

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

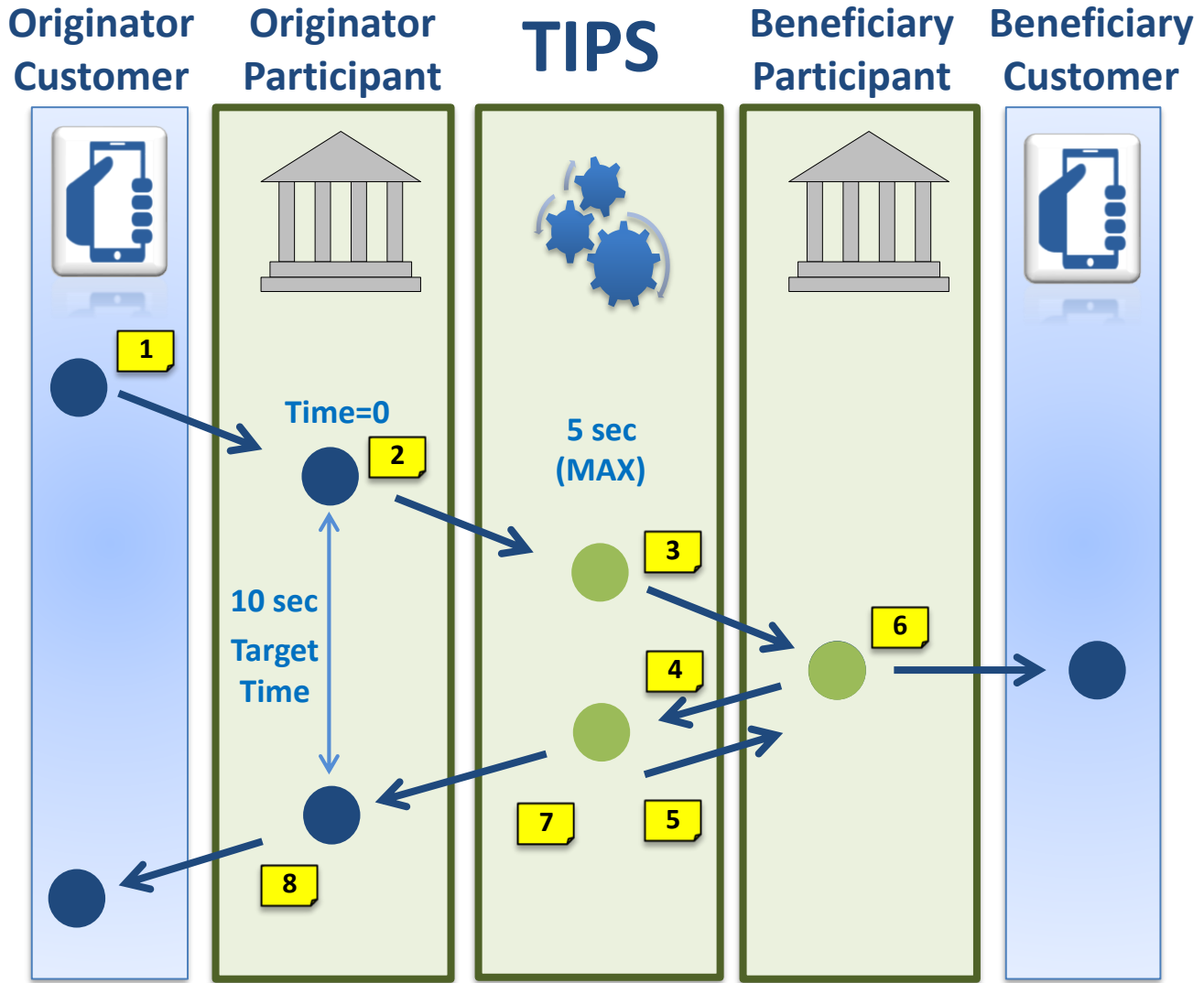
Messages

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)

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 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**)

Beneficiary Side Offset

Rejections due to timeout can occur in the event that the Beneficiary Reply message is not received or if it is submitted to TIPS with a timestamp that is already past the timeout window (**Timestamp Timeout + Beneficiary Side Offset**) (**+ 1,000 ms**)

Sweeping Timeout

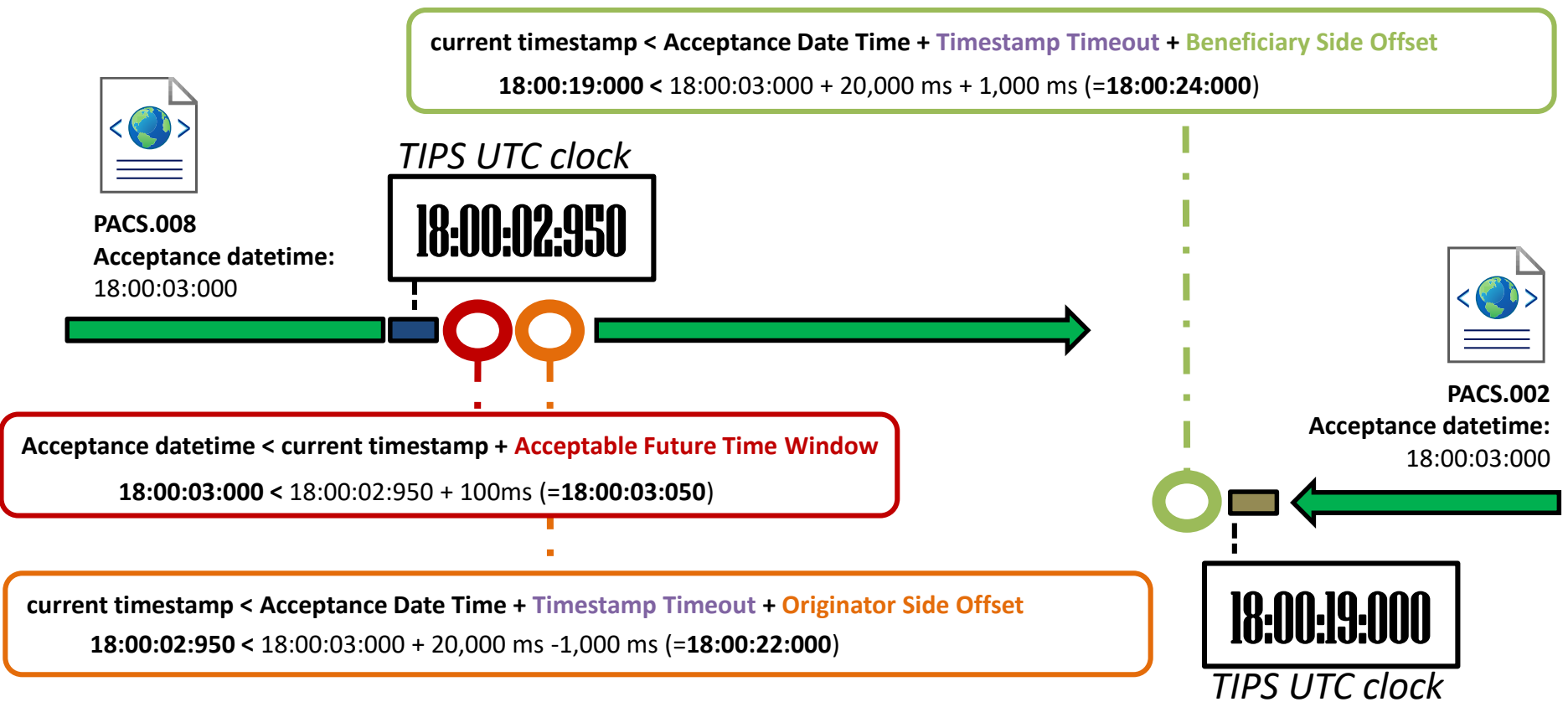
The time window after which TIPS takes care of all the

(**5 s**)

orphan payments

Instant Payment transaction still waiting for a confirmation/rejection

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

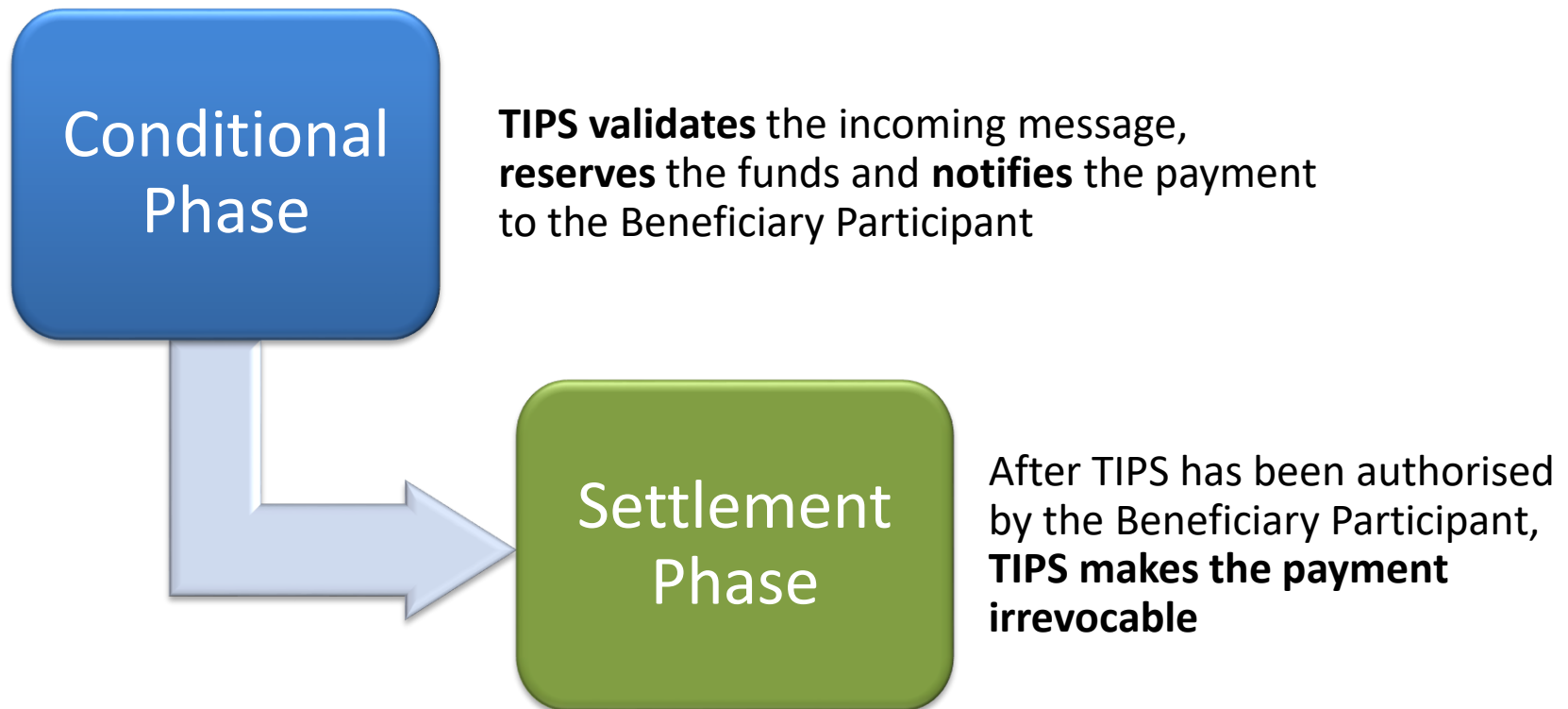
2 SIP Settlement Model

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

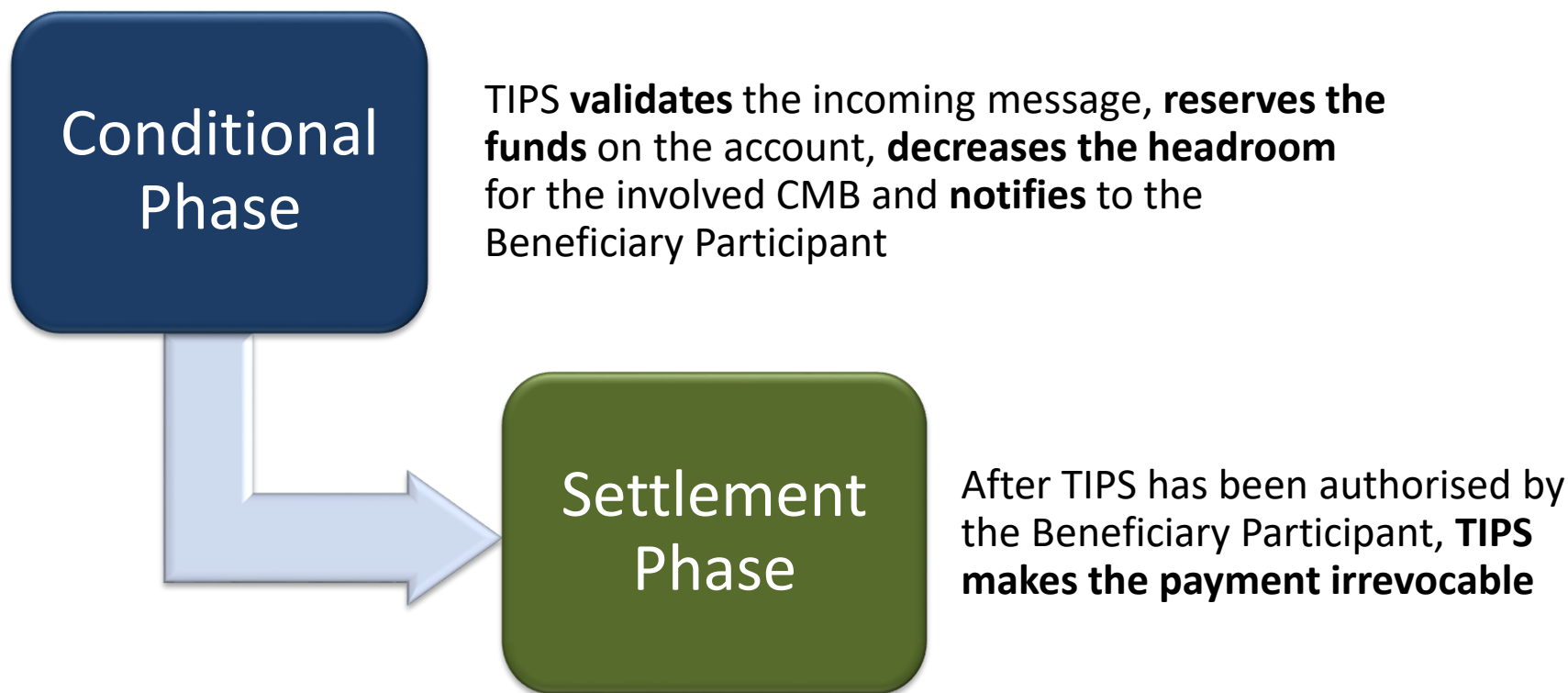
Settlement Phase

- 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

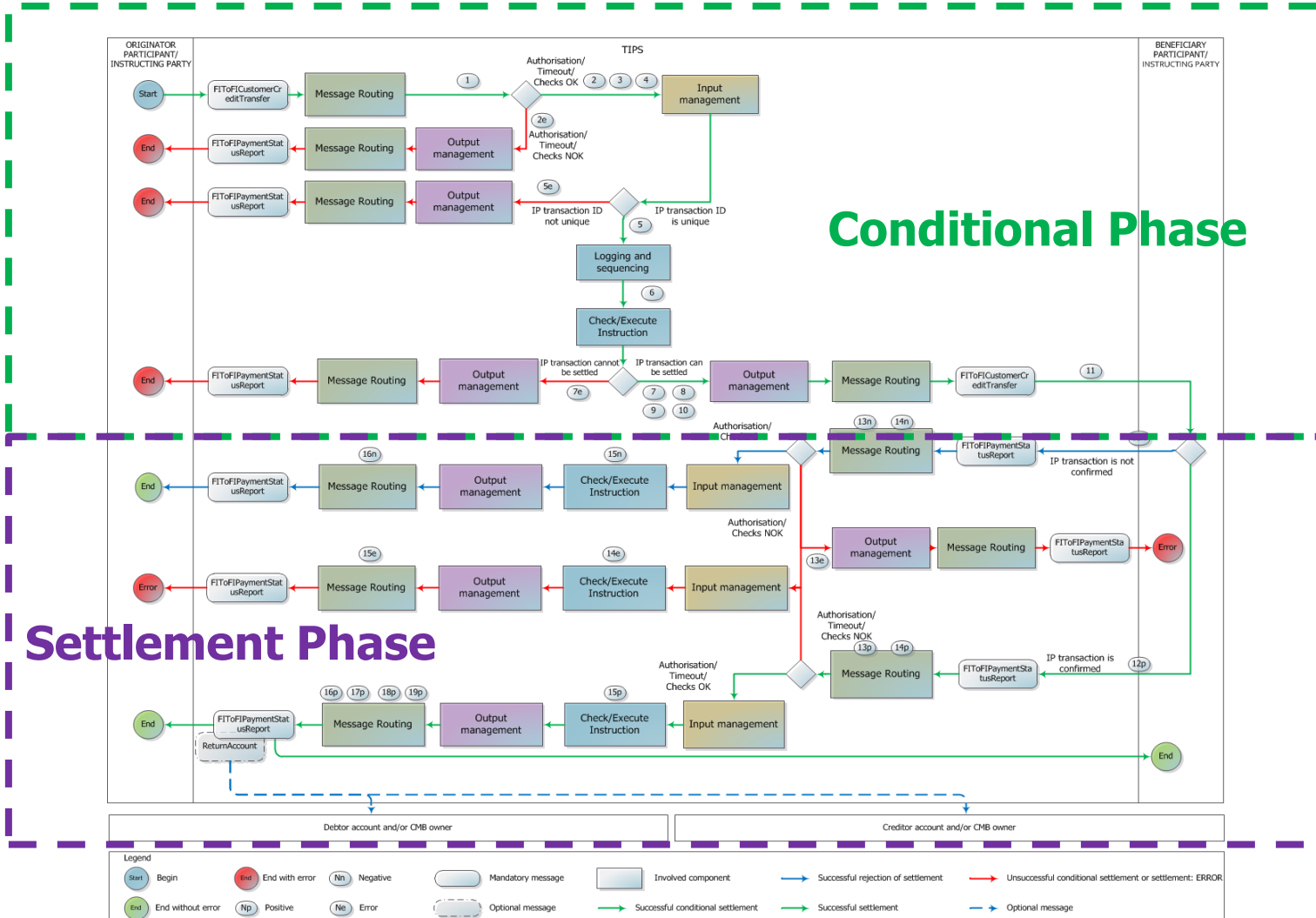
Messages

2 SIP Settlement Model

3 Recall

4 Investigation

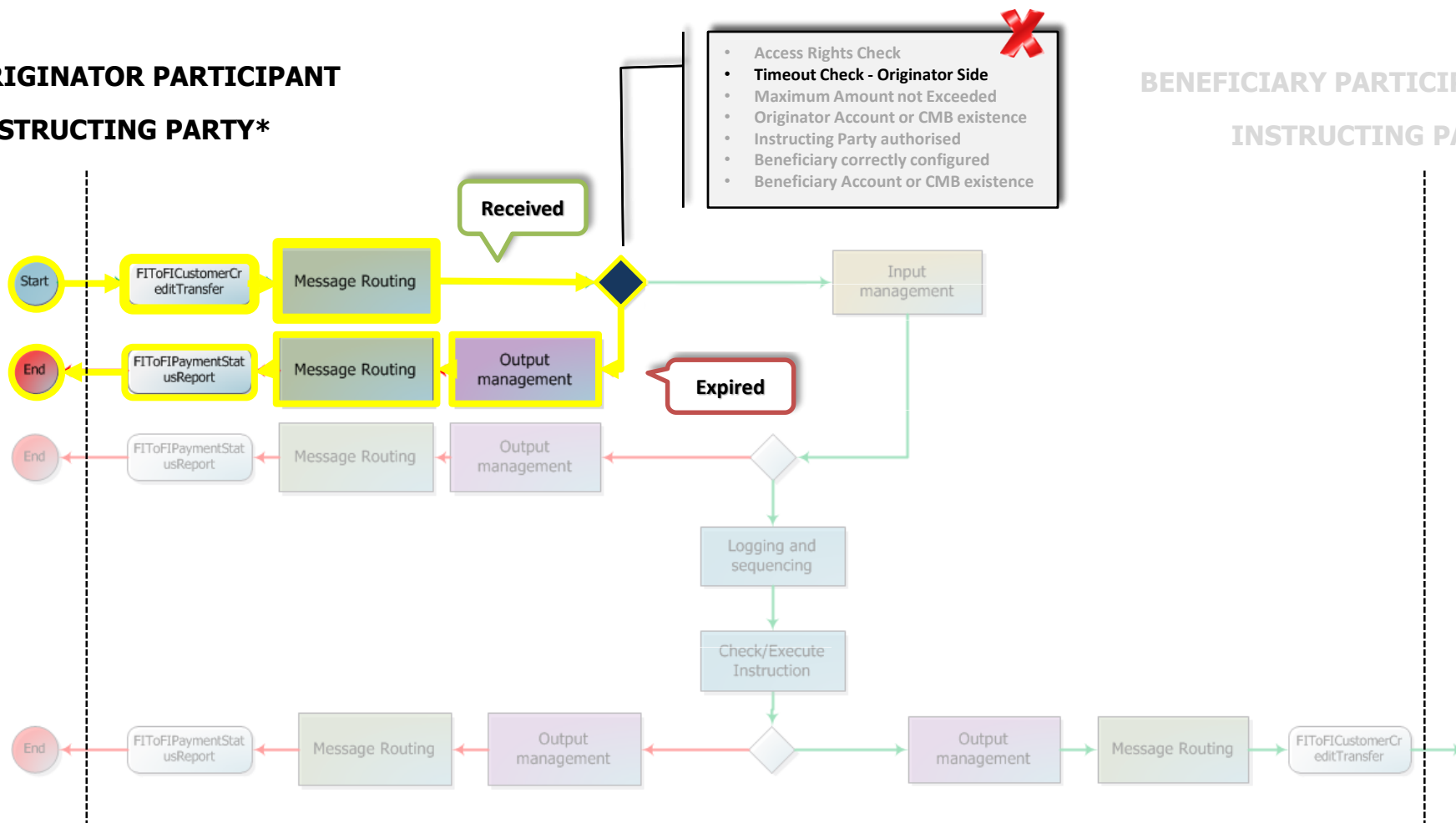
Instant Payment transaction flow - overview



