

HCE- CLOUD: RECENT EVOLUTIONS IN THE ORIGINAL HOST CARD EMULATION CONCEPT & TECHNOLOGY

HCE Summit, Brussels December 1st, 2017



Who we are

The Smart Payment Association addresses the challenges of today's evolving payment ecosystem. We offer leadership and expert guidance to help our members and their customers realize the opportunities of smart, secure and personalized payment systems and services - both now and in the future.

Since 2004



How we do it



- ▶ Provide a comprehensive portfolio of advisory and advocacy services.
 - An ever-growing library of expert technical resources and thought leadership collaterals to shape the future of payment technology
 - The market's most accurate barometer of payment trends – annual analysis based on actual manufacturer data



- ▶ Defend member interests from a regulatory perspective, while addressing issues of standardization, certification and security to drive the technologies and business models that are shaping the future of payment technology.
 - Engagement in industry bodies and standardization organizations across the world – offering guidance on best practices, providing the 'vendor' perspective and ensuring regulatory initiatives are beneficial to the efficiency of the ecosystem.



- ▶ Open to encompass a rapidly evolving and broad payments community addressing new verticals and geographies.
 - Controlled expansion of membership – consolidating its influence on the payment issuing value chain and extending to other ecosystem players via its Associate Member and Advisory Council programs.

- ▶ Fintechs
- ▶ Instant Payments Security
- ▶ Strong Customer Authentication
- ▶ Cashless World State of Play
- ▶ Contactless payments and security
- ▶ Host Card Emulation (HCE)
- ▶ Mobile Wallets
- ▶ DDA Authentication
- ▶ Tokenization
- ▶ Biometrics for financial services
- ▶ Instant Issuance
- ▶ PIN by SMS
- ▶ Private Label Payment Solutions
- ▶ Business Continuity in the Payment Card Issuance Industry



Presentation Objectives

- ▶ Describe the evolution of the HCE-Cloud original paradigm
- ▶ Present a taxonomy of HCE-Cloud implementation models
- ▶ Outline security challenges
- ▶ Brief on EMVCo Tokenization Framework v2.0
- ▶ Provide payment regulatory insight
- ▶ Standardization initiatives

The transformation of the mobile payments landscape

- ▶ Smartphone adoption drives:
 - Consumers to use mobile payments and wallets
 - Retailer acceptance of mobile payments
 - Triggering the two-side market effect

- ▶ The emergence of HCE as an alternative to hardware has consolidated the NFC

- ▶ ...and the NFC channels now being challenged by QR and BLE (“plan B”)

