EUROPEAN CENTRAL BANK
EUROSYSTEM

BANCA D'ITALIA
EUROSISTEMA

DEUTSCHE BUNDESBANK
EUROSYSTEM

TIPS Counterparty simulator

Online Training with live demo

11 September 2025

Andrea Dimartina - Banca d'Italia (4CB)
Piotr Saenger - Bundesbank

Agenda overview

1. **What is the TIPS Automatic Counterparty Simulator?**
2. How does the Simulator work?
3. How to reach the Simulator? CRDM steps
4. Live Demo: from the simple scenarios to the more advanced ones
5. Annex – How to set-up ad-hoc BICs for the simulator

What is the TIPS Automatic Counterparty Simulator?

- **TIPS Automatic Counterparty Simulator** (in short TIPS Simulator) is a tool available in the external testing environments of TIPS, namely the **Eurosystem Acceptance (EAC*)** and the **User Testing Environment (UTEST*)**

- TIPS simulator enables TIPS users to **reproduce a predefined set of scenarios**, supporting testing and validation of system functionalities:

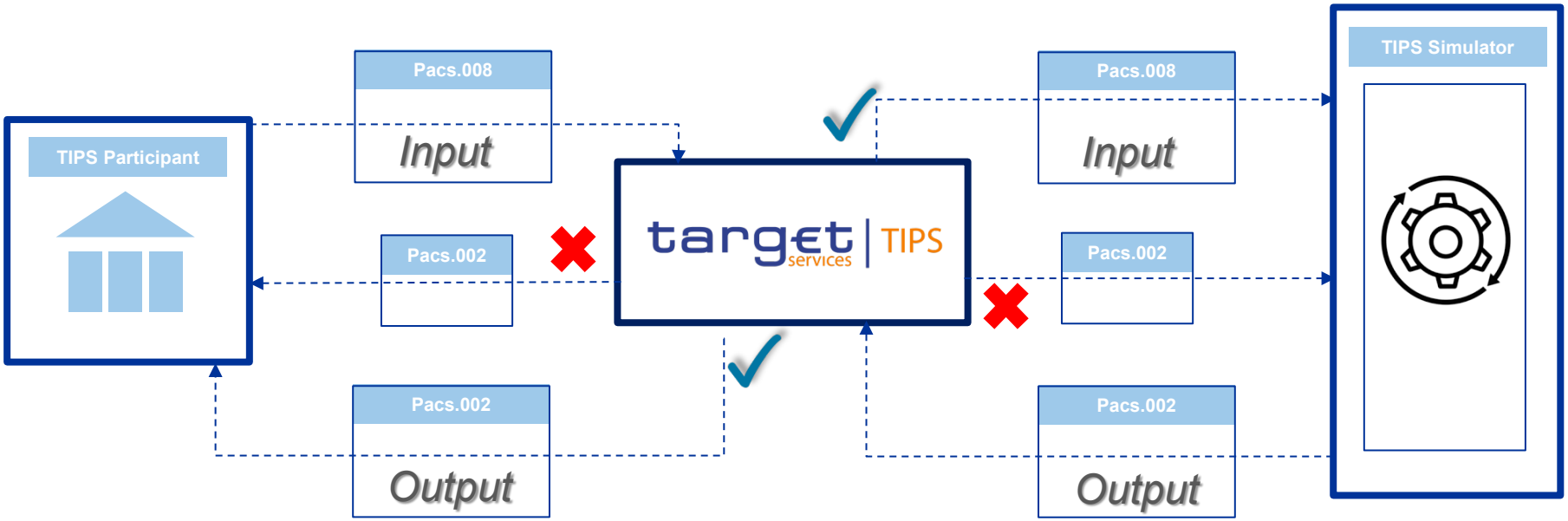
  → **TIPS Simulator is a tool which behaves as a Reachable Party in TIPS acting as Originator PSP or Beneficiary PSP, depending on the specific trigger message**

  → **Testing scenarios for Instant Payments (pacs.008) and positive/negative Confirmation (pacs.002) can technically be reproduced**

- Originally designed to simulate only instant payment confirmations/rejections, it was recently enhanced to introduce new features and testing scenarios

* EAC environment is exclusively accessible to National Central Banks, whereas the UTEST environment is available to all TIPS users.

