EUROPEAN CENTRAL BANK

EUROSYSTEM

[ECB-PUBLIC]

Update on the digital euro scheme

Market Advisory Group

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Digital euro project team

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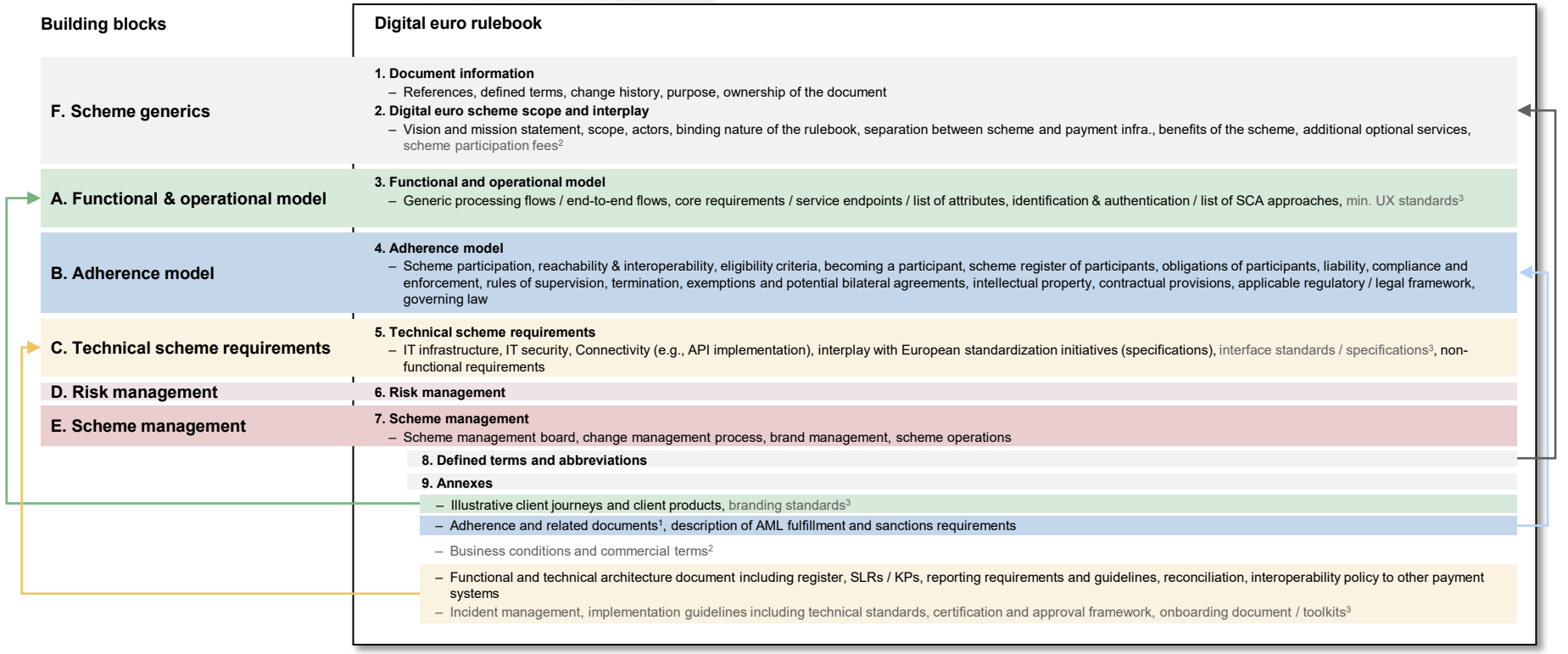
Building blocks for the scheme rulebook

We have identified 6 building blocks, numbered from A to F, covering together all sections of the digital euro rulebook[1]