Conditional Phase – Unsuccessful Scenario (1/3)

**ORIGINATOR PARTICIPANT
OR
INSTRUCTING PARTY***

**BENEFICIARY PARTICIPANT
OR
INSTRUCTING PARTY**

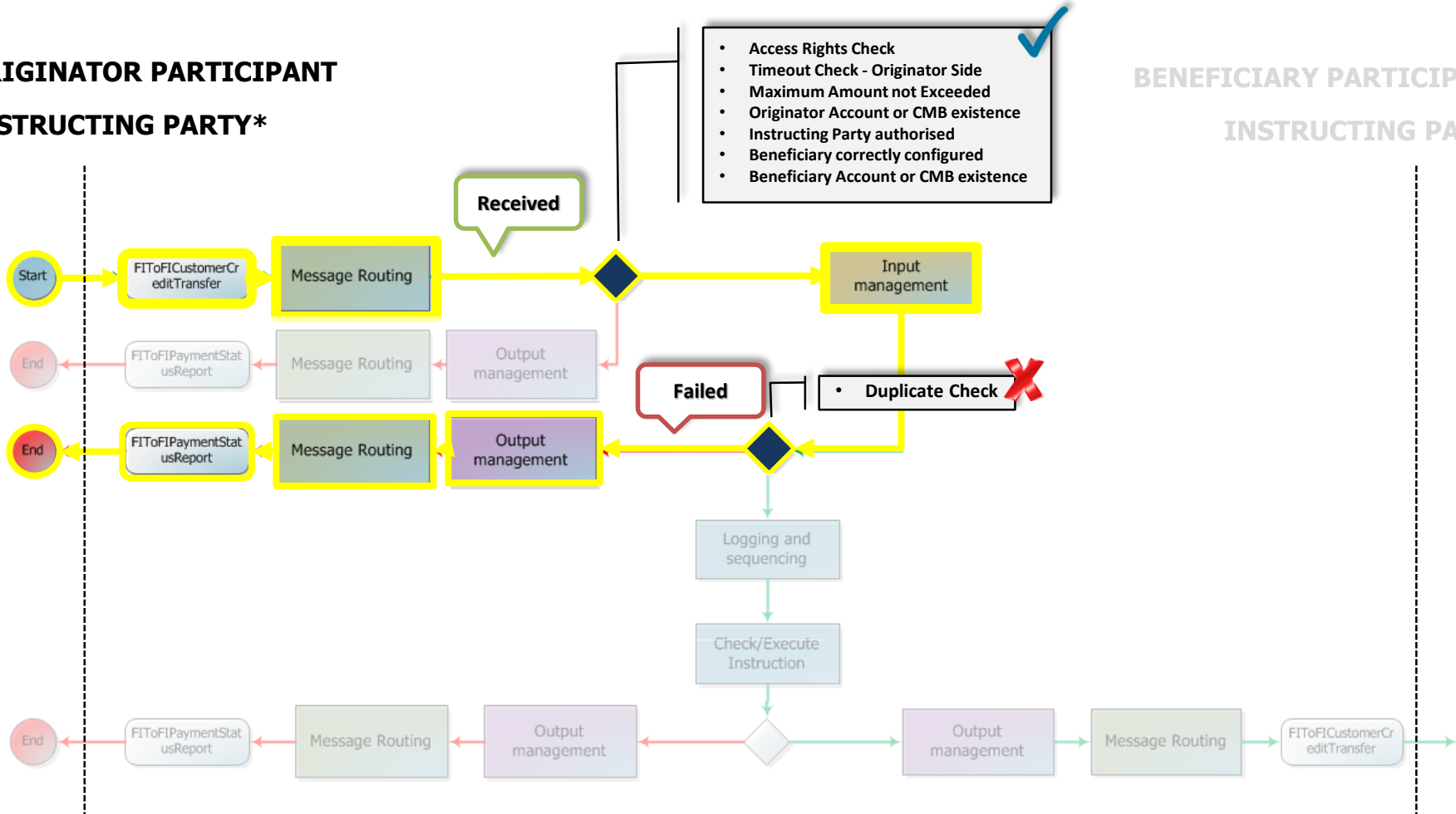


*The Ancillary System can initiate payments on behalf of its participants

Conditional Phase – Unsuccessful Scenario (2/3)

**ORIGINATOR PARTICIPANT
 OR
 INSTRUCTING PARTY***

**BENEFICIARY PARTICIPANT
 OR
 INSTRUCTING PARTY**

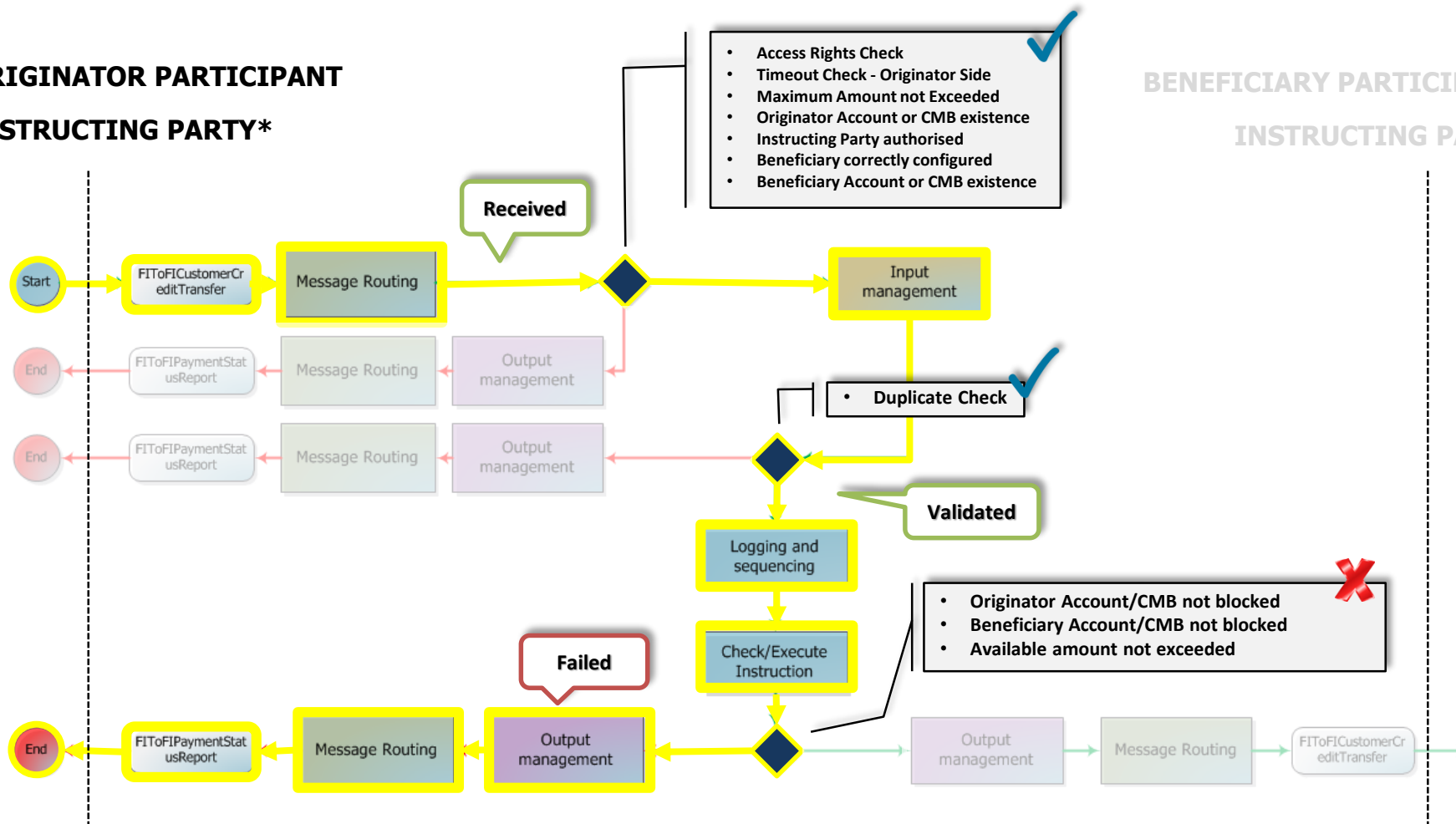


*The Ancillary System can initiate payments on behalf of its participants

Conditional Phase – Unsuccessful Scenario (3/3)

**ORIGINATOR PARTICIPANT
 OR
 INSTRUCTING PARTY***

**BENEFICIARY PARTICIPANT
 OR
 INSTRUCTING PARTY**

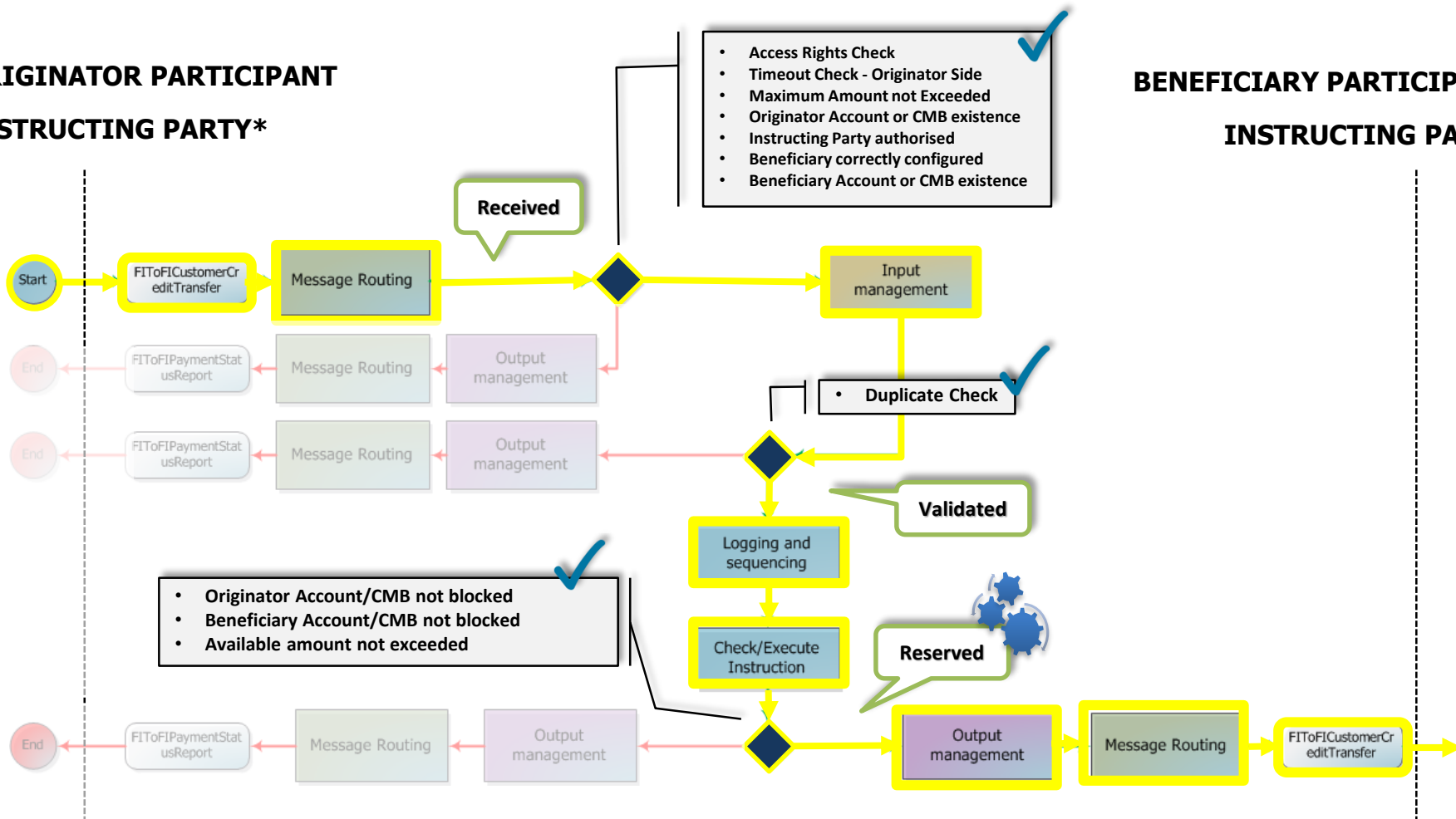


*The Ancillary System can initiate payments on behalf of its participants

Conditional Phase – Successful Scenario

**ORIGINATOR PARTICIPANT
OR
INSTRUCTING PARTY***

**BENEFICIARY PARTICIPANT
OR
INSTRUCTING PARTY**

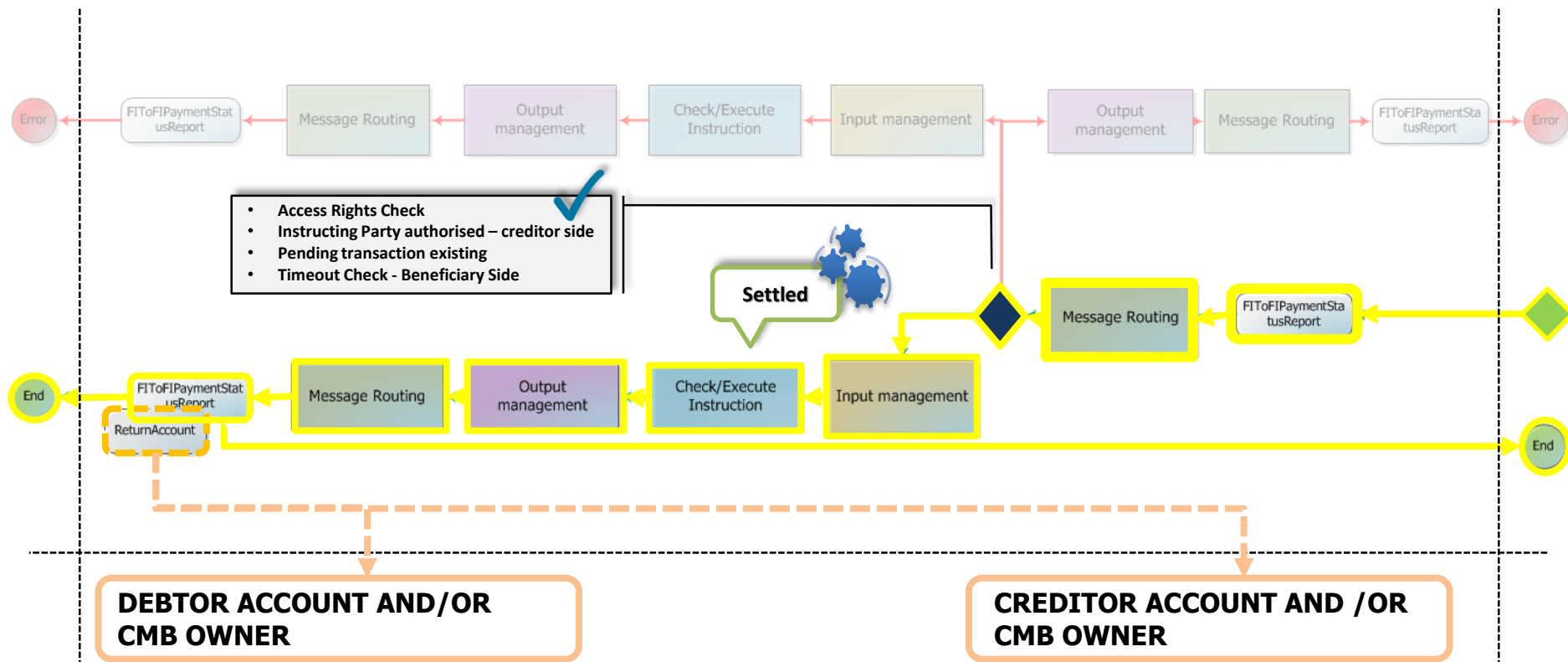


*The Ancillary System can initiate payments on behalf of its participants

Settlement Phase - Successful Scenario - Positive answer

ORIGINATOR PARTICIPANT
OR
INSTRUCTING PARTY*

BENEFICIARY PARTICIPANT
OR
INSTRUCTING PARTY*

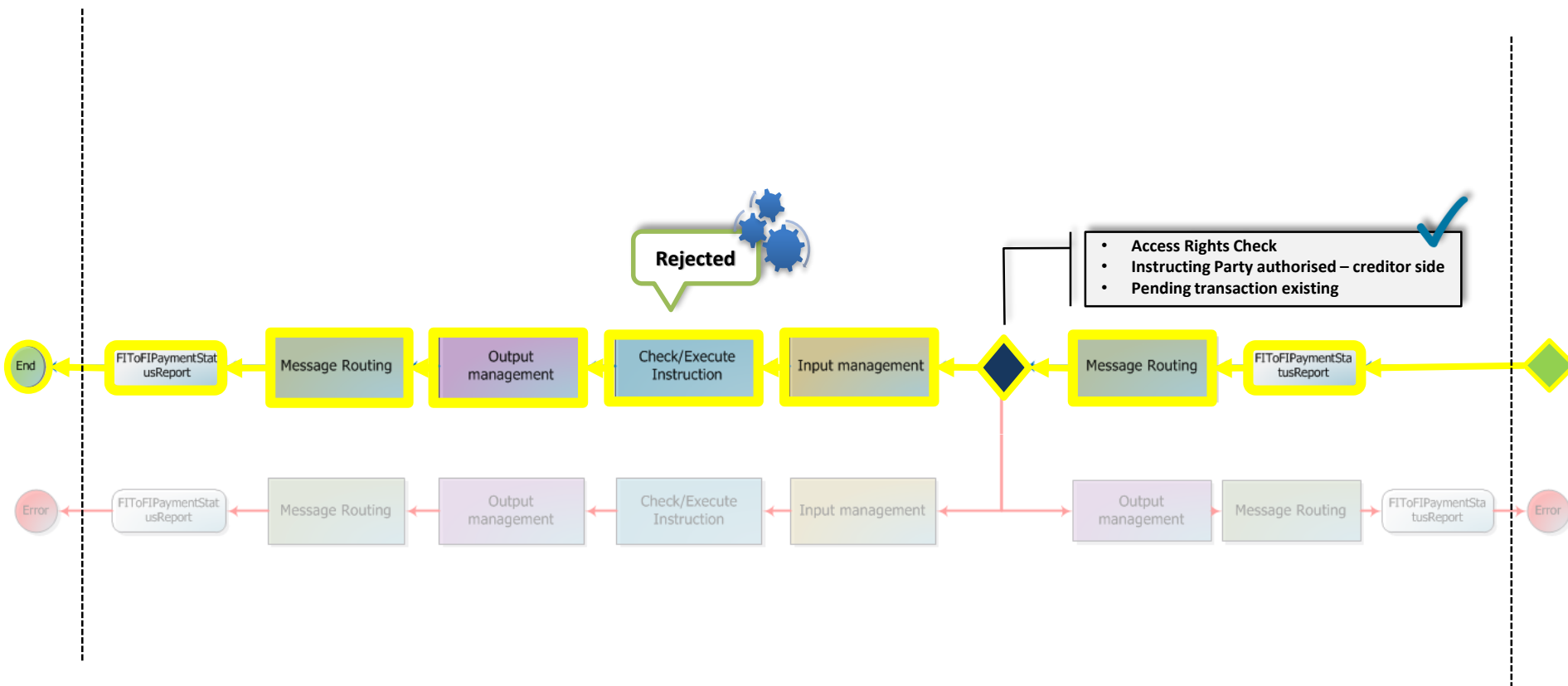


*The Ancillary System can initiate/receive payments on behalf of its participants

