

# Digital Cash Wallet



Crunchfish's Digital Cash Wallet is an extremely flexible and interoperable solution that compliments any payment service, on any payment scheme, with capabilities that replicate paying with cash. A two-step hierarchical architecture makes Digital Cash payments independent from the net, offering instant clearing offline at the moment of payment, followed by settlement online to move money between accounts. On request by the payer, payments may be private in relation to banks, within the limits of money laundering regulations.

The Digital Cash Wallet has a mirrored Digital Cash Account which is used for settlement online, when either the payer or the receiver connects online, independently of each other. The Digital Cash Account may only be debited from the Digital Cash Wallet protecting against double spending and overdrafts. It registers all activity in the Digital Cash Wallet.

Digital Cash payments are debited against a balance maintained by the Digital Cash Wallet, which may be implemented using signed risk parameters or as a trusted application running on a smart card or a digital wallet, on either a smartphone or a feature phone. It functions like a tollgate securing that sufficient balance is available and that issuer rules are fulfilled, before a cryptographically signed Digital Cash payment is generated. The payments are assigned and transferred to the receiver using proximity interaction, who may verify them on an electronic device in offline mode.

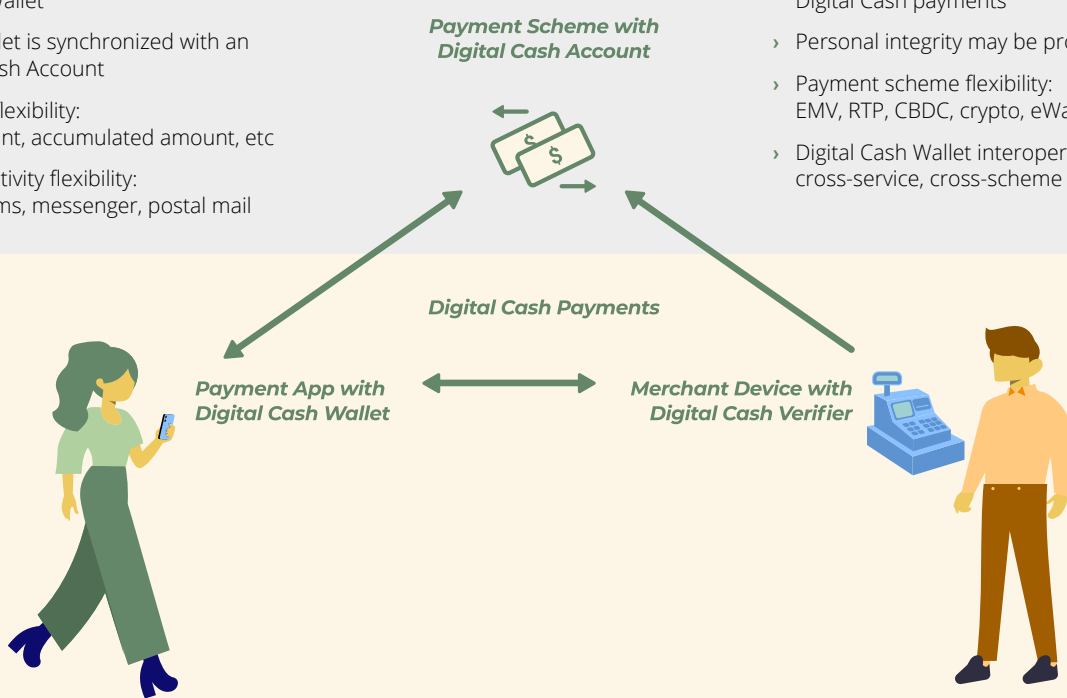
Crunchfish is global Certificate Authority for the Digital Cash Wallet. It is globally interoperable cross-service and cross-scheme by the use of signed user certs and payment service certificates. It is also cross-border by the use of foreign exchange in the payment app.

## Digital Cash Balance

- › Balance exchange and auto-refill of Digital Cash Wallet
- › Balance and transaction log maintenance in Digital Cash Wallet
- › Digital Cash Wallet is synchronized with an online Digital Cash Account
- › Issuer risk limit flexibility: maximum amount, accumulated amount, etc
- › Network connectivity flexibility: https, cellular, sms, messenger, postal mail

## Online Settlement

- › Independent settlement by the receiver and the payer
- › Online validation and settlement of Digital Cash payments
- › Personal integrity may be protected
- › Payment scheme flexibility: EMV, RTP, CBDC, crypto, eWallet or mobile money
- › Digital Cash Wallet interoperability: cross-service, cross-scheme and cross-border



## Digital Cash payment by Payer

- › Initiation of Digital Cash payments that debit the Digital Cash Wallet
- › Guaranteed Digital Cash payments cryptographically signed by payer
- › 2-factor authentication using PIN or biometrics in Digital Cash Wallet
- › Protection against overspending
- › Bearer device flexibility: smartphone, feature phone or cards
- › Security implementation flexibility: signed risk parameters or SE, SIM

## Digital Cash payment to Receiver

- › Receiver assigned in the Digital Cash payment cryptogram
- › Digital Cash payments verified by receiver in an offline mode
- › Digital Cash payments stored and forwarded by Digital Cash Verifier
- › Transaction replay protection
- › Proximity interaction flexibility: QR, NFC, BLE or ultrasound
- › Receiver device flexibility: mobile, cash register or payment terminal