- ▶ HCE and software-based solutions has prompted Tokenization and Cloud

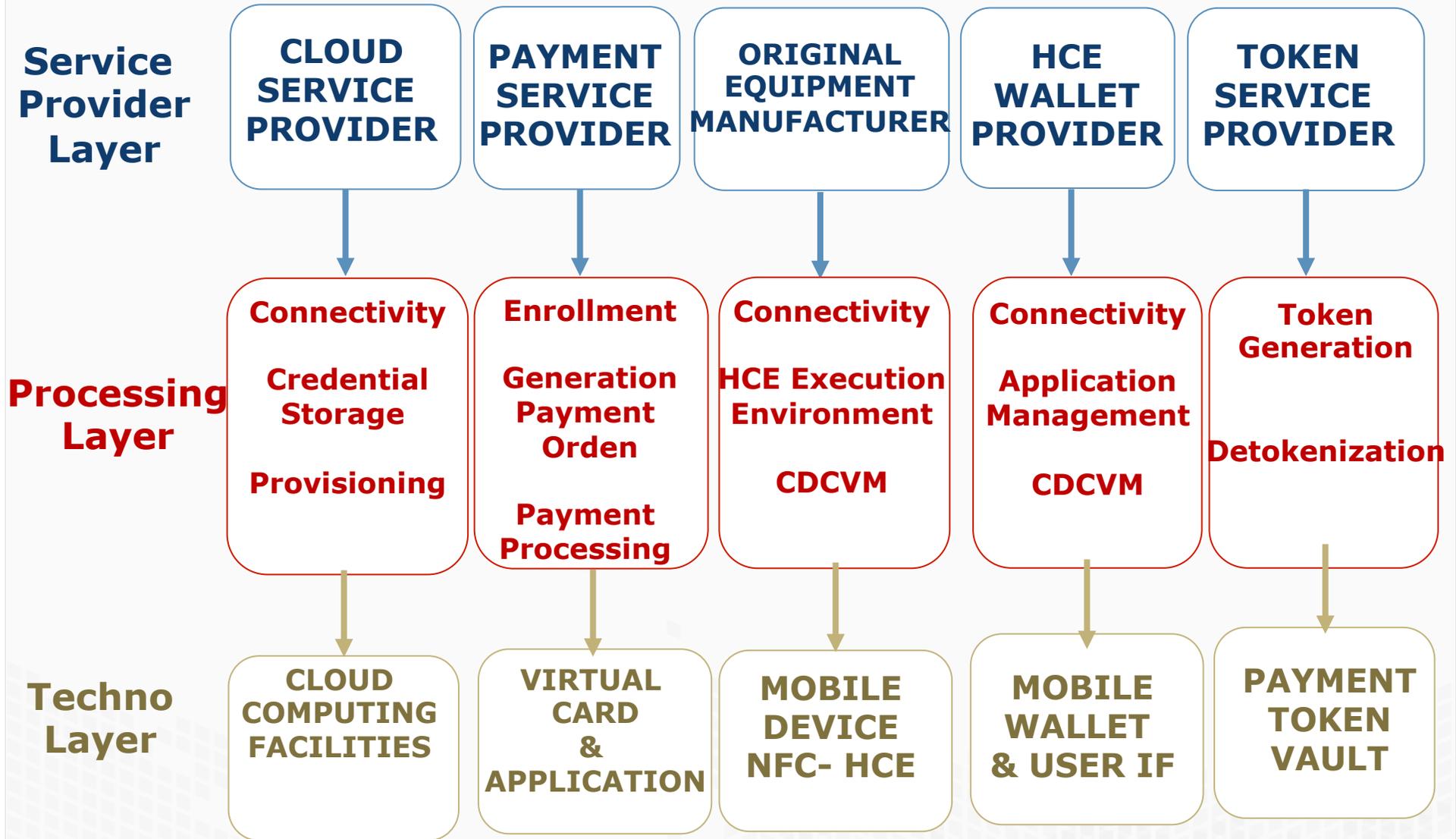
- ▶ X.PAYS have started to make popular the use of biometrics to authenticate

- ▶ Regulation is boosting competition :new incomers offering technology innovation

