

Two European Fingerprint Smart Card Teams prepare for Battle

Smart card technology has not advanced significantly since the introduction of dual-interface (contact & contactless) cards some ten years ago. The EMV “Second Generation” card specifications were abandoned before publication, and recent EMV specifications have concentrated on e-commerce, card-not-present (CNP) transactions – the main target area for card fraudsters.

Now the technology is starting to advance – fingerprint (or perhaps more accurately thumbprint) cards are being piloted by banks in several countries. The components for capturing and matching fingerprints in smart cards are developing rapidly. Chip integration and more efficient matching software are leading to faster processing and lower manufacturing costs, mimicking the trends that occurred with the original EMV chip-and-PIN cards, and with dual-interface cards.

For higher value retail transactions, the fingerprint replaces the PIN, and does not require the card to be inserted into a chip card reader. In fact the cardholder’s actions are the same as those for any contactless card.

Changes in the market are helping the business case for such cards:

- the rapid growth of contactless in-store transactions
- the requirement for two-factor cardholder authentication (SCA)
- the attraction of transactions that are not only contactless, but also “touch-free”
- competition from smartphones with biometric capabilities
- privacy concerns for personal data being misused - sometimes for fraudulent purposes

The market for EMV chip cards, the major target market, is still expanding rapidly. EMVCo recently announced that the number of EMV cards in global circulation at the end of 2020 was 10.8 Billion, compared with a global human population of 7+ Billion. The number of EMV cards has grown by nearly a billion in the year since the end of 2019.

The prospect of large worldwide markets, plus the major investments needed in the new technologies has led to the formation of two Europe-based “teams” of companies preparing products for market. Some of the developments have been assisted by the EU “Horizon 2020” research & innovation programme.

A team needs to cover the fingerprint sensor/capture, the fingerprint image processing and matching, the linking/integration of these technologies to the main card application platform, the manufacture of the card, and the marketing & selling of the card product.

The members of the **two** teams are:

1. **Team One:**

- a. **Fingerprint Cards (Sweden)** – fingerprint sensor supplier
- b. **Precise Biometrics (Sweden)** – fingerprint software

- c. **STMicroelectronics (Switzerland)** – chip integrator & card manufacturer
 - d. **Gemalto/Thales Group (France)** – chip card supplier (marketing & sales)
2. **Team Two:**
- a. **IDEX Biometrics (Norway)** – fingerprint sensor supplier
 - b. **ZWIPE (Norway)** – fingerprint software supplier
 - c. **Infineon Technologies (Germany)** – chip integrator & card manufacturer
 - d. **IDEMIA (France)** – chip card supplier (marketing & sales)

Team One started first in 2016 – Fingerprint Cards signed a licensing agreement with Precise Biometrics in February 2016 for the use their fingerprint software in smart cards. In the same month, Gemalto, Fingerprint Cards, Precise Biometrics and STMicroelectronics introduced the first end-to-end security architecture for biometric fingerprint cards at the 2016 Mobile World Congress.

Team Two followed in 2020, when IDEMIA, ZWIPE and IDEX announced in April the arrival of the first engineering samples of the “next generation” of the biometric secure element. The three companies also announced that they would be piloting in the second half of 2020, with commercial rollout planned from 2021 and onwards

Pilot trials have started and Team One has announced bank card issuer trials in France (BNP Paribas & Credit Agricole), Switzerland (Corner Bank) and Mexico (BBVA).

Team Two hasn't announced any issuer names yet, but it seems that many banks, perhaps understandably do not want to go public until their product launch.

Outside Europe, the fingerprint component suppliers are working with other chip and card suppliers. They are also looking at other markets – mobile phones, PCs, and access control cards.

The next few years should show us the winner, but the market seems to be big enough for both.

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