Security*

CSCIP/P

- Shing Pang, American Express

CSEIP

- Rick Burfield, Silent Partner Security Systems
- Steven Peltier, Johnson Controls
- Dustin Perkins, Orion Security Solutions
- Melvin Terezon, CertiPath
- Benjamin Williams, Probitas Technology

**Denotes corporate exam. For information or to schedule a corporate exam, please contact Randy Vanderhoof*

For more information, visit our website at www.securetechalliance.org. Members can also access white papers, educational resources and other content.

SECURE TECHNOLOGY ALLIANCE
191 Clarksville Road
Princeton Junction, New Jersey 08550
1.800.556.6828
Fax: 1.609.799.7032
info@securetechalliance.org
www.securetechalliance.org

About Secure Tech Talk

Secure Tech Talk is the monthly e-newsletter published by the Secure Technology Alliance to report on industry news, information and events and to provide highlights of Alliance activities and membership.

About the Secure Technology Alliance

The Secure Technology Alliance is a not-for-profit, multi-industry association working to stimulate the understanding, adoption and widespread application of secure solutions, including smart cards, embedded chip technology, and related hardware and software across a variety of markets including authentication, commerce and Internet of Things (IoT).