- ▶ M-Commerce boosts also the use of software-based solutions to pay online

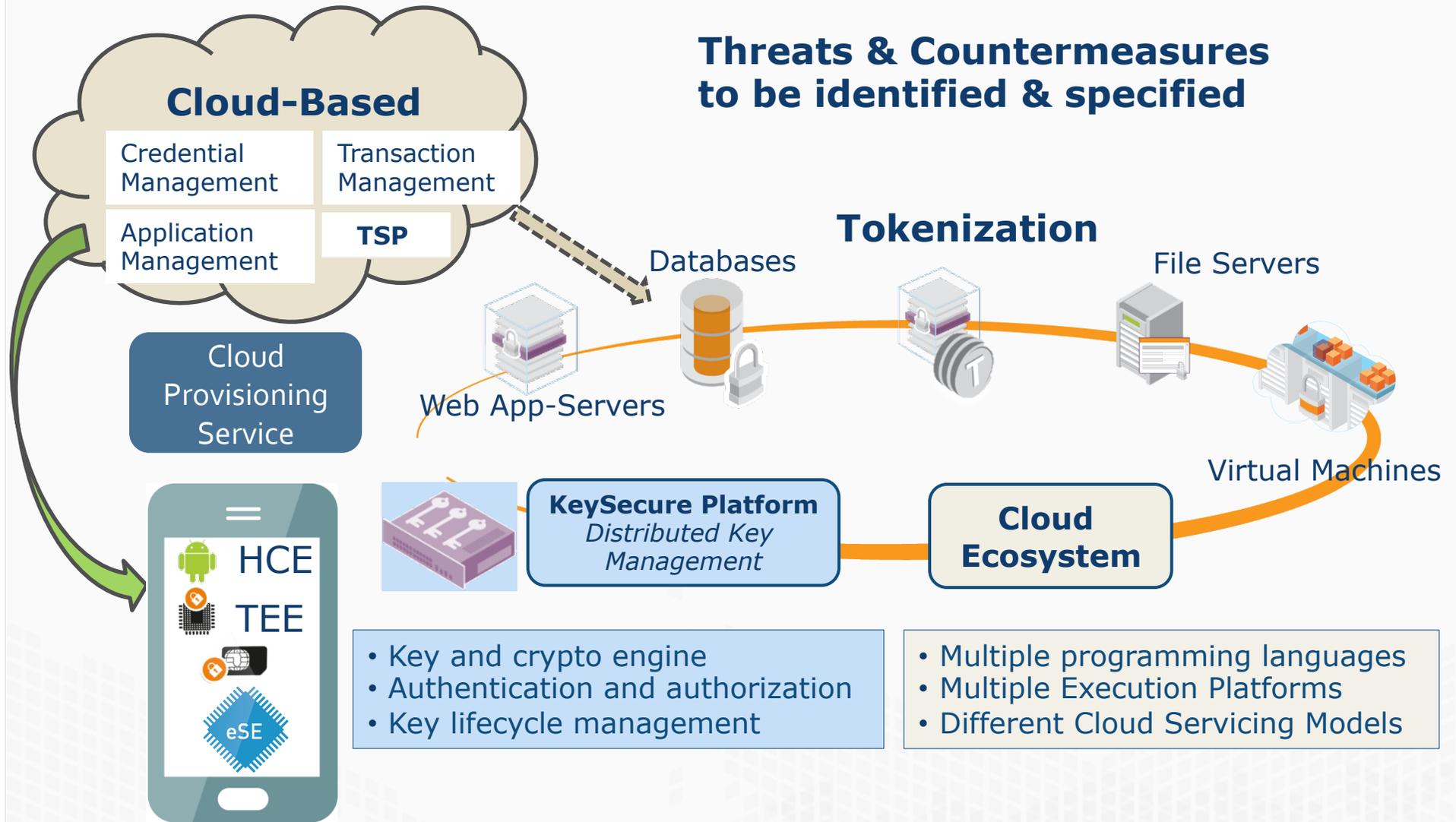
- ▶ In 2017, we are still far from fixing all the security threats