Settlement Phase - Successful Scenario - Negative answer

ORIGINATOR PARTICIPANT
OR
INSTRUCTING PARTY*

BENEFICIARY PARTICIPANT
OR
INSTRUCTING PARTY*

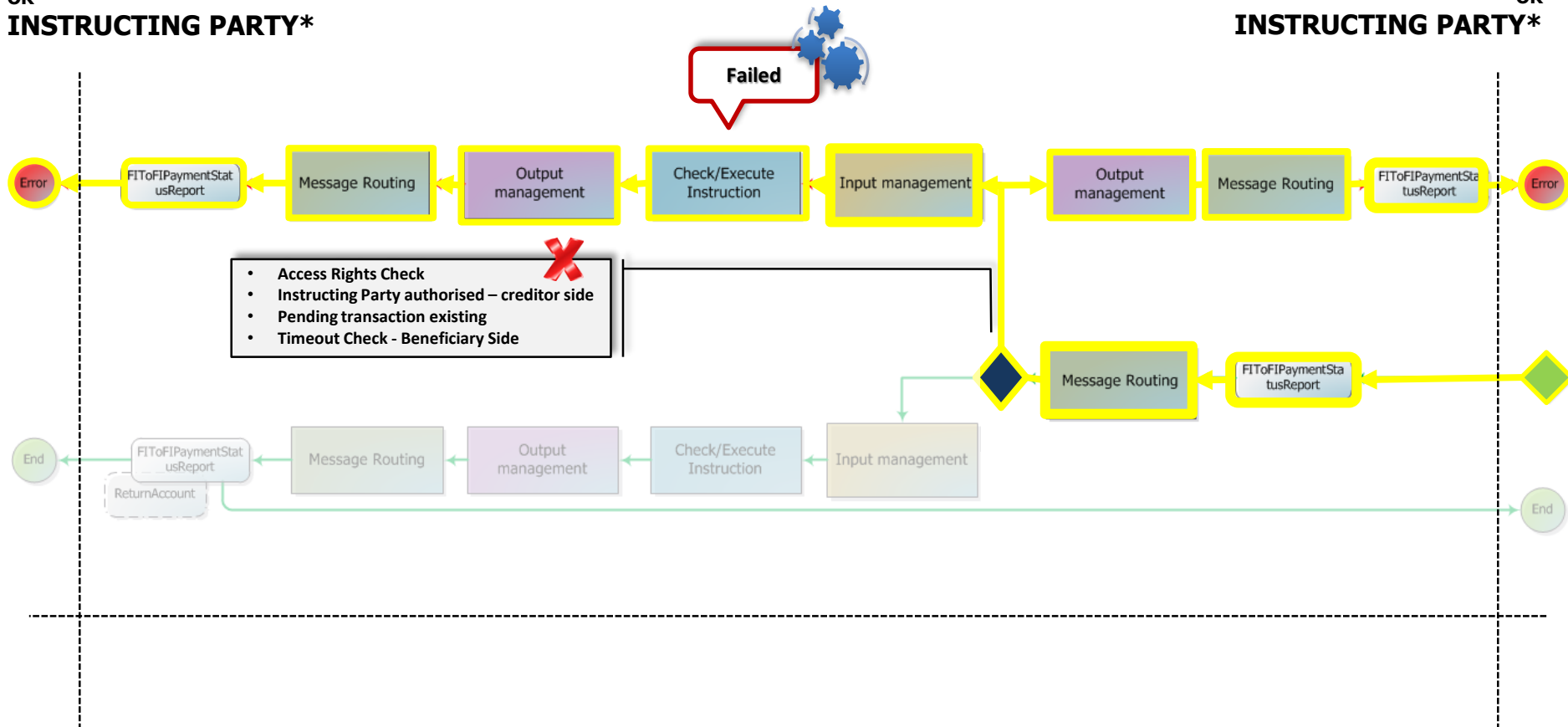


*The Ancillary System can initiate/receive payments on behalf of its participants

Settlement Phase - Unsuccessful Scenario - Positive answer

ORIGINATOR PARTICIPANT
OR
INSTRUCTING PARTY*

BENEFICIARY PARTICIPANT
OR
INSTRUCTING PARTY*

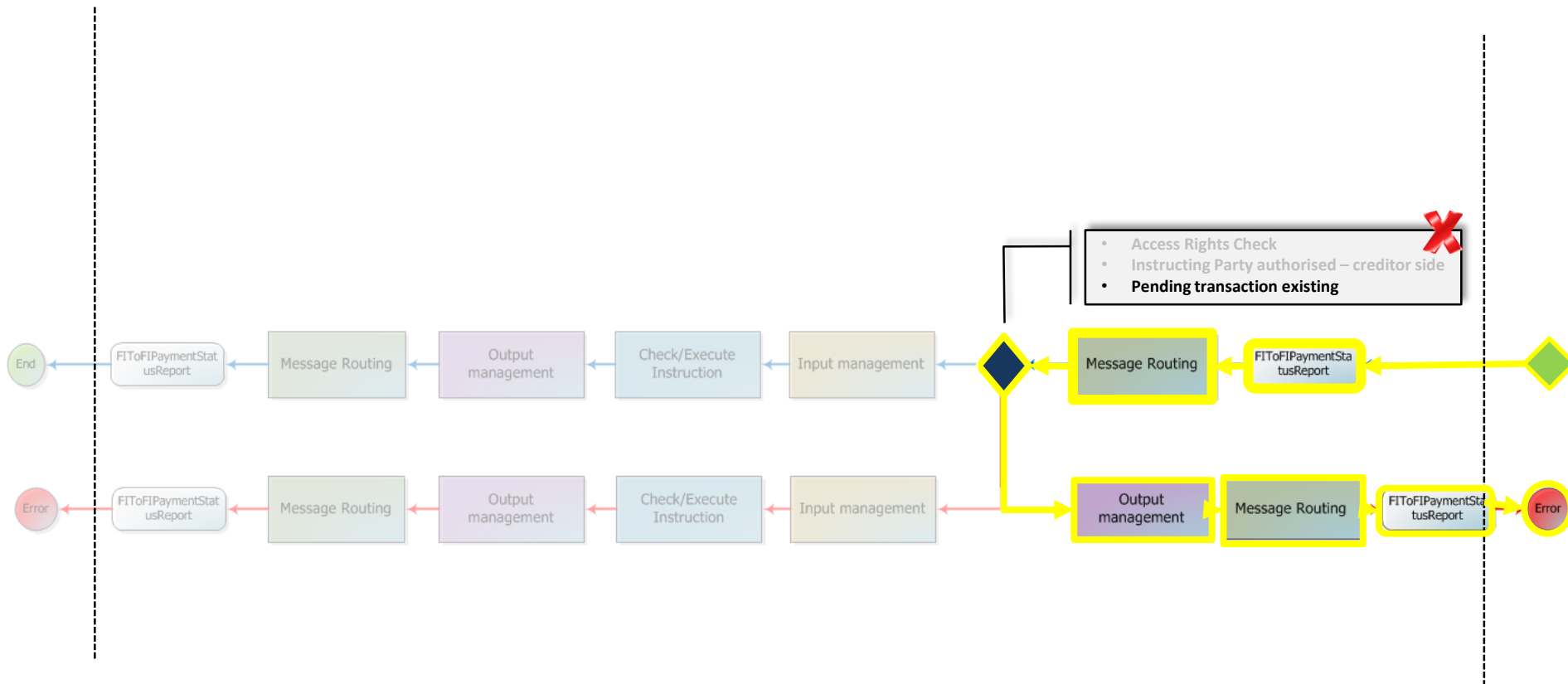


*The Ancillary System can initiate/receive payments on behalf of its participants

Settlement Phase - Unsuccessful Scenario - Negative answer (I)

ORIGINATOR PARTICIPANT
OR
INSTRUCTING PARTY

BENEFICIARY PARTICIPANT
OR
INSTRUCTING PARTY*

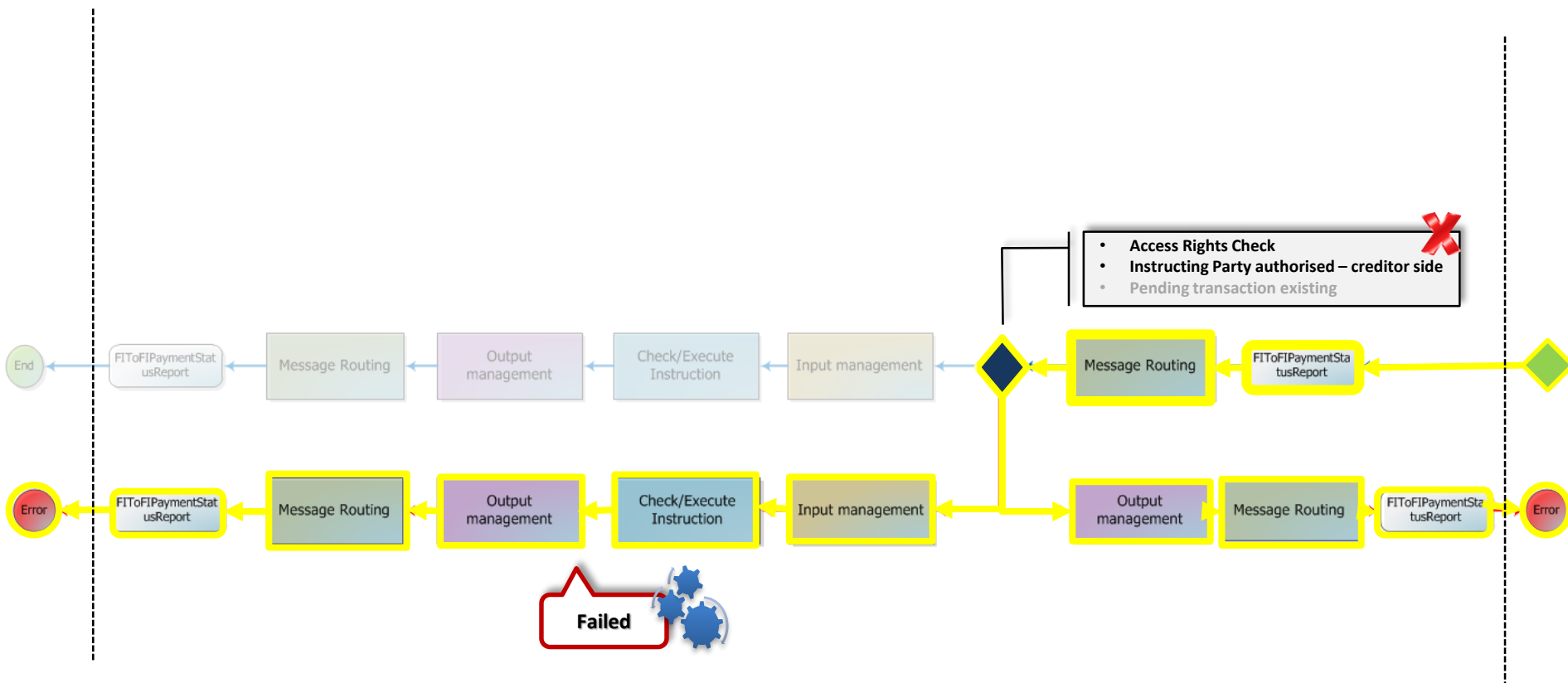


*The Ancillary System can initiate/receive payments on behalf of its participants

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

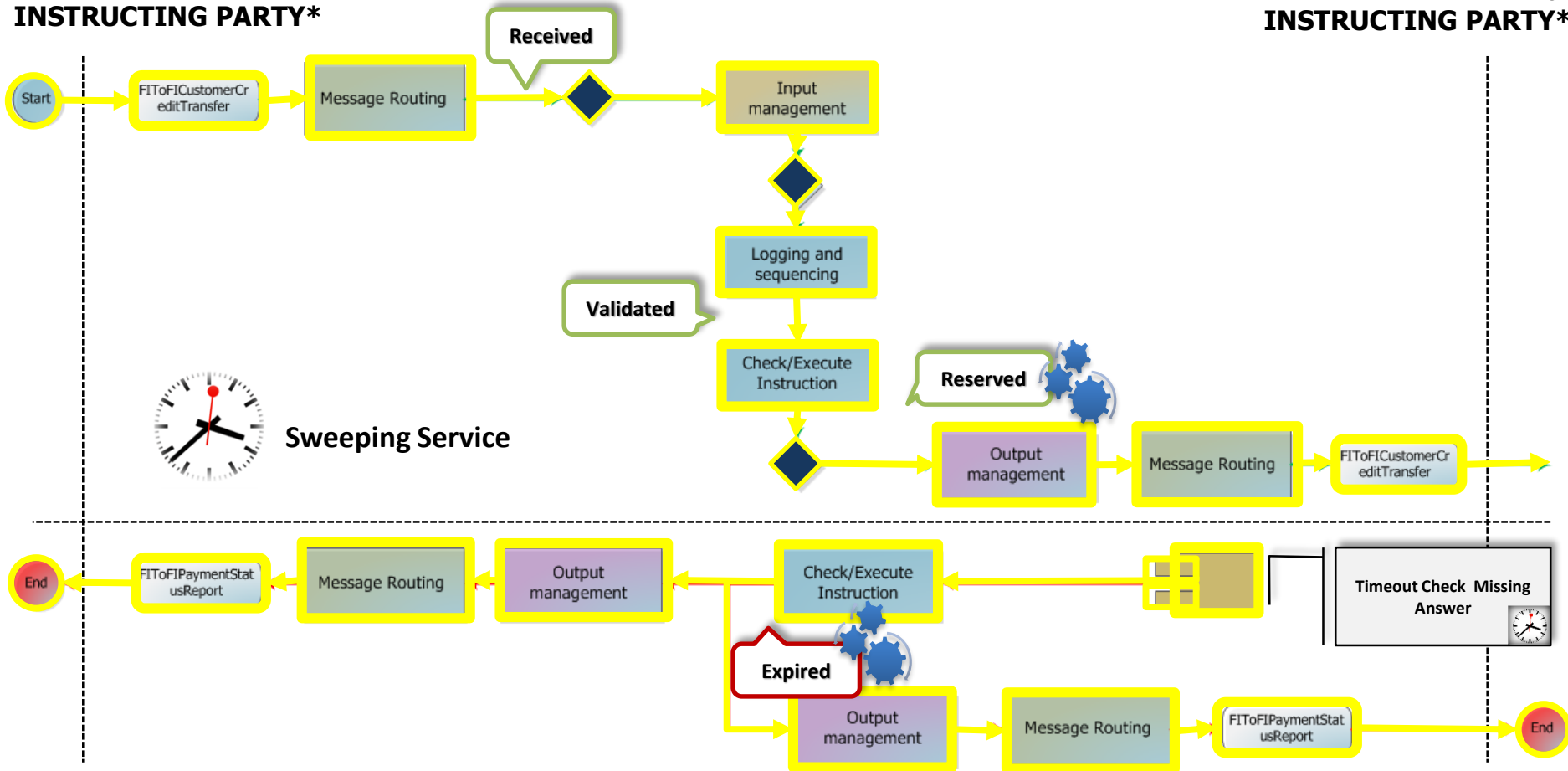
3 Recall

4 Investigation

Timeout scenario (I) : Sweeper activation

**ORIGINATOR PARTICIPANT
OR
INSTRUCTING PARTY***

**BENEFICIARY PARTICIPANT
OR
INSTRUCTING PARTY***

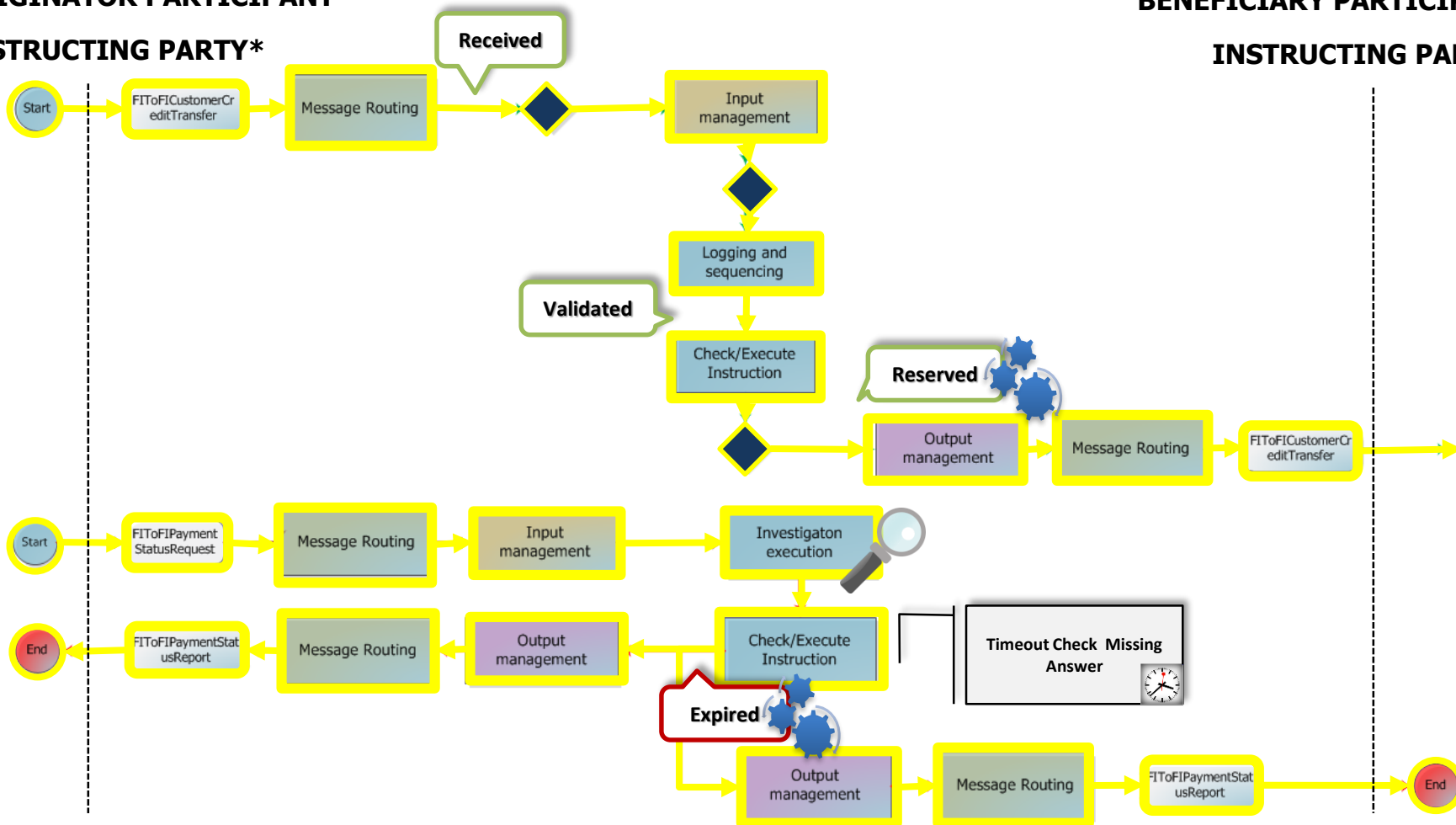


*The Ancillary System can initiate/receive payments on behalf of its participants

