Digital euro prototype

Summary and lessons learned

3 July 2023

Digital euro project team
Prototype background, set-up and goals

No personal data were processed in the prototyping exercise either by the ECB or by the front-end prototype participants.
Prototype exercise results

Possible to smoothly integrate digital euro into the existing European payments landscape, while leaving ample room for innovative features and technologies.

A digital euro could in principle work both online and offline, using independent designs.

Important: the specific choices made for the prototypes do not affect any decision relating to a specific technology or functionality for the final digital euro design. The API specifications do not prejudge possible alternative designs. The actual prototypes presented will be discarded and not used further.
Back-end prototype

What we developed

- N€XT, a bespoke centralized settlement system developed from scratch by the Eurosystem
- Not a DLT, but based on a UTXO data model (greatest potential for learning)

What we learned

- UTXO model allows for fast and efficient validation of transactions
- Transaction model based on UTXO can support different types of transactions (future proof)...
  ... while protecting user privacy by not revealing payment patterns or account balance to the Eurosystem
Front-end prototypes

What was developed

- **P2P online**
  - Caixa Bank
  - Mobile app Alias

- **P2P offline**
  - Worldline
  - Mobile app Secure Element, NFC

- **E-commerce**
  - Amazon
  - Online shopping Wallet webapp

- **POS payer**
  - EPI
  - Customer app + Merchant app QR codes

- **POS payee**
  - Nexi
  - Customer app + Smart POS NFC + QR codes

What we learned

- **Smooth interaction** between front-end and back-end with room for innovative approaches; adaptation effort for existing PSP systems remains to be evaluated.

- **Offline and online can have different data models and be interoperable:** offline data model can be also balance based. **Maturity still a challenge.**