What is the TIPS Automatic Counterparty Simulator?



Agenda overview

1. What is the TIPS Automatic Counterparty Simulator?
2. **How does the Simulator work?**
3. How to reach the Simulator? CRDM steps
4. Live Demo: from the simple scenarios to the more advanced ones
5. Annex – How to set-up ad-hoc BICs for the simulator

How does the Simulator work?

- **TIPS Simulator** was initially introduced in 2018 as a basic auto-responder tool. Its primary function was to automatically generate a predefined positive or negative response to an instant payment (pacs.008) based on the BIC used as the counterparty on the creditor side

- Following the functional enhancements deployed in **February 2025**, the simulator has been significantly upgraded to support a broader range of **production-like testing scenarios**. It now enables users to:

  - Simulate the reception of an incoming **Instant Payment flow**;
  - Trigger and test the **Recall flow** (camt.056/camt.029/pacs.004);
  - **Activate specific rejection codes on demand**, allowing for more granular validation of exception handling and system behavior.

→ These improvements provide a more comprehensive and flexible testing framework, aligning the simulator's capabilities with real-world operational conditions

How does the Simulator work?

- **Simple** and **advanced** scenarios can be tested by the TIPS users
- To interact with the TIPS Simulator, a **specific trigger message** must be sent to TIPS, that, after its successful validation, will take care of routing it towards the TIPS Simulator
- Messages must be routed through **two dedicated network services** to reach the Simulator
- All trigger messages are sent to TIPS, which forwards them to the Simulator following usual flows
- The **TIPS Simulator processes the trigger message**, **generates a response** based on used network service and predefined mappings, and **routes the response back to TIPS**

How does the Simulator work?

- Two predefined BICs are already in place to receive trigger messages, but ad-hoc BIC can be configured to receive these messages (see next section)
  - Predefined BICs:
    - **'ACCPITRRXXX' for positive responses**
    - **'REJEITRRXXX' for negative responses**
- **Same default BICs** might be used for all TIPS-hosted currencies (i.e. EUR and non-EUR)

How does the Simulator work?

To interact with the Simulator, the following conditions must be met:

- **Standard TIPS Configuration:** Elements such as AAU, DN-BIC Routing, and Routing must be set up for the relevant parties, using the designated network service
- **Trigger Message Requirements:** All tags outlined in the TIPS UDFS Annex must be included in the trigger message, as the Simulator relies on this information to generate the response message:
  - If any of the required tags is missing, the response created by the Simulator will be invalid, and TIPS will reject the message as non-schema compliant.
  - In such cases, a rejection message will be sent to the Simulator, but the original sender of the trigger message will not receive a reply.
  - The trigger message sent to the Simulator **must also be valid from a business perspective; otherwise, TIPS will reject it at the application level**. For example, if the Originator PSP triggers an Instant Payment with a Transaction ID that has already been used, TIPS will reject the generated pacs.008 due to a duplicated Transaction ID.
  - All validation rules foreseen in TIPS apply for both trigger and generated messages (e.g., retention period, duplicate checks).

How does the Simulator work?

- **Privileges:** For scenarios requiring specific privileges (e.g., to initiate an instant payment or a recall), the correct set of privileges must be assigned to the BIC used for the Simulator (see next section)

Agenda overview

1. What is the TIPS Automatic Counterparty Simulator?
2. How does the Simulator work?
3. **How to reach the Simulator? CRDM steps**
4. Live Demo: from the simple scenarios to the more advanced ones
5. Annex – How to set-up ad-hoc BICs for the simulator

How to reach the Simulator? CRDM steps

The TIPS Simulator does not have a GUI interface – test messages must be configured in the TIPS user's test interface and sent from there, with outcomes visible in the TIPS GUI.

