

# Settlement of instant payments

R2023.NOV

## Trainer Name

Banca d'Italia

## Banca d'Italia

TIPS User Training Course

Date – Training type

*Day 2 - Session TIPS.TR.FN.040*

**1** **Settlement process**

**2** **SIP Settlement Model**

**3** **Recall**

**4** **Investigation**

## 1 Settlement Process

**Overview**

**Settlement stages**

**Instant Payment transaction flow**

**Missing/Delayed Beneficiary-side answer scenario**

**Status transition**

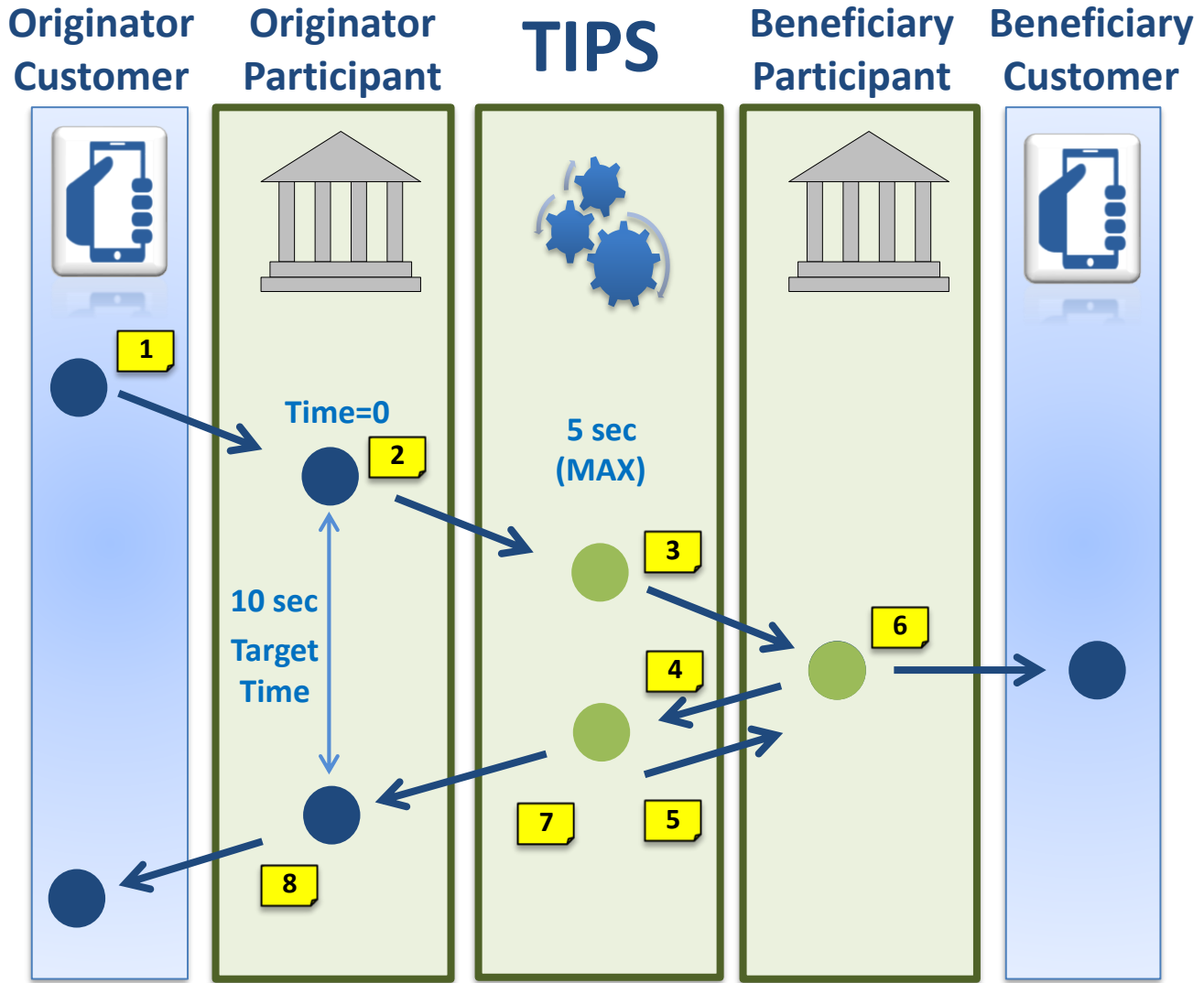
**Messages**

**2 SIP Settlement Model**

**3 Recall**

**4 Investigation**

# Settlement Process - Overview



● These must reject any message received after start + 20 sec



## Settlement of Instant Payment transactions – The actors

The perimeter of TIPS is limited to the interactions with:

**Originator Participant**

**Beneficiary Participant**

The financial institutions or parties acting on behalf of the **Originator and Beneficiary**

the individuals or institutions transferring funds between each other, which may be customers of the Originator/Beneficiary Participants

The **communication between the actual Originator and Beneficiary** of a payment is **out of the TIPS scope** and handled by each participant independently

## TIPS Payment transaction types

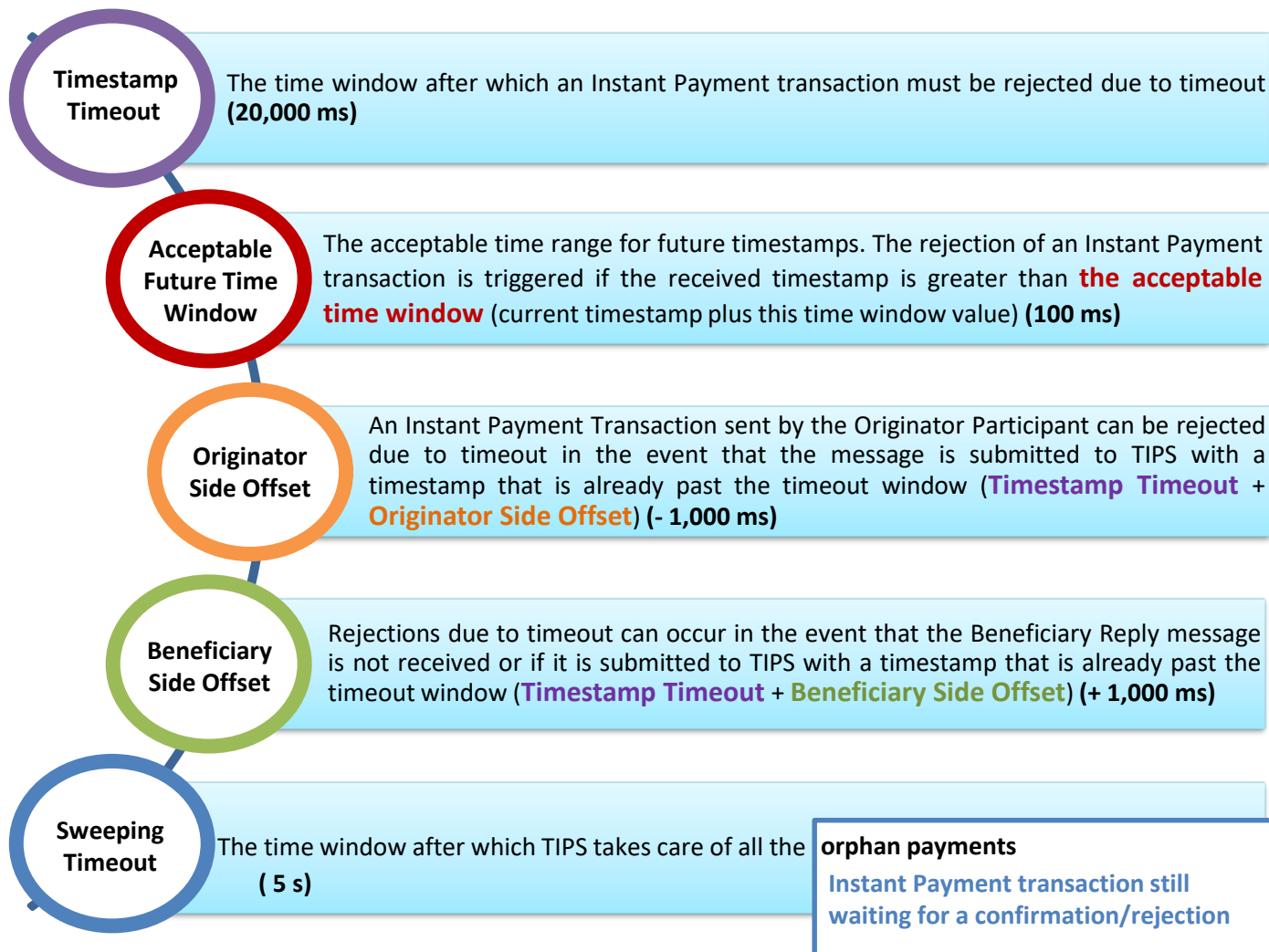
### Instant Payment transaction

- Forwarded from an Originator Participant to TIPS to instruct the settlement of cash on a TIPS Account, TIPS AS Technical account or CMB
- Forwarded by TIPS to the intended Beneficiary Participant to request confirmation for the settlement

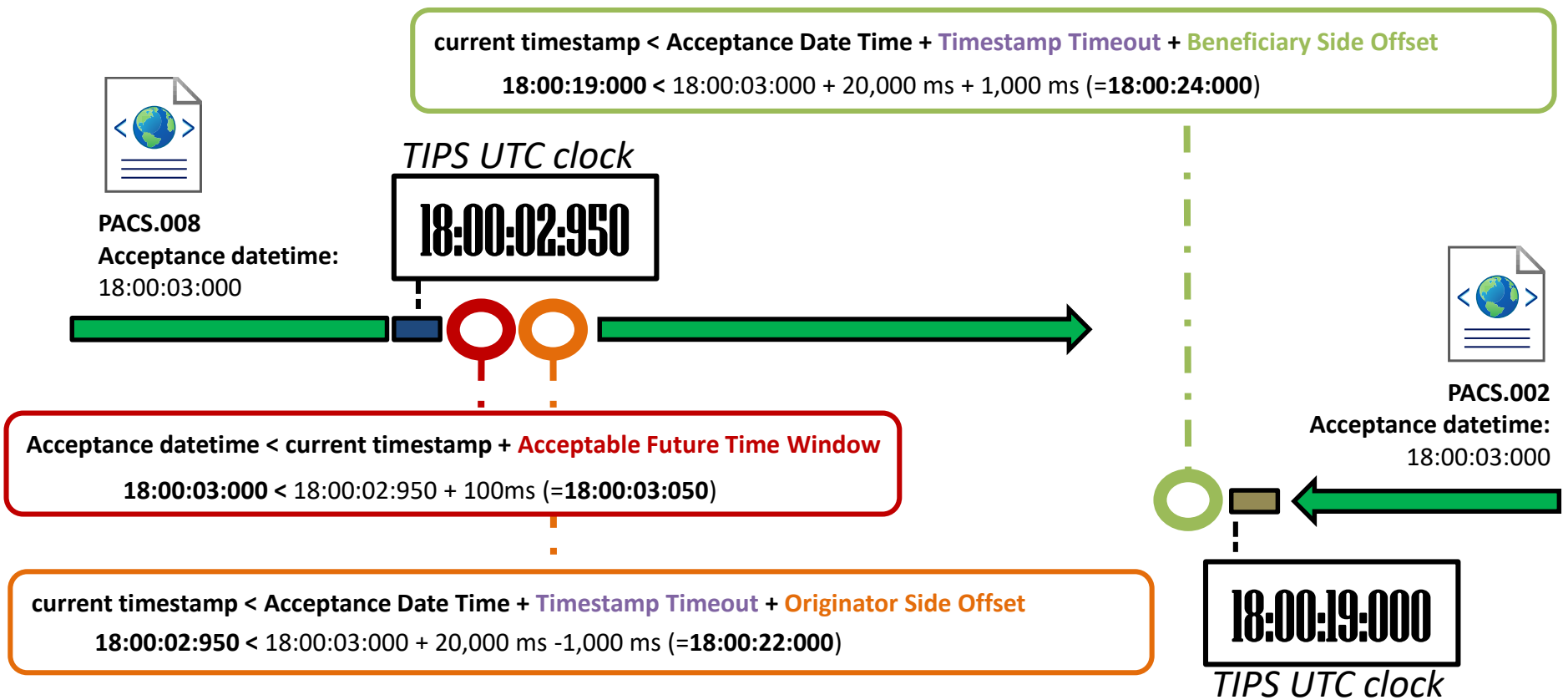
### Beneficiary Reply

- Forwarded from a Beneficiary Participant to TIPS as response to an Instant Payment transaction
- Forwarded by TIPS back to both (i) the Originator Participant and (ii) Beneficiary Participant as confirmation that settlement has been performed or ended in error

## Instant Payment transactions – Time parameters (1/2)



# Instant Payment transactions – Time parameters (2/2)



- IP Transaction is received in TIPS
- Beneficiary Reply is received in TIPS

## 1 Settlement Process

*Overview*

*Settlement stages*

*Instant Payment transaction flow*

*Missing/Delayed Beneficiary-side answer scenario*

*Status transition*

*Messages*

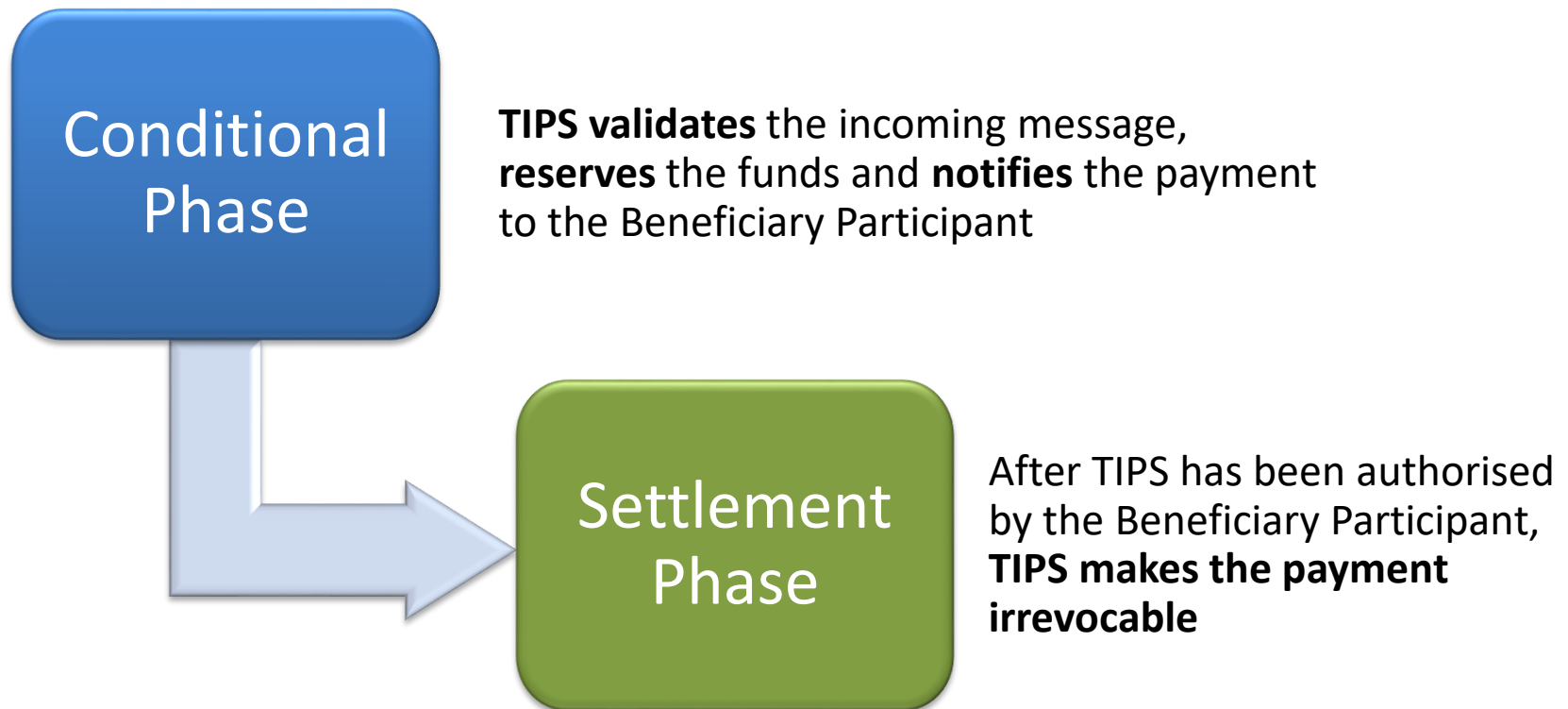
2 SIP Settlement Model

3 Recall

4 Investigation

## Settlement Stages – Only accounts involved

The settlement process of an Instant Payment (with reservation of funds) consists of two phases: Conditional Phase and Settlement phase



## Conditional Phase

- TIPS, if sufficient funds are available, reserves the amount to be debited on the Originator side's account by creating a related **cash posting**
- TIPS thereafter forwards the Instant Payment transaction to the Beneficiary side
- While the cash amount is reserved, it cannot be used for settlement in a different payment or liquidity transfer

## Settlement Phase

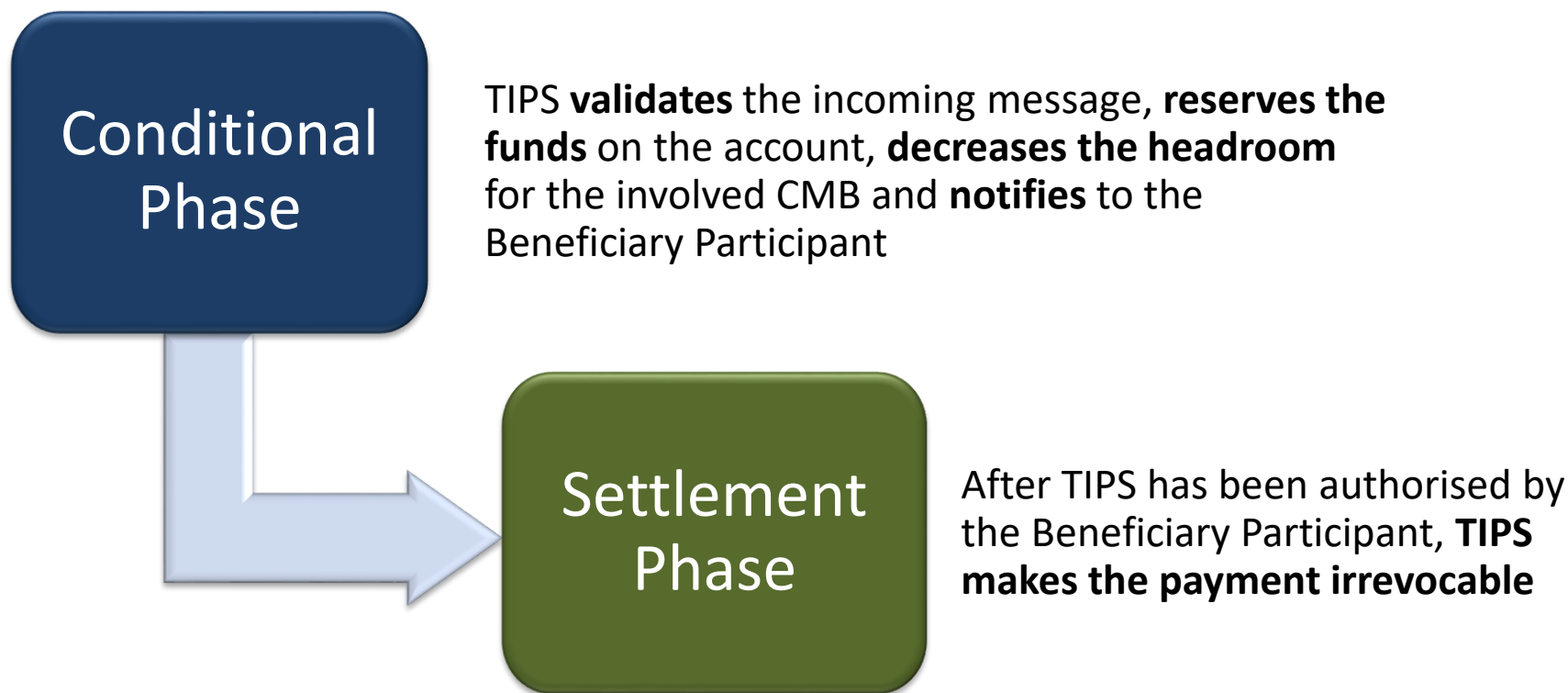
- The Beneficiary side responds to TIPS with a beneficiary reply, either confirming or rejecting the payment
- Upon receiving this reply, TIPS respectively settles or releases the reserved amount, removing the **cash posting** and updating the **cash balances** of the Originator and Beneficiary Participant accounts
- If TIPS does not receive a reply from the Beneficiary Participant within a standard, configurable timeout period, the reserved amount is automatically released and can then be once again used for settlement



## Settlement Stages – Accounts and CMBs involved

Instant Payment transactions that involve CMBs are handled in a similar way

A **CMB Headroom** is created for each CMB in TIPS, and it is always kept equal to the CMB limit minus the current limit utilisation



## Conditional Phase

- If sufficient funds are available in the relevant TIPS Account and the Instant Payment transaction would not exceed the current CMB Headroom of the CMB to be debited, TIPS reserves the amount to be debited on the Originator side's account by creating a related **cash posting**
- TIPS decreases the relevant **CMB Headroom** accordingly at the same time
- TIPS thereafter forwards the Instant Payment transaction to the Beneficiary side

## Settlement Phase

- The Beneficiary side responds to TIPS with a beneficiary reply, either confirming or rejecting the payment
- Upon receiving this reply, TIPS respectively settles or releases the reserved amount, removing the **cash posting** and updating the **cash balances** of the Originator and Beneficiary Participant accounts
- TIPS updates the **CMB Headroom** of the Beneficiary Participant accordingly at the same time
- If TIPS does not receive a reply from the Beneficiary Participant within a standard, configurable timeout period, the reserved amount is automatically released and the Headroom of the debited CMB is updated accordingly