Framework flexible but complex



Mobile Cloud card based payments

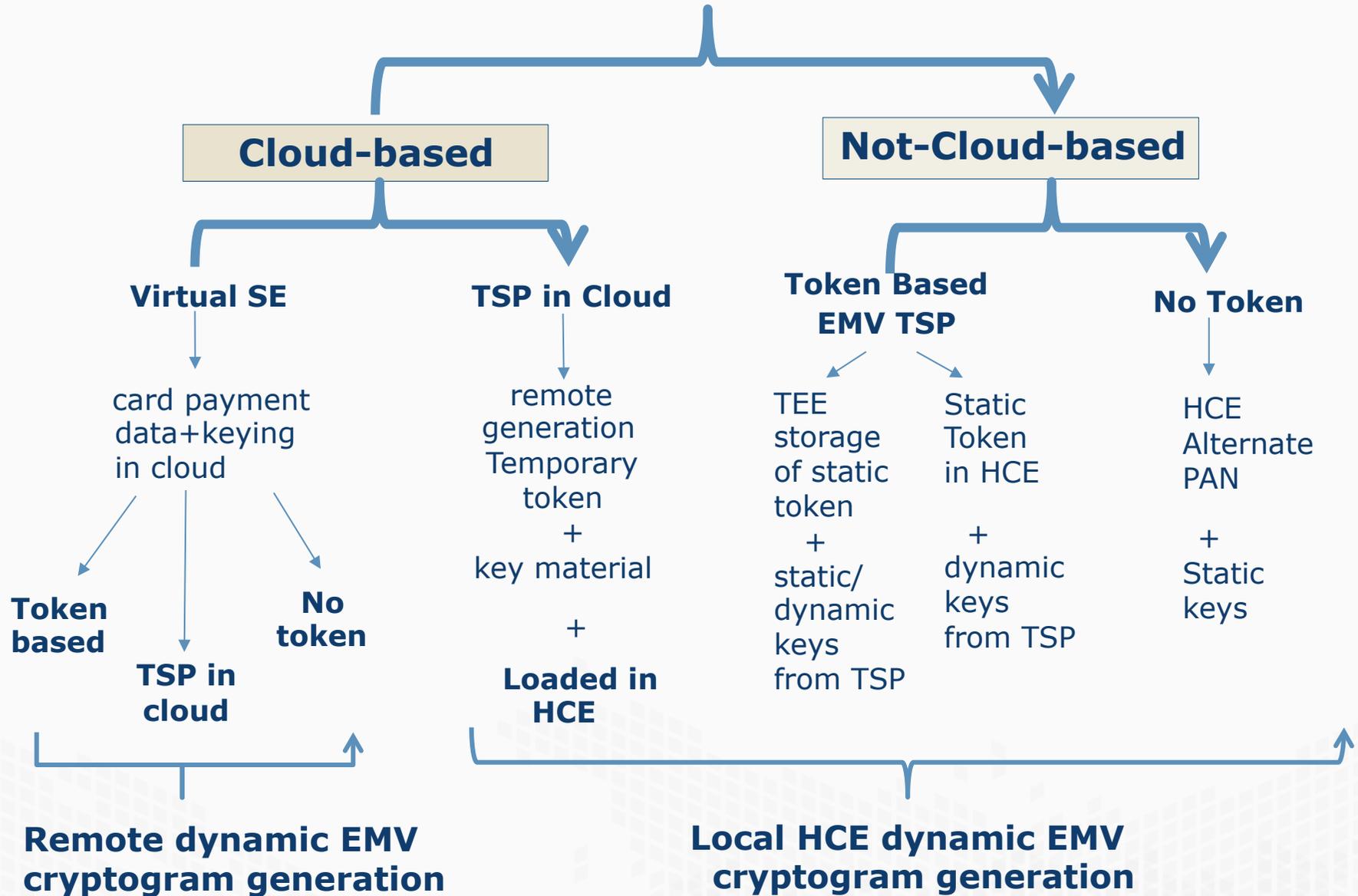
**Threats & Countermeasures
to be identified & specified**



