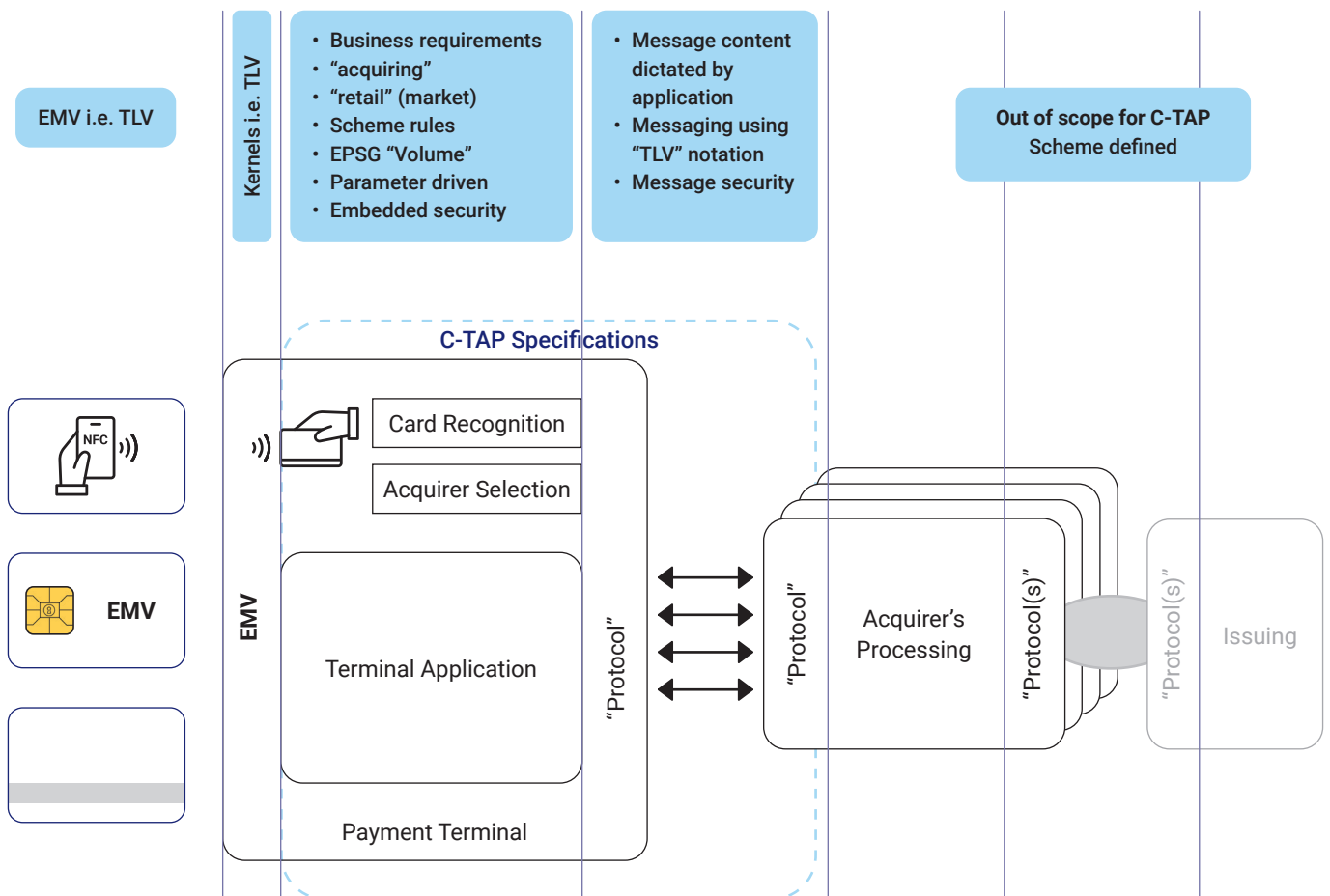# C-TAP functionality

The interoperable terminal specifications for SEPA multi-brand cross-border card acquiring

acquiris

Acquiris a.i.s.b.l. is the payment terminal specification and certification body within the SEPA region. In close co-operation with stakeholders, Acquiris keeps the specifications in line with market demands and technological developments.