1

## Settlement Process

*Overview*

*Settlement stages*

*Instant Payment transaction flow*

*Missing/Delayed Beneficiary-side answer scenario*

*Status transition*

*Messages*

2

**SIP Settlement Model**

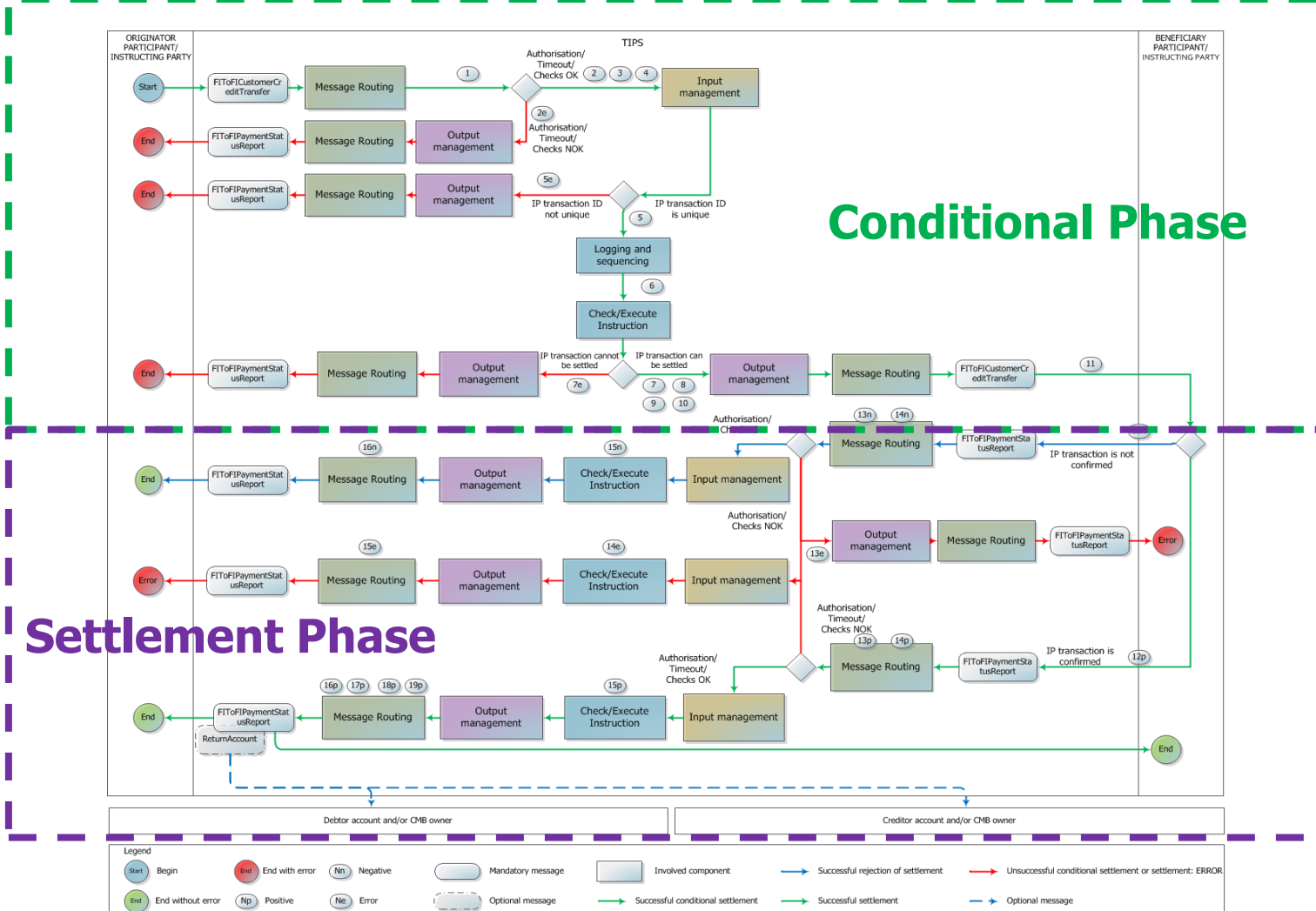
3

**Recall**

4

**Investigation**

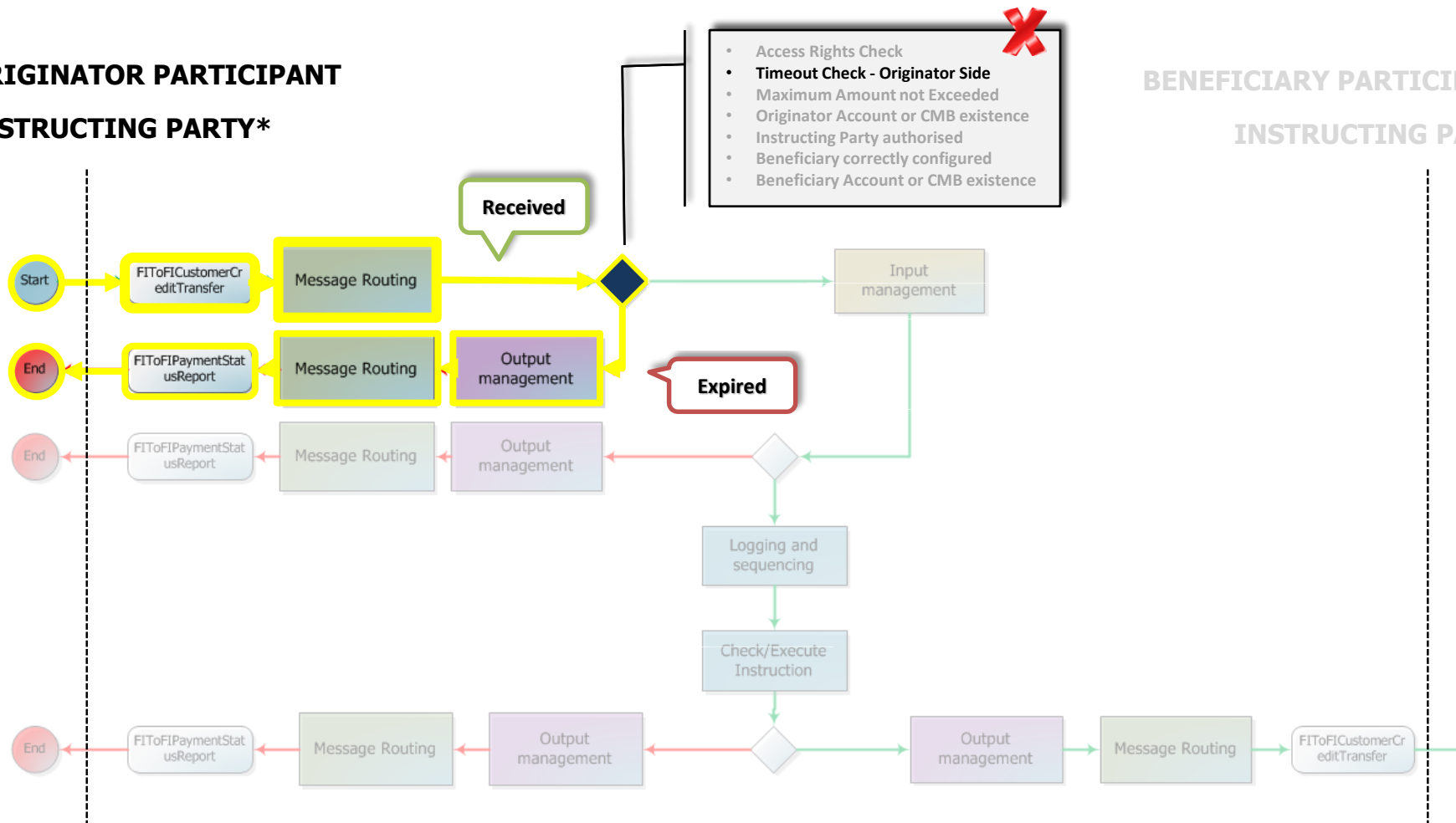
## Instant Payment transaction flow - overview



# Conditional Phase – Unsuccessful Scenario (1/3)

**ORIGINATOR PARTICIPANT  
 OR  
 INSTRUCTING PARTY\***

**BENEFICIARY PARTICIPANT  
 OR  
 INSTRUCTING PARTY**

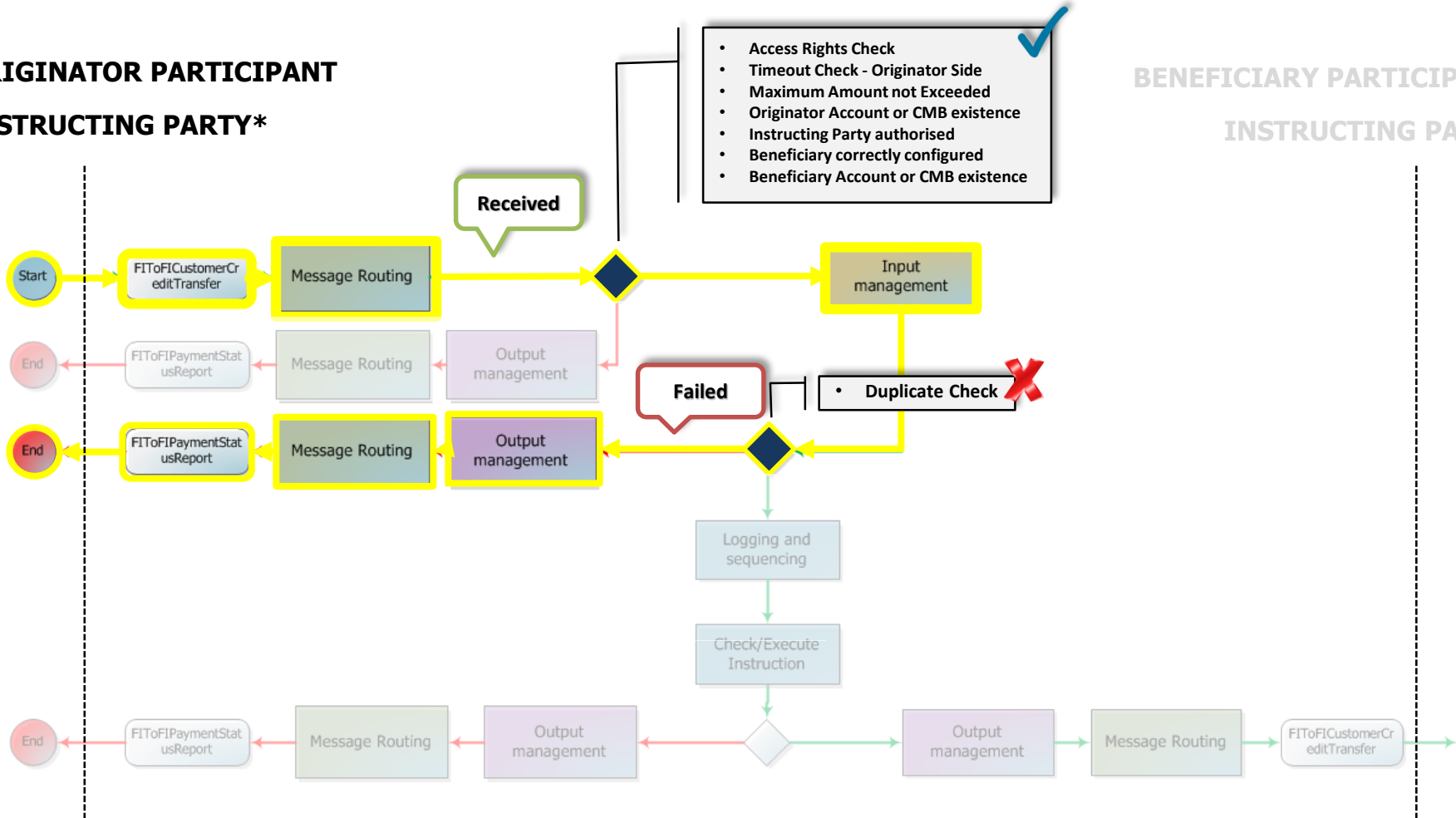


\*The Ancillary System can initiate payments on behalf of its participants

# Conditional Phase – Unsuccessful Scenario (2/3)

ORIGINATOR PARTICIPANT OR INSTRUCTING PARTY\*

BENEFICIARY PARTICIPANT OR INSTRUCTING PARTY

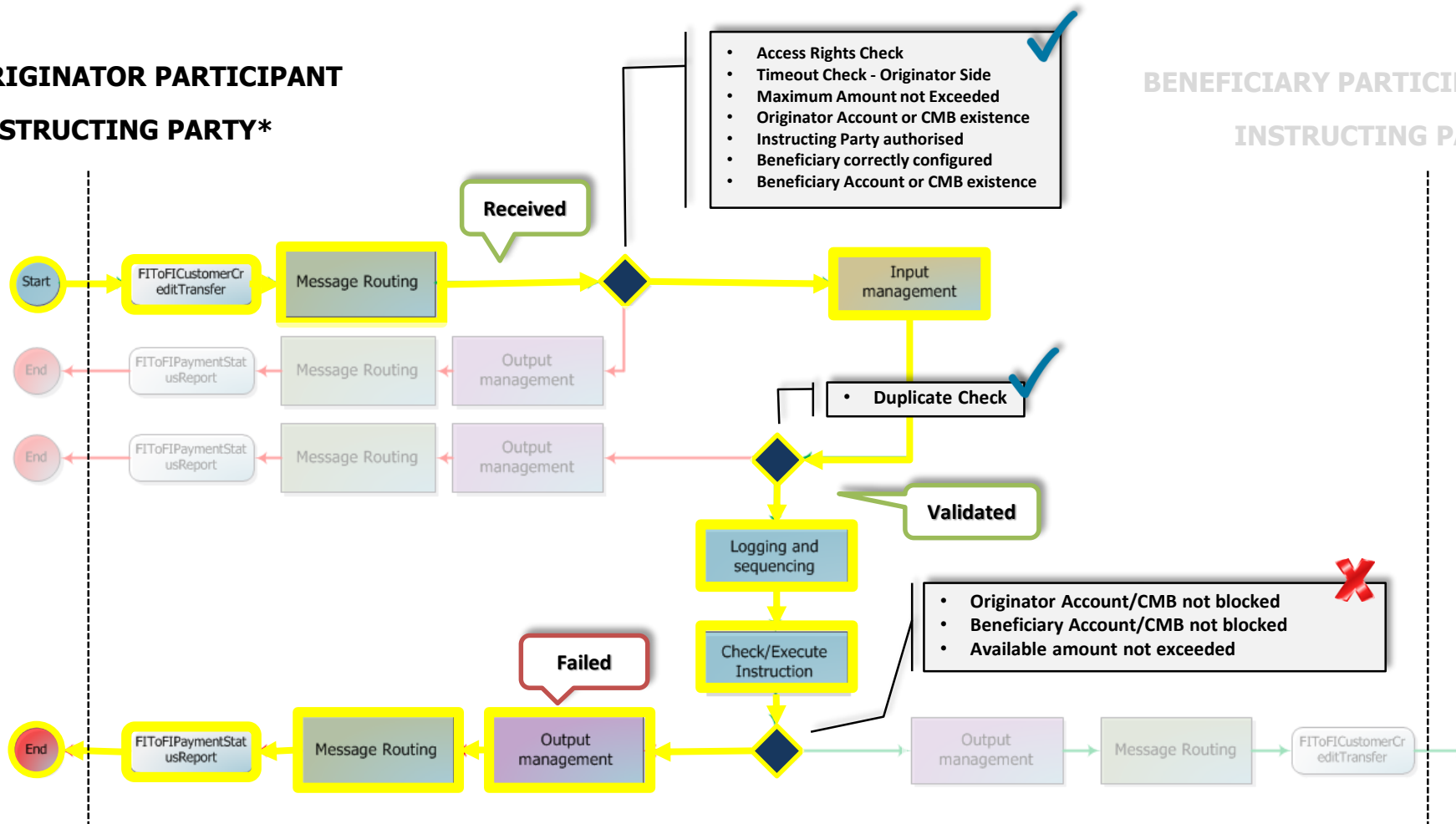


\*The Ancillary System can initiate payments on behalf of its participants

# Conditional Phase – Unsuccessful Scenario (3/3)

**ORIGINATOR PARTICIPANT  
 OR  
 INSTRUCTING PARTY\***

**BENEFICIARY PARTICIPANT  
 OR  
 INSTRUCTING PARTY**



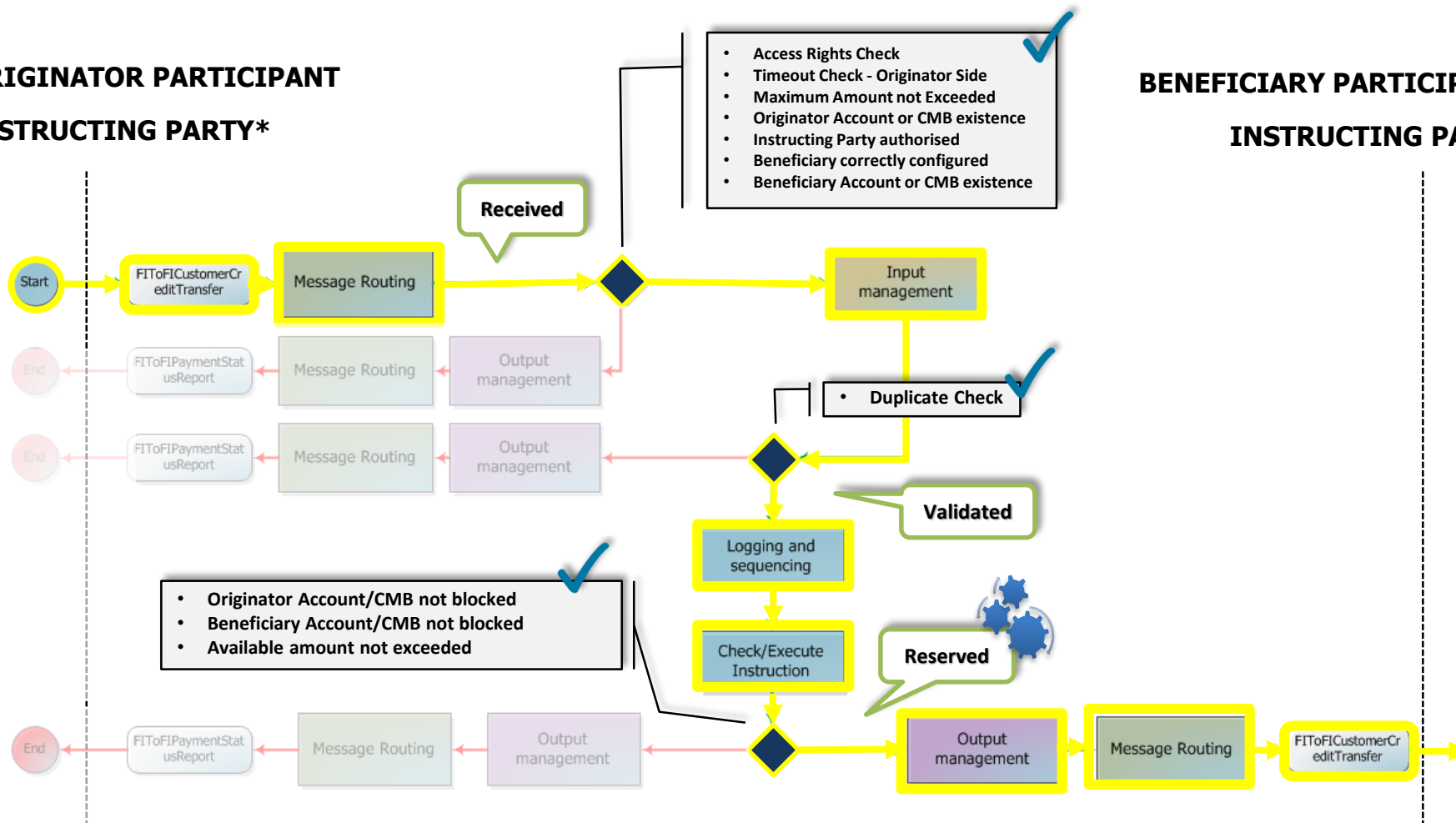
\*The Ancillary System can initiate payments on behalf of its participants



# Conditional Phase – Successful Scenario

**ORIGINATOR PARTICIPANT  
 OR  
 INSTRUCTING PARTY\***

**BENEFICIARY PARTICIPANT  
 OR  
 INSTRUCTING PARTY**

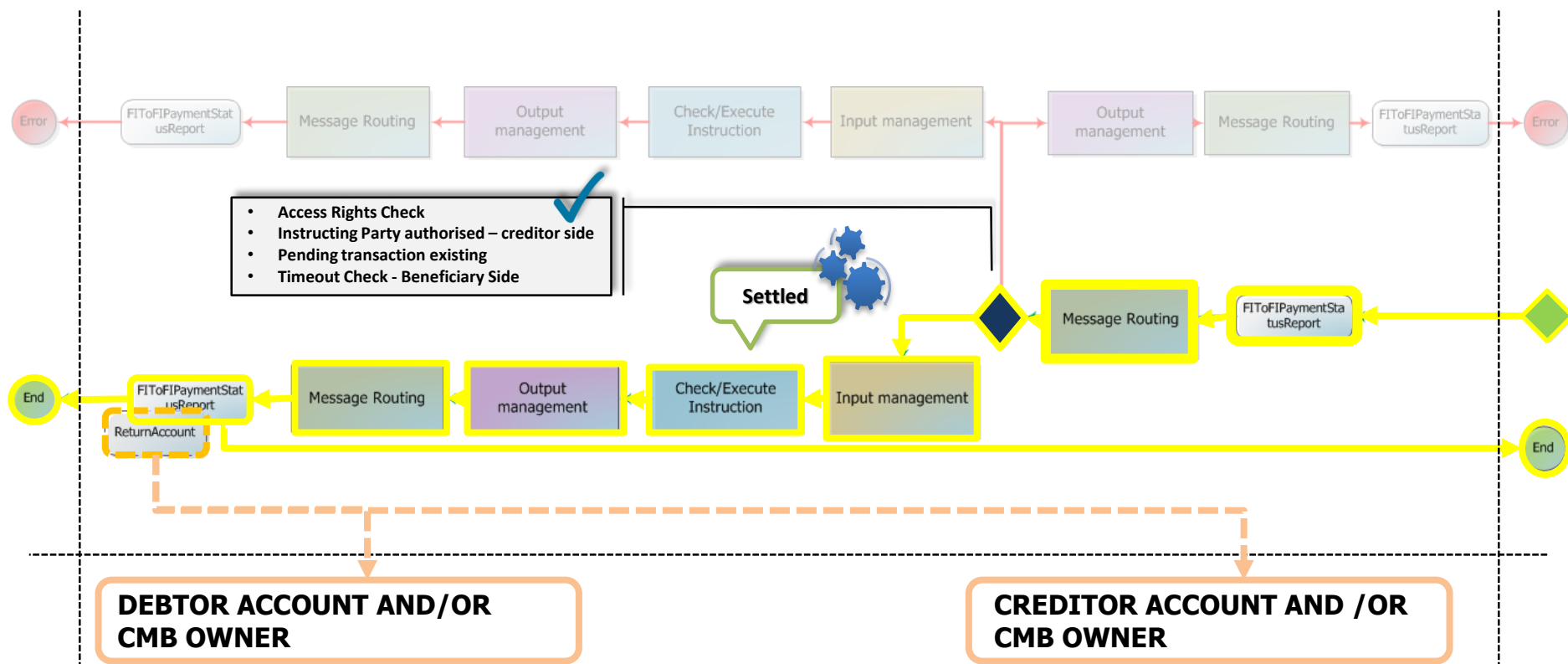


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# Settlement Phase - Successful Scenario - Positive answer