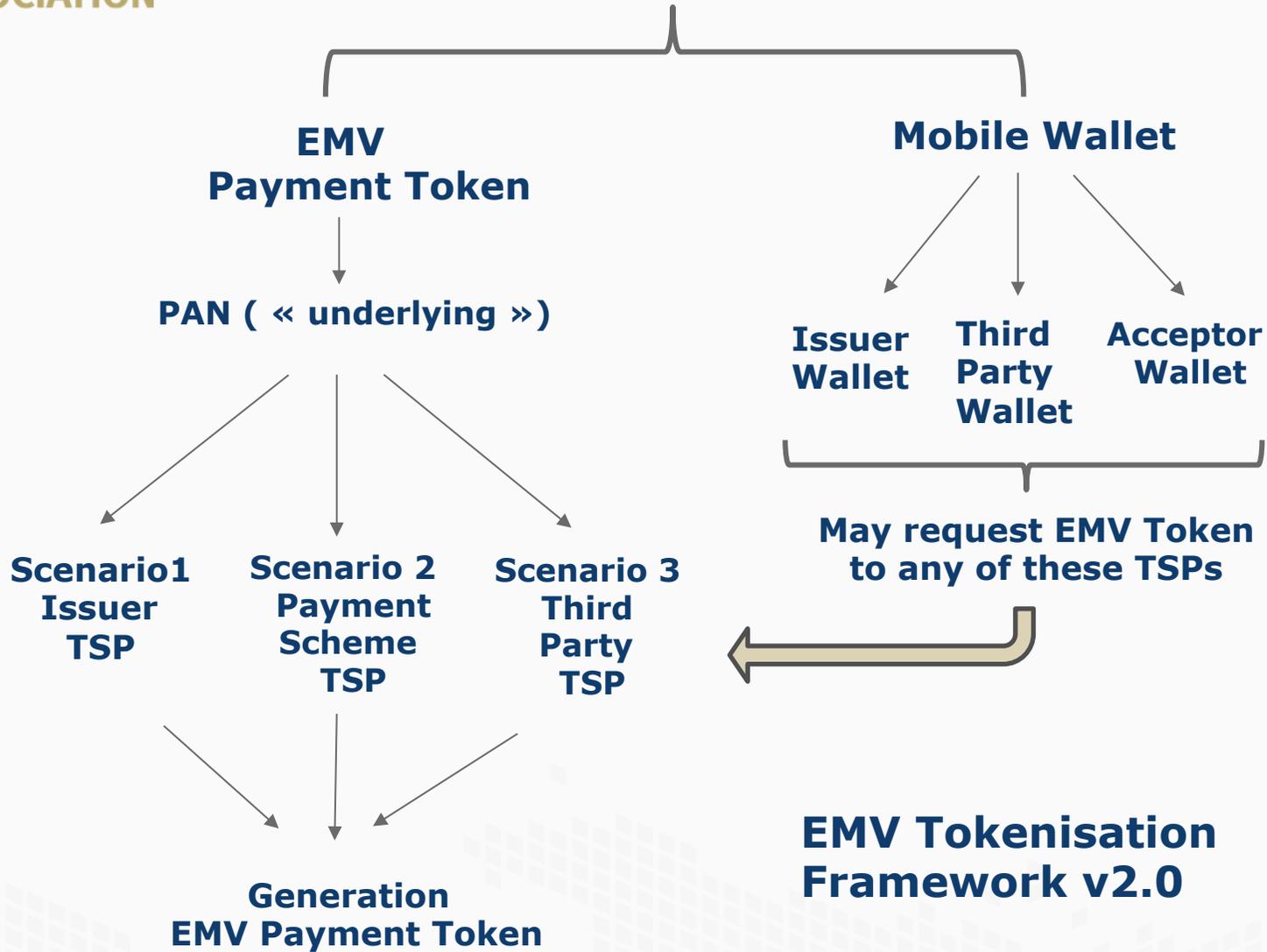
HCE-Cloud Security aspects

- ▶ The complexity of HCE-Cloud based systems extends the perimeter of attack There are a number of factors to be considered when migrating to cloud services
- ▶ The beneficial HCE-Cloud flexibility in terms of functionality and the search for user convenience cannot be achieved without proper new risks management
- ▶ Incentives for participants to secure a complex payment system are often misaligned and lead to a variety of vulnerabilities
- ▶ The Regulatory Technical Standard on Strong Customer Authentication sets out strict security requirements on the protection of personal credentials
- ▶ For financial services using the Cloud, the European Banking Authority is developing specific requirements
- ▶ EMVCo has just announced ongoing work to establish a Security Evaluation Process to enable a robust security foundation for software-based mobile payment solutions
- ▶ PCI released the PCI-DSS Cloud computing guidelines to fix cloud security issues

Taxonomy of HCE Mobile Payments



Taxonomy of payment Token solutions



▶ **Token Programme, policies and processes**

- Generation and Issuance of Payment Tokens & Detokenisation
- Designation of Token BIN or Token BIN Ranges
- **Token Assurance Methods** to indicate the ID&V process to bind the Token to a PAN

