Smart Card Printing: An Evolving System of Security

By Jeff Tingley, GET Group North America Passport and ID Division
There’s more than just a smart chip involved in smart cards and their production. As all of us are asked to carry or have access to more critical and personal information, the use of smart cards is being adopted within both the public and private sector. Chip and data encryption and closed loop systems to ensure data integrity and tracking have grown in complexity and security to protect important information. In the upcoming year, smart card technology will continue to accelerate with an increased emphasis on customer service.

To match these advancements, the cards themselves will continue evolving. From the most obvious level of security, a printed image such as a user’s photograph, to advanced features like laser engraving and custom holograms, smart cards will incorporate more and more physical security to ensure the card holder is who he or she is supposed to be. As smart technologies proliferate and personalized identity systems grow increasingly sophisticated across multiple applications, the one constant that has remained is the physical card. Whether contact or contactless, the visual personalization of the card is paramount to its validity and usability across all kinds of applications. And as the value of the data on that card increases, so must the card’s security. For smart cards, the quality of the card’s security layers is now more important than ever.

Put simply, today’s cards demand a whole new level of personalization security and physical durability, while consumers expect technology delivered more rapidly than ever before. Thanks to new technologies, card issuers are finally up to the challenge of producing attractive cards with rigorous security layers without the need for complex infrastructure. In 2013, these forces will continue to affect the development of smart cards and the features contained within while introducing new technologies that make production increasingly streamlined and efficient.

The Departure from Centralization

The conventional approach to smart card printing has typically been centralized personalization, in which entities—be it a government agency, educational institution or retailer—manufacture personalized cards in one central location. This approach is used when delivering the finished cards to end-users is not immediately required, thus necessitating that the finished product be mailed to its owner. Although many organizations still rely on this approach, there has been an ongoing shift towards a de-centralized, point of issuance concept. This method of card issuance has numerous merits, the most obvious being improved customer service. By eliminating the risk of mailing a card full of sensitive data, and delivering a card instantly in a face-to-face exchange, end-users can activate and begin using their smart card immediately and not face the hassle of waiting—and potentially losing—a card delivered from a centralized location through the mail. In addition, by eliminating the costs associated with mailing hundreds if not thousands of cards, card issuing entities also stand to save money. Take a bank, as an example. When a card can be immediately issued to the customer, research has shown an increase in transactions and card usage, thereby increasing the bank’s profits.

With instant issuance, card issuers can invest in new technology, such as desktop printers that will not only personalize the card, but encode a magstripe, contact or contactless chip. The data behind the card and its user is kept within the institution’s secure data network. Instant validation of the card, user and terms can be made on the spot. Instant issuing can easily be performed in a bank branch or any other type of card issuance office by providing the proper personnel with application information in exchange for their ready-to-use, fully activated cards that are printed instantly on-site once the application has been approved. Clients are immediately able to use their cards, whether used to confirm their ID at a secure location or withdraw cash from their bank account.

Instant issuing is not about providing a software and printer solution, however; it is the integration of a closed-loop system into existing infrastructure.
without the need for large scale investments. The immediate improvements to security, customer service and cost will continue to play a significant role in transitioning more and more agencies to an instant issuance solution.

**Ink’s Growing Influence**

Increasingly, different ink types are also changing the way card issuers produce smart cards. For instance, 600dpi ink opens up a range of possibilities for new levels of security that can help organizations keep pace with new security standards with relative ease. With better ink, the information is displayed with greater accuracy and will remain visible for far longer than with lower-quality materials.

Pigment inks are likely to become an increasingly popular choice in 2013, as they are UV-resistant for the entire lifetime of the smart card and are not affected by contact with chemicals, making the cards difficult to alter or ruin without destroying the card material itself. Environmental factors such as natural light and moisture have less of an impact on pigment inks than others, and thus do not adversely impact the quality or longevity of the card.

While not as common as their dye-sublimation counterparts, pigment inks are the most durable ink options for card printing and bind firmly to substrate materials to resist degrading over time. More so than other inks, pigment ink particles maintain color fidelity on a variety of card materials regardless of environment. This durability is particularly important for smart cards over other IDs and access control tools, since they are frequently handled and more often exposed to wear and tear, especially as smart cards become more frequently deployed in high-impact environments such as the defense industry and law enforcement.

**Keeping Quality Standards High**

An underlying current that will certainly play a role in smart card development is adherence to ISO standards. With cards carrying more and more data, and security features ranging from the simple to the infinitely complex, meeting standards for everything from card size to chip type will become critical to safeguarding the integrity of smart cards.

Although still evolving, expect to see rigorous quality standards for smart cards have an ever-increasing impact as issuers strive to protect the technology on their cards while leveraging a de-centralized approach. With a blank card, organizations today have limitless options for customization and capturing precious data, right down to choosing their preferred ink type. This creates not only a better customer service experience, but also provides the ability to change the look and feel of a card on the fly. And with the ever-changing requirements of today’s access control systems, the ability to perform on-demand alterations is mission-critical.

While ultimately introducing new levels of customization and flexibility to card printing, issuers must remain vigilant when creating a closed-loop system that reaps the benefits of an instant issuance solution while preserving the standards that set high-quality smart cards apart from cheap imposters. To truly take advantage of these shifts towards an improved card issuance process, all must be used in concert to create a multi-layered solution to smart card printing.

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