ORIGINATOR PARTICIPANT  
OR  
INSTRUCTING PARTY\*

BENEFICIARY PARTICIPANT  
OR  
INSTRUCTING PARTY\*

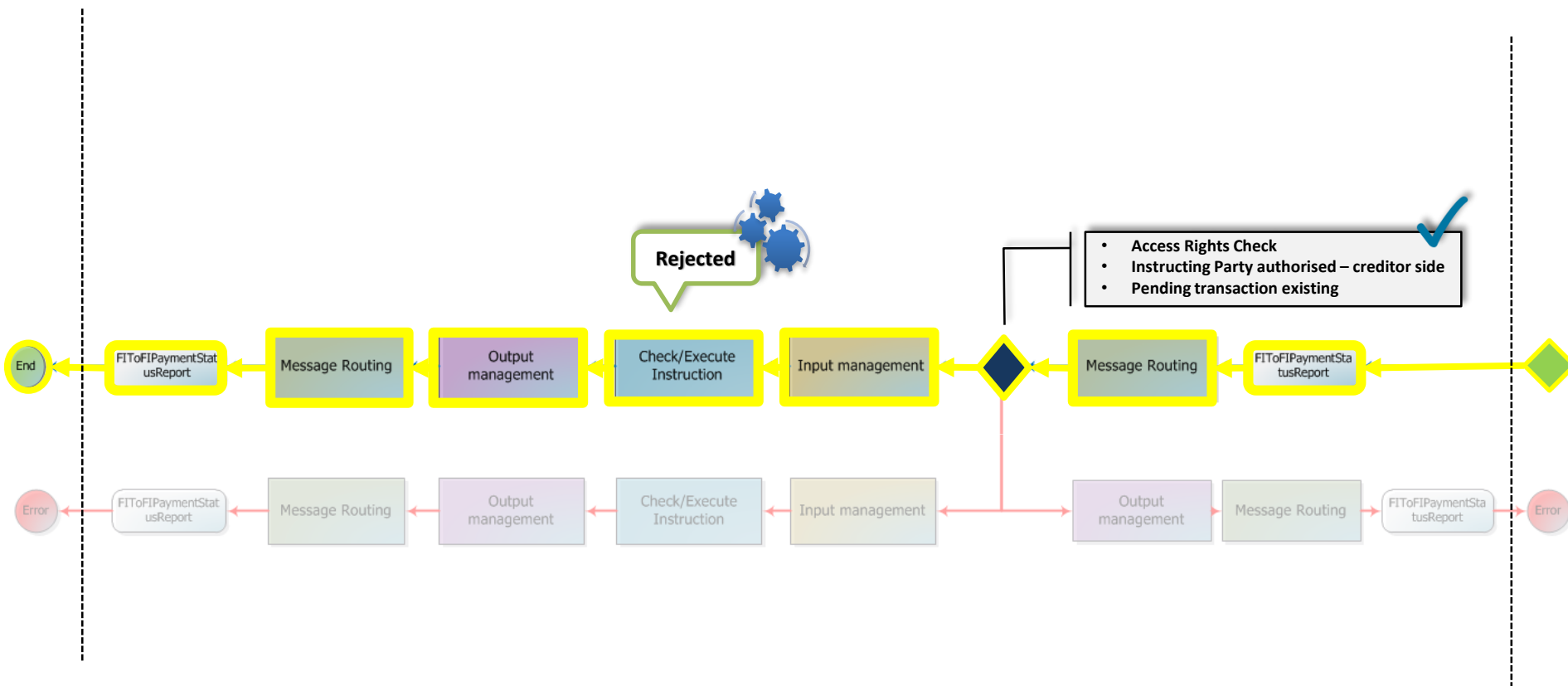


\*The Ancillary System can initiate/receive payments on behalf of its participants

# Settlement Phase - Successful Scenario - Negative answer

ORIGINATOR PARTICIPANT  
OR  
INSTRUCTING PARTY\*

BENEFICIARY PARTICIPANT  
OR  
INSTRUCTING PARTY\*

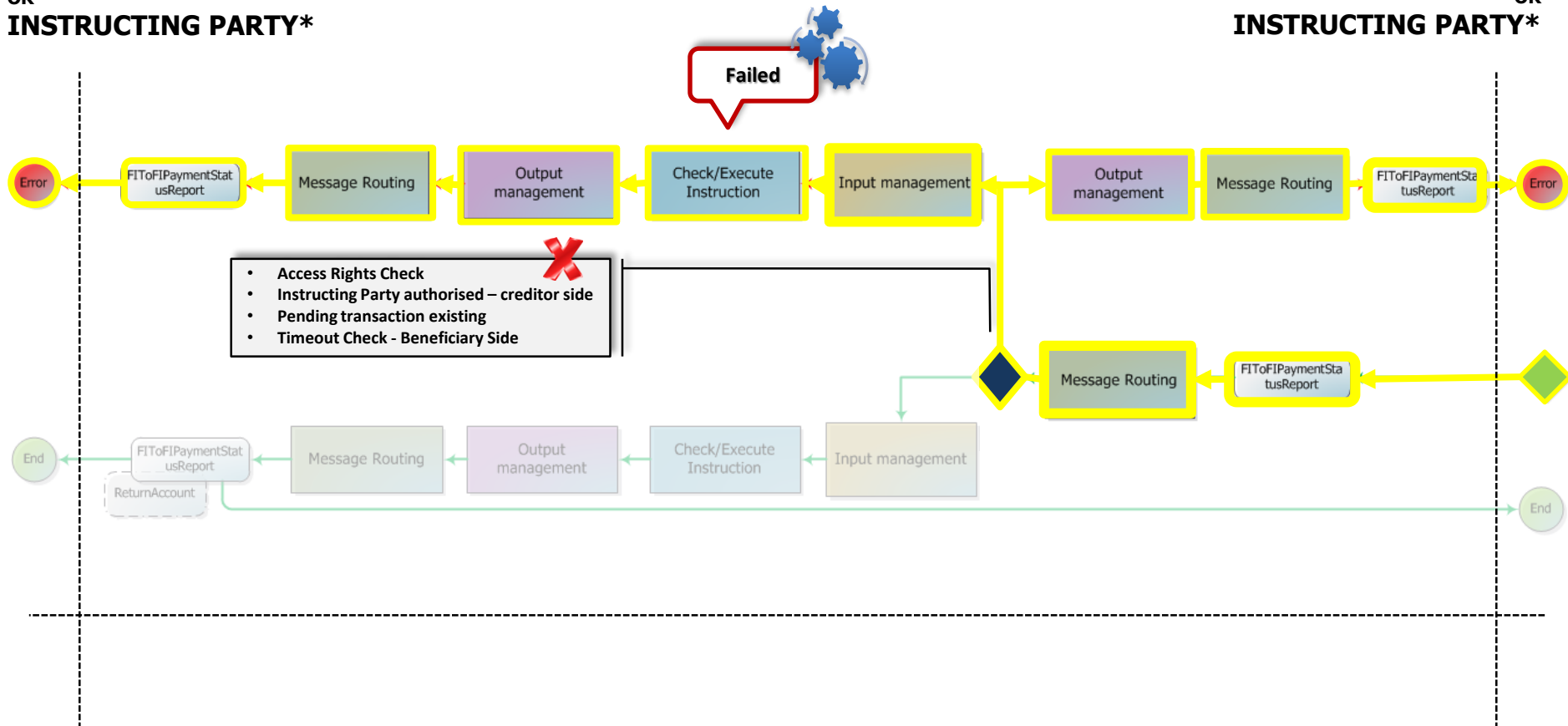


\*The Ancillary System can initiate/receive payments on behalf of its participants

# Settlement Phase - Unsuccessful Scenario - Positive answer

ORIGINATOR PARTICIPANT  
OR  
INSTRUCTING PARTY\*

BENEFICIARY PARTICIPANT  
OR  
INSTRUCTING PARTY\*

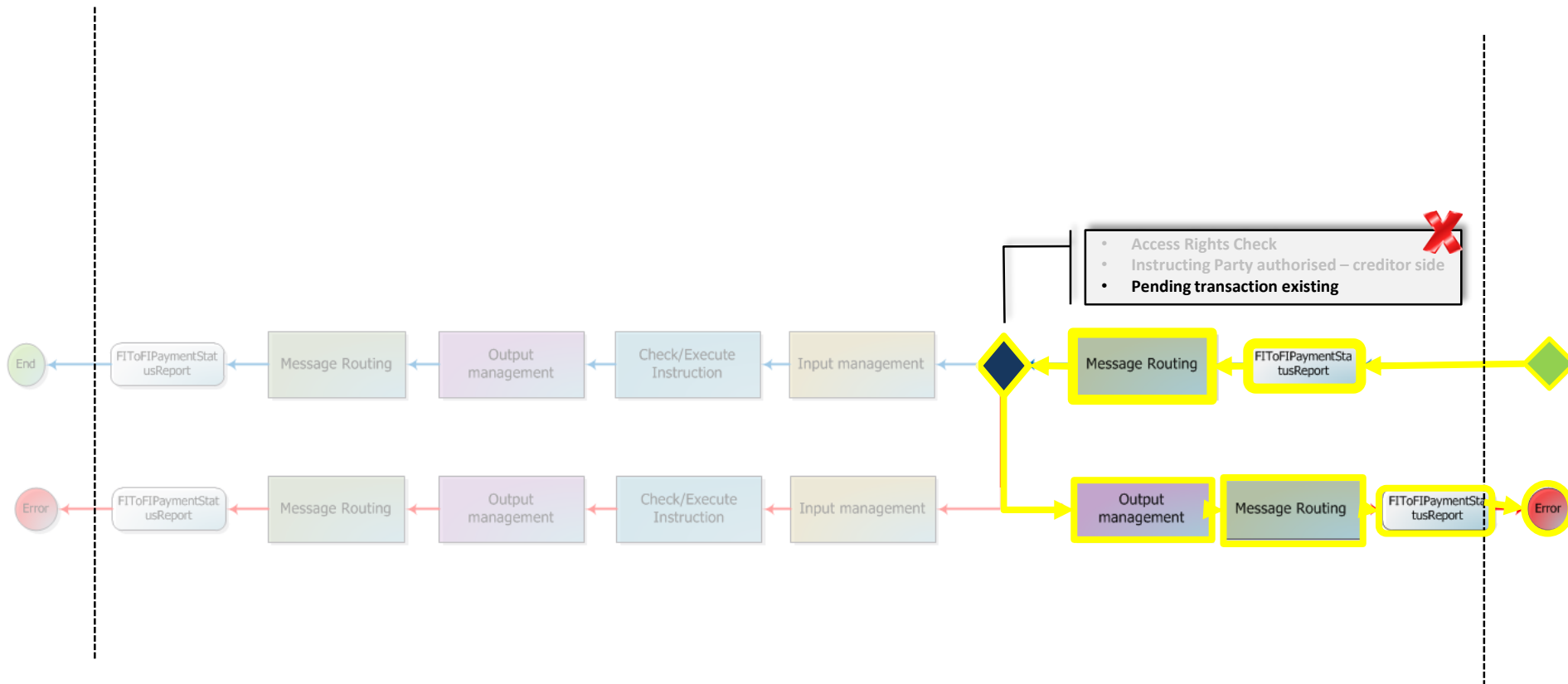


\*The Ancillary System can initiate/receive payments on behalf of its participants

# Settlement Phase - Unsuccessful Scenario - Negative answer (I)

ORIGINATOR PARTICIPANT  
OR  
INSTRUCTING PARTY

BENEFICIARY PARTICIPANT  
OR  
INSTRUCTING PARTY\*

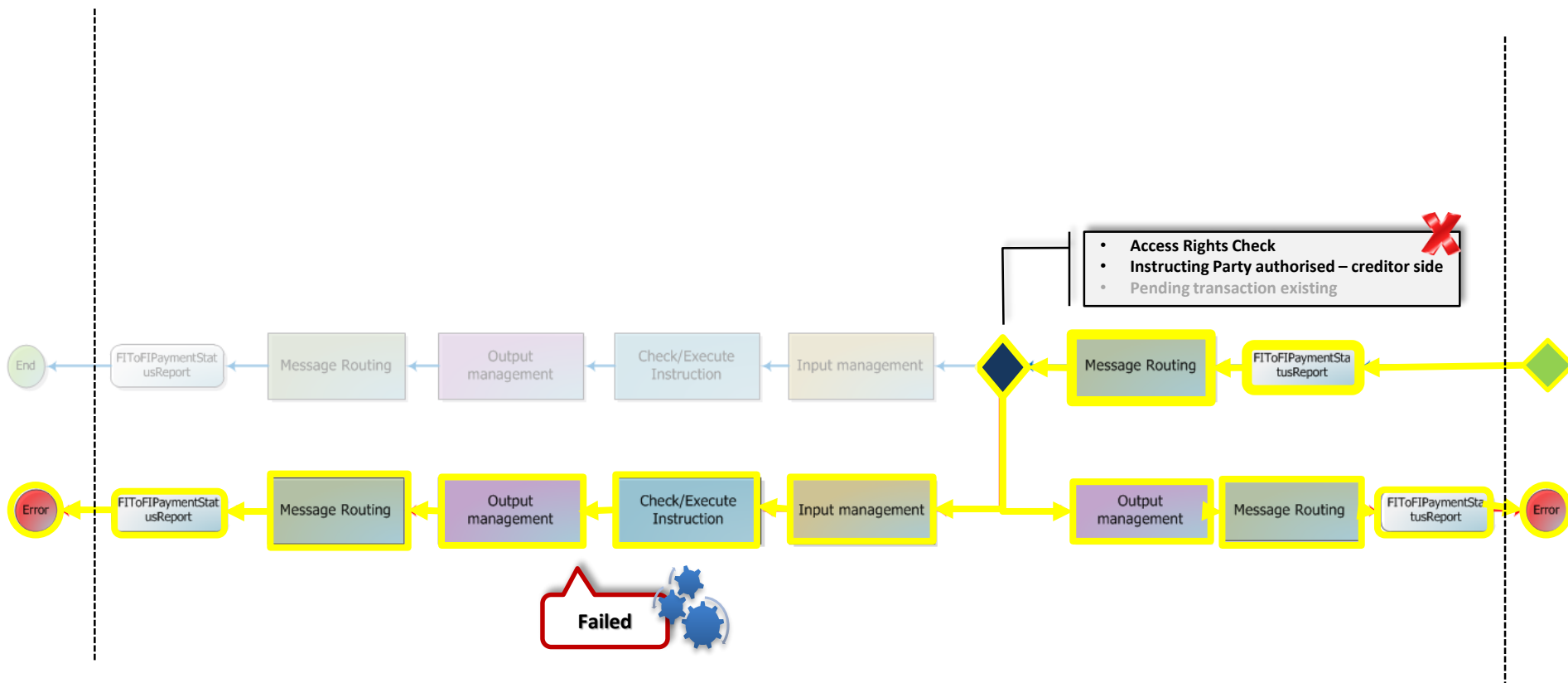


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# Settlement Phase - Unsuccessful Scenario - Negative answer (II)

ORIGINATOR PARTICIPANT  
OR  
INSTRUCTING PARTY\*

BENEFICIARY PARTICIPANT  
OR  
INSTRUCTING PARTY\*



\*The Ancillary System can initiate/receive payments on behalf of its participants

1

## Settlement Process

*Overview*

*Settlement stages*

*Instant Payment transaction flow*

*Missing/Delayed Beneficiary-side answer scenario*

*Status transition*

*Messages*

2

**SIP Settlement Model**

3

**Recall**

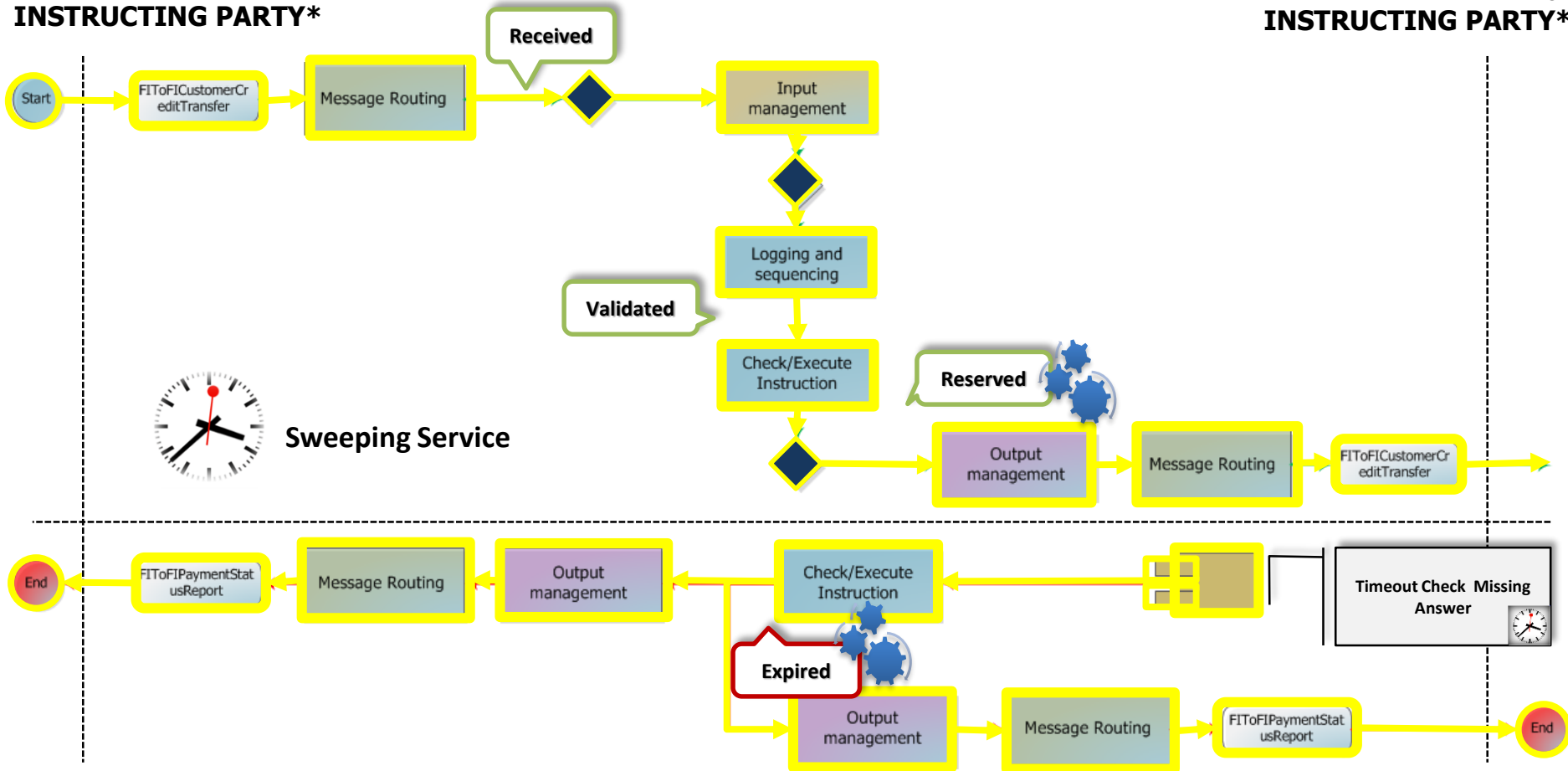
4

**Investigation**

# Timeout scenario (I) : Sweeper activation

ORIGINATOR PARTICIPANT  
OR  
INSTRUCTING PARTY\*

BENEFICIARY PARTICIPANT  
OR  
INSTRUCTING PARTY\*



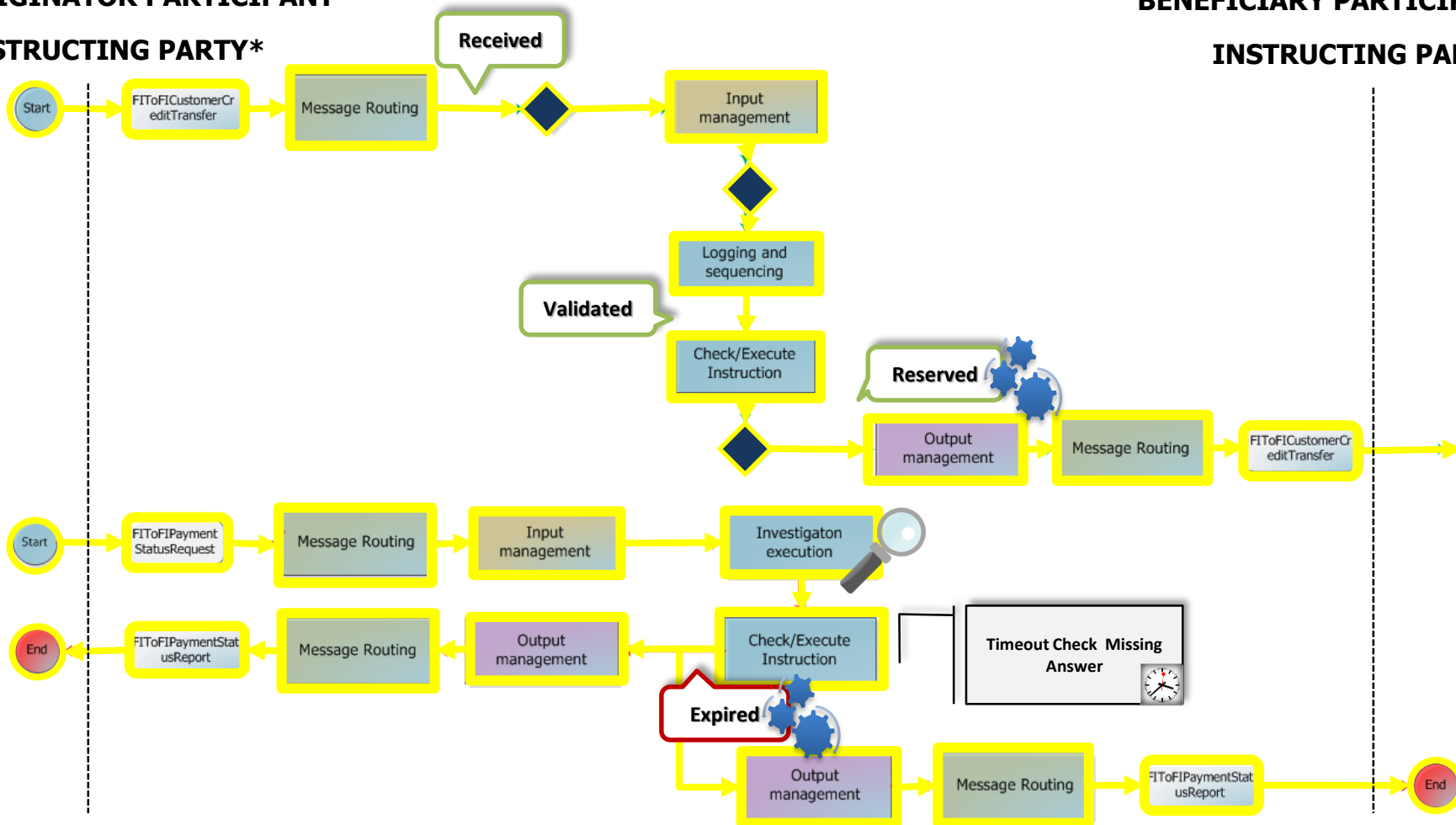
\*The Ancillary System can initiate/receive payments on behalf of its participants



# Timeout scenario (II) : Trigger through an Investigation

**ORIGINATOR PARTICIPANT  
OR  
INSTRUCTING PARTY\***

**BENEFICIARY PARTICIPANT  
OR  
INSTRUCTING PARTY\***

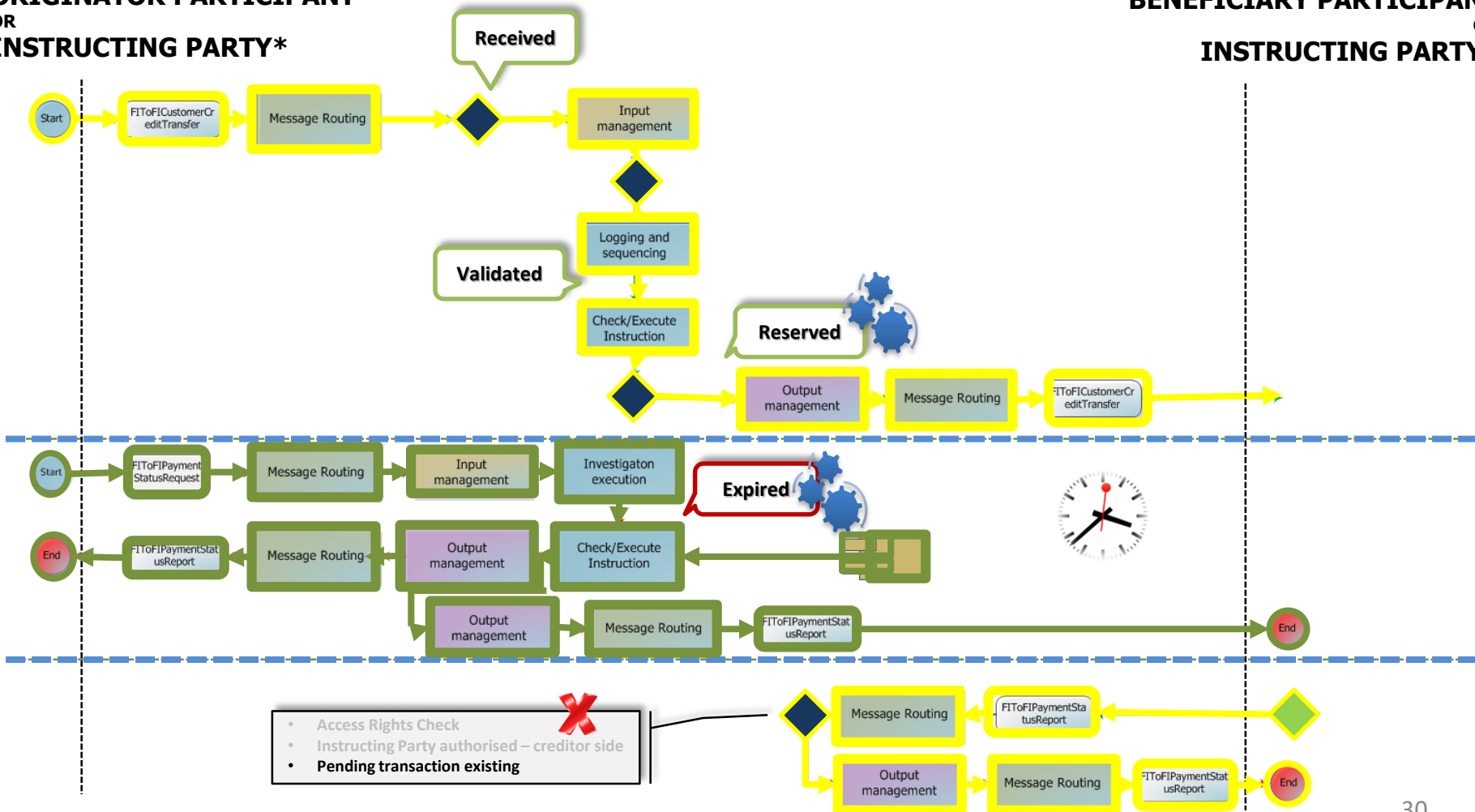


\*The Ancillary System can initiate/receive payments on behalf of its participants