▶ **Token Assurance Method**

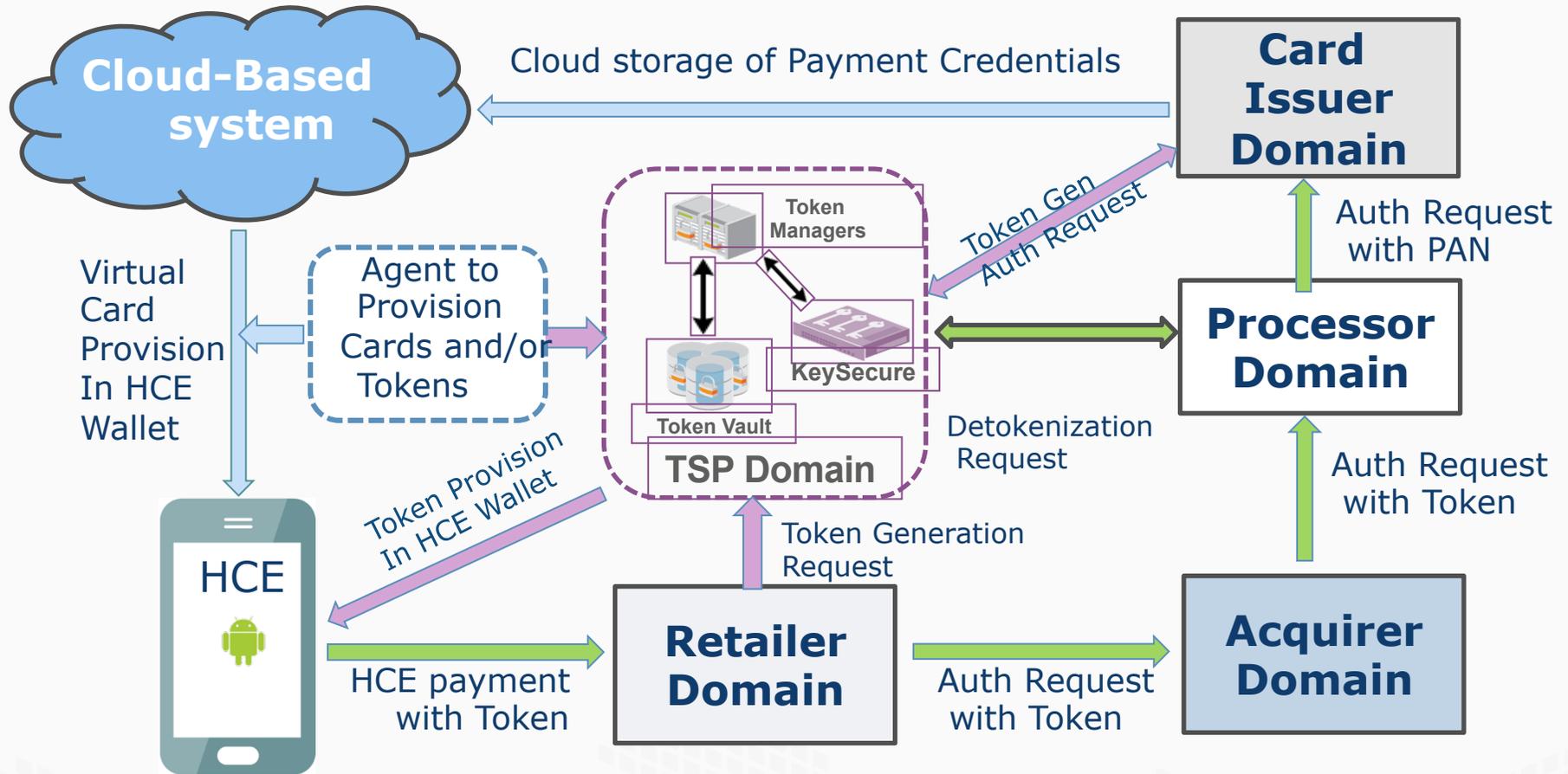
- What was done : ID&V Method(s)
- Who did it: ID&V Actor
- Categories: Token Assurance Method Categories

▶ **Token Request and Token Processing**

▶ **Use Cases**

- Use case 1 NFC mobile
- Use case 2 E-commerce using a mobile digital wallet
- Use Case 3 Card on File
- Use Case 4 new Shared Payment Token

A possible implementation model



- Virtual Card provisioning chain in HCE Wallet
- Token provisioning chain in HCE Wallet
- EMV Virtual Card payment circuit using a Token

To take away

- ▶ Technology is evolving to secure the mobile payment channels and counter the anticipated increase in both face-to-face and online mobile payment fraud
- ▶ Short-term priorities to protect HCE-Cloud payments include the need for effective security standards and improved incentives for their adoption
- ▶ SPA is working hard to develop technology and push standardization to protect payment data, improve security and prevent fraud in new payment systems
- ▶ Coexistence of payment and not-payment applications in the same HCE wallet should neither undermine security nor privacy
- ▶ Different security controls, hardware and software based will coexist in the mobile
- ▶ SPA recommends the use of certified hardware-based technology to secure high-risk transactions initiated with a mobile device
- ▶ Fix first the security issue, then deploy applications in your HCE- wallet
- ▶ EMV and PCI collaborating to provide a convenient security certification framework for HCE card payment solutions using Cloud computing facilities



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