Timeout scenario (II) : Trigger through an Investigation

ORIGINATOR PARTICIPANT OR INSTRUCTING PARTY*

BENEFICIARY PARTICIPANT OR INSTRUCTING PARTY*

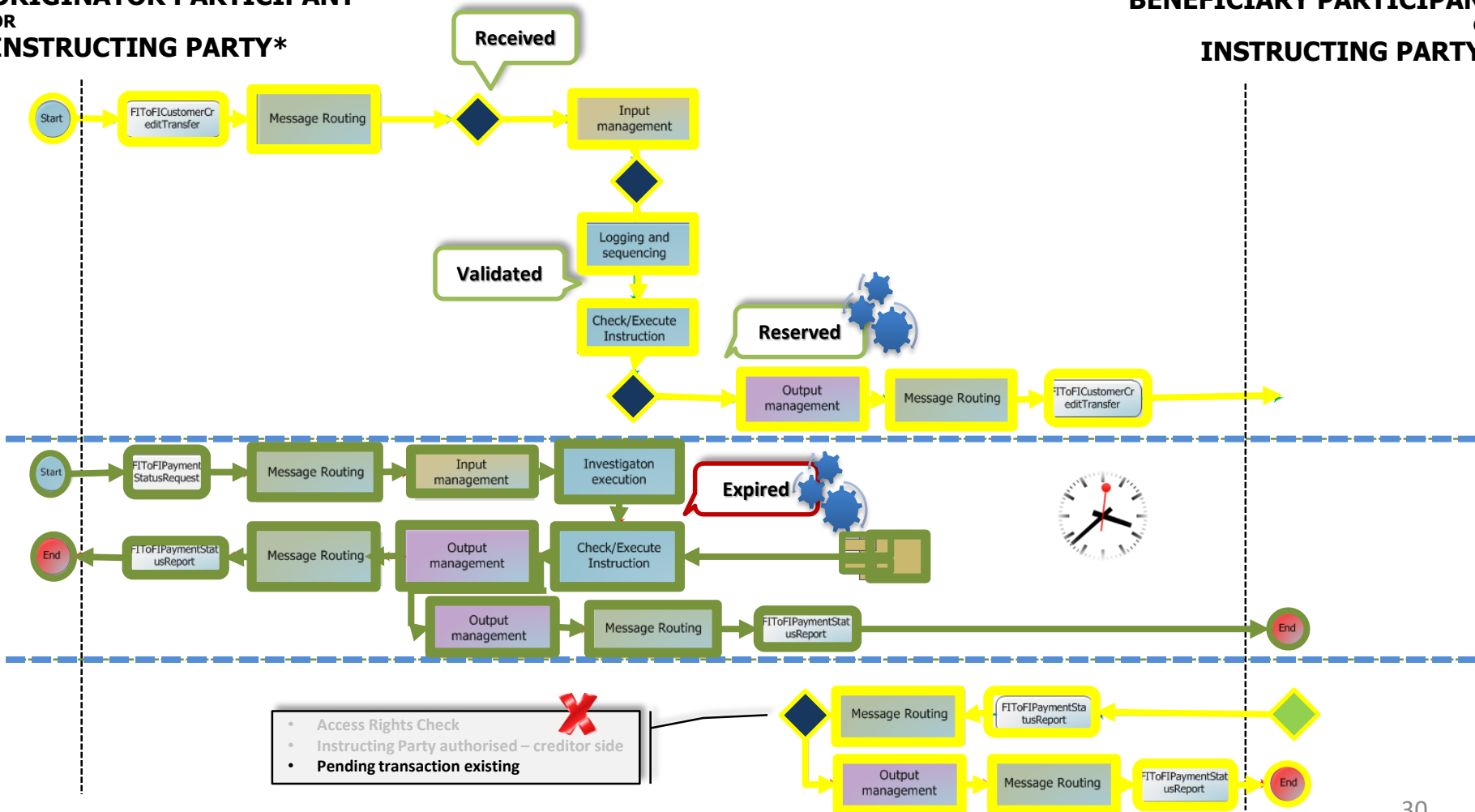


*The Ancillary System can initiate/receive payments on behalf of its participants

Timeout scenario (III) : Delayed Beneficiary-side answer

ORIGINATOR PARTICIPANT OR INSTRUCTING PARTY*

BENEFICIARY PARTICIPANT OR INSTRUCTING PARTY*



*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

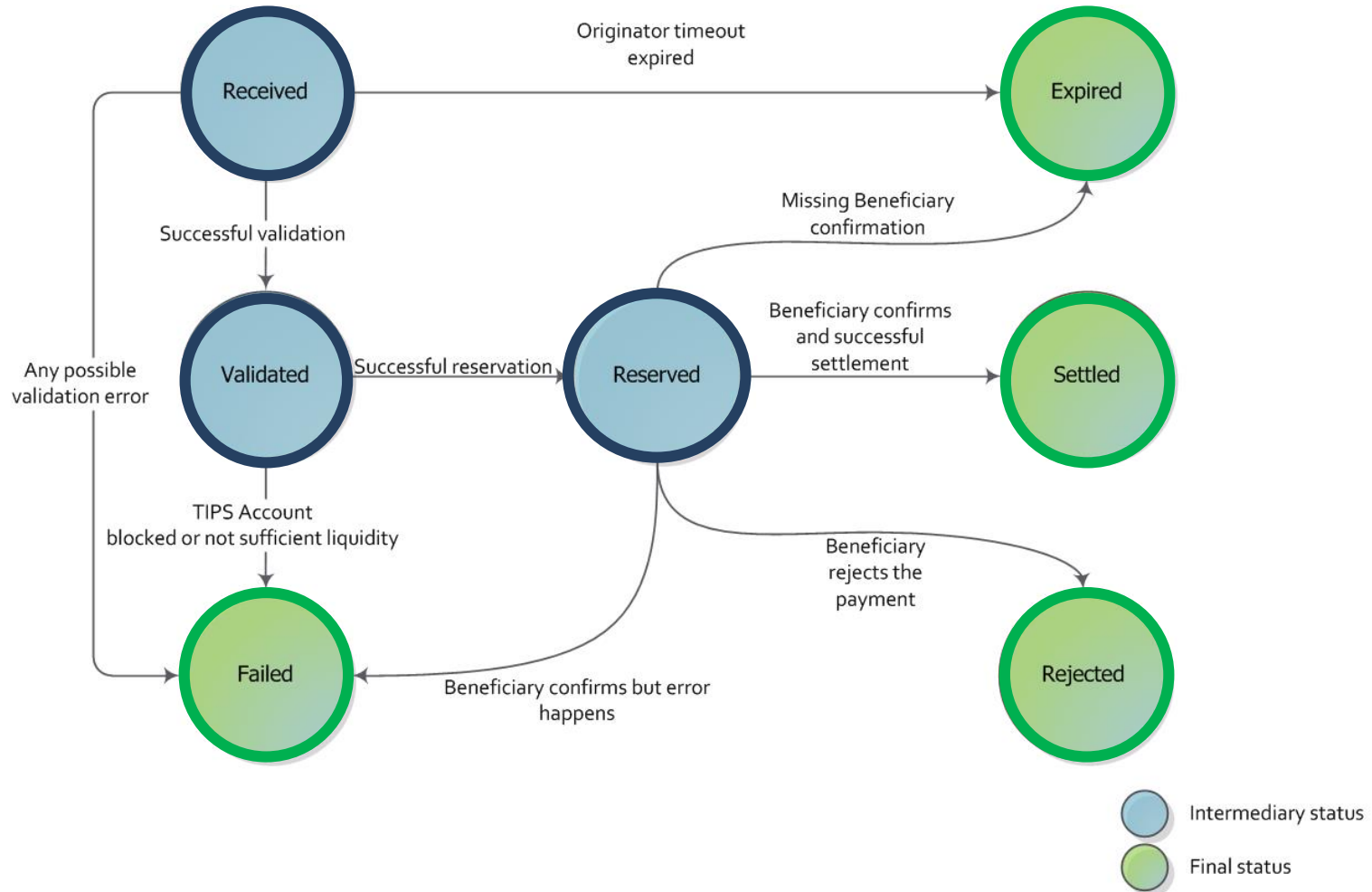
Messages

2 SIP Settlement Model

3 Recall

4 Investigation

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^{Inst} 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^{Inst} 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^{Inst}

MsgType= pacs.008.001.08.EPC for messages sent in EUR compliant with the SCT^{Inst} 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

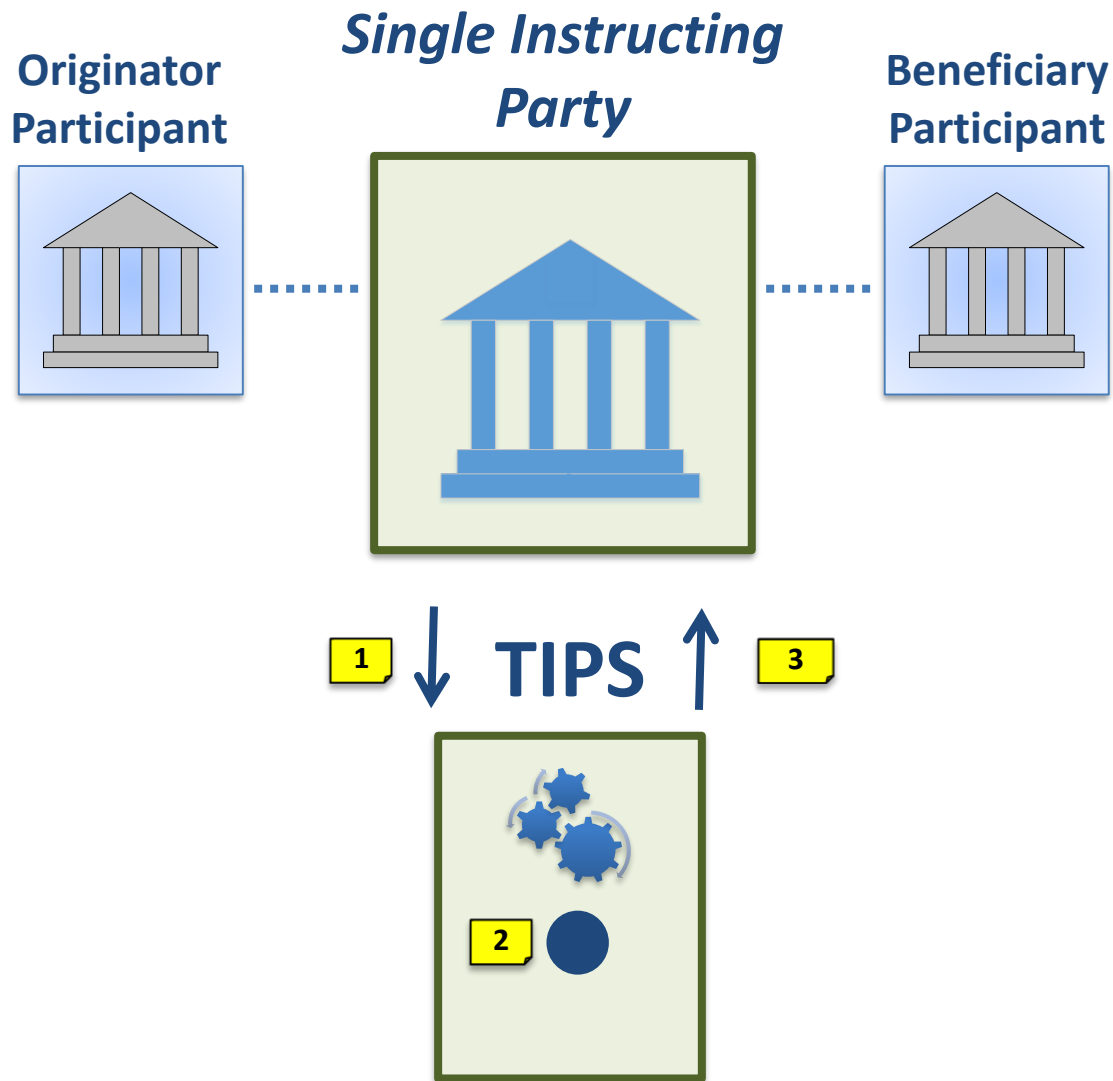
Instant Payment transaction flow

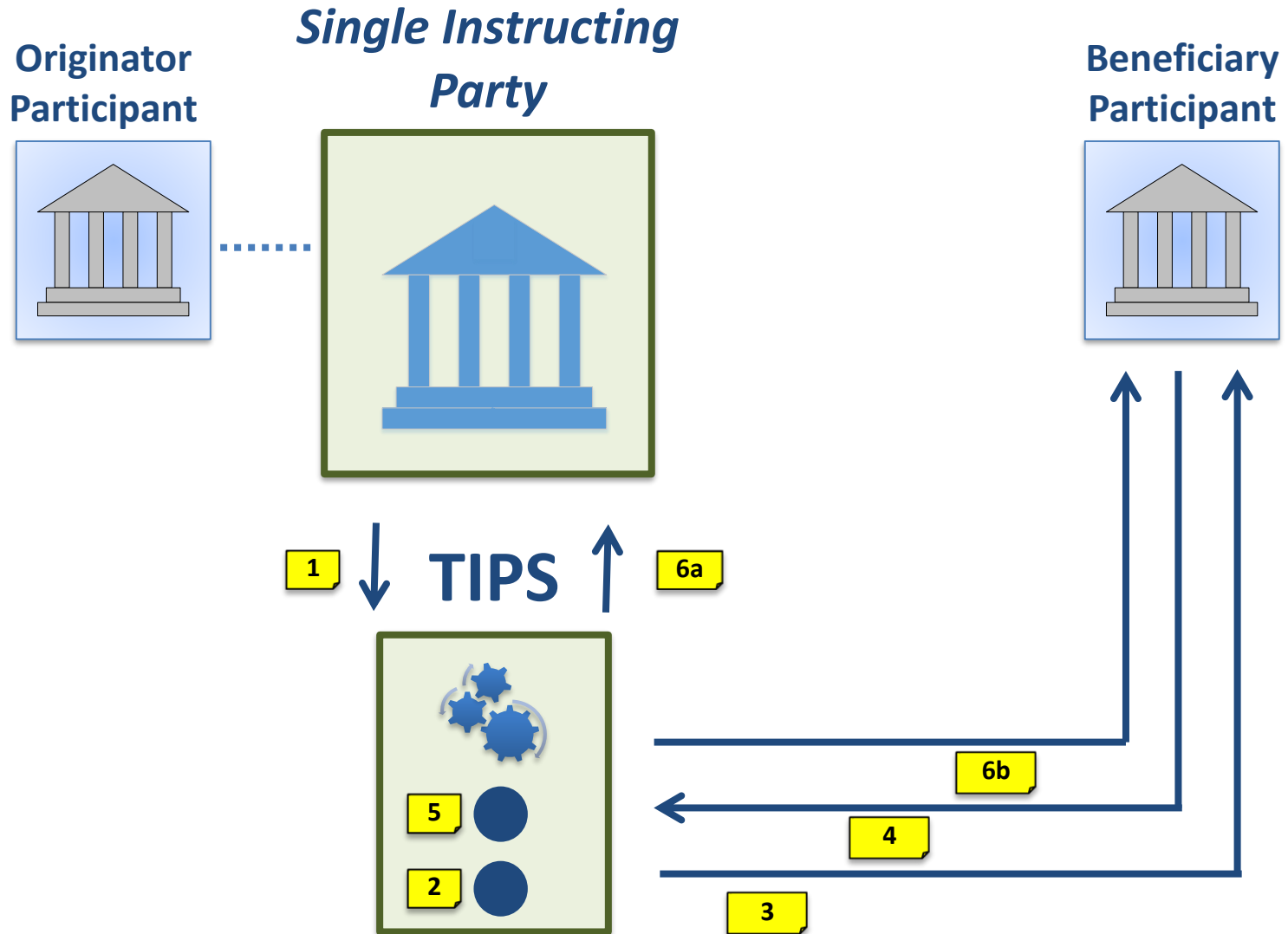
Status transition

Messages

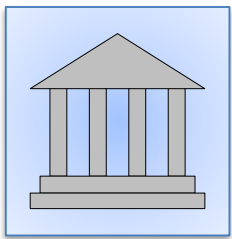
3 Recall

4 Investigation





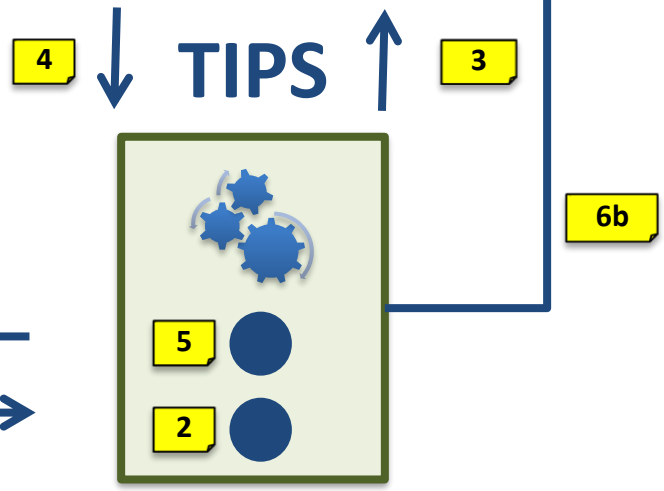
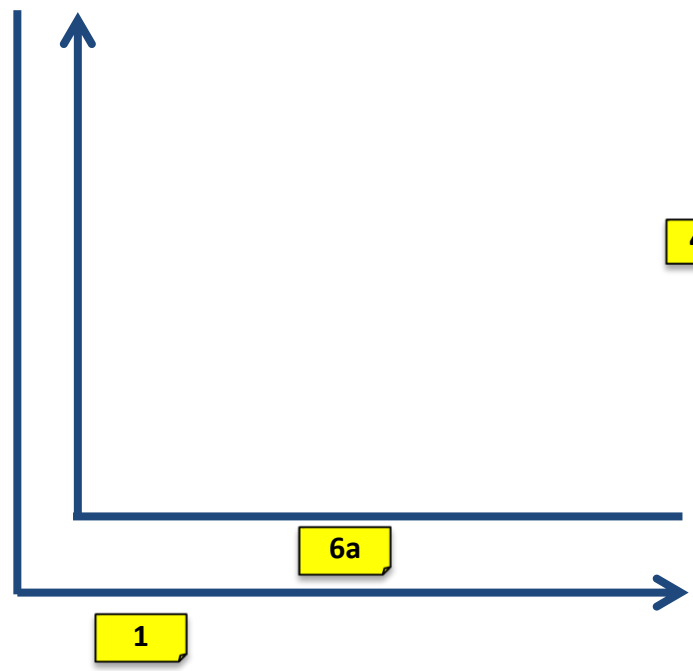
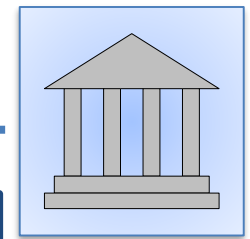
Originator Participant



Single Instructing Party



Beneficiary Participant



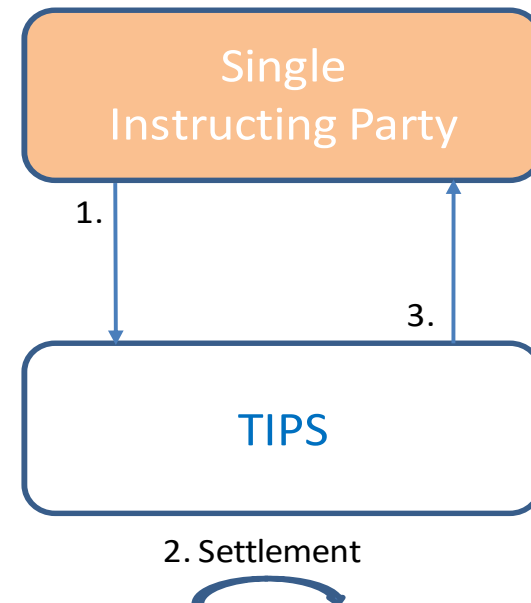
Settlement of Instant Payment transactions – The actors

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**)

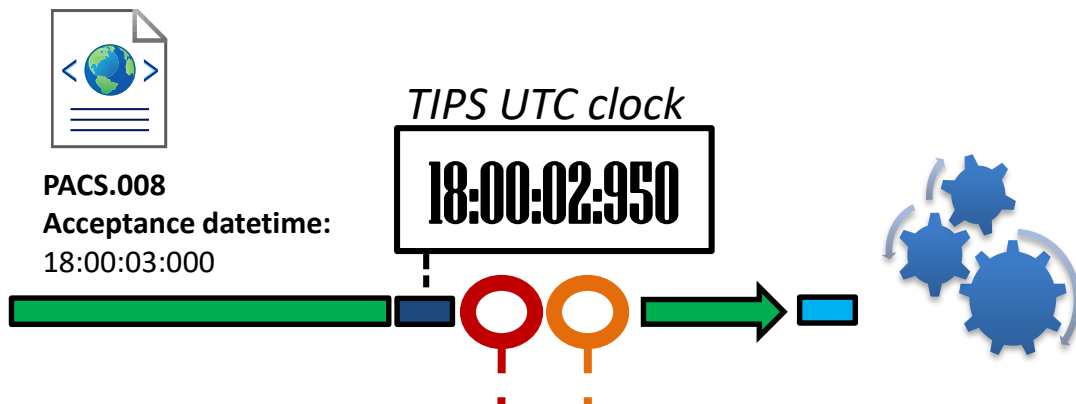
Acceptable Future Time Window

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
 $18:00:03:000 < 18:00:02:950 + 100\text{ms} (=18:00:03:050)$

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

-  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.

