Update on the digital euro scheme

Market Advisory Group

Digital euro project team
Christian Schäfer

24 February 2023
Overview

Client Journeys

Approach for the rulebook development
Building blocks for the scheme rulebook
We have identified 6 building blocks, numbered from A to F, covering together all sections of the digital euro rulebook

<table>
<thead>
<tr>
<th>Building blocks</th>
<th>Digital euro rulebook</th>
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</thead>
</table>
| **A. Functional & operational model** | 1. Document information (References, defined terms, change history, purpose, ownership of the document)  
2. Digital euro scheme scope and interplay (Vision and mission statement, scope, actors, binding nature of the rulebook, separation between scheme and payment infra., benefits of the scheme, additional optional services, scheme participation fees) |
| **B. Adherence model** | 3. Functional and operational model (Generic processing flows / end-to-end flows, core requirements / service endpoints / list of attributes, identification & authentication / list of SCA approaches, min. UX standards) |
| **C. Technical scheme requirements** | 4. Adherence model (Scheme participation, reachability & interoperability, eligibility criteria, becoming a participant, scheme register of participants, obligations of participants, liability, compliance and enforcement, rules of supervision, termination, exemptions and potential bilateral agreements, intellectual property, contractual provisions, applicable regulatory / legal framework, governing law) |
| **D. Risk management** | 5. Technical scheme requirements (IT infrastructure, IT security, Connectivity (e.g., API implementation), interplay with European standardization initiatives (specifications), interface standards / specifications, non-functional requirements) |
| **E. Scheme management** | 6. Risk management |
| | 7. Scheme management (Scheme management board, change management process, brand management, scheme operations) |
| | 8. Defined terms and abbreviations |
| | 9. Annexes (Illustrative client journeys and client products, branding standards, Adherence and related documents, description of AML fulfillment and sanctions requirements, Business conditions and commercial terms, Functional and technical architecture document including register, SLRs / KPs, reporting requirements and guidelines, reconciliation, interoperability policy to other payment systems, Incident management, implementation guidelines including technical standards, certification and approval framework, onboarding document / toolkits) |

Note: Overlaps with other engagement groups may materialize.

1. The digital euro legal act currently being prepared may impact the rulebook scope and content and may require subsequent adjustments
2. Out of scope of Rulebook Development Group
3. Out of scope of current phase; to be detailed as part of implementation phase

ECB-PUBLIC
High-level approach for the development of the scheme rulebook
## High-level approach

<table>
<thead>
<tr>
<th>Activity</th>
<th>A. Functional &amp; operational model</th>
<th>B. Adherence model</th>
<th>C. Technical scheme requirements</th>
<th>D. Risk management</th>
<th>E. Future scheme management</th>
<th>F. Scheme generics</th>
<th>Planning for Phase 2</th>
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<td>A1. Identification and authentication</td>
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<td>A3. Branding and communication standards (Regular approach elements)</td>
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<td>B1a. Rights and obligations of Participants</td>
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<td>F1. Scheme compatibility</td>
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**Activity**

- Launch of workstream mandate
- Reflection on building blocks

1. "Regular approach" elements – i.e., sections of the rulebook drafted by the rulebook team without interactions with a dedicated workstream; 2. Updated references and defined terms and abbreviations will be presented on a regular basis to the RDG
Illustrative Client Journeys
Why focusing on client journeys?

In particular, client journeys inform functional requirements, which in turn inform activities necessary from the Eurosystem and intermediaries, and thereby “generic flows”, in turn informing tasks and “end-to-end flows”.

1. Activities and tasks related to communications between the different intermediaries and with the Eurosystem; internal activities and tasks are out of scope of generic flows and end-to-end flows.
A long list of ~45-50 journeys has been identified (including variations of similar use cases)

1. Core & optional requirements defined by Eurosystem

2. Use case & Form factors Prioritization by Eurosystem

User vs merchant perspective as a digital euro user

Intermediaries’ app vs D€ standalone app experience

~45-50 user journeys to be illustrated in total
## Use Case: Payer completes payment by scanning QR Code generated by Payee

### Pre-requisites
- Payer and Payee must be enrolled
- Payee must accept DE as a payment method
- Payer must be purchasing in desktop or have two devices (limitation)

### Open points to be tracked because they will impact the journeys
- Standard selected for QR Code (e.g., EPC) could have impacts on type of information that can be channeled through the QR
- Selection of payment method: should an intermediate step be included in Step 2 for the selection of QR Code as the payment method?
- Authentication: authentication step may perhaps be skipped because the payer has authenticated earlier or because the amount is below the regulatory threshold for mandatory authentication

### Business requirements
- Payer should be able to select DE payment through QR Code
- Payee should be able to generate dynamic QR Code (to support encoding of the amount)
- Generated QR Code should be valid and compliant (e.g., with the EPC QR Code rulebook)

### Pre-requisites
- Payer selects DE as payment method and QR Code with payment details is generated
- Payee's web-shop

### Checkout
- Payer scans QR Code

### Payment initiation
- Payer scans QR Code

### Consent & Authentication
- Payer consents the transaction

### Payment confirmation
- Payer receives payment confirmation

### # of actions (estimated)
<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>Pre-requisites</td>
<td>Payee's web-shop</td>
<td>Payer selects DE as payment method and QR Code with payment details is generated</td>
<td>Payer scans QR Code</td>
<td>Payer consents the transaction</td>
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<table>
<thead>
<tr>
<th>Pre-requisites</th>
<th>Payee</th>
<th>Payer</th>
</tr>
</thead>
</table>