# Timeout scenario (III) : Delayed Beneficiary-side answer

**ORIGINATOR PARTICIPANT OR INSTRUCTING PARTY\***

**BENEFICIARY PARTICIPANT OR INSTRUCTING PARTY\***



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## 1 Settlement Process

*Overview*

*Settlement stages*

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*Missing/Delayed Beneficiary-side answer scenario*

*Status transition*

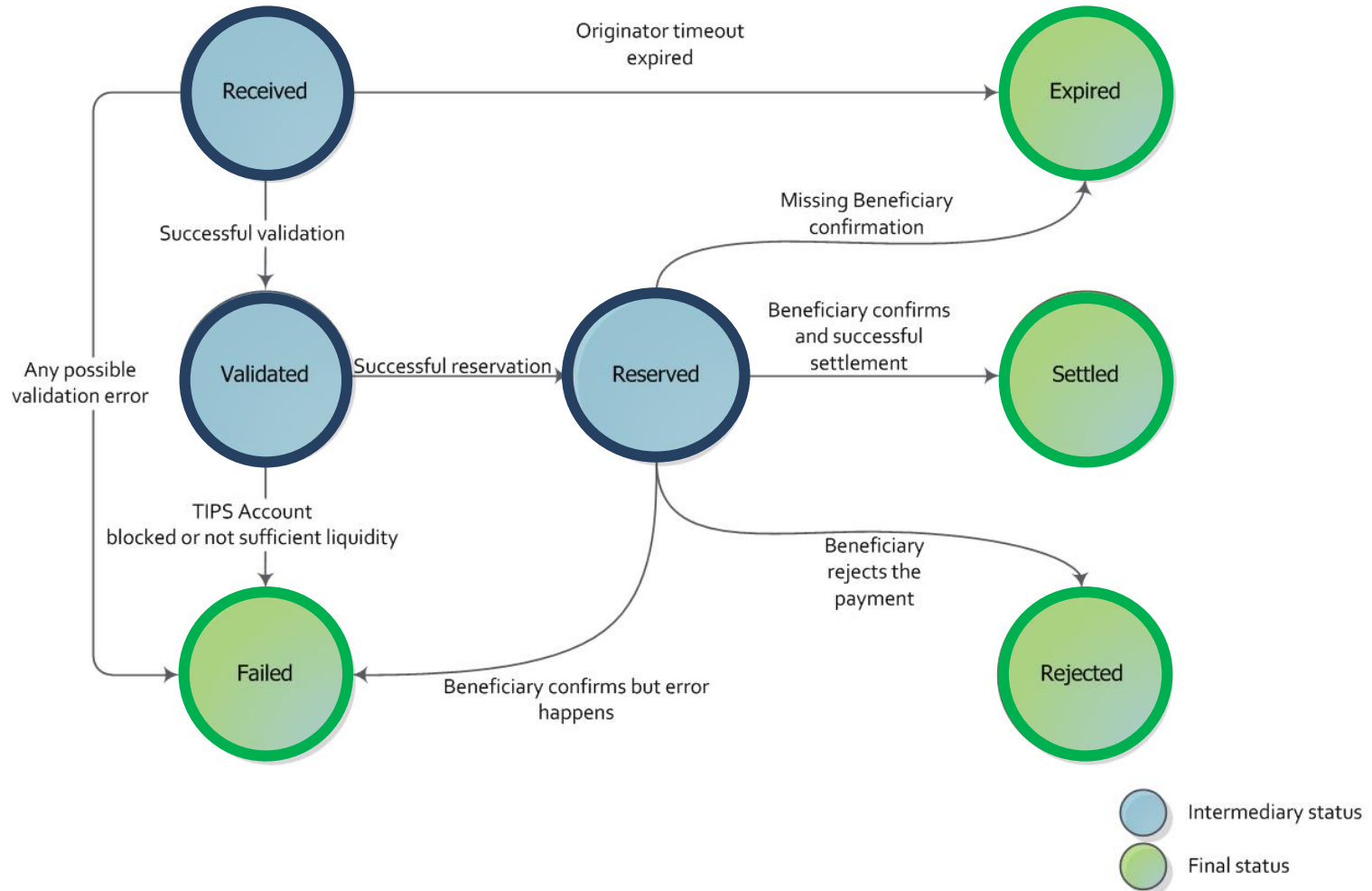
*Messages*

2 SIP Settlement Model

3 Recall

4 Investigation

## Instant Payment transaction – Status transition



## 1 Settlement Process

*Overview*

*Settlement stages*

*Instant Payment transaction flow*

*Missing/Delayed Beneficiary-side answer scenario*

*Status transition*

*Messages*

2 SIP Settlement Model

3 Recall

4 Investigation

## Involved messages for SCT<sup>Inst</sup> as of R2023.NOV

### **FIToFICustomerCreditTransfer**

**(pacs.008.001.08)**

To instruct the payment

To reserve the corresponding amount

To inform the Beneficiary Participant about the transaction received



### **FIToFIPaymentStatusReport**

**(pacs.002.001.10)**

To accept/ reject the Instant Payment transaction

To inform the actors about the result of the settlement



### **ReturnAccount**

**(camt.004.001.07)**

To notify the owner of the account (or CMB) that the floor/ ceiling configured threshold is crossed



## Involved messages for non-Euro Settlement Models

### **FIToFICustomerCreditTransfer**

**(pacs.008.001.08)**

To instruct the payment

To reserve the corresponding amount

To inform the Beneficiary Participant about the transaction received



### **FIToFIPaymentStatusReport**

**(pacs.002.001.10)**

To accept/ reject the Instant Payment transaction

To inform the actors about the result of the settlement



### **ReturnAccount**

**(camt.004.001.07)**

To notify the owner of the account (or CMB) that the floor/ ceiling configured threshold is crossed



# Overlapping messages for SCT<sup>Inst</sup> and non-Euro Settlement Models as of R2023.NOV

Need to append a **suffix** to the value of the existing *MsgType* MEPT\* property in order to distinguish the two datasets at transport level

## **FIToFICustomerCreditTransfer** (pacs.008.001.08) for SCT<sup>Inst</sup>

*MsgType*= pacs.008.001.08.EPC for messages sent in EUR compliant with the SCT<sup>Inst</sup> specifications



## **FIToFICustomerCreditTransfer** (pacs.008.001.08) for non-Euro Settlement Models

*MsgType*= pacs.008.001.08.NPC for messages sent (e.g. in SEK) compliant with the non-Euro specifications





**1 Settlement process**

**2 SIP Settlement Model**

*Overview*

*Settlement stages*

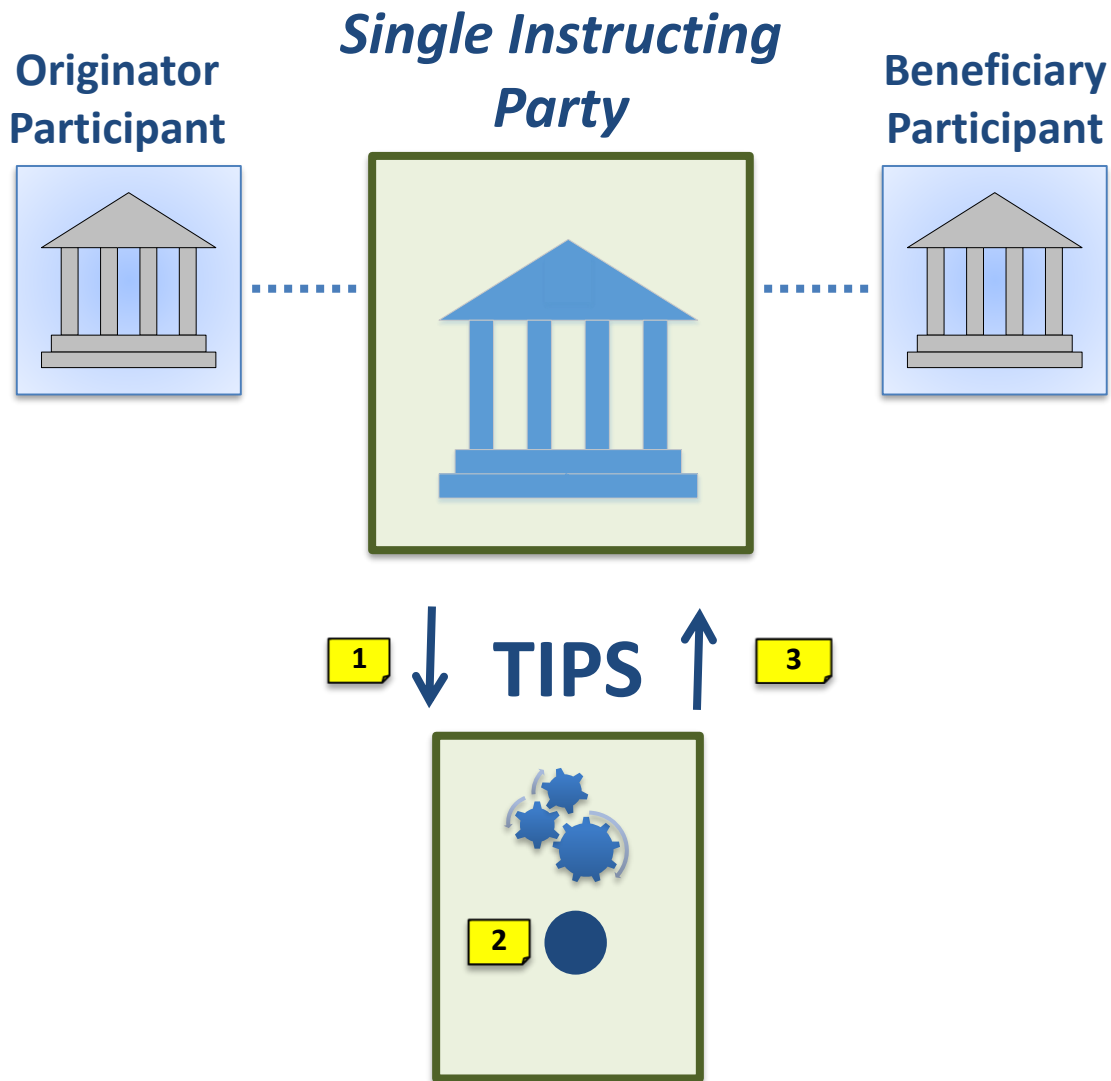
*Instant Payment transaction flow*

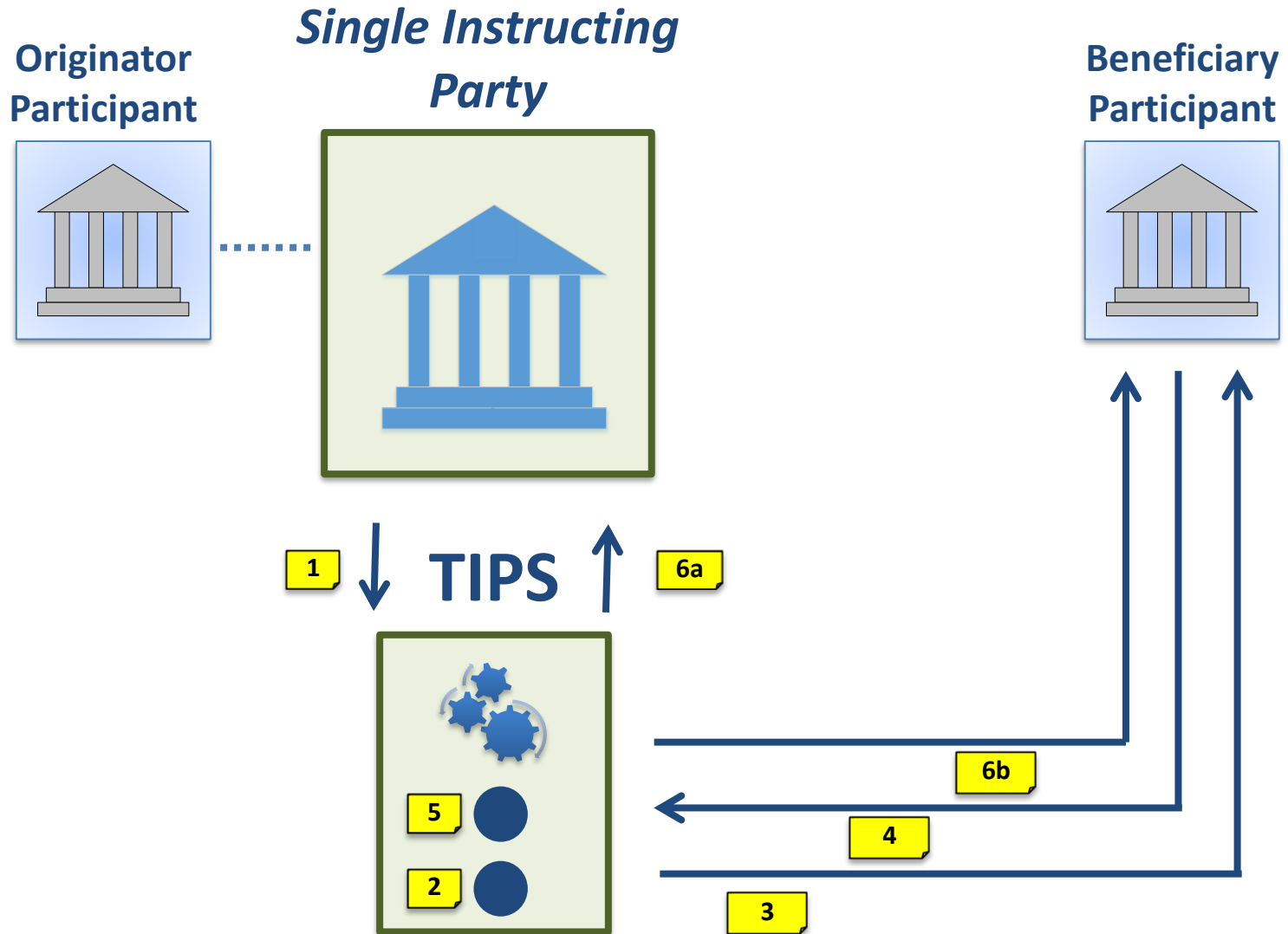
*Status transition*

*Messages*

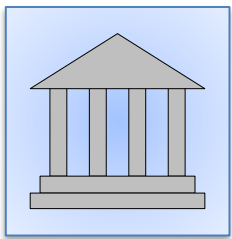
**3 Recall**

**4 Investigation**





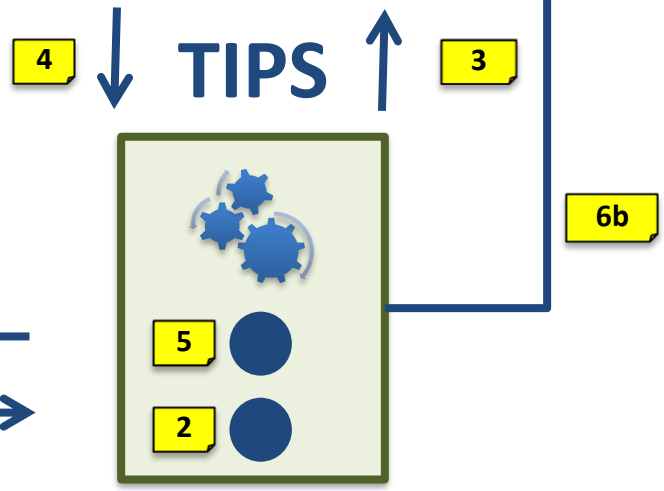
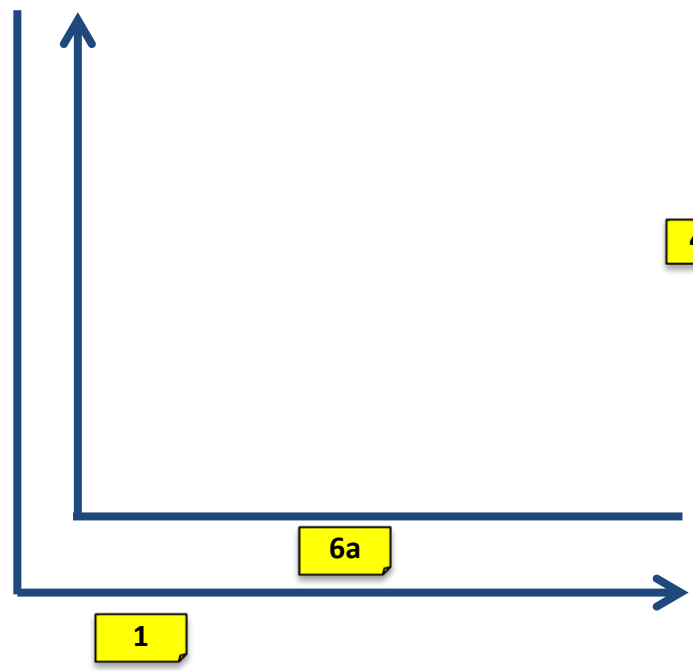
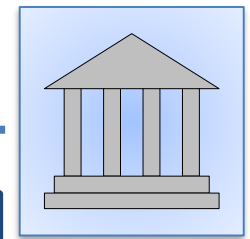
Originator Participant



Single Instructing Party



Beneficiary Participant



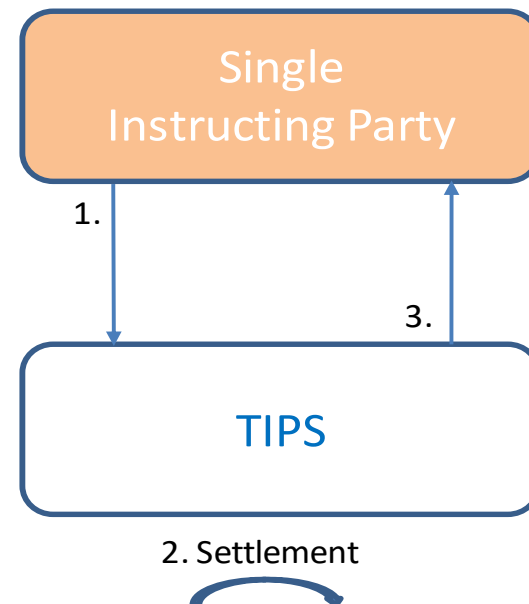
## Settlement of Instant Payment transactions – The actors

The perimeter of TIPS is limited to the interactions with:

### Single Instructing Party (SIP)

The entity who validates the Instant Payments, with the involvement of both the Originator PSP and the Beneficiary PSP (which accepts the transaction before it is submitted to TIPS). Following validation, the SIP sends the payment to TIPS for immediate settlement.

The communication between the SIP, the Originator and the Beneficiary PSPs, as well as the communication with the actual Originator and Beneficiary of a payment, is out of the TIPS scope and handled by each participant independently



## TIPS Payment transaction types

### Instant Payment transaction

- Sent by the Single Instructing Party acting on behalf of the counterparties to TIPS in order to instruct the instant payment.

### Status Report

- Sent by TIPS to inform the Single Instructing Party about the result of the settlement.

## Instant Payment transactions – Time parameters (1/2)

### Timestamp Timeout

The time window after which an Instant Payment transaction must be rejected due to timeout (**20,000 ms**)

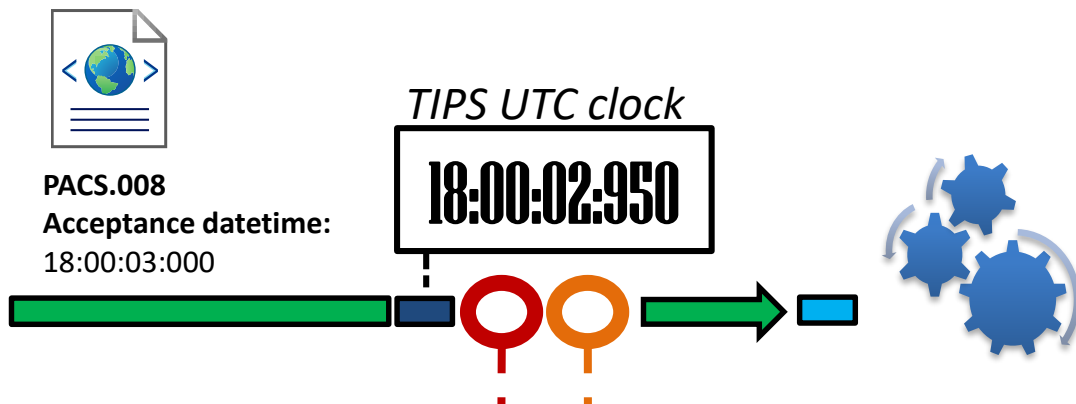
### Acceptable Future Time Window

The acceptable time range for future timestamps. The rejection of an Instant Payment transaction is triggered if the received timestamp is greater than the **acceptable future time window** (current timestamp plus this time window value) (**100 ms**)

### Originator Side Offset



An Instant Payment Transaction sent by the Originator Participant can be rejected due to timeout in the event that the message is submitted to TIPS with a timestamp that is already past the timeout window (**Timestamp Timeout + Originator Side Offset**) (**- 1,000 ms**)

# Instant Payment transactions – Time parameters (2/2)



Acceptance datetime < current timestamp + **Acceptable Future Time Window**  
 18:00:03:000 < 18:00:02:950 + 100ms (=18:00:03:050)

current timestamp < Acceptance Date Time + **Timestamp Timeout** + **Originator Side Offset**  
 18:00:02:950 < 18:00:03:000 + 20,000 ms -1,000 ms (=18:00:22:000)

-  IP Transaction is received in TIPS
-  IP Transaction is settled in TIPS



**1** Settlement process

**2** SIP Settlement Model

*Overview*

*Settlement stages*

*Instant Payment transaction flow*

*Status transition*

*Messages*

**3** Recall

**4** Investigation

## Settlement Stages – Only accounts involved (1/3)

The settlement of an Instant Payment (without reservation of funds) is a one-stage process (i.e. it consists only of a settlement phase with no conditional phase). TIPS validates the incoming message before triggering the payment settlement.