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

Note: Overlaps with other engagement groups may materialize

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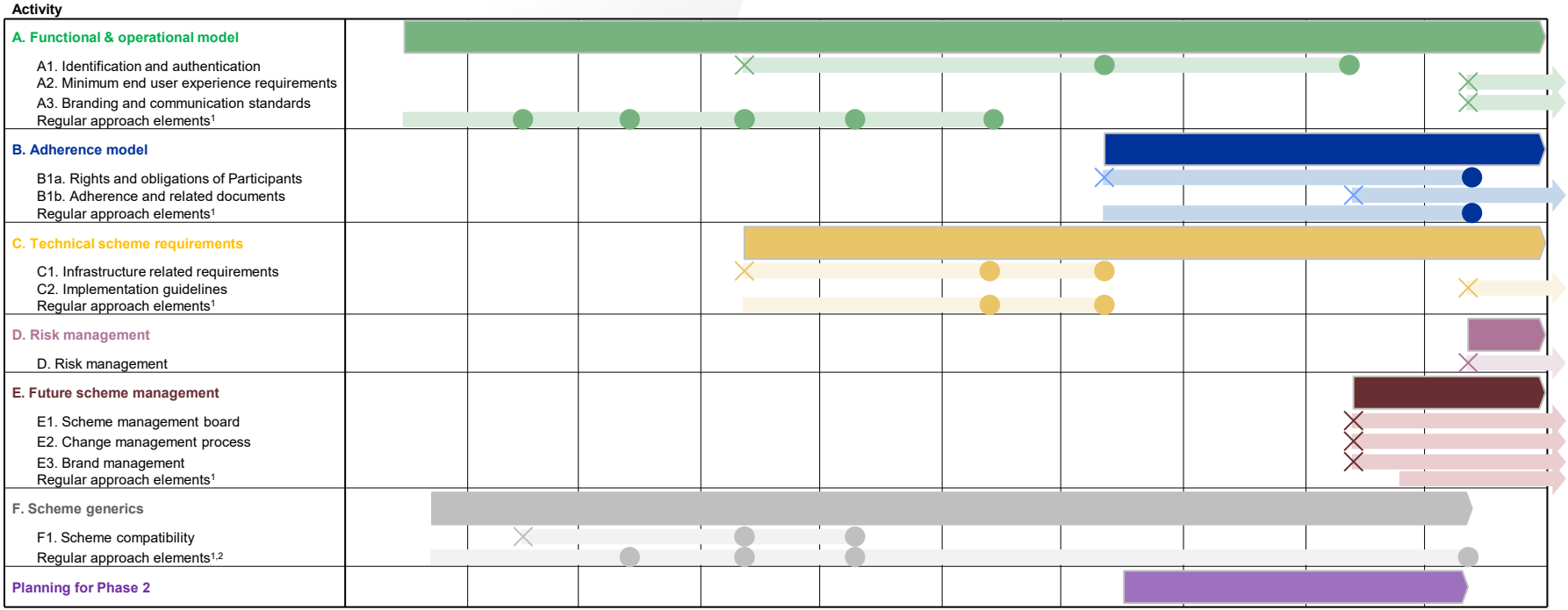
High-level approach for the development of the scheme rulebook

High-level approach



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

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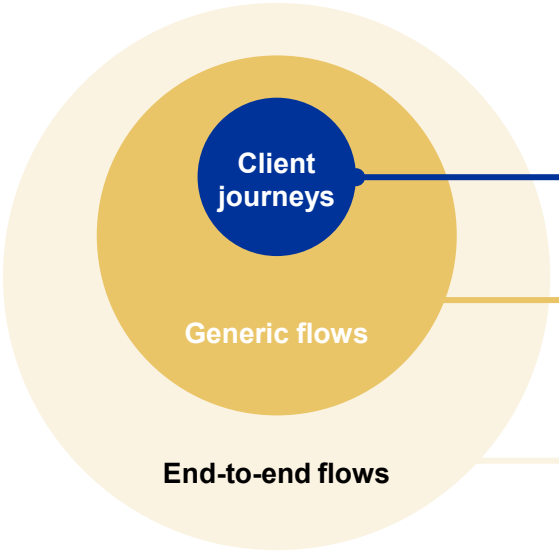
Illustrative Client Journeys

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”



Client journeys allow to define and illustrate **functional requirements**

Generic flows are related to **activities**[1] that the Eurosystem and intermediaries need to perform to deliver the above functionalities

End-to-end flows are related to **tasks**[1] that the Eurosystem and intermediaries need to conduct to perform the above activities

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

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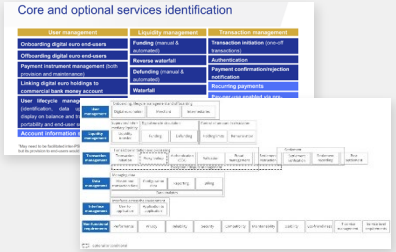
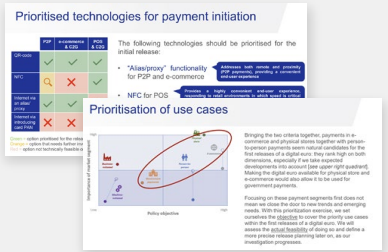
A long list of ~45-50 journeys has been identified (including variations of similar use cases)