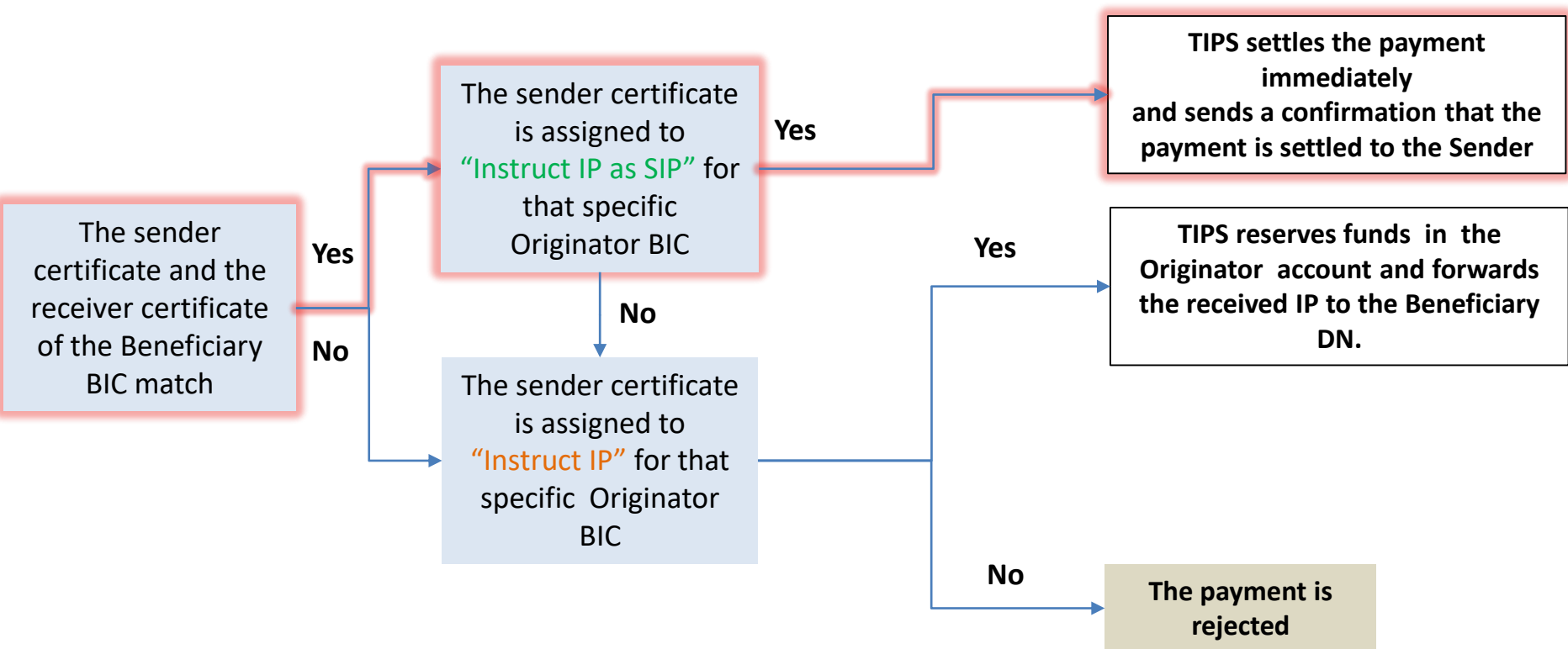
After the checks have been successfully performed, **TIPS settles the payment immediately**. The available balance of the Originator Account is decreased by the amount of the corresponding settled transaction. The same positive amount is added to the Beneficiary Account

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

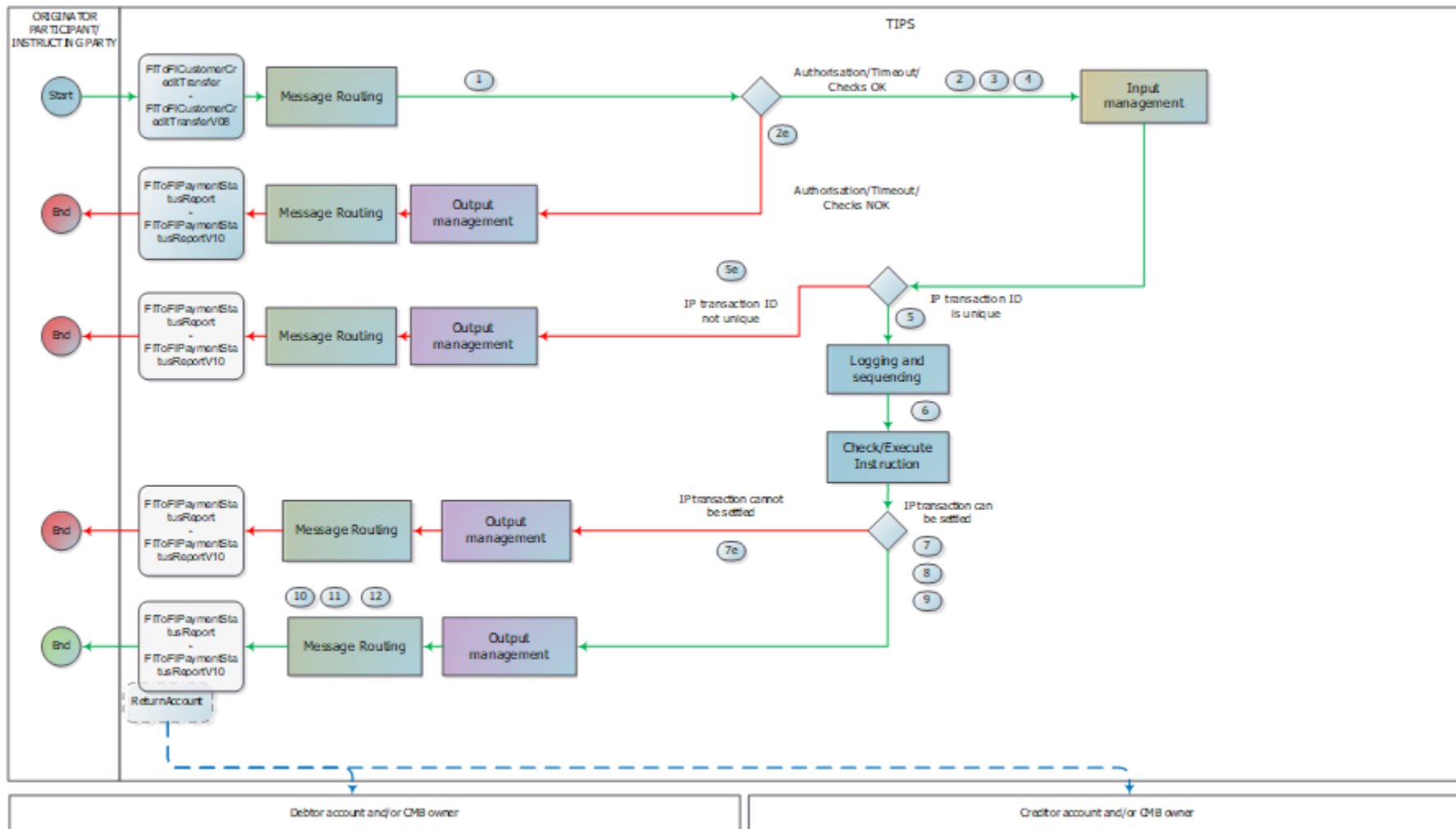
Status transition

Messages

3 Recall

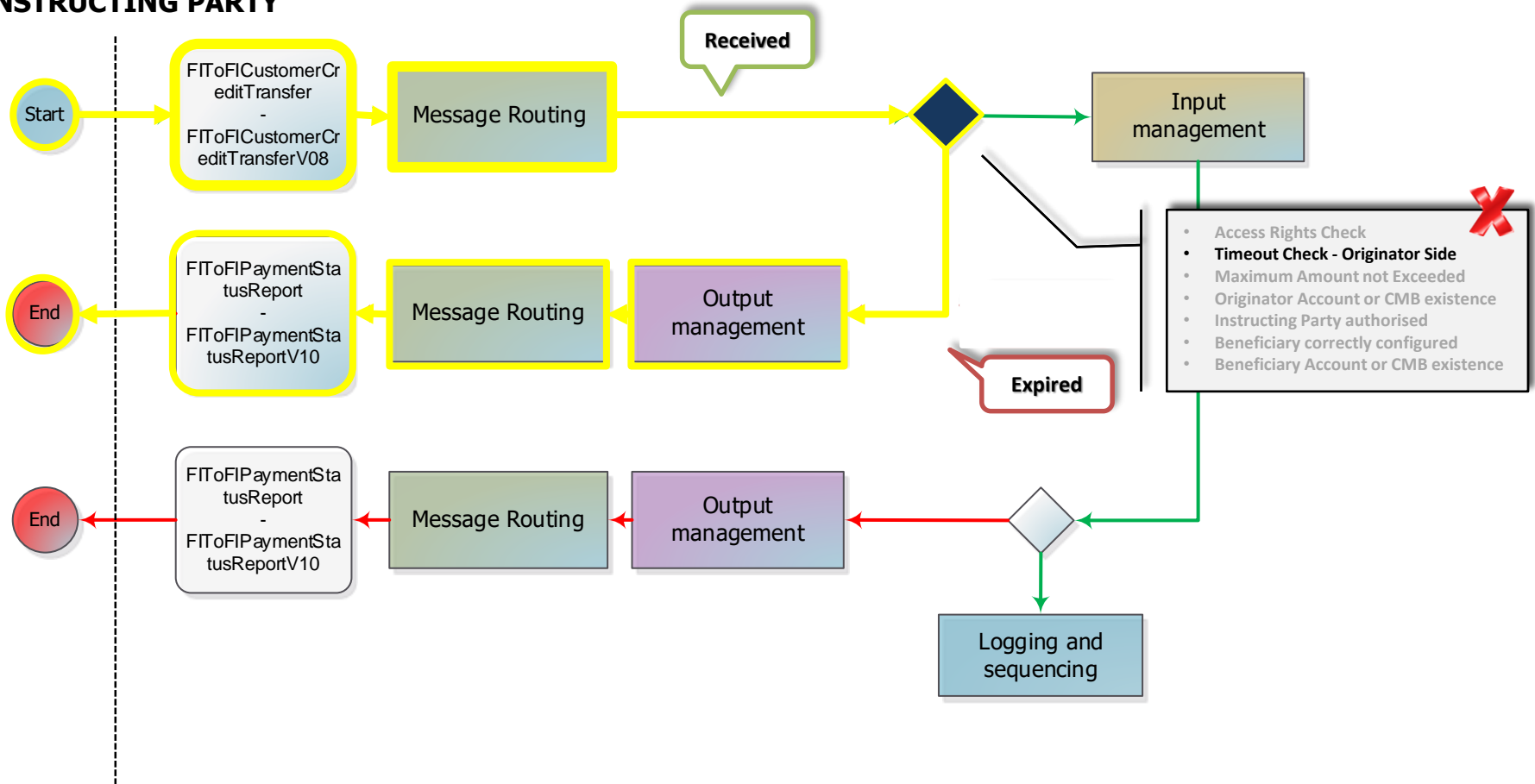
4 Investigation

Instant Payment transaction flow - overview



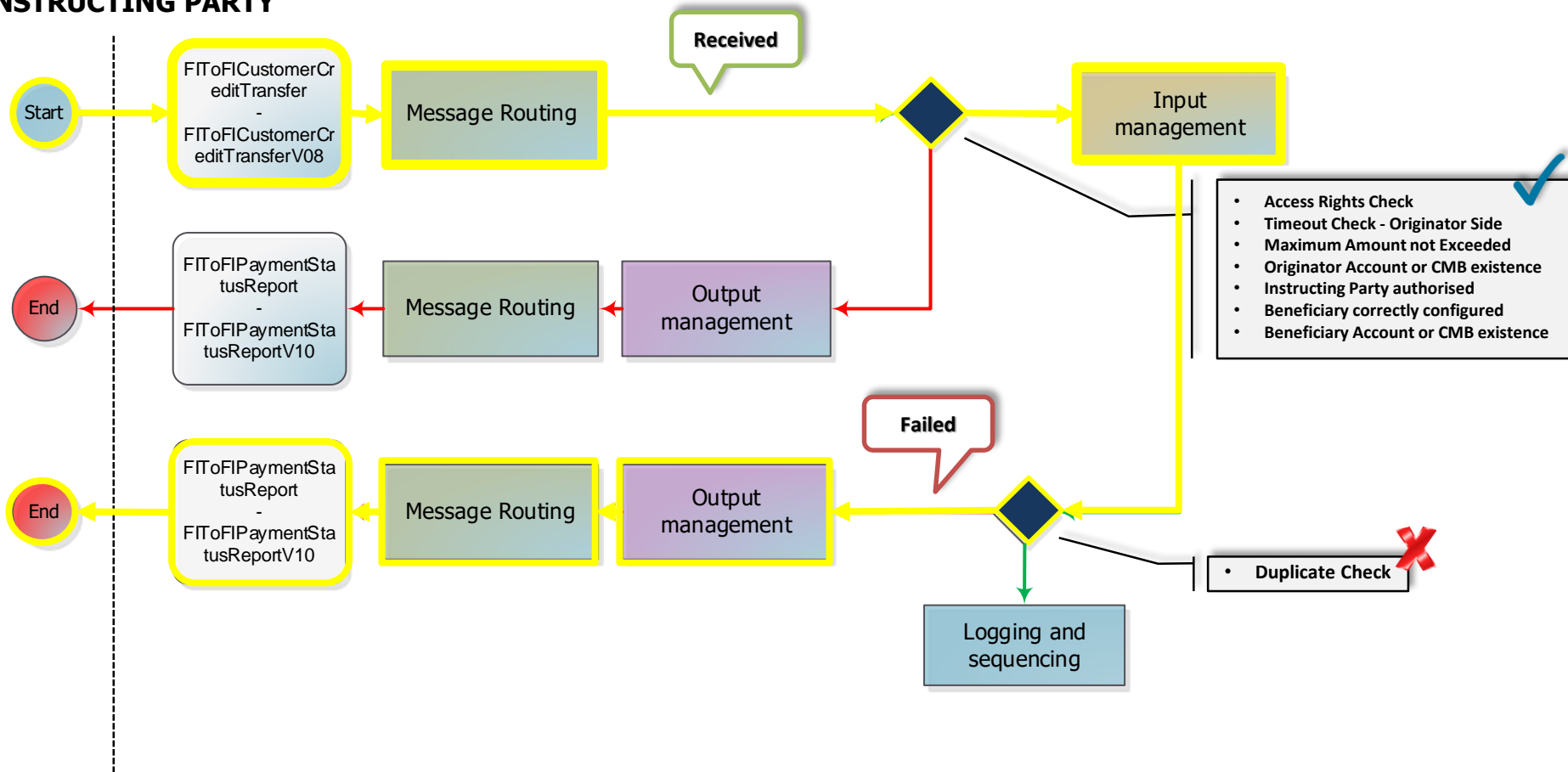
Settlement Phase - Unsuccessful Scenario (1/3)

ORIGINATOR PARTICIPANT
OR
INSTRUCTING PARTY



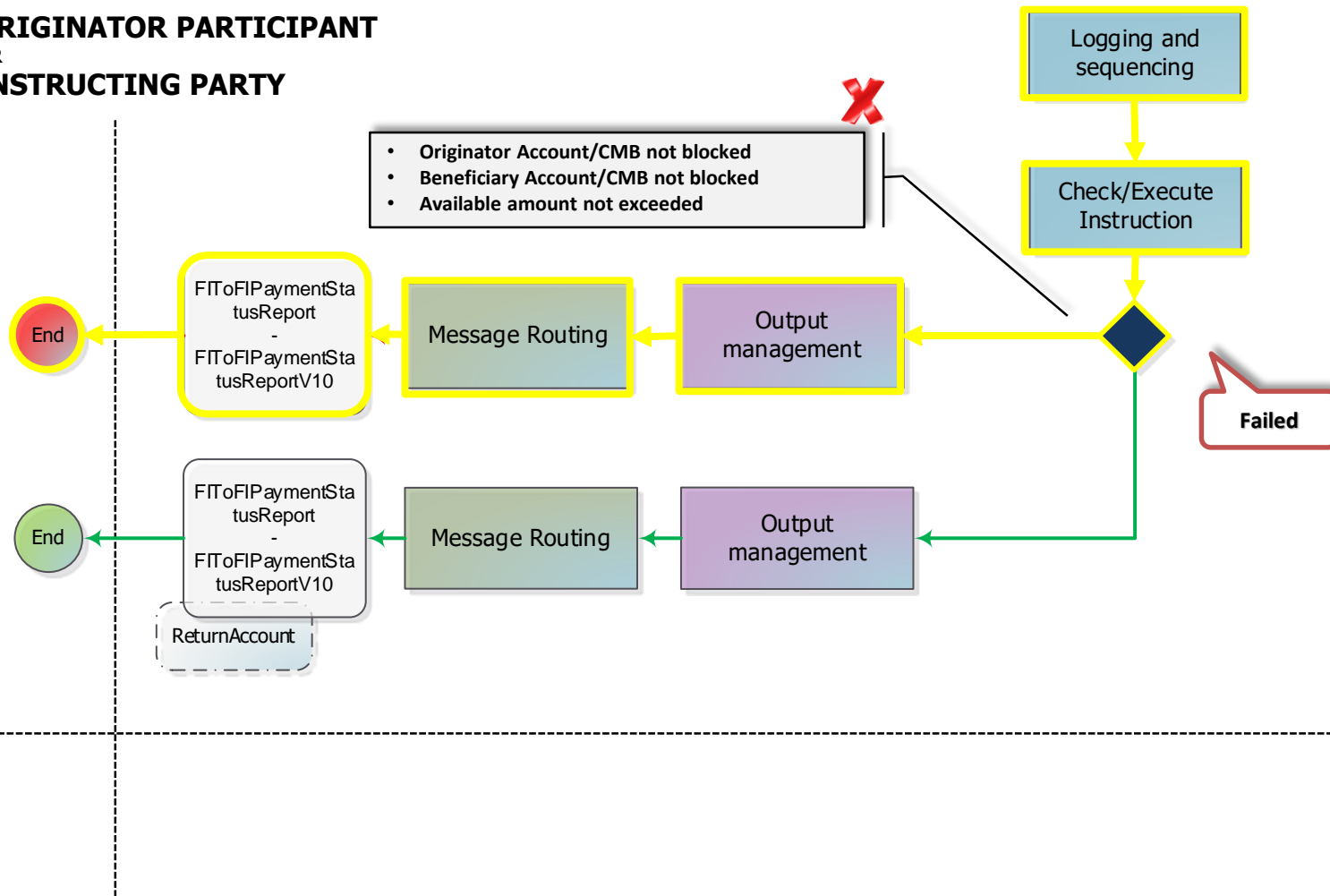
Settlement Phase – Unsuccessful Scenario (2/3)

**ORIGINATOR PARTICIPANT
OR
INSTRUCTING PARTY**



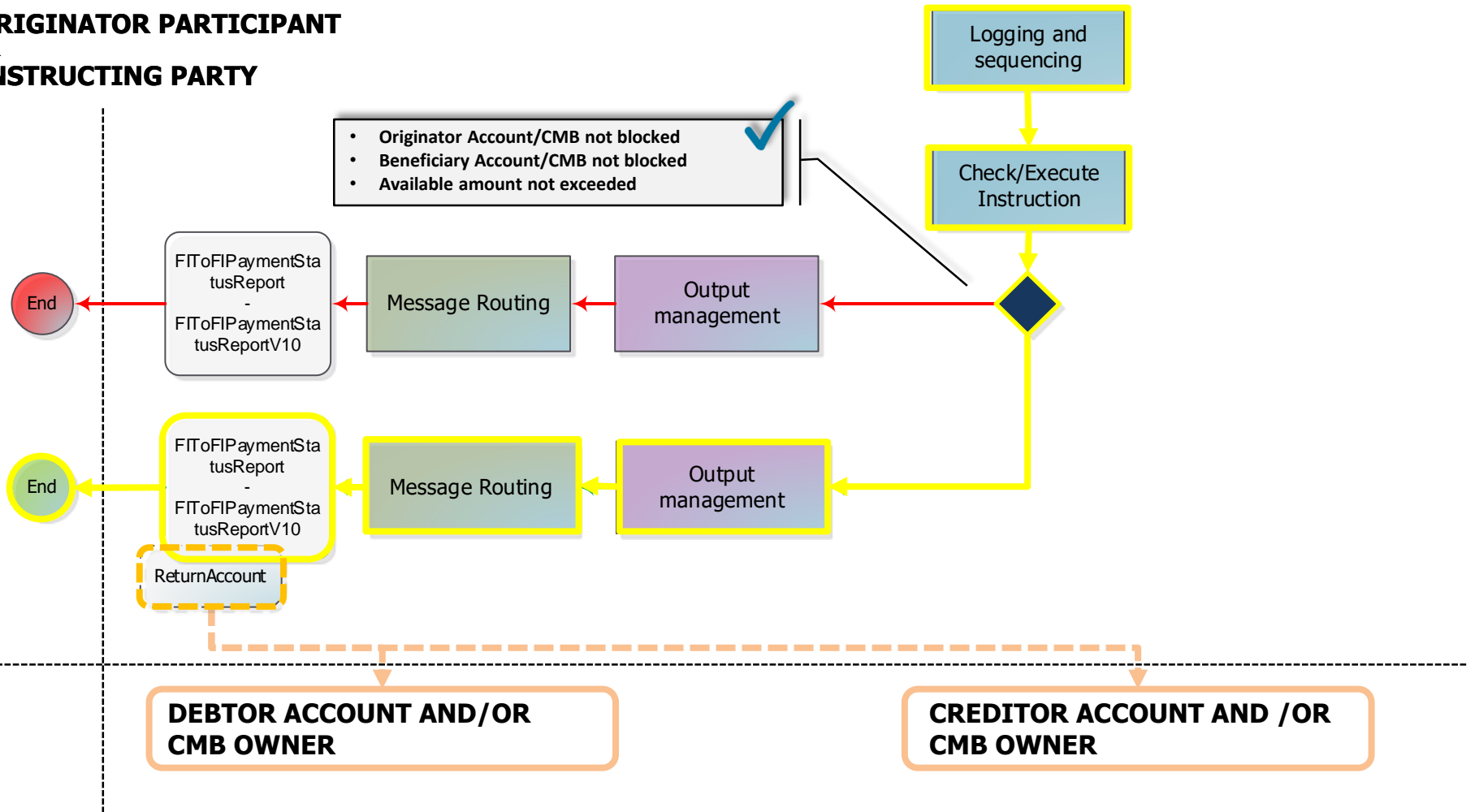
Settlement Phase – Unsuccessful Scenario (3/3)