Before using the TIPS Simulator, certain elements must be configured on the user's side.

1. Users and Privileges

- **User Configuration:**
  - At least one user must be configured under the Party owning the relevant accounts
  - Additionally, a specific User-DN Link object must be created with the "Main User" flag set to "True" between the user and the aforementioned DNs

- **Roles and Privileges:**
  - **For scenarios involving instant payments or recalls:** the user must have the appropriate roles and privileges to instruct these transactions (instant payments and recalls)

How to reach the Simulator? CRDM steps

2. BIC Usage

- **Predefined BICs:**
  - The **predefined BICs 'ACCPITRRXXX'** and **'REJEITRRXXX**', configured by the Service Desk, can be used without additional customisation.
  - Real **alternate BICs** configured in CRDM can also be used (see TIPS UDFS Annex to set it up)

Agenda overview

1. What is the TIPS Automatic Counterparty Simulator?
2. How does the Simulator work?
3. How to reach the Simulator? CRDM steps
4. **Live Demo: from the simple scenarios to the more advanced ones**
5. Annex – How to set-up ad-hoc BICs for the simulator

Live Demo

- In the following slides we will go through **nine different scenarios**.
- For each of them there will be a **theoretical introduction**, followed by a **live demo** for the most relevant.
- Thanks to **A2A connectivity in UTEST** environment, Deutsche Bundesbank colleagues will share the screen to demonstrate live usage of the TIPS Simulator
- The scenarios will be showcased using mock BICs
- **Predefined message templates** will be used to avoid manual entry of individual fields.

Scenarios that can be tested: from the simples one to the more advanced ones

Simple scenarios:

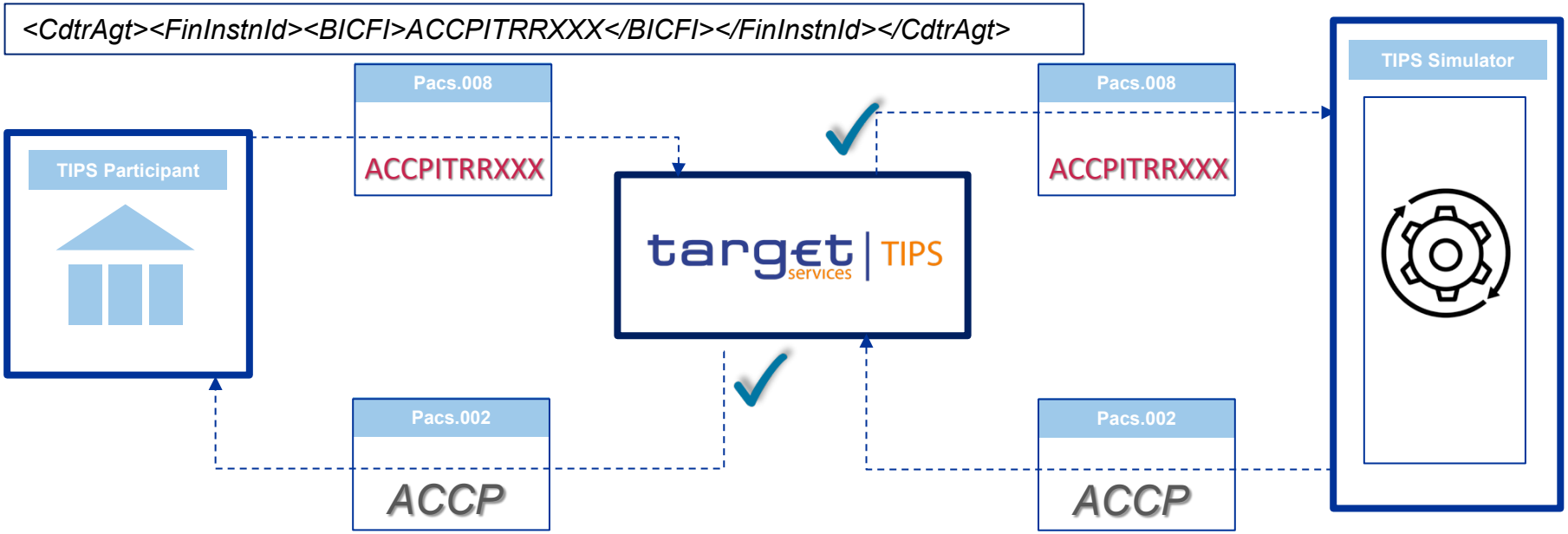
1. Acceptance of an outgoing pacs.008 by the Simulator (i.e. using 'ACCPITRRXXX')
2. Rejection of an outgoing pacs.008 by the Simulator (i.e. using 'REJEITRRXXX')
3. Duplication of an already sent outgoing pacs.008
4. Rejection of an outgoing pacs.008 by the Simulator with a customized error code