### Settlement Phase

TIPS checks whether the Beneficiary PSP has authorised the sender of the payment to act on its behalf and verifies whether the sender certificate is enabled to use the SIP model for that specific Originator BIC.

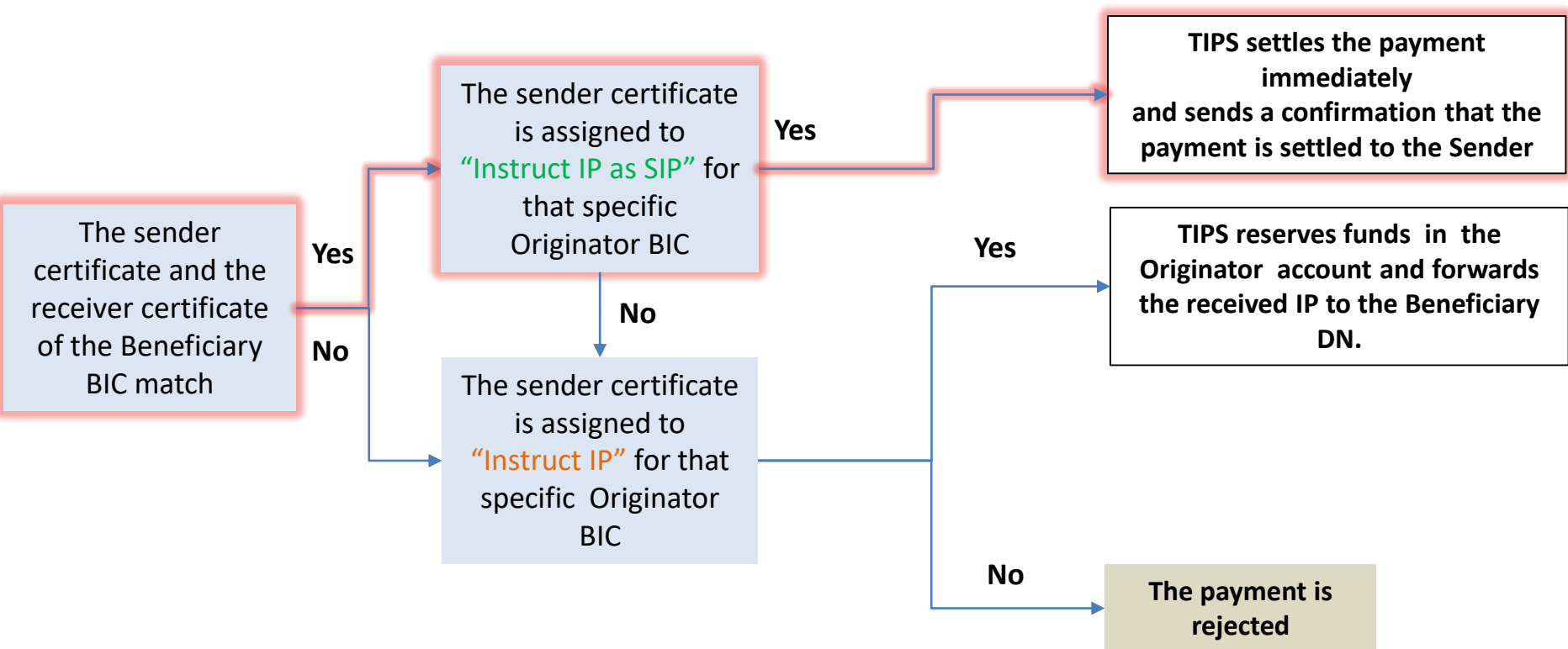
After the checks have been successfully performed, **TIPS settles the payment immediately**. The available balance of the Originator Account is decreased by the amount of the corresponding settled transaction. The same positive amount is added to the Beneficiary Account

## Settlement Stages – Only accounts involved (2/3)

Everytime an Instant Payment transaction enters the system, it undergoes the following TIPS validations:

- Firstly, TIPS checks whether the Beneficiary PSP has authorised the sender of the payment to act on its behalf. More specifically, TIPS verifies whether the sender certificates of the payment is the same as the one configured as receiver certificate for the Beneficiary BIC.
- Only if the certificates (sender and receiver) match, TIPS verifies whether the sender certificate is enabled to use the SIP model for that specific Originator BIC. If it is not enabled to do that, TIPS verifies whether the sender is authorised to instruct a payment under the standard settlement process.
- If the two certificates do not match, TIPS verifies directly whether the sender certificate is enabled to instruct a payment under the standard settlement process for that specific Originator BIC.

## Settlement Stages – Only accounts involved (3/3)



## Settlement Stages – Accounts and CMBs involved

Instant Payment transactions that involve CMBs are handled in a similar way.

A **CMB Headroom** is created for each CMB in TIPS, and it is always kept equal to the CMB limit minus the current limit utilisation.

### Settlement Phase

TIPS checks whether the Beneficiary PSP has authorised the sender of the payment to act on its behalf and verifies whether the sender certificate is enabled to use the SIP model for that specific Originator BIC.

After the checks have been successfully performed, **TIPS settles the payment immediately**. The available balance of the Originator Account is decreased by the amount of the corresponding settled transaction. If a Debiting CMB is involved, the system decreases its headroom by the same amount.

The same positive amount is added to the Beneficiary Account. If a Crediting CMB is involved, TIPS increases its headroom by the same amount.

## 1 Settlement process

## 2 SIP Settlement Model

*Overview*

*Settlement stages*

*Instant Payment transaction flow*

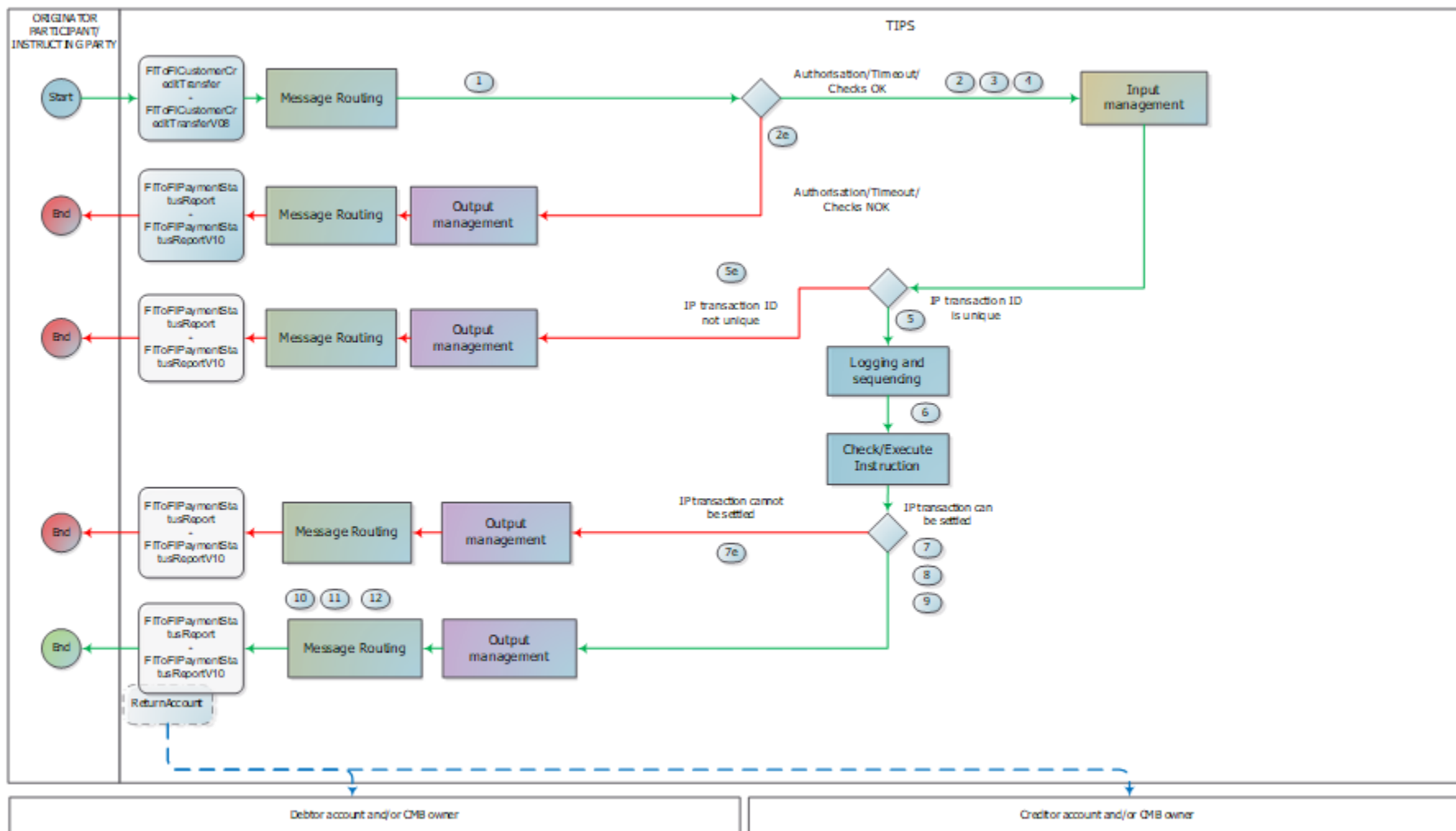
*Status transition*

*Messages*

## 3 Recall

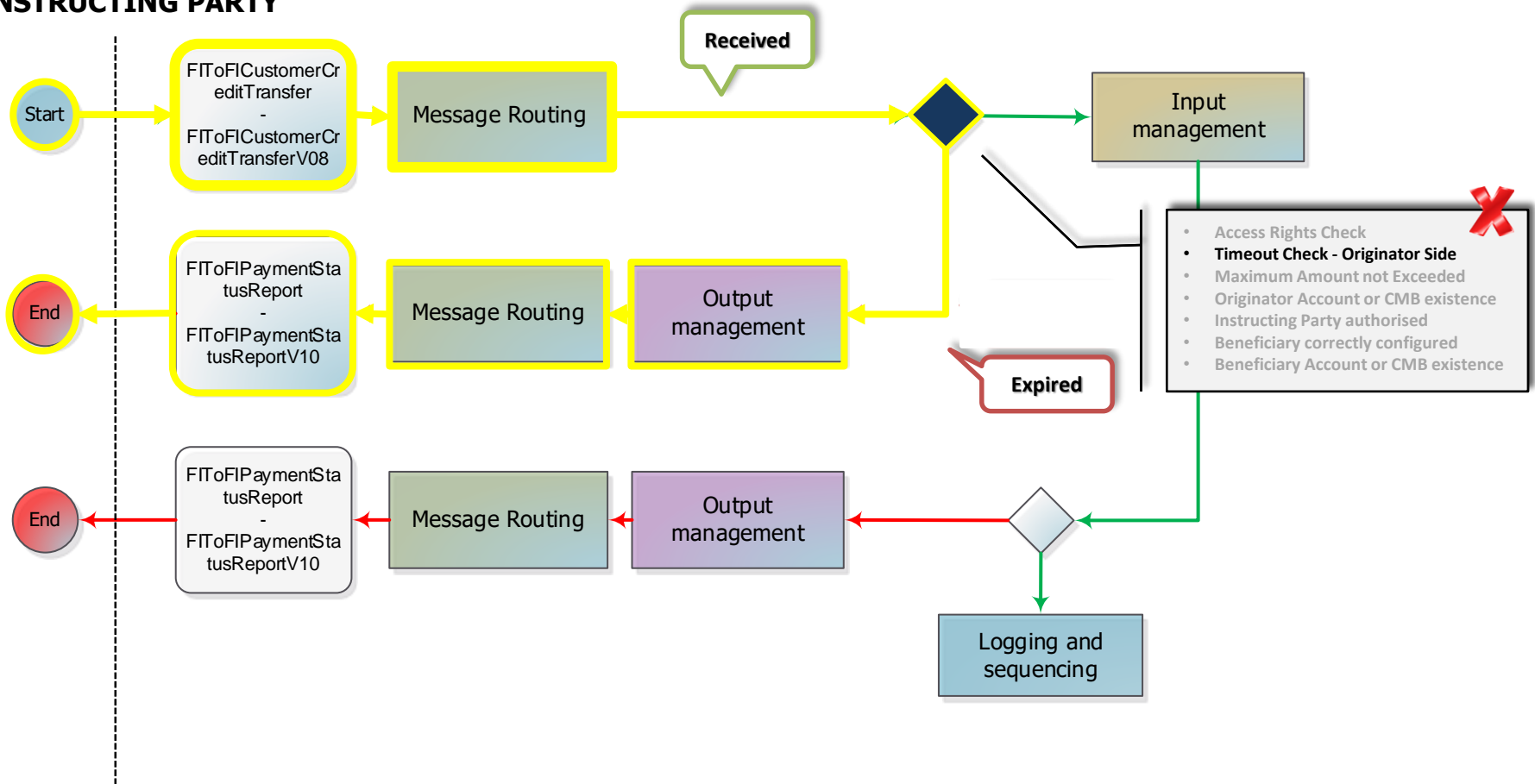
## 4 Investigation

# Instant Payment transaction flow - overview



# Settlement Phase - Unsuccessful Scenario (1/3)

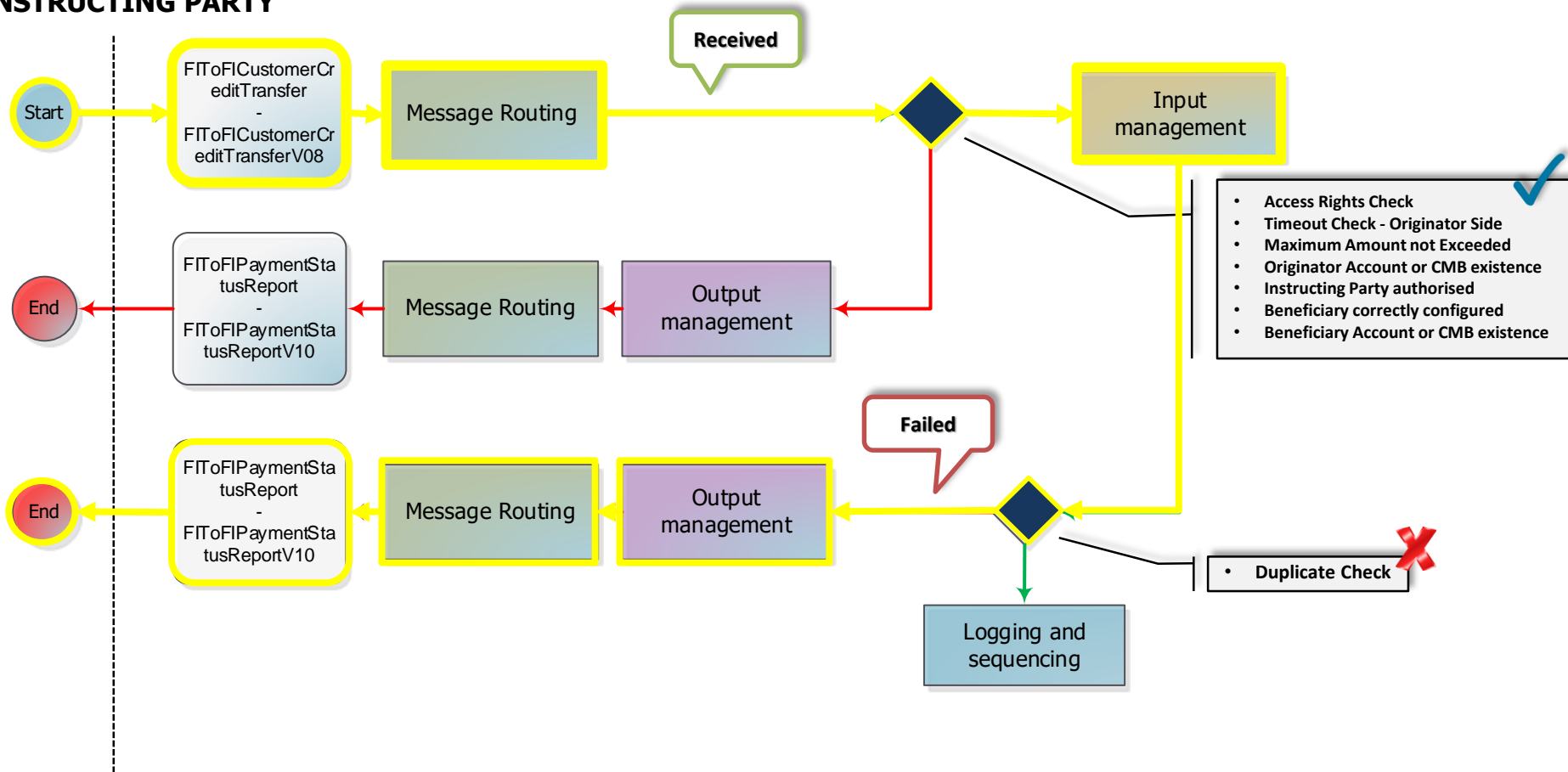
ORIGINATOR PARTICIPANT  
OR  
INSTRUCTING PARTY





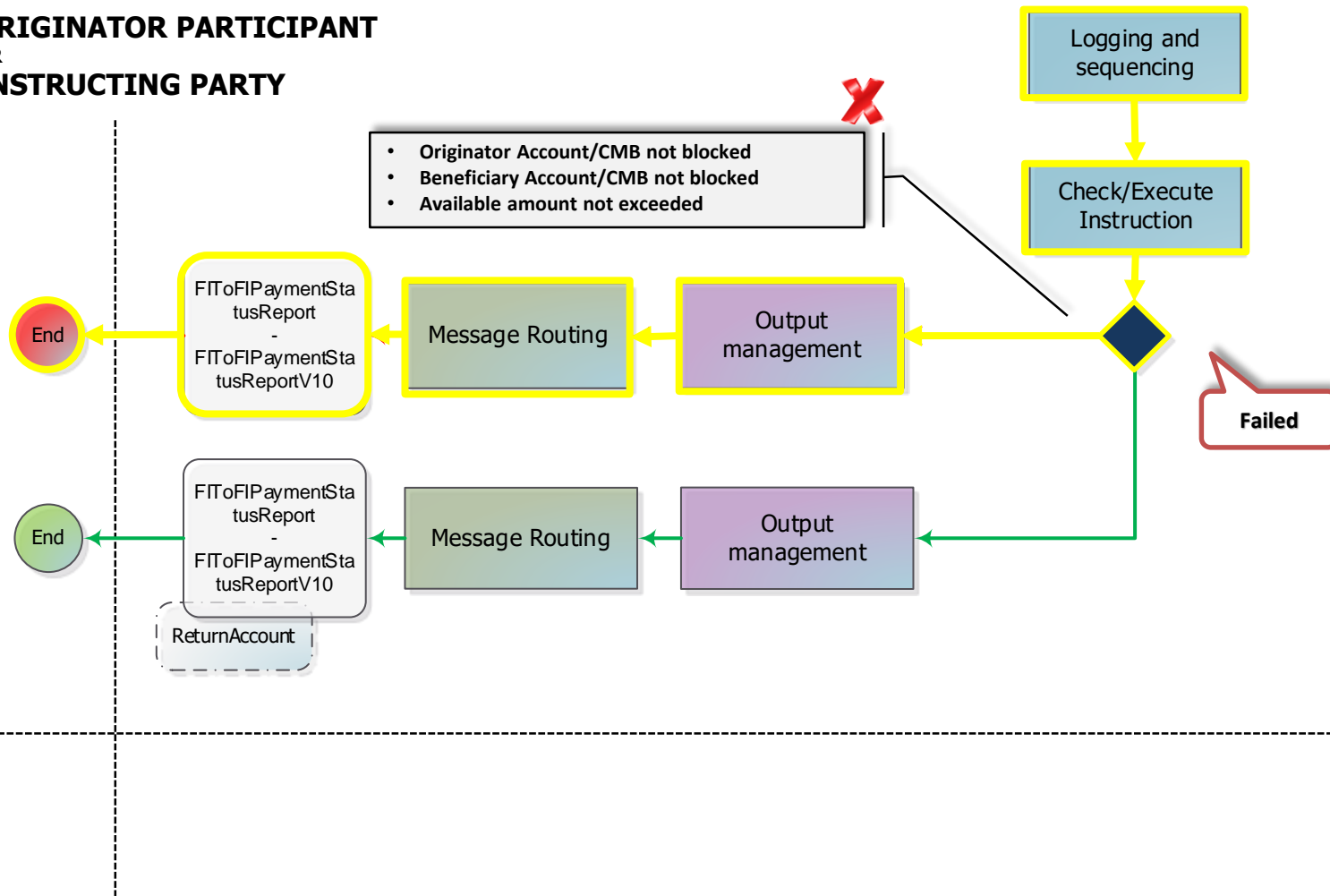
# Settlement Phase – Unsuccessful Scenario (2/3)

**ORIGINATOR PARTICIPANT  
OR  
INSTRUCTING PARTY**



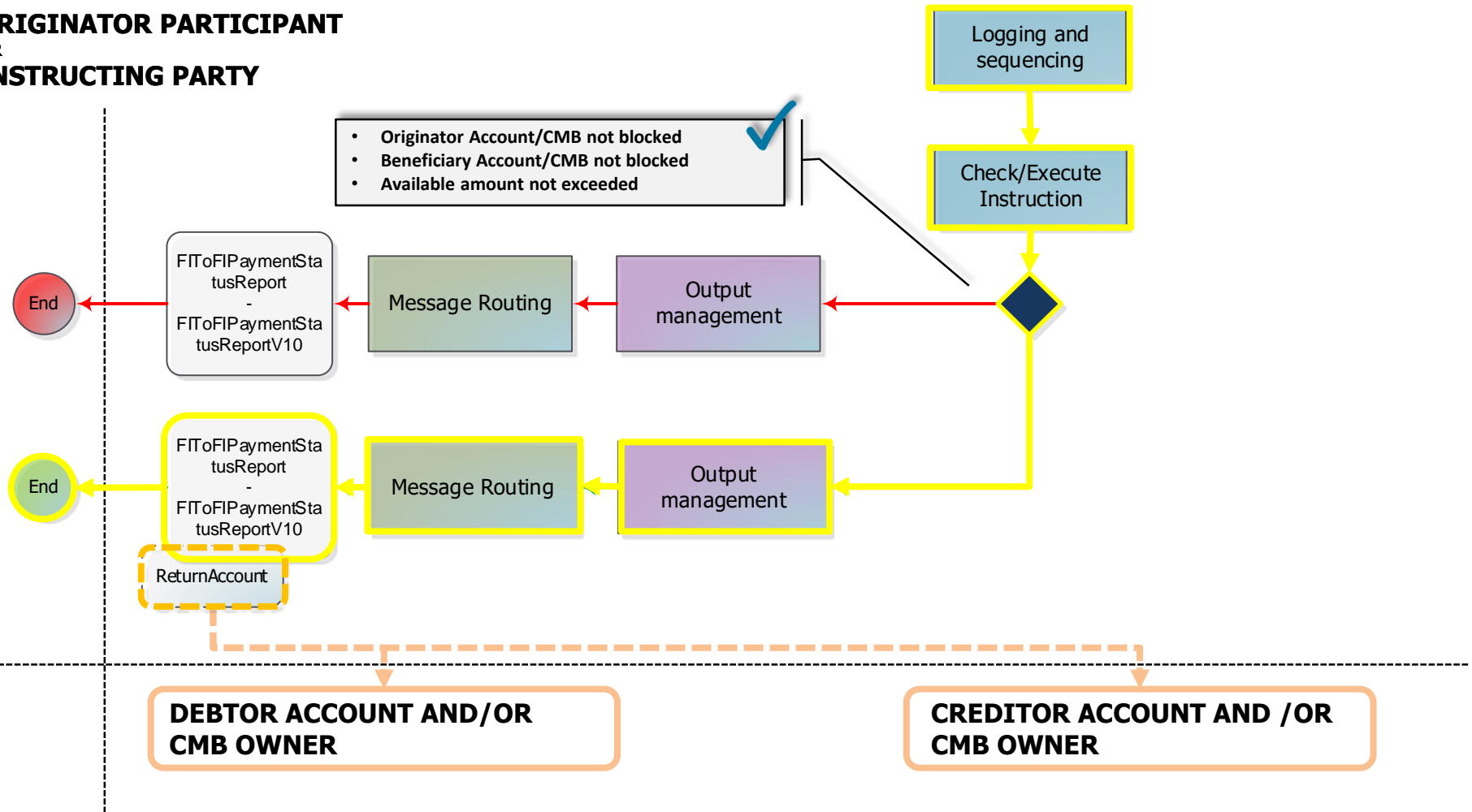
# Settlement Phase – Unsuccessful Scenario (3/3)