**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

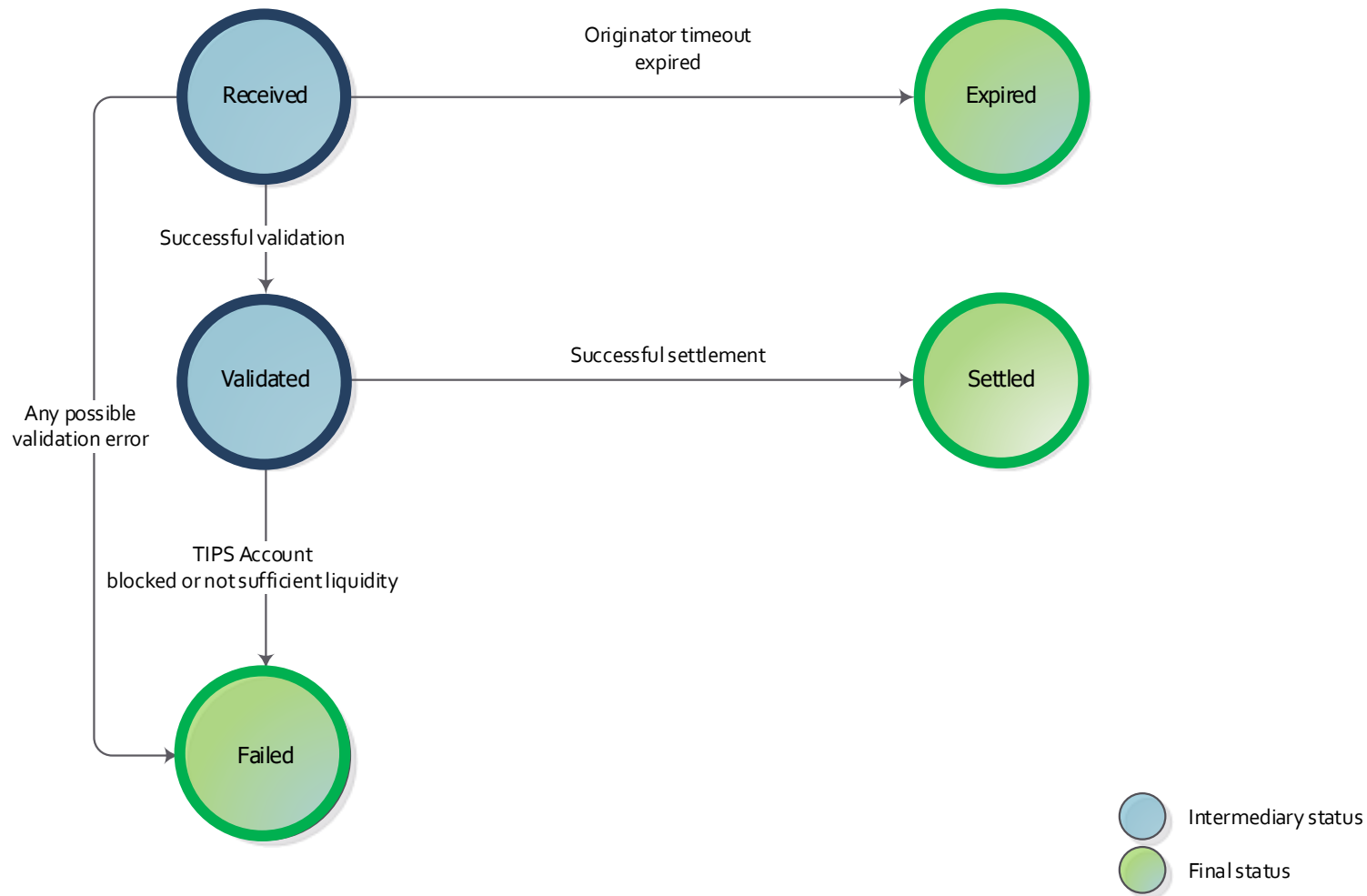
Status transition

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^{Inst} 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^{Inst} 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^{Inst}

MsgType= pacs.008.001.08.EPC for messages sent in EUR compliant with the SCT^{Inst} 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