Scenarios that can be tested: from the simples one to the more advanced ones

Simple scenarios:

1. **Acceptance of an outgoing pacs.008 by the Simulator (i.e. using 'ACCPITRRXXX')**
2. **Rejection of an outgoing pacs.008 by the Simulator (i.e. using 'REJEITRRXXX')**
3. **Duplication of an already sent outgoing pacs.008**
4. **Rejection of an outgoing pacs.008 by the Simulator with a customized error code**

Scenario 1 - Acceptance of an outgoing pacs.008 by the Simulator (i.e. using 'ACCPITRRXXX')

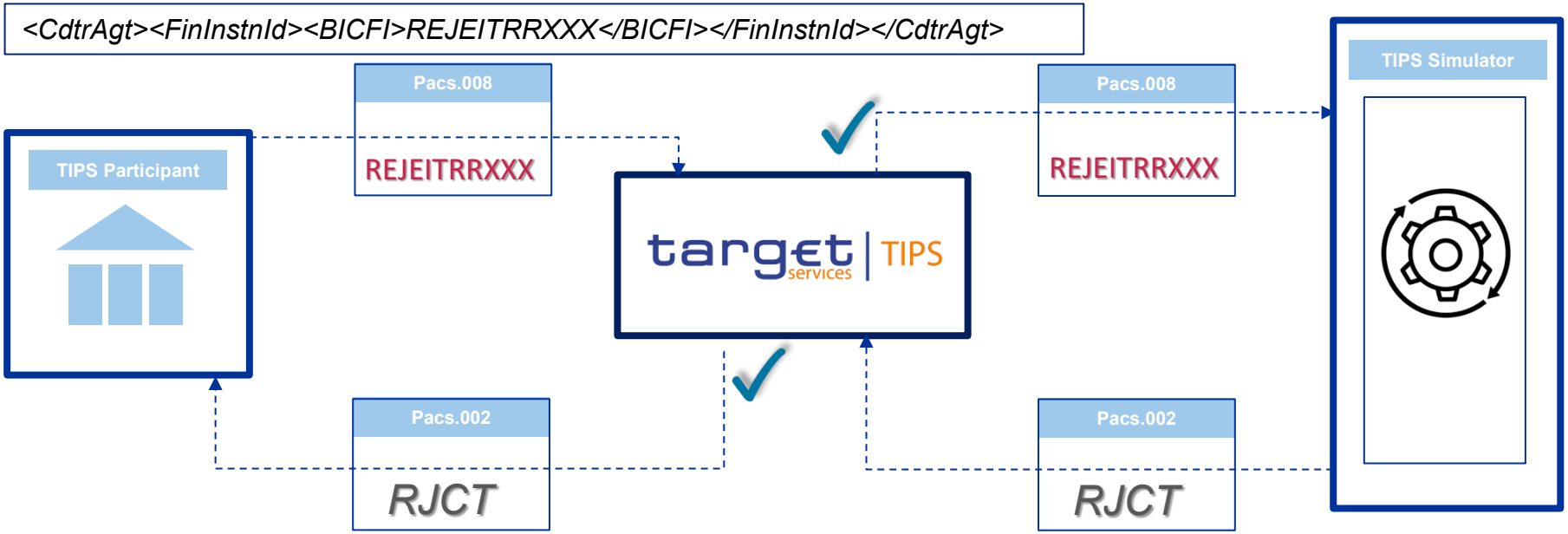


Scenarios that can be tested: from the simples one to the more advanced ones

Simple scenarios:

1. Acceptance of an outgoing pacs.008 by the Simulator (i.e. using 'ACCPITRRXXX')
2. **Rejection of an outgoing pacs.008 by the Simulator (i.e. using 'REJEITRRXXX')**
3. Duplication of an already sent outgoing pacs.008
4. Rejection of an outgoing pacs.008 by the Simulator with a customized error code