**ORIGINATOR PARTICIPANT  
 OR  
 INSTRUCTING PARTY**



# Settlement Phase – Successful Scenario

**ORIGINATOR PARTICIPANT  
OR  
INSTRUCTING PARTY**



## 1 Settlement process

## 2 SIP Settlement Model

*Overview*

*Settlement stages*

*Instant Payment transaction flow*

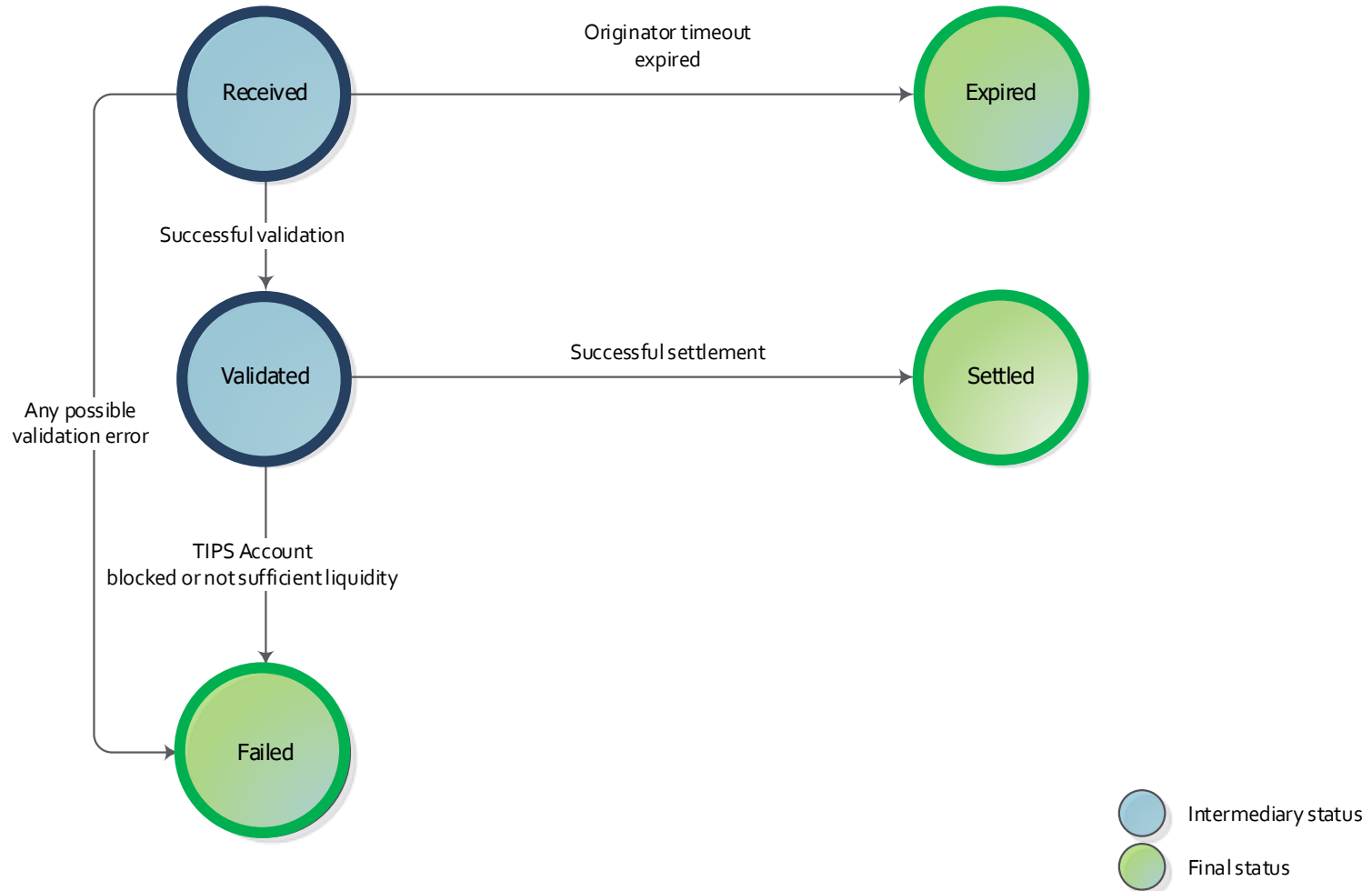
*Status transition*

*Messages*

## 3 Recall

## 4 Investigation

## Instant Payment transaction – Status transition



**1** Settlement process

**2** SIP Settlement Model

*Overview*

*Settlement stages*

*Instant Payment transaction flow*

*Status transition*

*Messages*

**3** Recall

**4** Investigation

## Involved messages for SCT<sup>Inst</sup> as of R2023.NOV

### **FIToFICustomerCreditTransfer**

**(pacs.008.001.08)**

To instruct the payment

To reserve the corresponding amount

To inform the Beneficiary Participant about the transaction received



### **FIToFIPaymentStatusReport**

**(pacs.002.001.10)**

To accept/ reject the Instant Payment transaction

To inform the actors about the result of the settlement



### **ReturnAccount**

**(camt.004.001.07)**

To notify the owner of the account (or CMB) that the floor/ ceiling configured threshold is crossed



## Involved messages for non-Euro Settlement Models

### **FIToFICustomerCreditTransfer**

**(pacs.008.001.08)**

- To instruct the payment
- To reserve the corresponding amount
- To inform the Beneficiary Participant about the transaction received



### **FIToFIPaymentStatusReport**

**(pacs.002.001.10)**

- To accept/ reject the Instant Payment transaction
- To inform the actors about the result of the settlement



### **ReturnAccount**

**(camt.004.001.07)**

- To notify the owner of the account (or CMB) that the floor/ ceiling configured threshold is crossed





## Overlapping messages for SCT<sup>Inst</sup> and non-Euro Settlement Models as of R2023.NOV

Need to append a **suffix** to the value of the existing *MsgType* MEPT\* property in order to distinguish the two datasets at transport level

### **FIToFICustomerCreditTransfer** (pacs.008.001.08) for SCT<sup>Inst</sup>

*MsgType*= pacs.008.001.08.EPC for messages sent in EUR compliant with the SCT<sup>Inst</sup> specifications



### **FIToFICustomerCreditTransfer** (pacs.008.001.08) for non-Euro Settlement Models

*MsgType*= pacs.008.001.08.NPC for messages sent (e.g. in SEK) compliant with the non-Euro specifications



**1** Settlement process

**2** SIP Settlement Model

**3** Recall

**Overview**

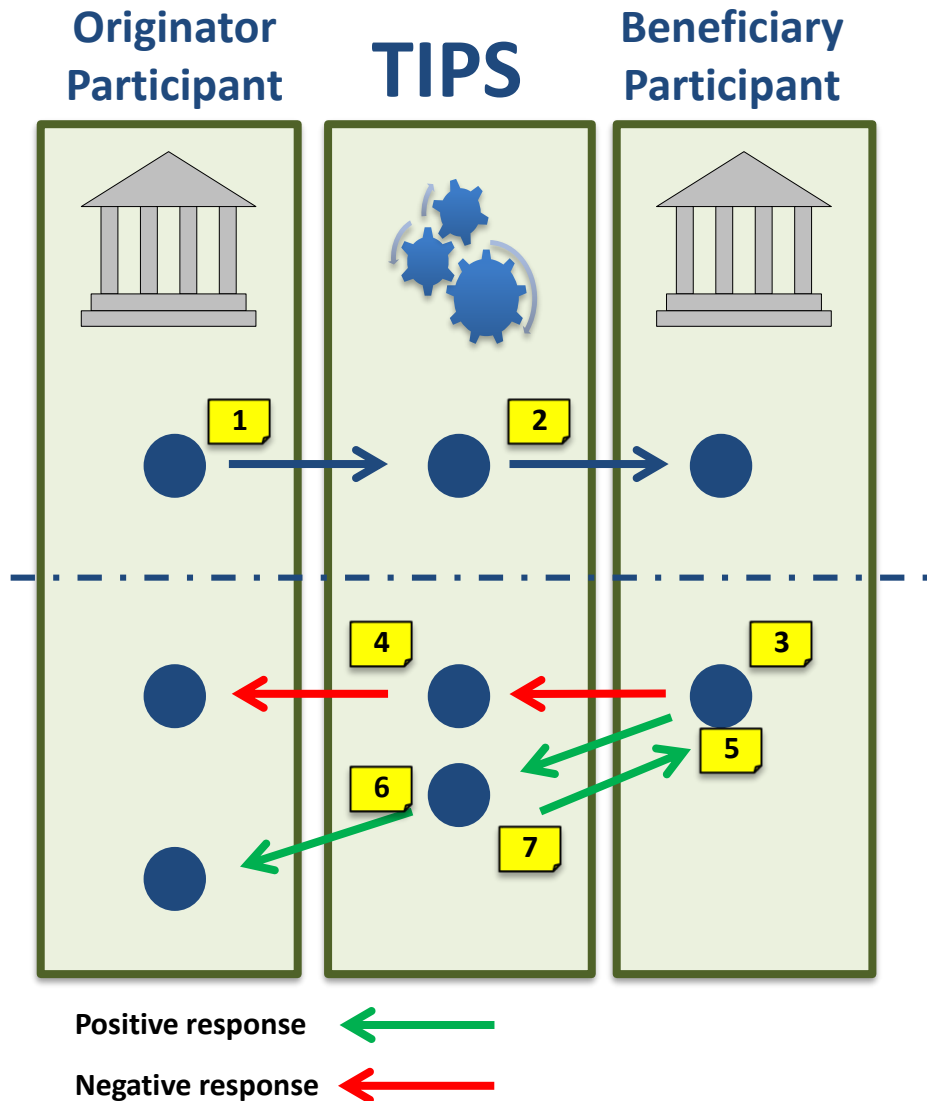
**Recall flow**

**Status transition**

**Messages**

**4** Investigation

## TIPS Recall overview



## Settlement of a Recall – the actors

The involved actors are:

### Recall Assigner

The Originator Participant or Instructing Party\* of a previously settled instruction that sends the Recall request

### Recall Assignee

The Beneficiary Participant or Instructing Party\* that receives the Recall request

\*The Ancillary System can send/receive recall request on behalf of its participants

## TIPS Payment transaction types

### Recall

- Forwarded from the Recall Assigner to TIPS to request that the underlying transaction is refunded and a refunded amount – equal or possibly lower than the original one – is credited back to the original account
- Forwarded by TIPS to the Recall Assignee

### Recall Response

- Forwarded from the Recall Assignee to TIPS as either a positive response to refund the cash, reversing the effect of the original Instant Payment transaction, or a negative response to a Recall instruction
- Forwarded by TIPS back to the Recall Assigner as confirmation

**1** Settlement process

**2** SIP Settlement Model

**3** Recall

*Overview*

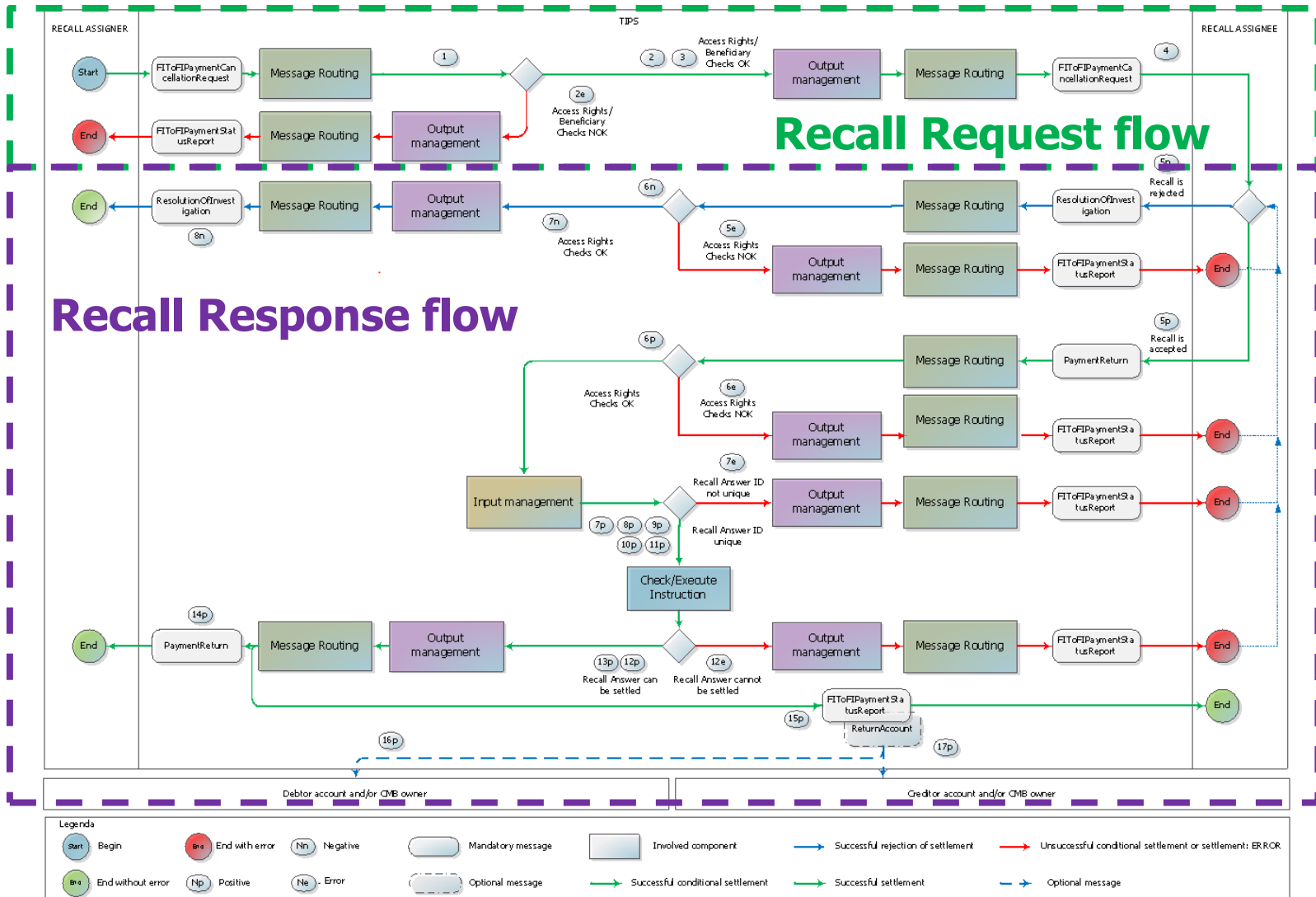
*Recall flow*

*Status transition*

*Messages*

**4** Investigation

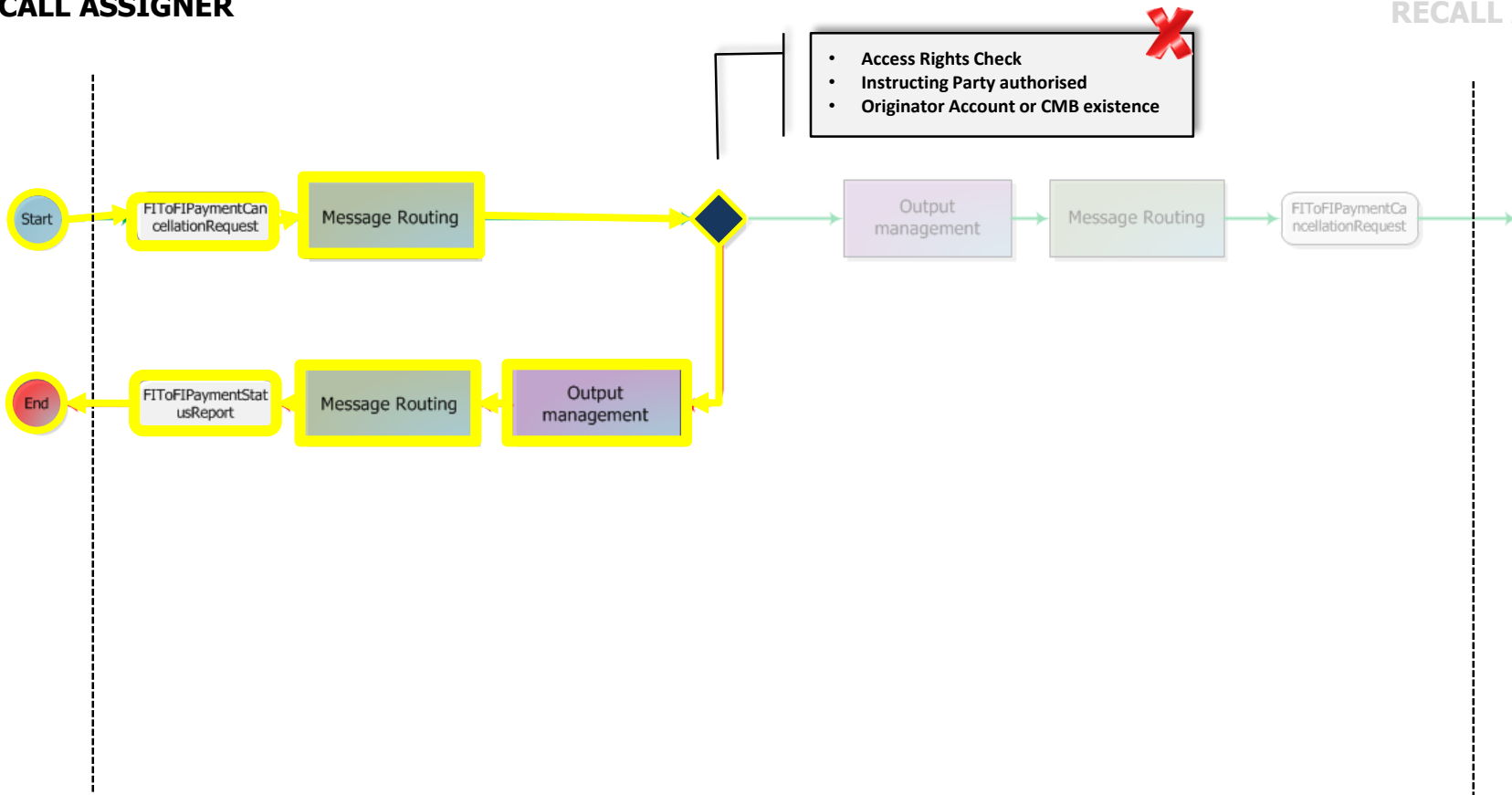
## Recall flow



# Recall Request flow - Unsuccessful Scenario

## RECALL ASSIGNER

## RECALL ASSIGNEE

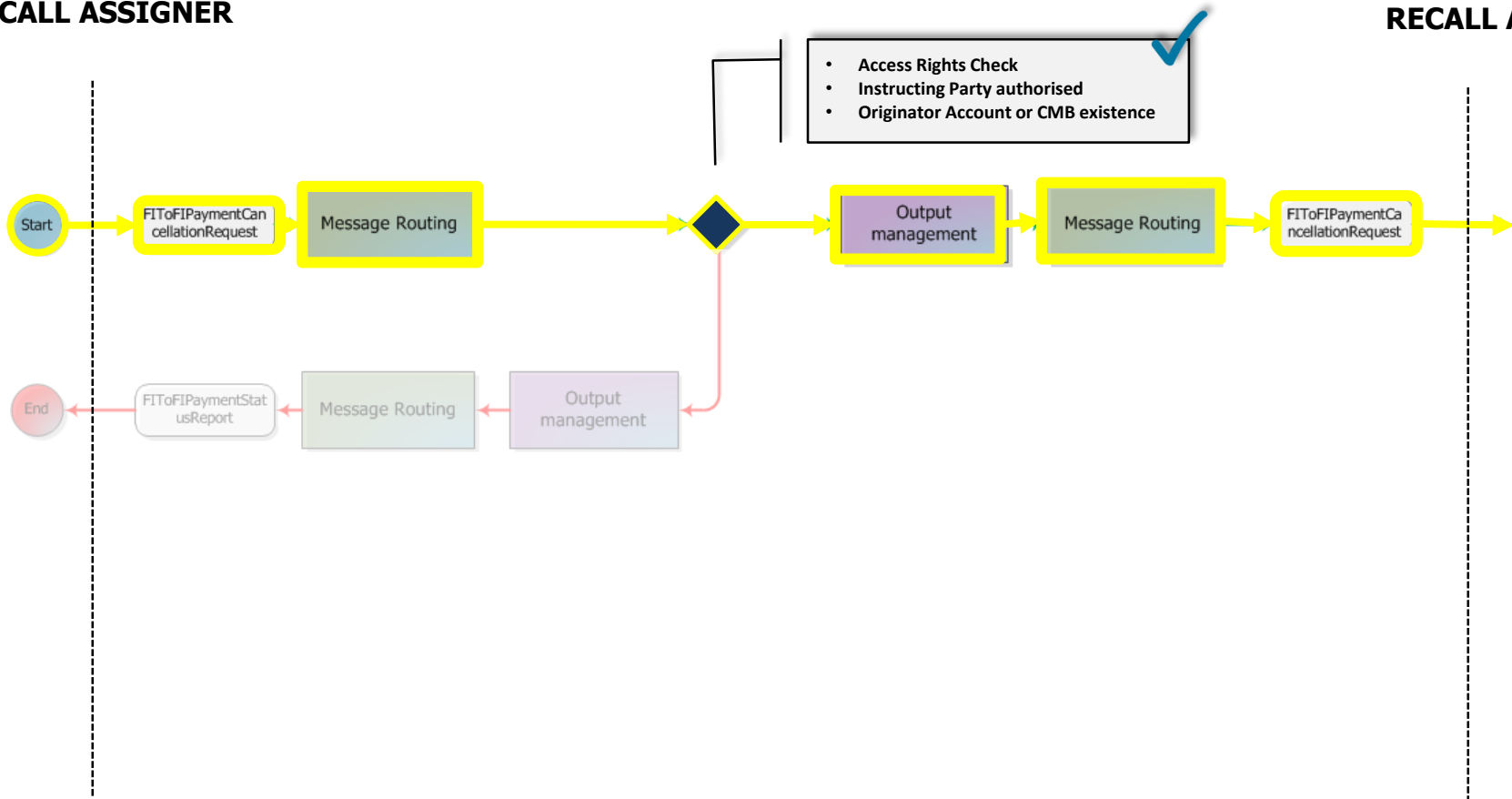




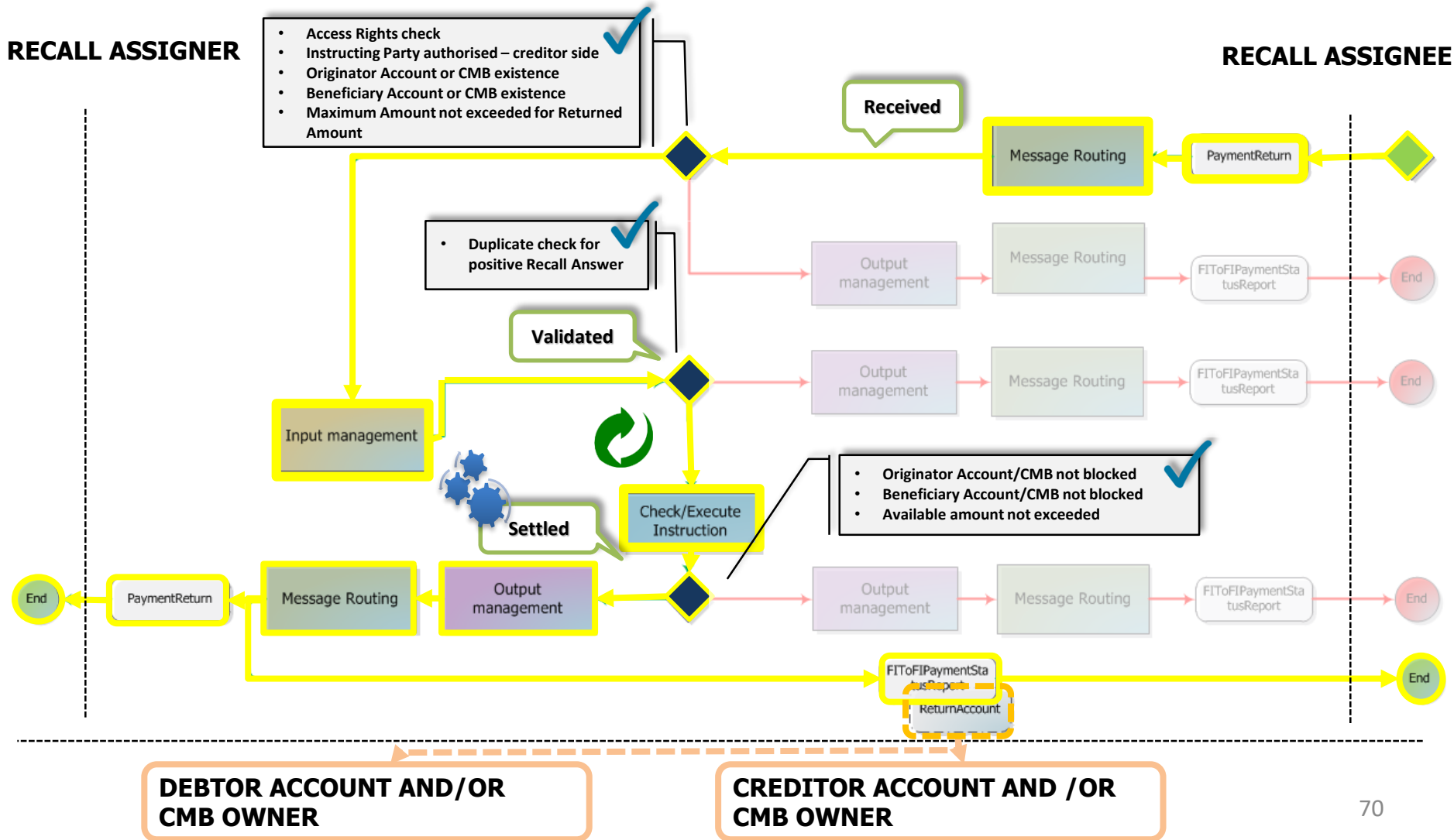
## Recall Request flow - Successful Scenario