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1. Select digital euro, select QR Code and QR Code generation
2. Open app, authenticate, select scan QR and scan QR

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Tactile draft to support discussion
**TM 1.6 – M-Commerce payment (in-app)**

**Use Case:** Payer completes payment by using an alias/proxy

<table>
<thead>
<tr>
<th># of actions</th>
<th>Pre-requisites</th>
<th>Business requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimate: 2</td>
<td>Payer and Payee must be enrolled</td>
<td>• Payer should be able to select pay with digital euro.</td>
</tr>
<tr>
<td>Estimate: 3</td>
<td>Payee must accept D€ as a payment method</td>
<td>• A pop up from the D€ wallet should appear on the screen.</td>
</tr>
<tr>
<td>Estimate: 1</td>
<td></td>
<td>• Payer should be able to choose a preferred way to authenticate (e.g., Code, biometrics).</td>
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<td></td>
<td></td>
<td>• Payer should be able to consent the transaction through one of the accepted authentication mechanisms.</td>
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<td></td>
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<td>• If amount exceeds available, reverse waterfall should be triggered for Payer.</td>
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</tbody>
</table>

**Illustrative draft to support discussion**
**Use Case:** Payer completes payment by scanning Payee’s QR Code

**Pre-requisites**
- Payer and Payee must be enrolled
- Payee must accept D€ as a payment method
- Payer has authenticated in the app
- Payee must have a POS equipped with QR Code technology

**Business requirements**
- Payee should be able to generate dynamic QR Code (to support encoding of the amount)
- Generated QR Code should be valid and compliant (e.g., with the EPC QR Code rulebook)
- Payer should be able to scan QR Code, with a built-in QR scanner from their payment app
- App should display amount and Payee of the transaction and confirm consent of Payer
- Payer should be able to consent the transaction through one of the accepted authentication mechanisms
- Payer should be able to choose a preferred way to authenticate (e.g., code, biometrics)
- If amount exceeds available balance, reverse waterfall should be triggered for Payer
- Payer’s account/wallet should be debited, and Payee’s account/wallet should be credited
- Both Payer and Payee should receive a confirmation message
- Payer’s confirmation message includes amount, date and time, merchant name and location
- Transaction should be recorded in Payer’s and Payee’s transaction log

**Open points to be tracked because they will impact the journeys**
- Standard selected for QR Code (e.g., EPC) could have impacts on type of information that can be channelled through the QR
- Authentication: authentication step may perhaps be skipped because the payer has authenticated earlier or because the amount is below the regulatory threshold for mandatory authentication

**# of actions (estimated)**
1. Open app, authenticate, select scan QR and scan QR
2. Payee generates QR Code with transaction amount
3. Payer scans QR Code
4. Payer consents the transaction
5a. Payment of [amount] sent to [Payee] at [time]
5b. Enter your PIN

**Flowchart**
1. Checkout
   - Payee generates QR Code with transaction amount
2. Payment initiation
   - Payer scans QR Code
3. Consent & Authentication
   - Payer consents the transaction
   - Might be skipped?
4. Payment confirmation
   - Both Payer and Payee receive payment confirmation

**Intermediary / D€ app**
- Touch ID
- Authenticate
- Consent
- Payment of [amount] sent to [Payee] at [time]
- Enter your PIN
- Touch ID
- Authenticate
- Consent
- Payment of [amount] to [Name of payee]
TM 1.2 – POS payment with NFC

Use Case: Payer completes payment by using NFC technology

# of actions (estimated)

1. Checkout
   Payee sets up POS terminal with transaction amount

2. Consent & Authentication
   Payer consents the transaction

3. Payment confirmation
   Both Payer and Payee receive payment confirmation

Business requirements

- POS terminal should display transaction amount and NFC icon
- NFC-based communication should comply with standards
- Payer should be able to consent the transaction through one of the accepted authentication mechanisms
- Payer should be able to choose a preferred way to authenticate (e.g., code, biometrics)
- If amount exceeds available balance, reverse waterfall should be triggered for Payer
- Alternatively, consent and authentication might be provided by activation of smartphone before bringing device near the NFC reader
- Payer’s account/wallet is debited, and Payee’s account/wallet is credited
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- Payer’s account/wallet is debited, and Payee’s account/wallet is credited
- Transaction should be recorded in Payer’s and Payee’s transaction log

Pre-requisites

- Payer and Payee must be enrolled
- Payee must accept D€ as a payment method
- Payer has authenticated in the app
- Payee must have a POS equipped with NFC technology

Open points to be tracked because they will impact the journeys

- Smart devices: “smart devices” allowed for NFC transactions (e.g., watches?)

1. Open app, authenticate and select payment method

2. Consent & Authentication
   Payer consents the transaction

3. Payment confirmation
   Both Payer and Payee receive payment confirmation

Pre-requisites

- Payer and Payee must be enrolled
- Payee must accept D€ as a payment method
- Payer has authenticated in the app
- Payee must have a POS equipped with NFC technology

Open points to be tracked because they will impact the journeys

- Smart devices: “smart devices” allowed for NFC transactions (e.g., watches?)