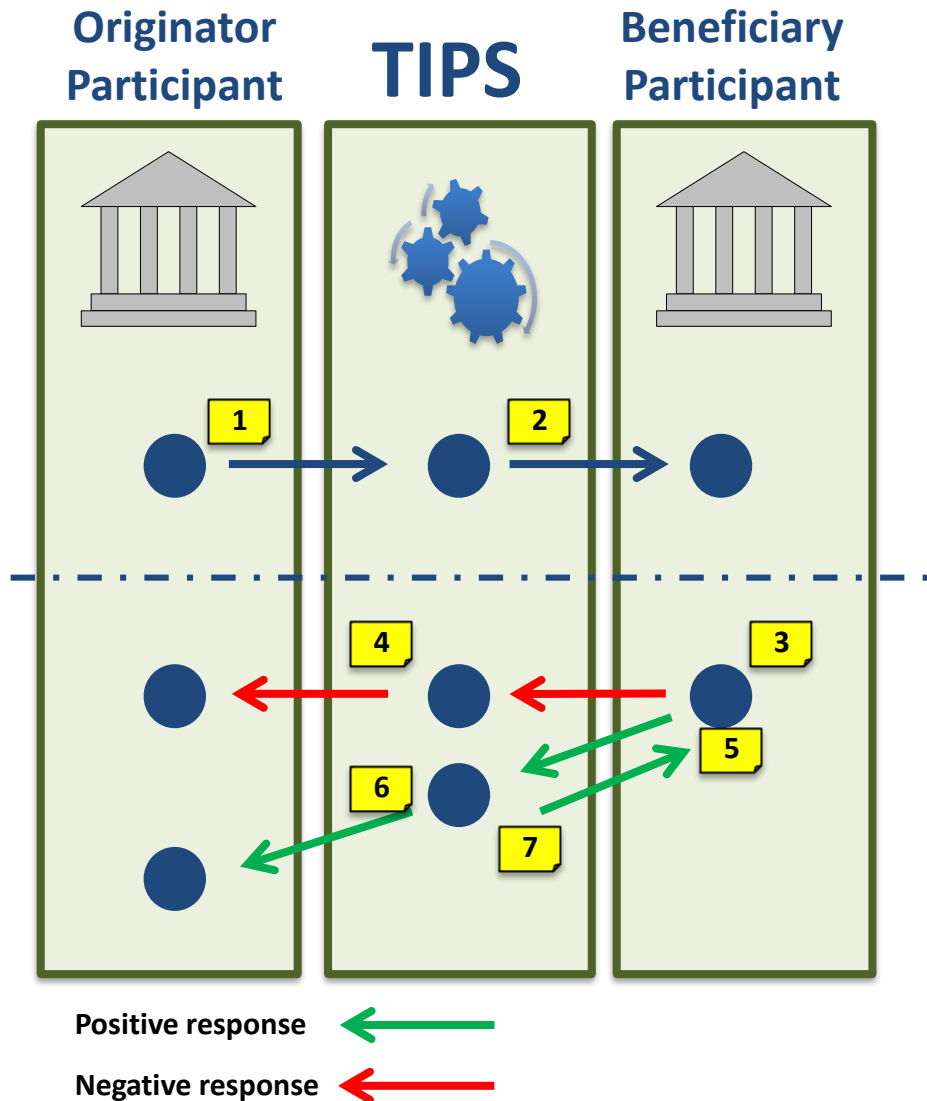
Recall flow

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

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

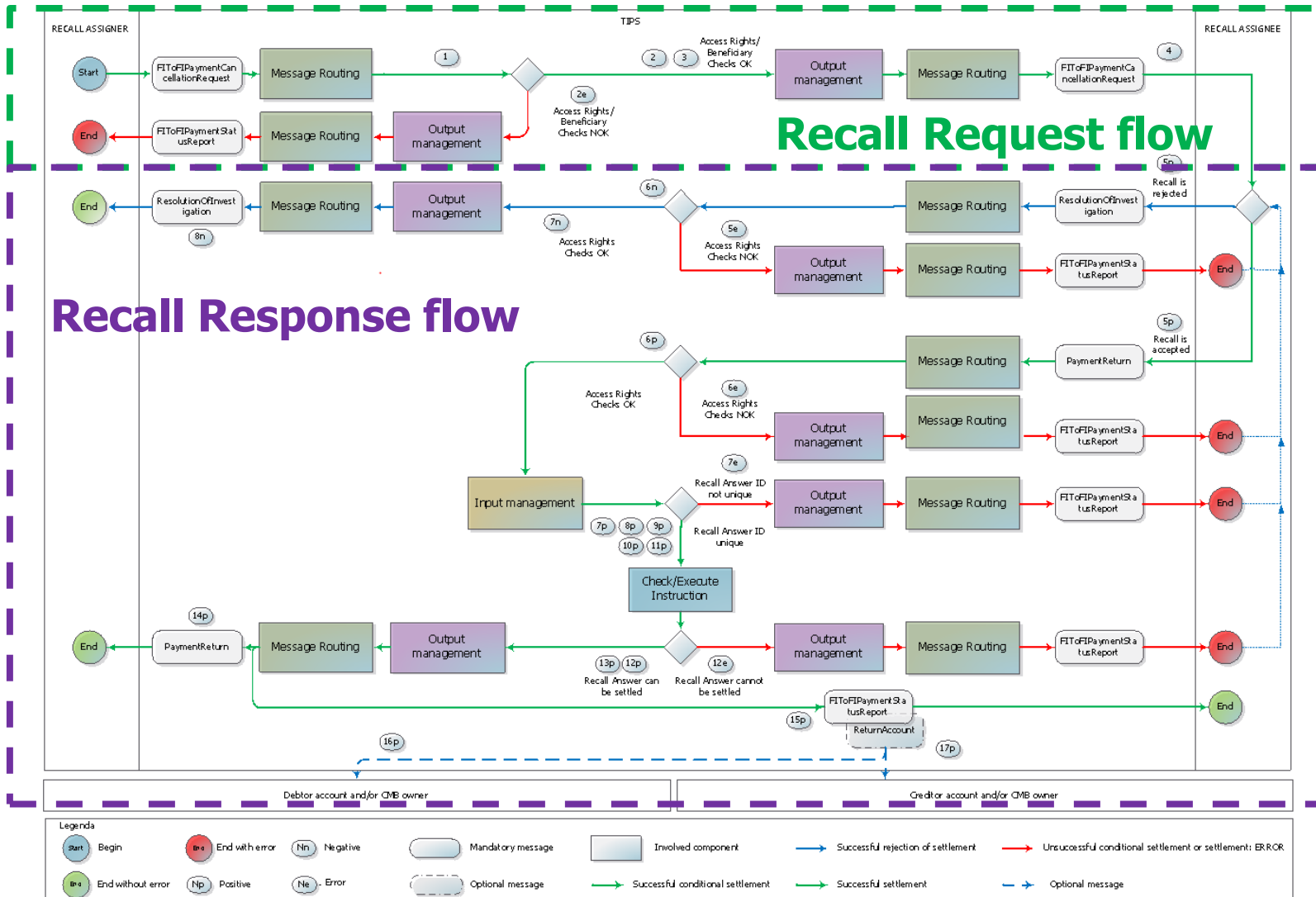
Recall flow

Status transition

Messages

4 Investigation

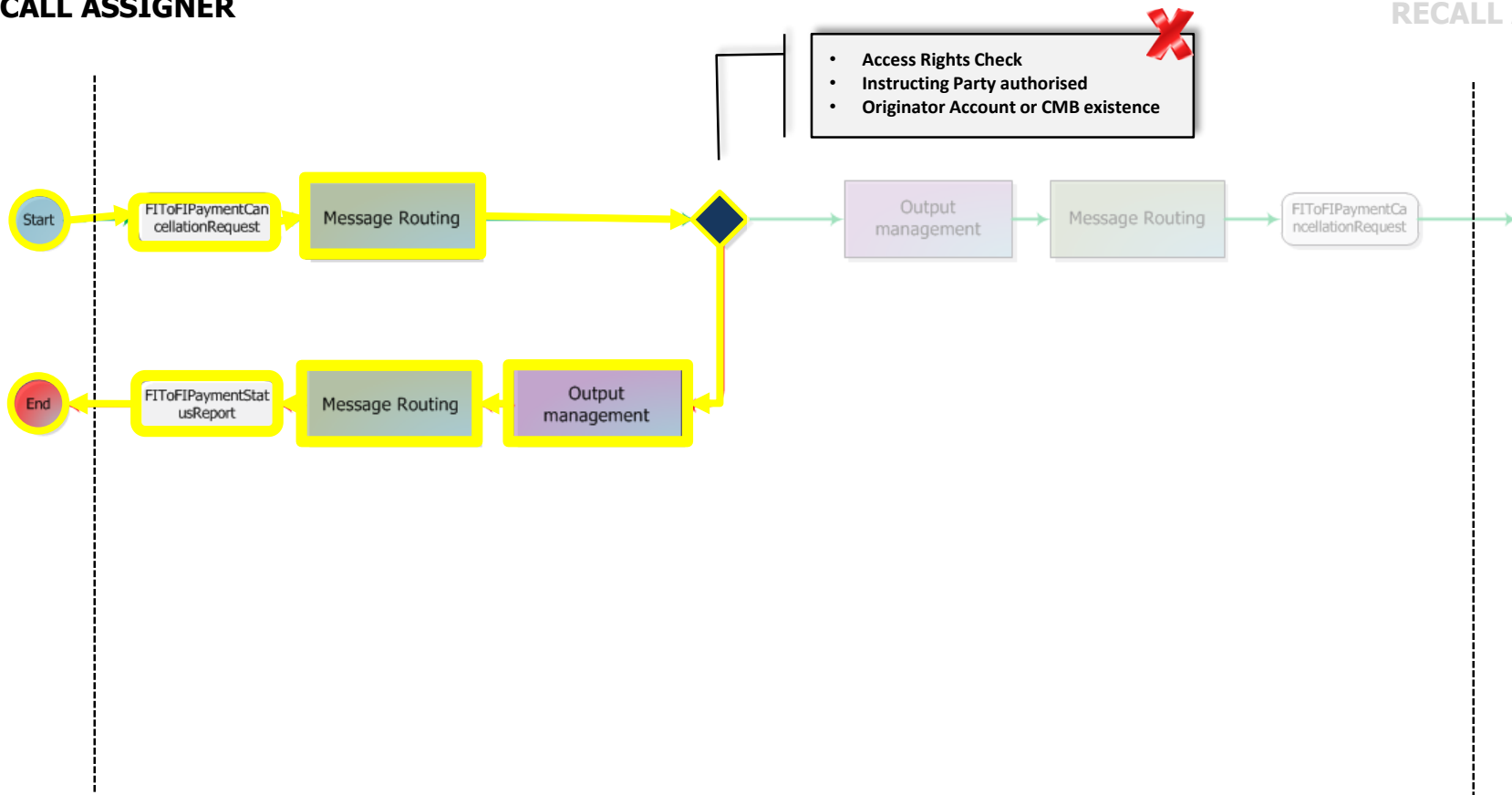
Recall flow



Recall Request flow - Unsuccessful Scenario

RECALL ASSIGNER

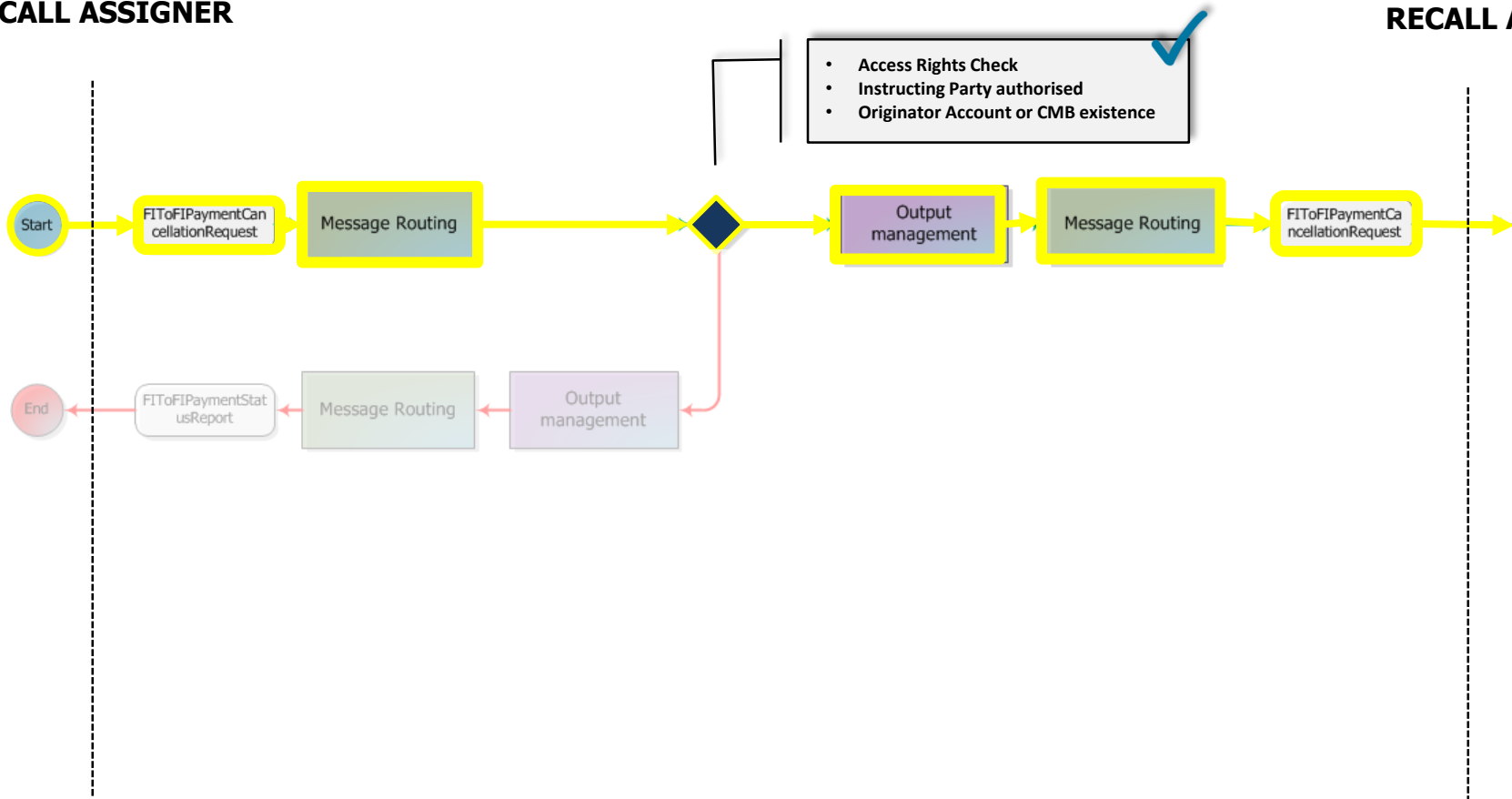
RECALL ASSIGNEE



Recall Request flow - Successful Scenario

RECALL ASSIGNER

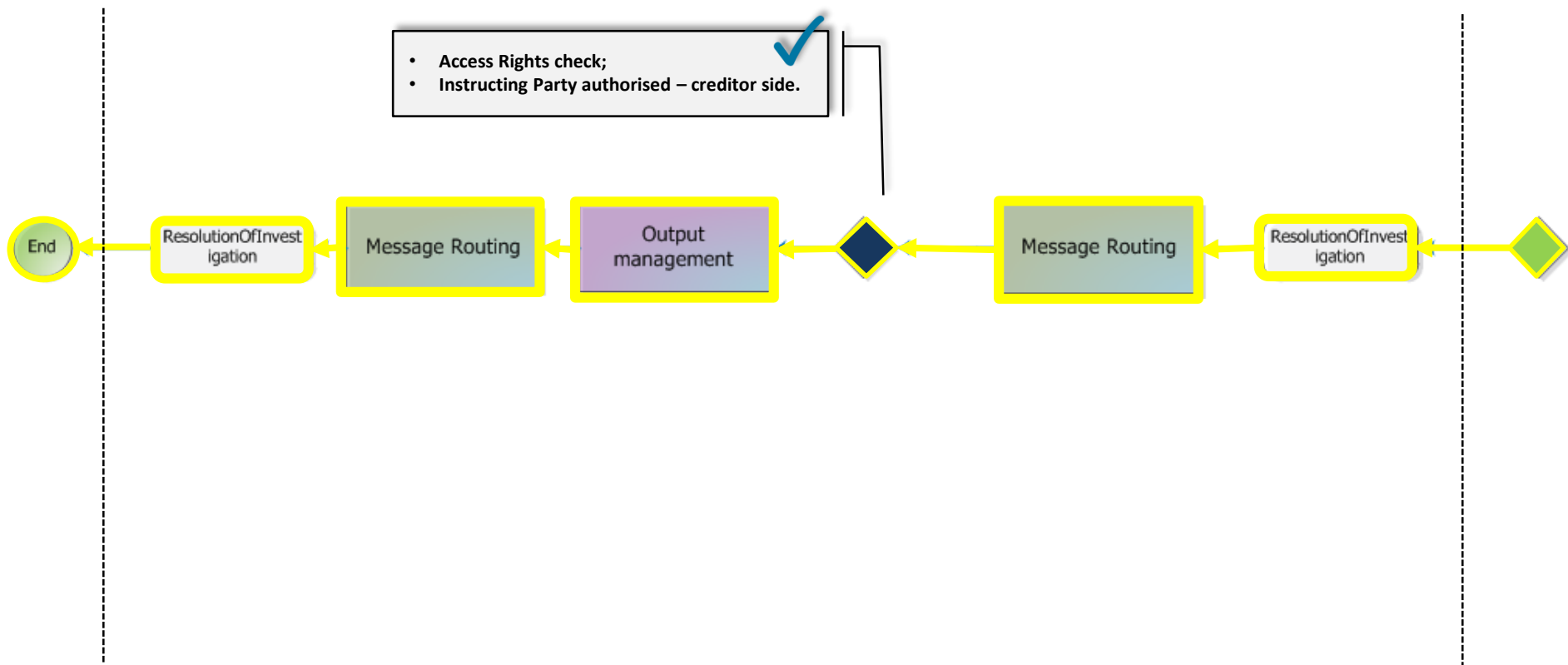
RECALL ASSIGNEE



Negative Recall Response flow - Successful Scenario

RECALL ASSIGNER

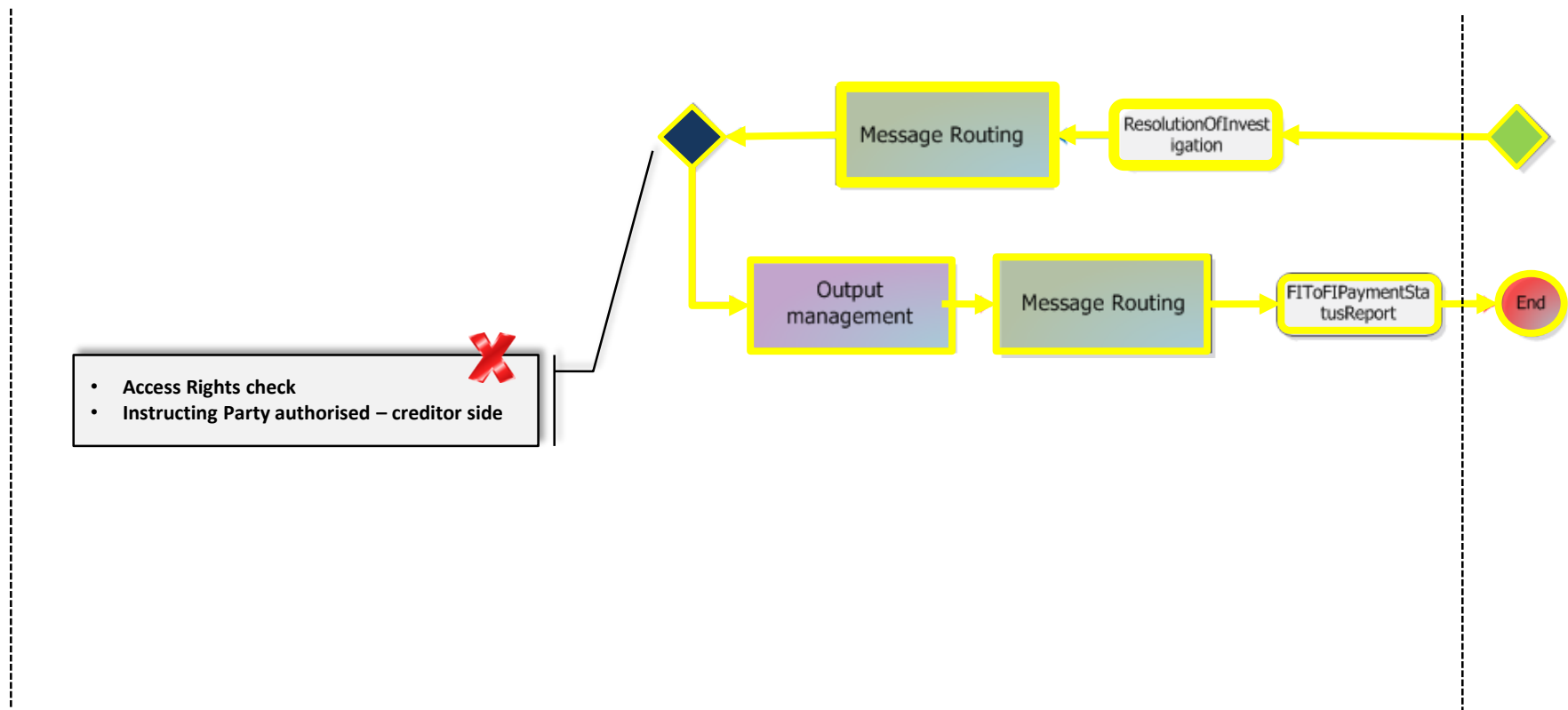
RECALL ASSIGNEE



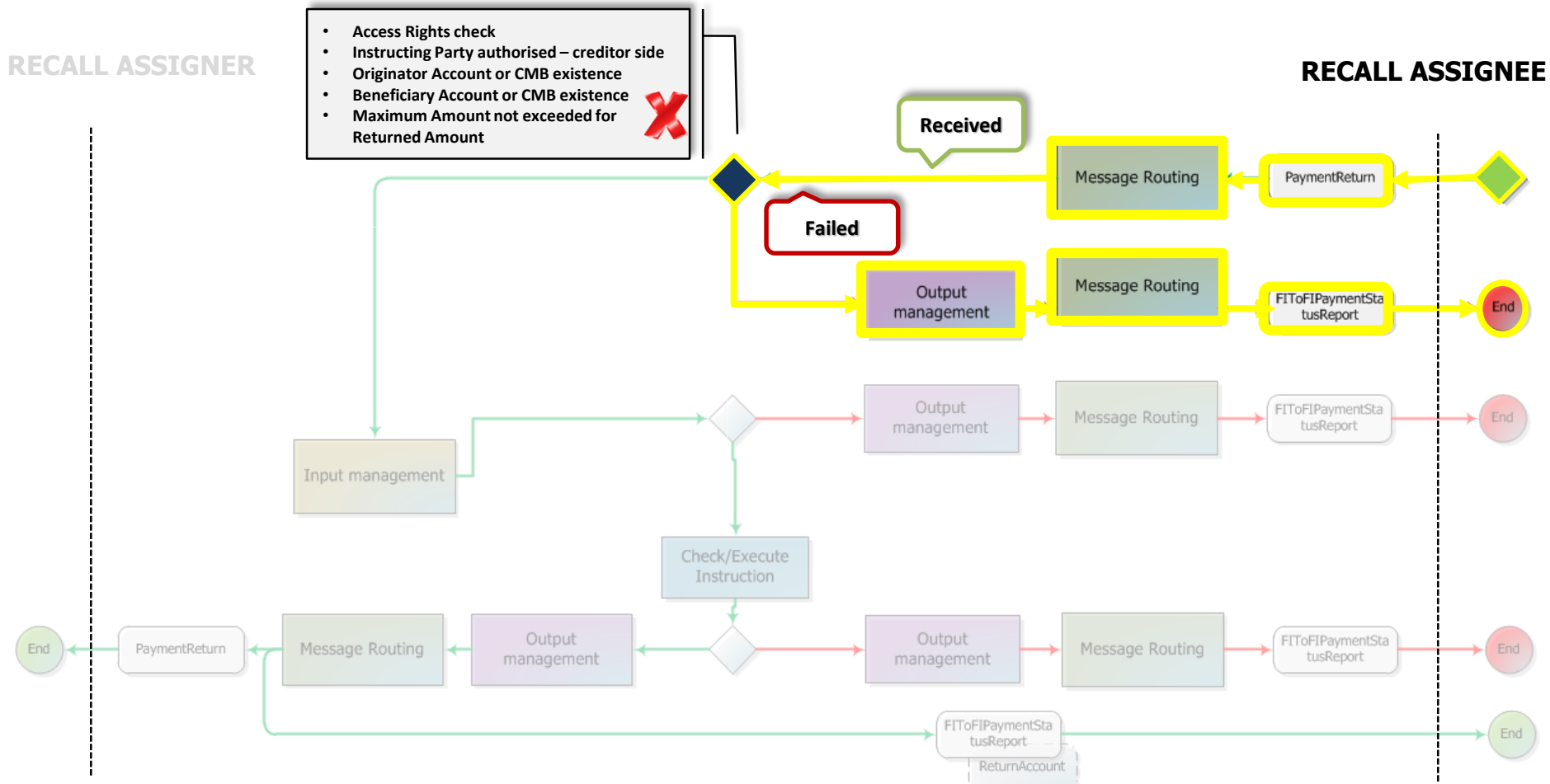
Negative Recall Response flow - Unsuccessful Scenario

RECALL ASSIGNER

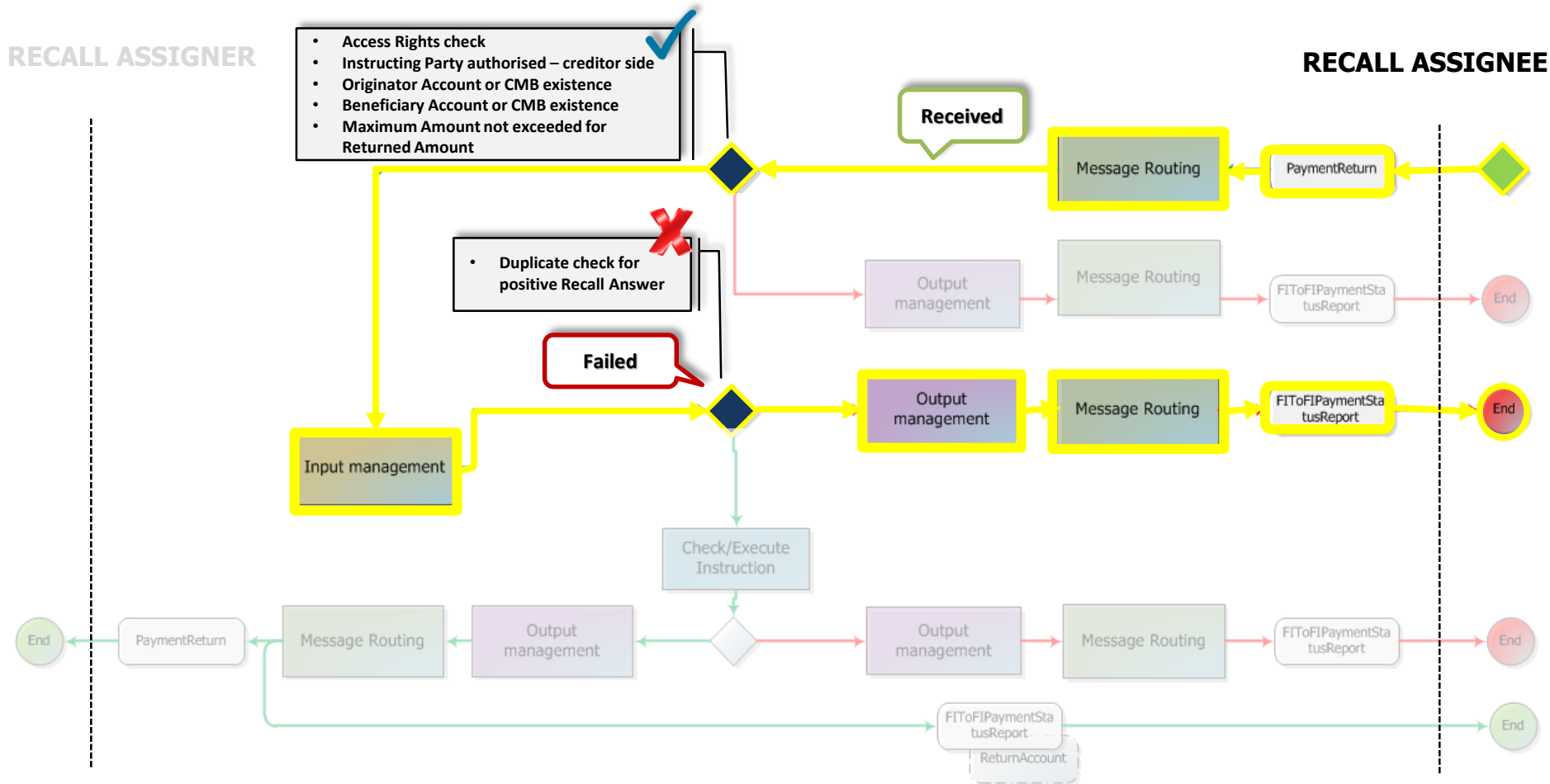
RECALL ASSIGNEE



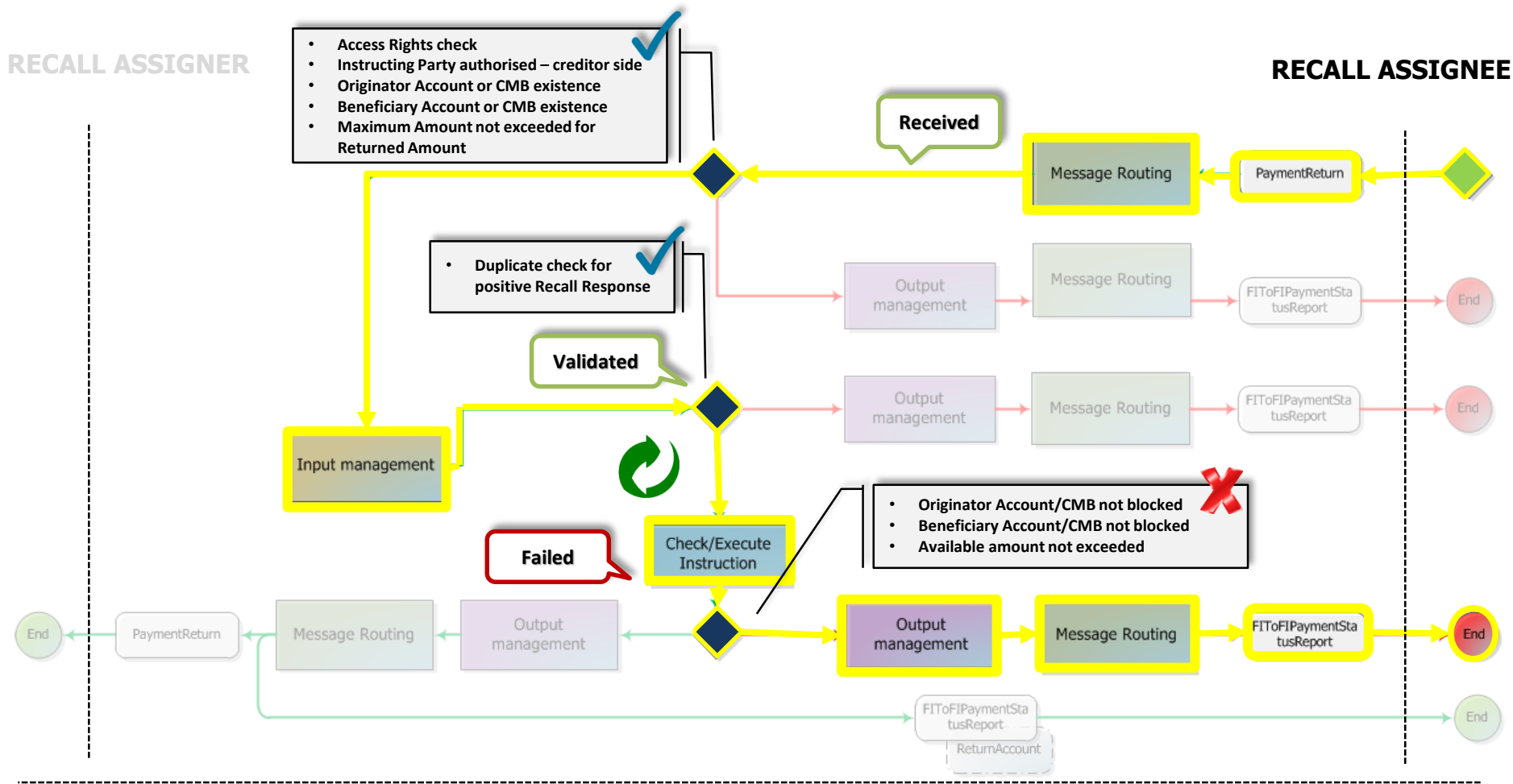
Positive Recall Response flow - Unsuccessful Scenario (1/3)



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

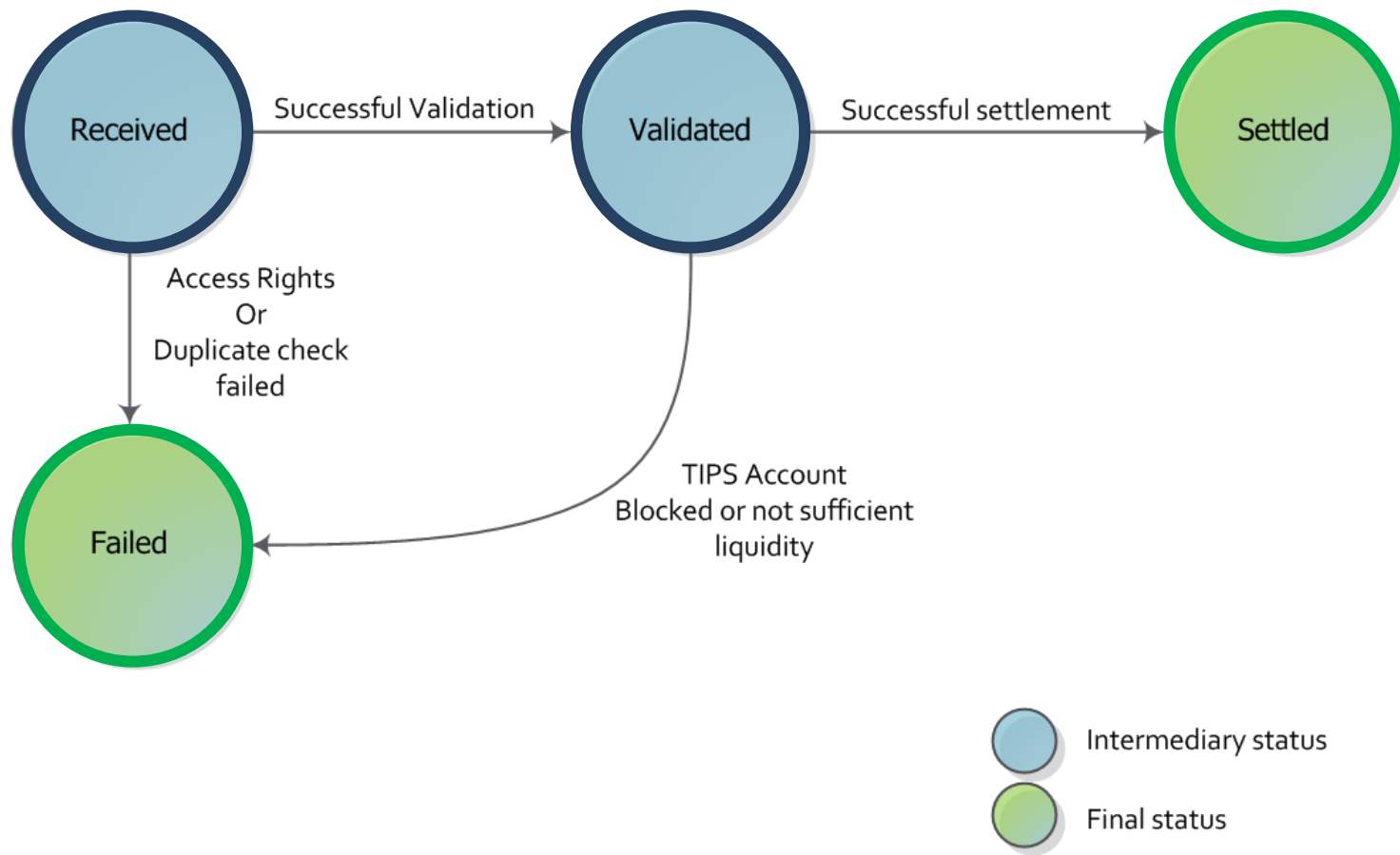
Recall flow

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^{Inst} 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