RECALL ASSIGNER

RECALL ASSIGNEE



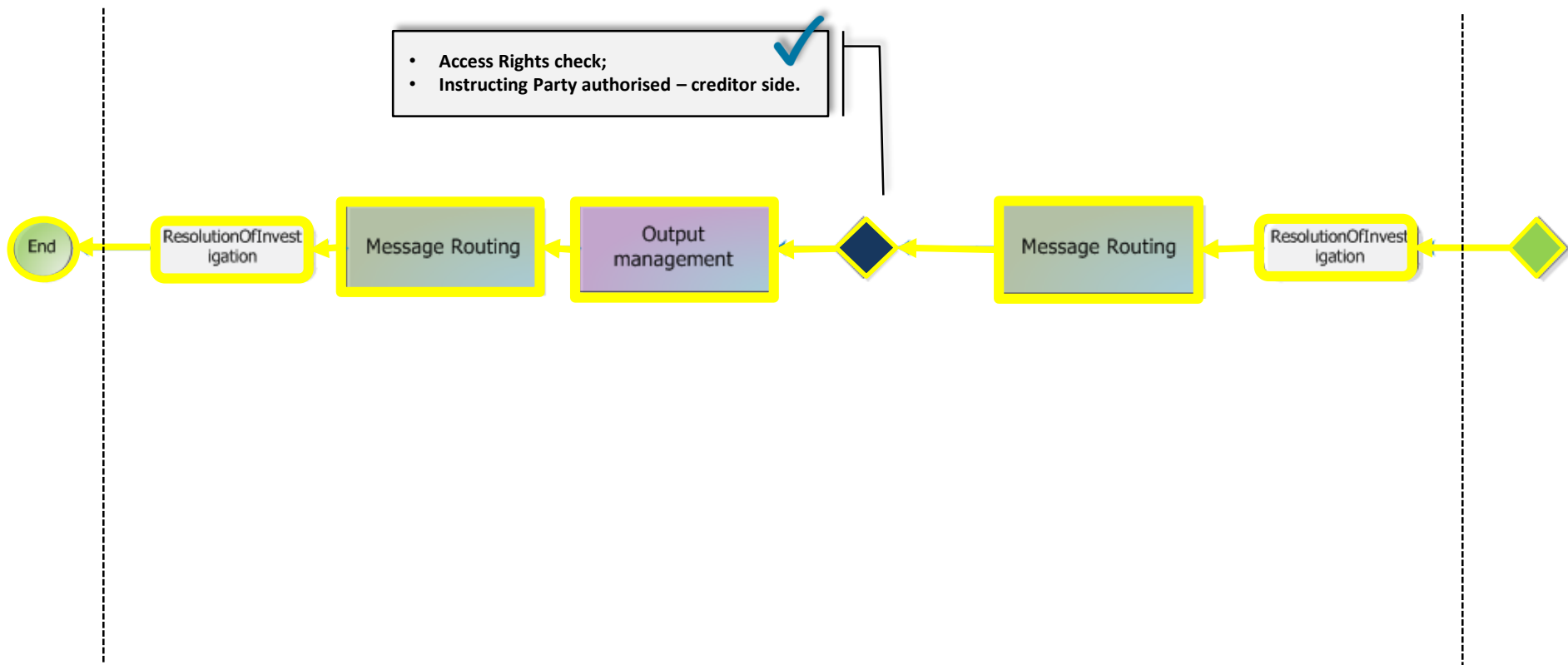
## Positive Recall Response flow - Successful Scenario



# Negative Recall Response flow - Successful Scenario

RECALL ASSIGNER

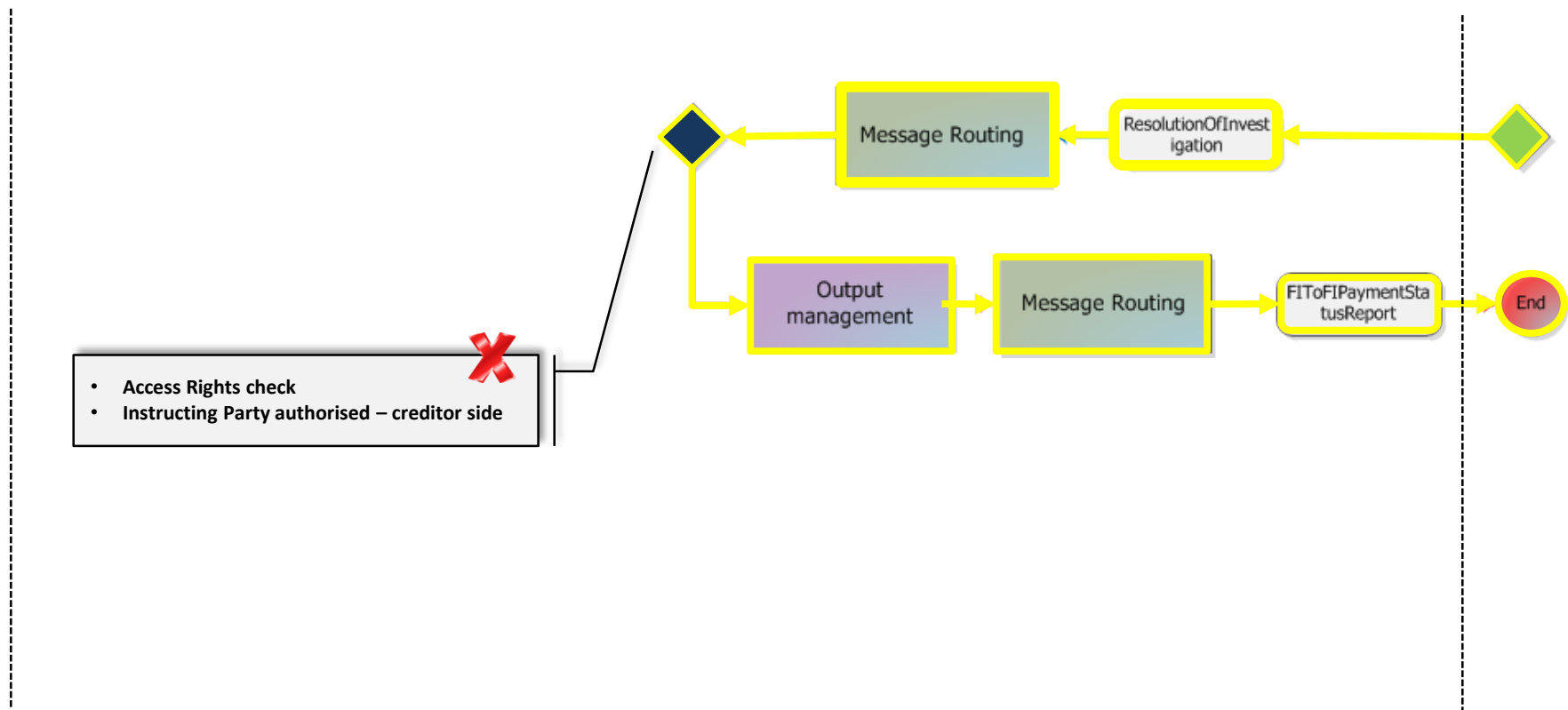
RECALL ASSIGNEE



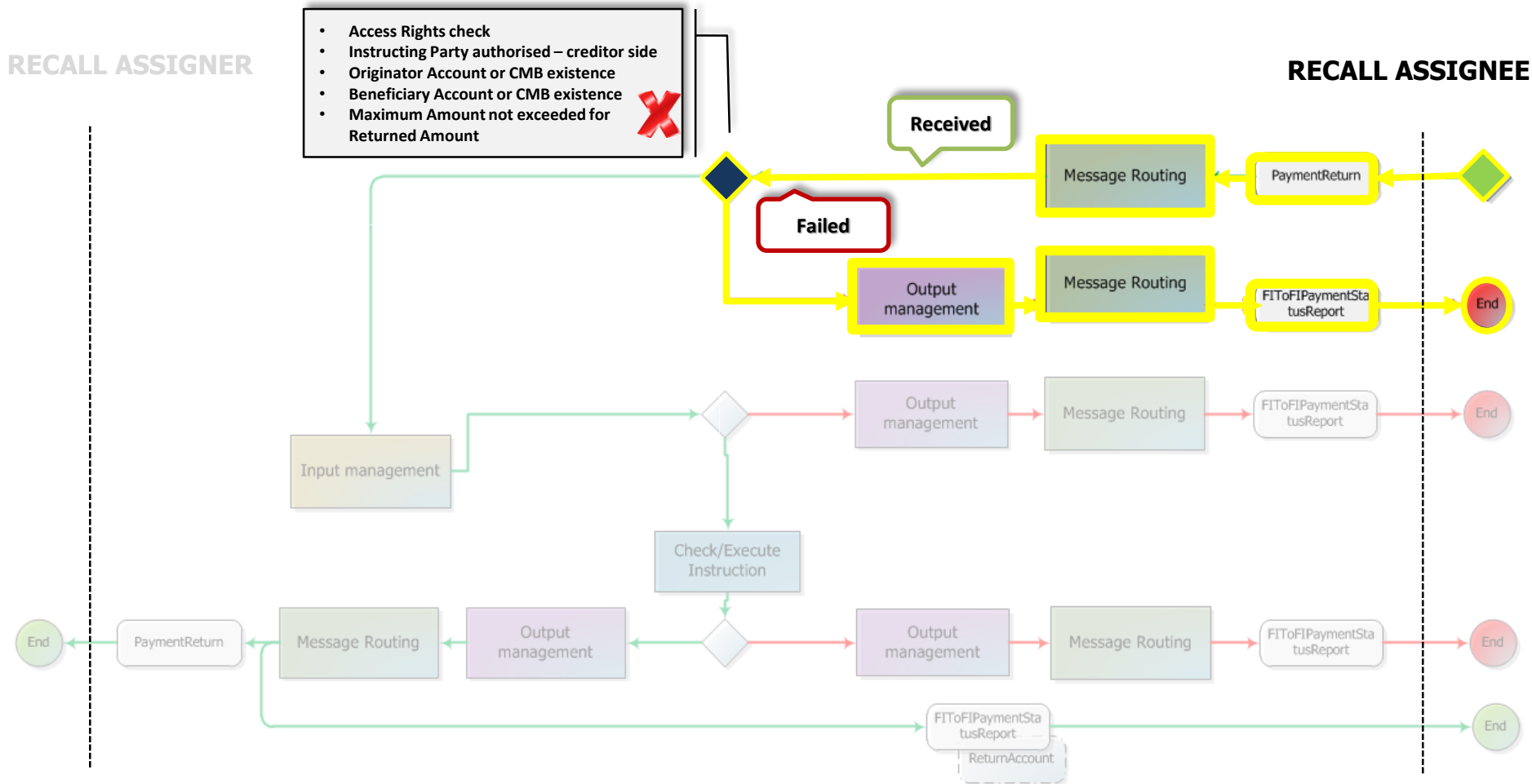
# Negative Recall Response flow - Unsuccessful Scenario

RECALL ASSIGNER

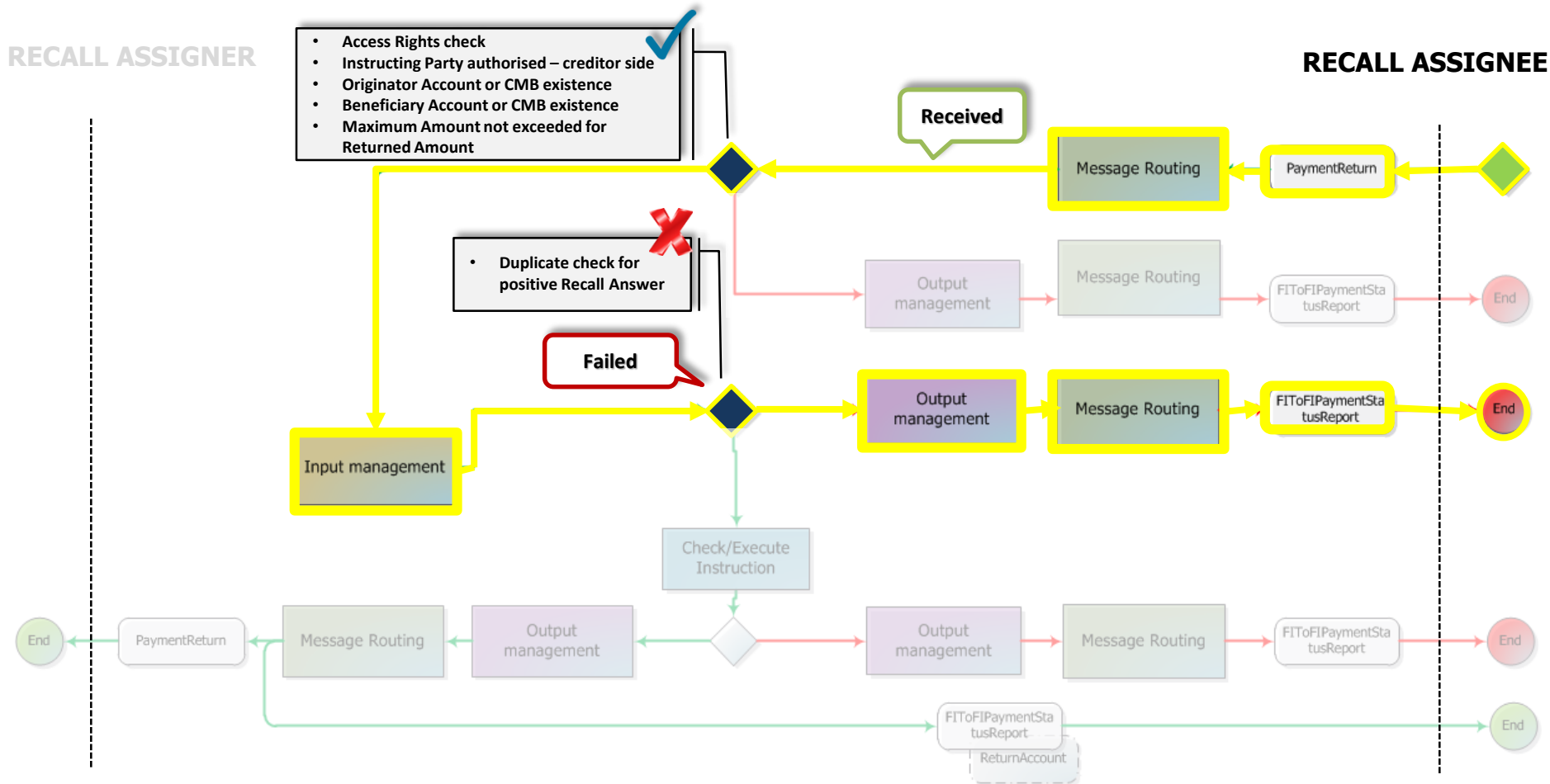
RECALL ASSIGNEE



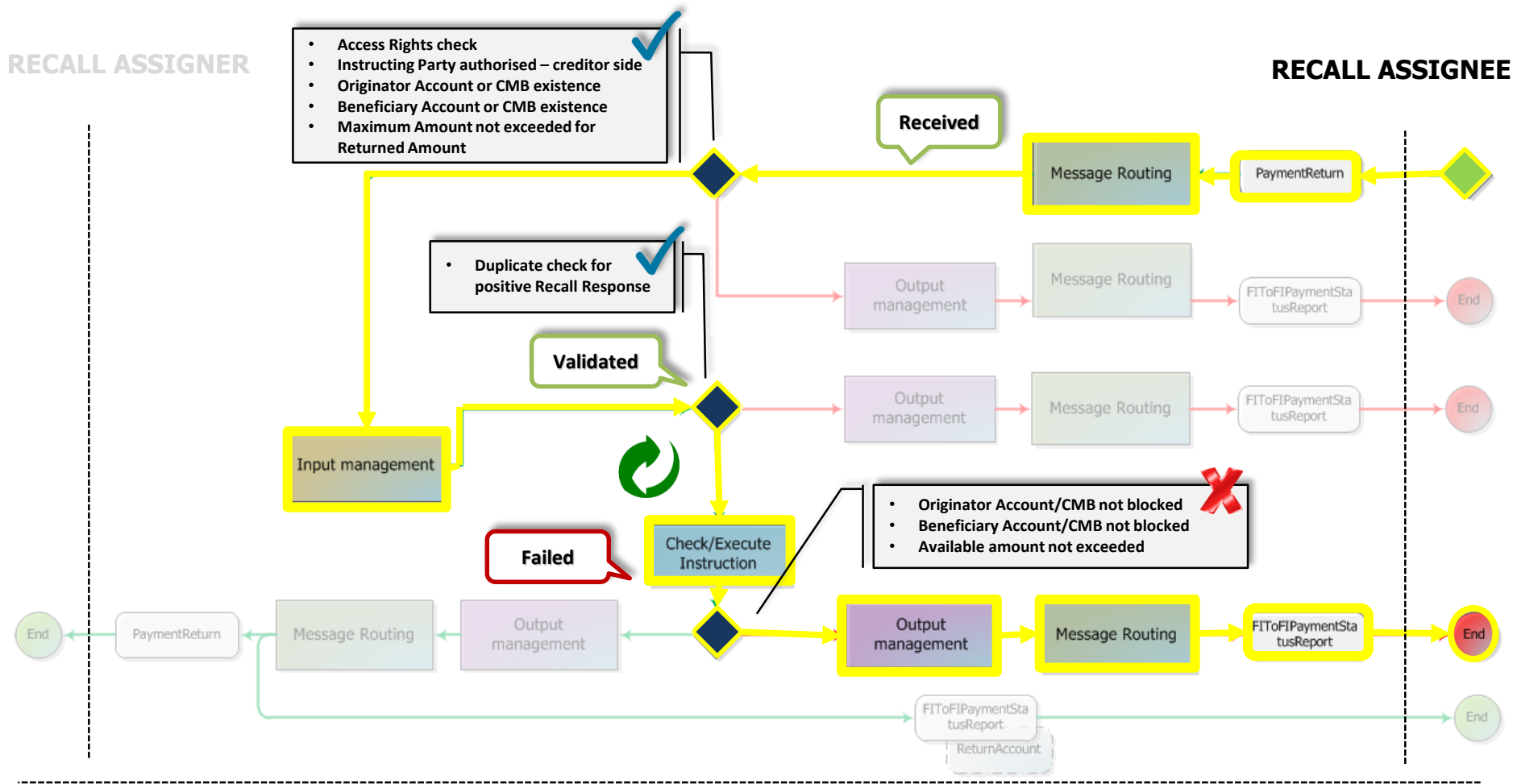
## Positive Recall Response flow - Unsuccessful Scenario (1/3)