THE C-TAP SPECIFICATIONS IN THEIR OPERATIONAL ENVIRONMENT

EMV i.e. TLV

Kernels i.e. TLV

- Business requirements
- "acquiring"
- "retail" (market)
- Scheme rules
- EPSG "Volume"
- Parameter driven
- Embedded security

- Message content dictated by application
- Messaging using "TLV" notation
- Message security

Out of scope for C-TAP Scheme defined

C-TAP Specifications

NFC

EMV

Card Recognition

Acquirer Selection

Terminal Application

Payment Terminal

EMV

"Protocol"

"Protocol"

Acquirer's Processing

"Protocol(s)"

"Protocol(s)"

Issuing

C-TAP FUNCTIONALITY

Multiple configurations
- Terminal with separate merchant unit and Pinpad
- Terminal with combined merchant unit and Pinpad
- Terminals without Pinpad (No cardholder validation)
- Above terminals in attended mode
- Above terminals in unattended mode
- Electronic Cash Register (ECR) or POS interfaces
  - aligned to the market with multiple protocols for retail and petrol

Multiple card entry modes
- EMV contact
  - requiring EMV L1 and L2 certification
  - magstripe fall-back
- Contactless
  - "chip" and "magstripe" mode
  - Multiple form factors (card, smartphone …)
  - supporting multiple kernels (requiring specific
    EMVCo and scheme certification for these kernels)
    - EMV contactless
    - MasterCard Contactless (formerly PayPass)
    - Visa payWave
    - AMEX ExpressPay
    - CPACE
- Manual Entry
- Magstripe

Services
- Payment
- Payment at Voice Referral
- Cash Advance
- Cash Advance at Voice Referral
- Card Validity Check
- Resubmission
- Pre-Authorisation
- Update Pre-authorisation
- Payment completion
- Refund
- Deferred Payment (including transmission of fuel types and volumes)
- Cancellation
- Back-up mode (temporary local authorisation activated by merchant when connectivity with acquirers is lost)
- Management functions: balances and financial counters

Additional Functions
- Partial Approval
- Product Selection
- Dynamic Currency Conversion (DCC)
- Extra amount
- Shop / petrol products
- Terminals with local authorisation capabilities
- Token recognition to link e.g. pre-authorisation and payment completion
- Merchant activated PIN entry bypass
- No-CVM required limit
- Cash-back
- Site management
- Application pre-selection
- Additional Data (e.g. for petrol cards)

Card and cardholder verification
- EMV SDA, DDA and CDA card authentication
- No CVM
- Signature
- Off-line PIN validation – clear text
- Off-line PIN validation – encrypted
- Contactless on-device CVM
- On-line PIN

Cardholder and merchant guidance
- Multilingual – driven by card's language (if available) and merchants language
- Standard messages prescribed by specifications and their translation in different languages
- Multiple character sets

Transaction receipts
- Prescribed by the documentation for local printing and submission to ECR systems
- Driven by the acquirer
  - Mandatory or optional printing for cardholder or merchant
  - Additional data and cardholder text
  - Truncation of sensitive data

Security methodologies
- TLSv1.2 with RSA or ECC mutual authentication (acquiring host authentication by terminal, terminal authentication by acquiring host)
- Terminal Secure Component (TSCv1.0-RSA or TSCv2.0-ECC) – proprietary method to provide storage of symmetrical keys for each acquirer, to support message authentication, selective data encryption and PIN block transmission - DUKPT compliant
- Acquirers select which method or combination to use for each terminal
- Both TLS v1.2, TSCv1.0 and TSCv2.0 are driven from a Acquiris Certification Authority
- Support of SRED (Secure Reading and Exchange of Data)

Telecommunication
- Open Internet (GPRS, local Wi-Fi)
- Dedicated Internet (GPRS, local Wi-Fi)
- Private networks and VPN gateways

Driven by common parameters and acquirers' decisions

- Terminal management system load (at regular intervals, upon publication by Acquiris):
  - Card recognition criteria (BIN, AID)
  - Acquirer tables and corresponding connectivity data
  - Merchant's decisions on acceptance of brands and the corresponding acquirers
- Acquirers customize the transaction flow and processing options parameters

The Acquiris ecosystem

- Acquiris is a member-driven not-for profit organisation and recognises various types of membership (principal members, associate members and observers).
- Both principal and associate members are active in the industry of acquiring card transactions in a role for which terminal specification are instrumental, i.e. as acquirer or acquirer processor (principal members) or terminal vendors (associate member).
- Acquiris has following activities:
  - Licensing: Acquiris provides licenses to members (free of charge). Members participate in a cost-sharing agreement.
  - Specifications: Acquiris manages the C-TAP specifications with its members and makes the resulting documentation available.
  - Certification: The terminal certification by Acquiris relies on preliminary certifications mandated by the members as acquirers of e.g. international schemes. Acquiris will have performed a functional certification of the C-TAP terminal application by independent labs.
  - Public Key Certification Authority: Acquiris provides CA services to its members to support acquirer key distribution and TLS.

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