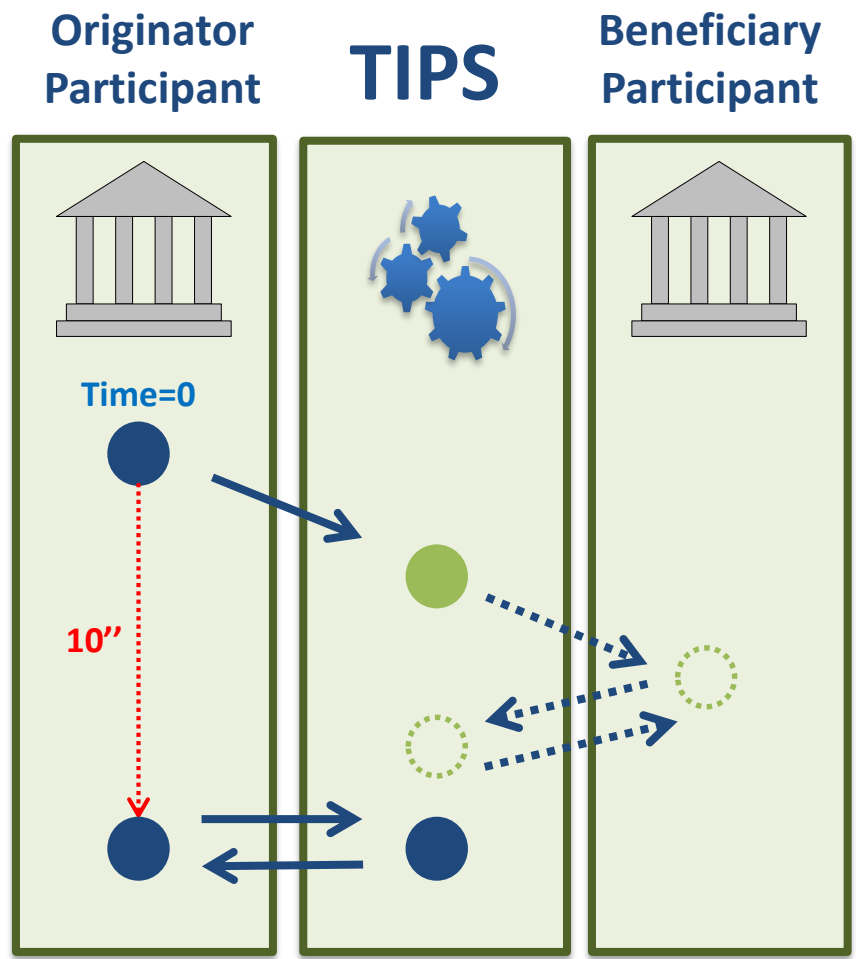
4 Investigation

Overview

Investigation flow

Messages

Investigation overview



Investigation – The actors

Originator Participant

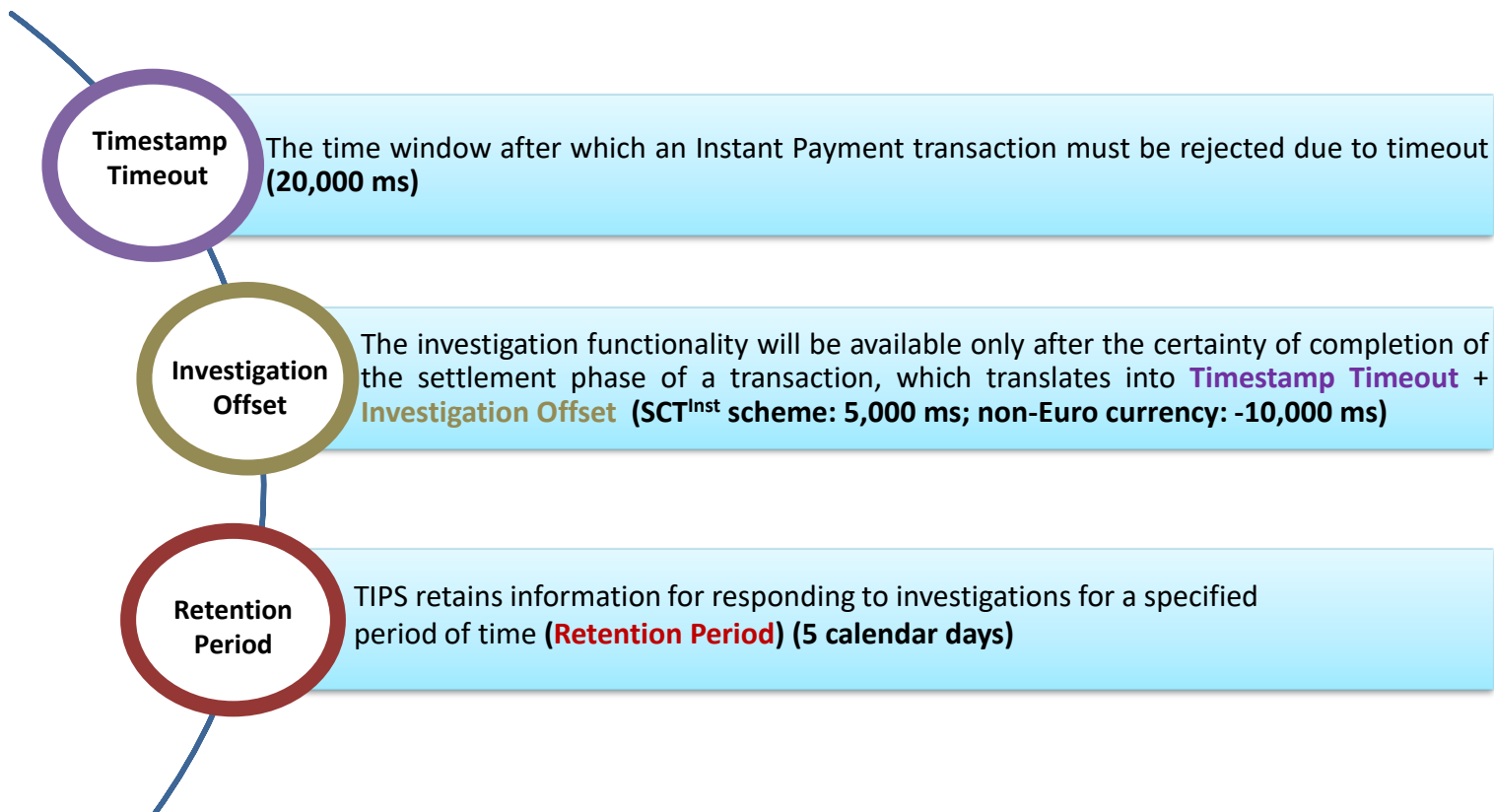
The Participant or Instructing Party* acting on behalf of Participants or Reachable Parties on the originator side that request information on a transaction for which no confirmation message has reached the Originator PSP after the time-out deadline.

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

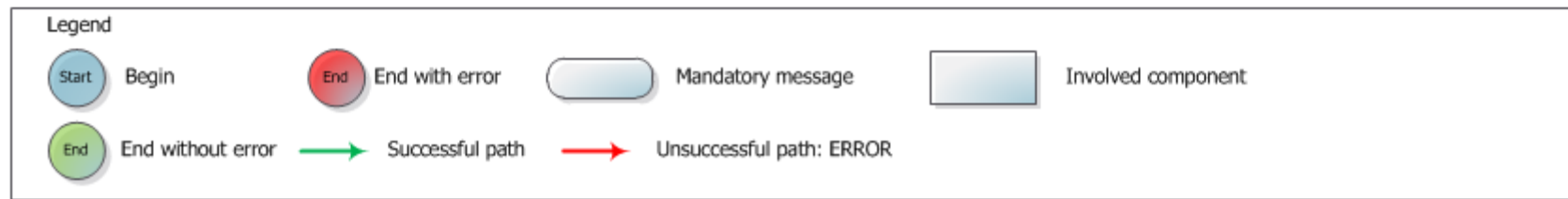
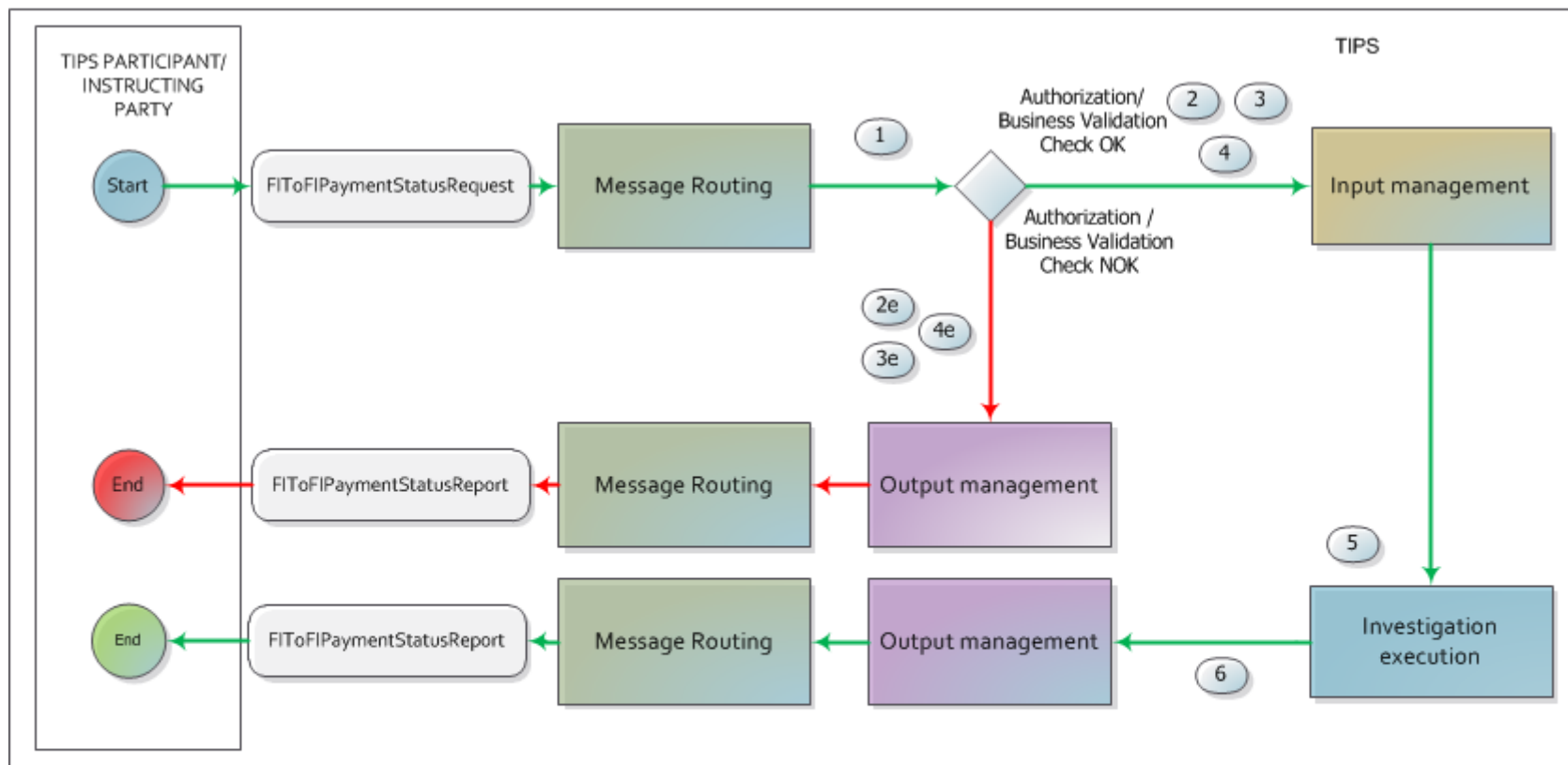
4 Investigation

Overview

Investigation flow

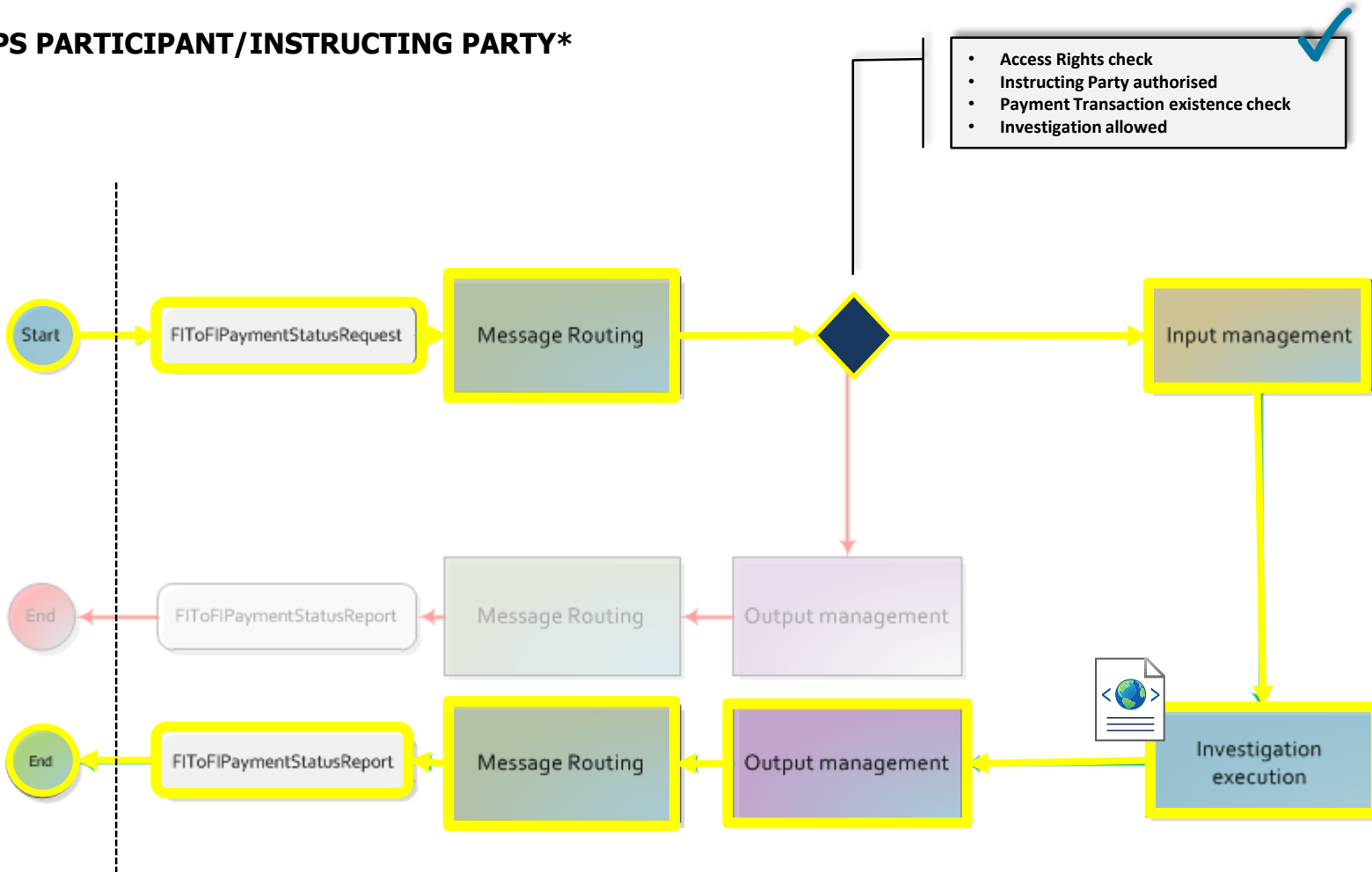
Messages

Investigation flow



Investigation flow – Successful Scenario

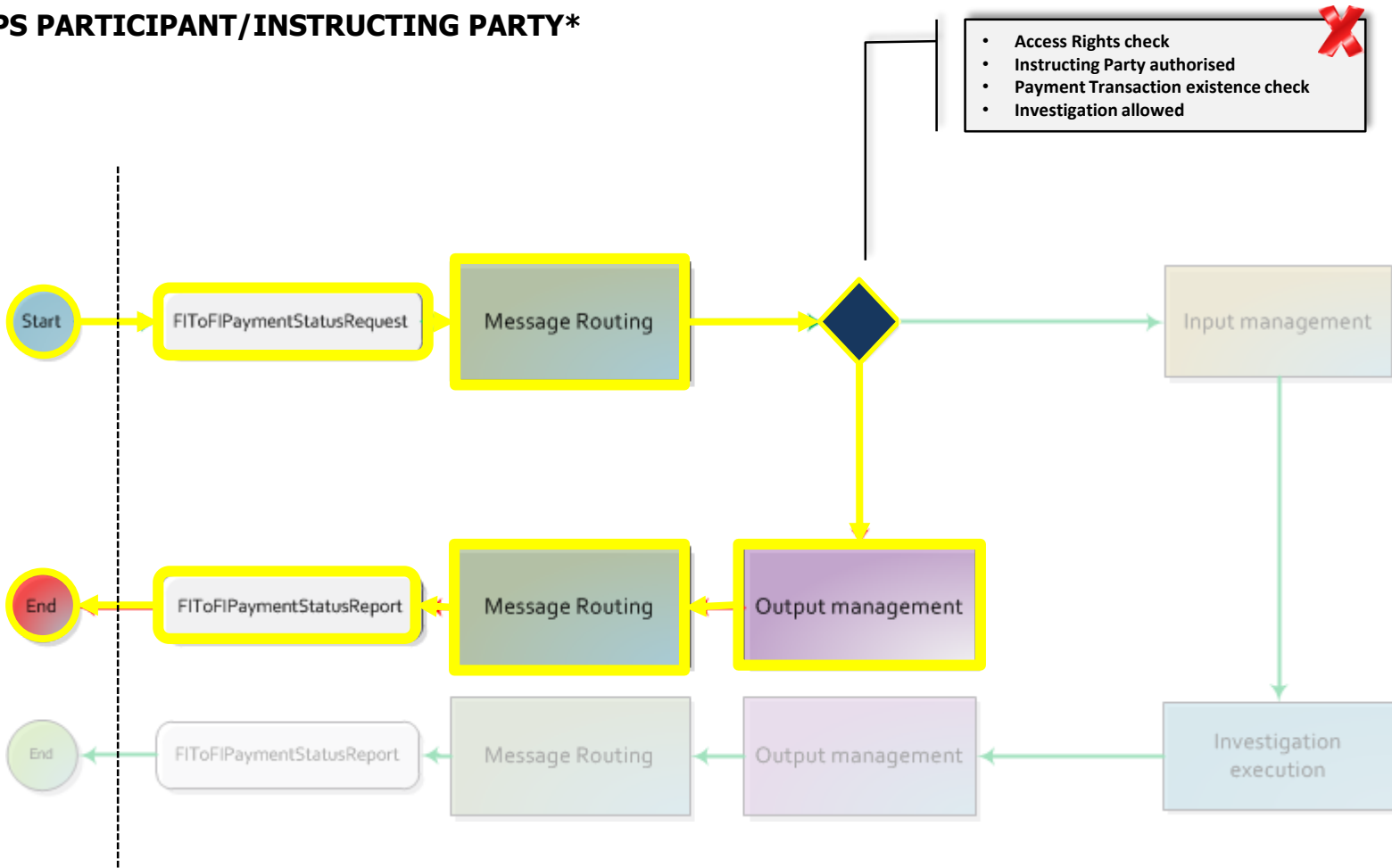
TIPS PARTICIPANT/INSTRUCTING PARTY*



*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^{Inst} 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!