## Positive Recall Response flow - Unsuccessful Scenario (2/3)



## Positive Recall Response flow - Unsuccessful Scenario (3/3)



**1** Settlement process

**2** SIP Settlement Model

**3** Recall

*Overview*

*Recall flow*

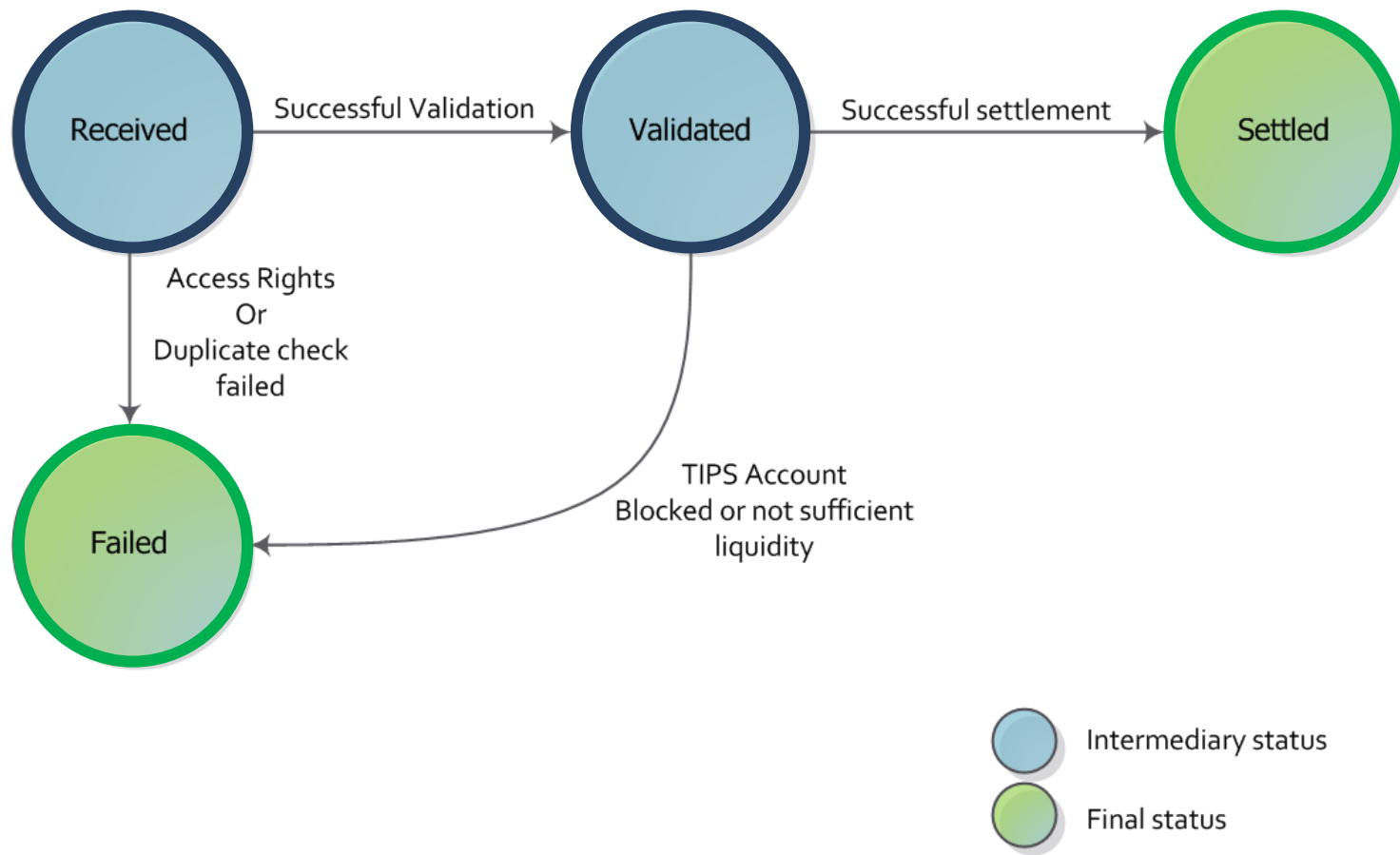
*Status transition*

*Messages*

**4** Investigation



## Recall Response – Status transition



**1** Settlement process

**2** SIP Settlement Model

**3** Recall

*Overview*

*Recall flow*

*Status transition*

*Messages*

**4** Investigation

## Involved messages for SCT<sup>Inst</sup> as of R2023.NOV

**FIToFIPaymentCancellationRequest**

(camt.056.001.08)



**ResolutionOfInvestigation**

(camt.029.001.09)



**PaymentReturn**

(pacs.004.001.09)



**FIToFIPaymentStatusReport**

(pacs.002.001.10)



**ReturnAccount**

(camt.004.001.07)



## Involved messages for non-Euro Settlement Models

**FIToFIPaymentCancellationRequest**  
(camt.056.001.08)



**ResolutionOfInvestigation**  
(camt.029.001.09)



**PaymentReturn**  
(pacs.004.001.09)



**FIToFIPaymentStatusReport**  
(pacs.002.001.10)



**ReturnAccount**  
(camt.004.001.07)



**1** Settlement process

**2** SIP Settlement Model

**3** Recall

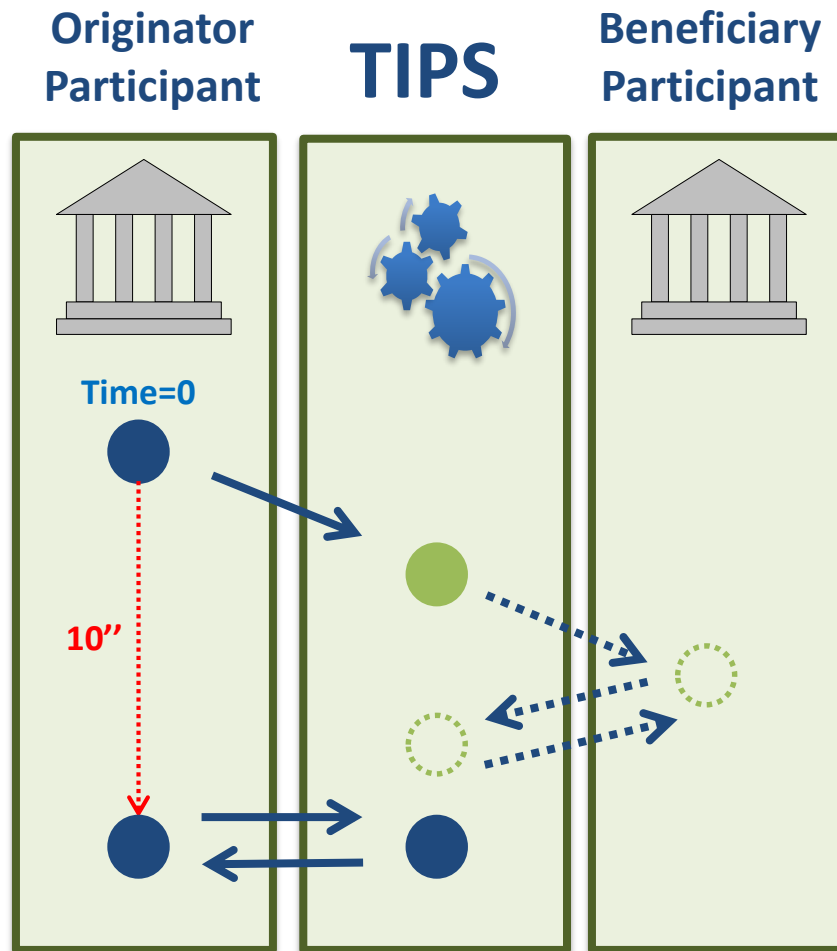
**4** Investigation

*Overview*

*Investigation flow*

*Messages*

## Investigation overview



## Investigation – The actors

### Originator Participant

The Participant or Instructing Party\* acting on behalf of Participants or Reachable Parties on the originator side that request information on a transaction for which no confirmation message has reached the Originator PSP after the time-out deadline.

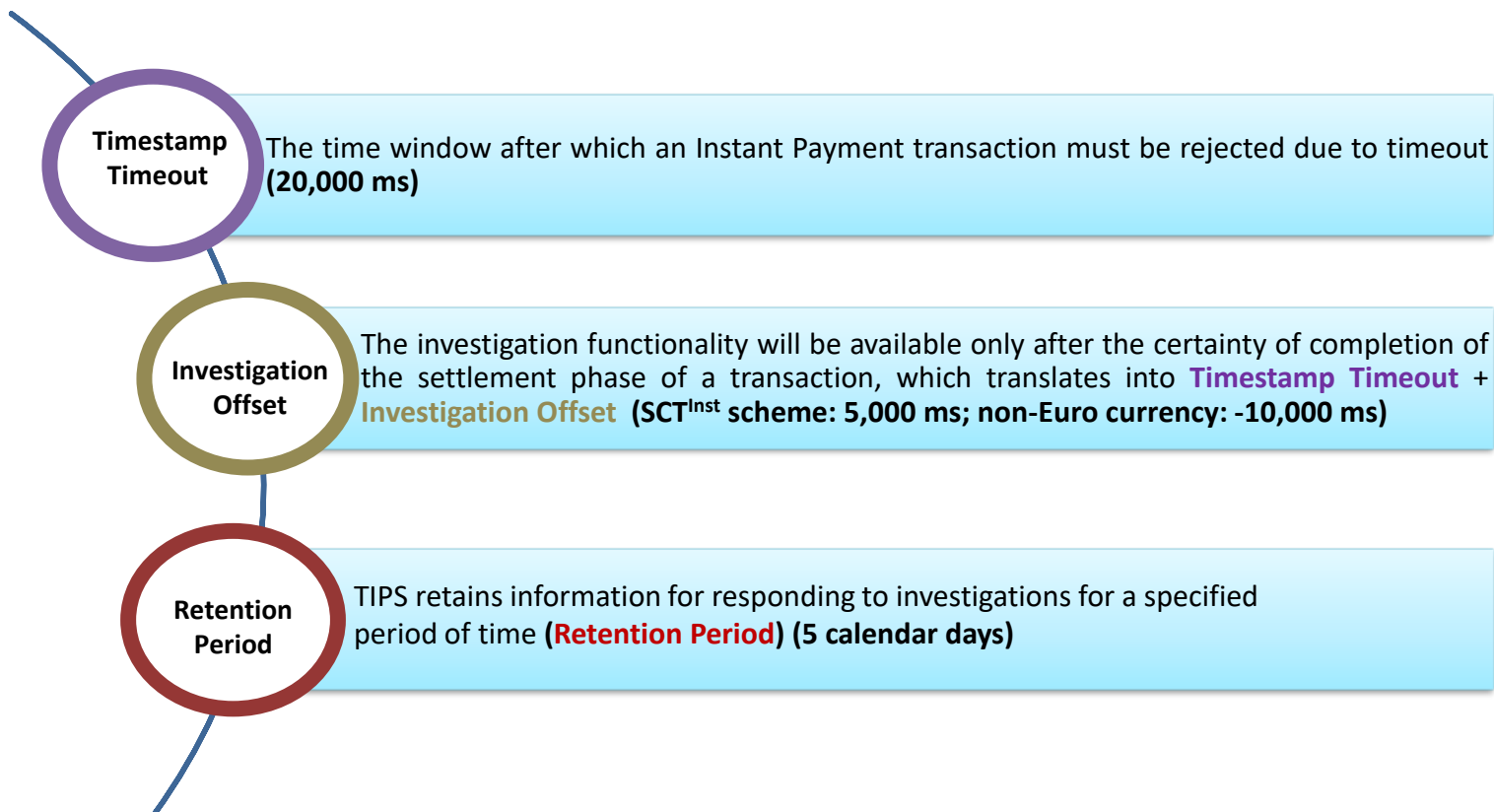
## Investigation – TIPS Payment Transaction types

### Investigation

It is sent by the Originator Participant or Instructing Party\* acting on behalf of the Originator Participant or Reachable Party to TIPS in order to retrieve the last generated payment transaction status advice



# Investigation – Time parameters



**1** Settlement process

**2** SIP Settlement Model

**3** Recall

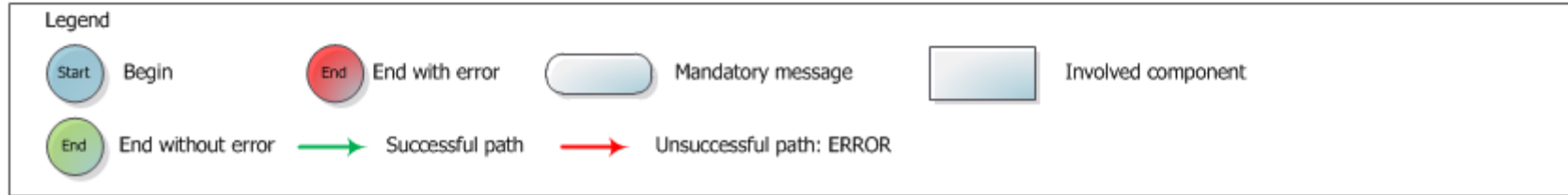
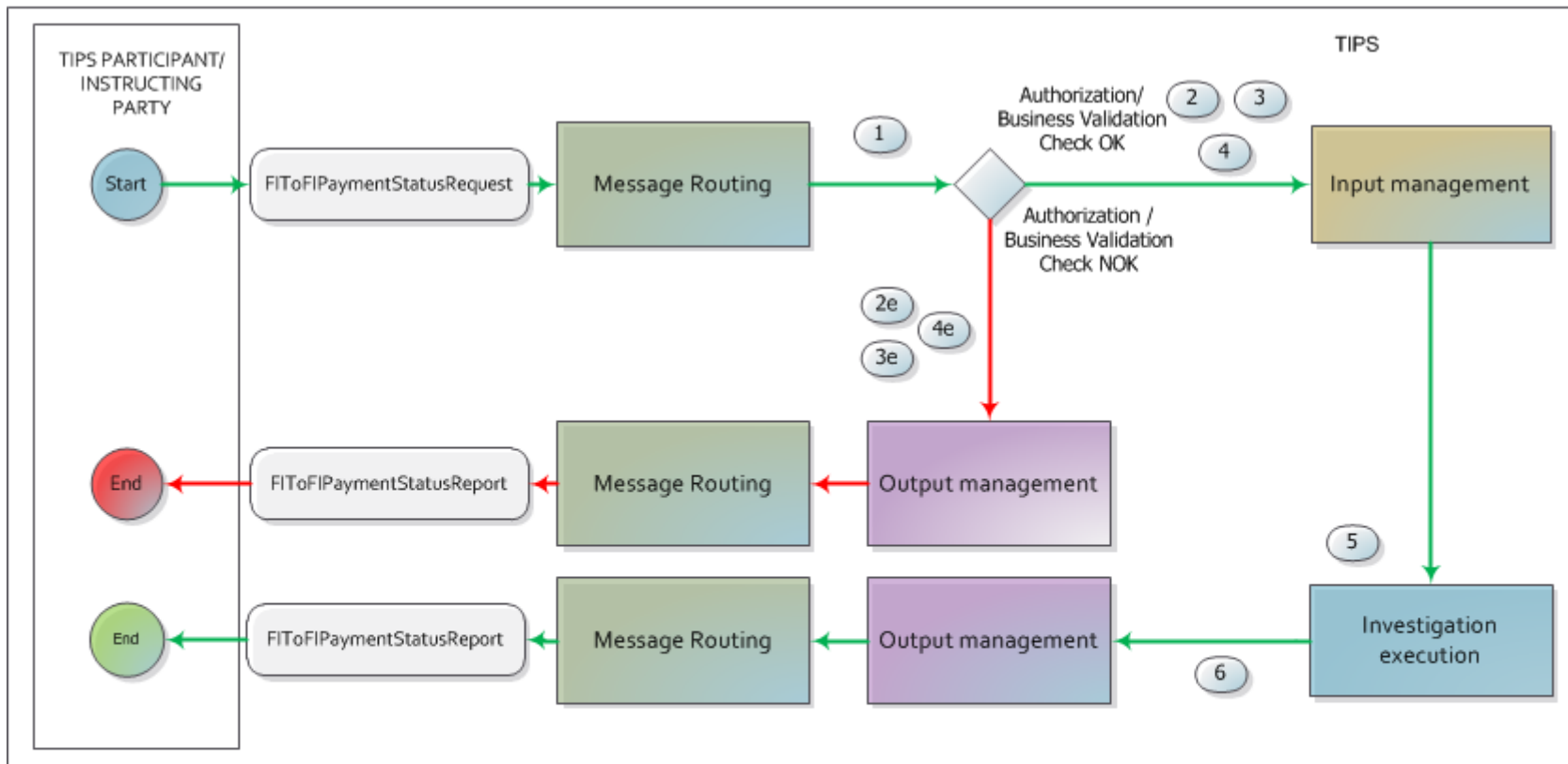
**4** Investigation

*Overview*

*Investigation flow*

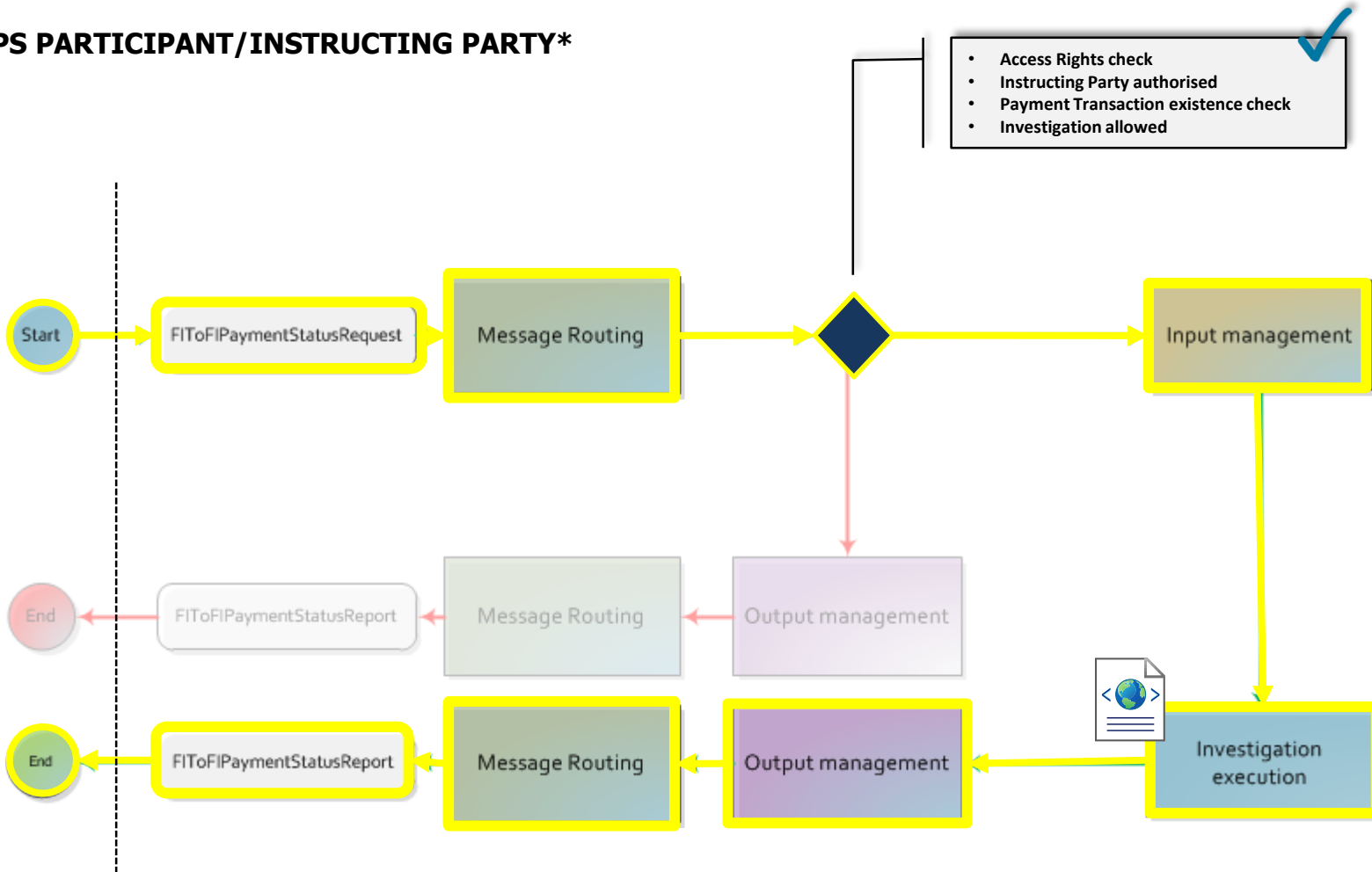
*Messages*

## Investigation flow



## Investigation flow – Successful Scenario

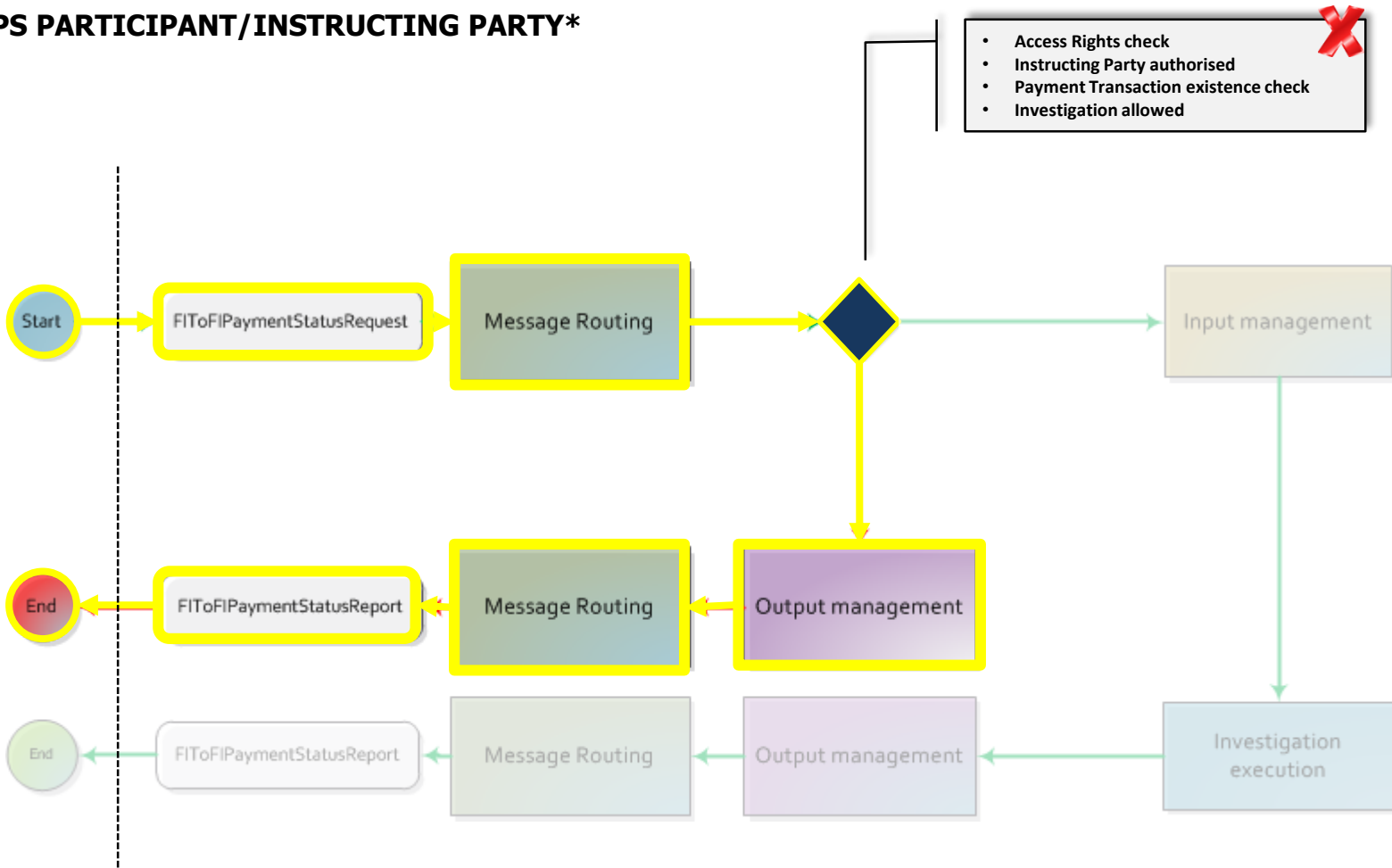
TIPS PARTICIPANT/INSTRUCTING PARTY\*



\*The Ancillary System can initiate investigations on behalf of its participants

## Investigation flow – Unsuccessful Scenario

TIPS PARTICIPANT/INSTRUCTING PARTY\*



\*The Ancillary System can initiate investigations on behalf of its participants

**1** Settlement process

**2** SIP Settlement Model

**3** Recall

**4** Investigation

*Overview*

*Investigation flow*

*Messages*

## Involved messages for SCT<sup>Inst</sup> as of R2023.NOV

**FIToFIPaymentStatusRequest**  
(pacs.028.001.03)



**FIToFIPaymentStatusReport**  
(pacs.002.001.10)



## Involved messages for non-Euro Settlement Models

**FIToFIPaymentStatusRequest**  
(pacs.028.001.03)



**FIToFIPaymentStatusReport**  
(pacs.002.001.10)





**Thank you for the attention!**

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