1 **Core & optional requirements defined by Eurosystem**



2 **Use case & Form factors Prioritization by Eurosystem**



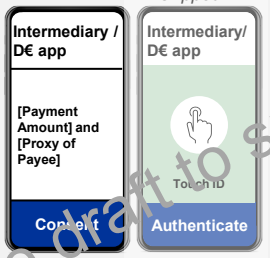
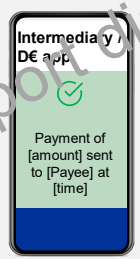
User vs merchant perspective as a digital euro user

Intermediaries' app vs D€ standalone app experience

~45-50 user journeys to be illustrated in total

TM 1.4 – E-Com (incl. C2G) payment with QR Code

Use Case: Payer completes payment by scanning QR Code generated by Payee

# of actions (estimated)	3[1]	4[2]	2	1
	2	3	4	5
Pre-requisites	**Checkout**	**Payment initiation**	**Consent & Authentication**	**Payment confirmation**
	Payer selects D€ as payment method and QR Code with payment details is generated	Payer scans QR Code	Payer consents the transaction	Payer receives payment confirmation
	Payee's web-shop 		*Might be skipped?* 	
Business requirements	• Payer should be able to select D€ 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)	• 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 • Payer receives a confirmation message, including amount, date, time, and merchant name • Transaction should be recorded in Payer's and Payee's transaction log

Payee Payer

Pre-requisites

- Payer and Payee must be enrolled
- Payee must accept D€ 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

Illustrative draft to support discussion

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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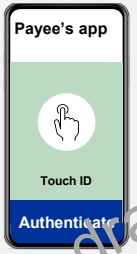
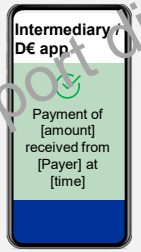
TM 1.6 – M-Commerce payment (in-app)

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

# of actions *(estimated)*	~3[1]	~3[2]	1
	2	3	4
Pre-requisites	**Checkout** Payer selects D€ as payment method 	**Consent & Authentication** Payer consents the transaction 	**Payment confirmation** Payer receives payment confirmation 
Business requirements	• Payer should be able to select pay with digital euro.	• A pop up from the digital euro wallet should appear on the screen. • Payer should be able to choose a preferred way to authenticate (e.g., Code, biometrics). • Payer should be able to consent the transaction through one of the accepted authentication mechanisms. • If amount exceeds available, reverse waterfall should be triggered for Payer.	• Payer's account should be debited and Payee's account should be credited. • Payer receives a confirmation message, including amount, date and time. • Transaction should be recorded in Payer's and Payee's transaction log.

Payee Payer

Pre-requisites

- Payer and Payee must be enrolled
- Payee must accept D€ as a payment method

Open points to be tracked because they will impact the journeys

- **Payment confirmation:** will the Payer receive an additional confirmation of the purchase, and if so, in which app?
- **Technical and regulatory requirements:** what is the in-app authentication impact on technical and regulatory requirements from other players?

Illustrative draft to support discussion

1. Select digital euro, select alias/proxy and insert alias/proxy
2. Open app, authenticate and consent

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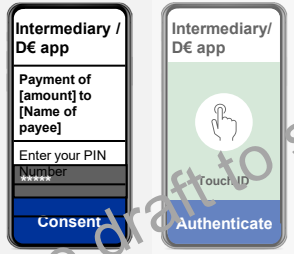
TM 1.1 – POS payment with Payee-generated QR Code

Use Case: Payer completes payment by scanning Payee's QR Code

	# of actions *(estimated)*	1	4[1]	2	1
		1 2	3	4	5a 5b
Pre-requisites		**Checkout** Payee generates QR Code with transaction amount	**Payment initiation** Payer scans QR Code	**Consent & Authentication** Payer consents the transaction	**Payment confirmation** Both Payer and Payee receive payment confirmation
				Might be skipped? 	
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

Payee Payer

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

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

Illustrative draft to support discussion

1. Open app, authenticate, select scan QR and scan QR

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TM 1.2 – POS payment with NFC

Use Case: Payer completes payment by using NFC technology

# of actions *(estimated)*: 1 | 3[1] | 1

Payee | Payer

Pre-requisites

1

2 Checkout

Payee sets up POS terminal with transaction amount

3 Consent & Authentication

Payer consents the transaction

4a Payment confirmation

Both Payer and Payee receive payment confirmation

4b

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
- Both Payer and Payee 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

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?)

Illustrative draft to support discussion

1. Open app, authenticate and select payment method