Scenario 2 - Rejection of an outgoing pacs.008 by the Simulator (i.e. using 'REJEITRRXXX')



Demo

Scenarios that can be tested: from the simples one to the more advanced ones

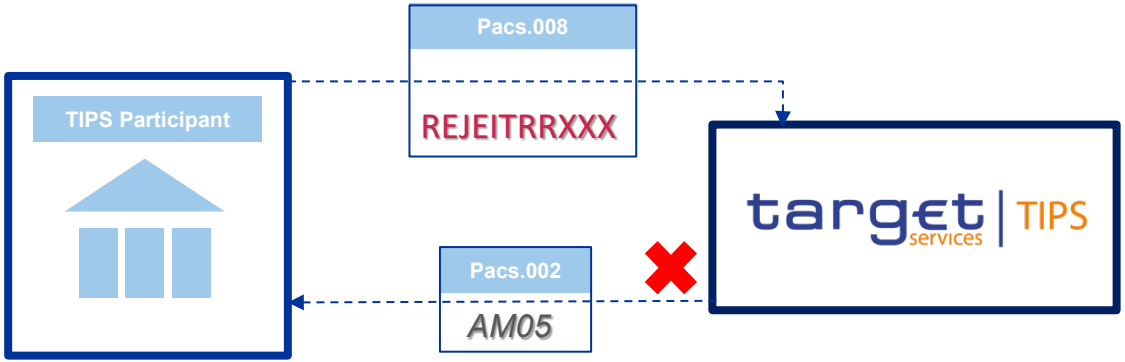
Simple scenarios:

1. Acceptance of an outgoing pacs.008 by the Simulator (i.e. using 'ACCPITRRXXX')
2. Rejection of an outgoing pacs.008 by the Simulator (i.e. using 'REJEITRRXXX')
3. **Duplication of an already sent outgoing pacs.008**
4. Rejection of an outgoing pacs.008 by the Simulator with a customized error code

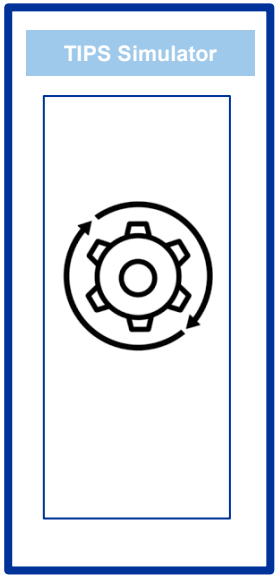
Scenario 3 - Duplication of an already sent outgoing pacs.008

<TxId> Same TxID used in Scenario 2 </TxId>

<CdtrAgt><FinInstnId><BICFI>REJEITRRXXX</BICFI></FinInstnId></CdtrAgt>



The trigger message does not reach the simulator



Scenarios that can be tested: from the simples one to the more advanced ones

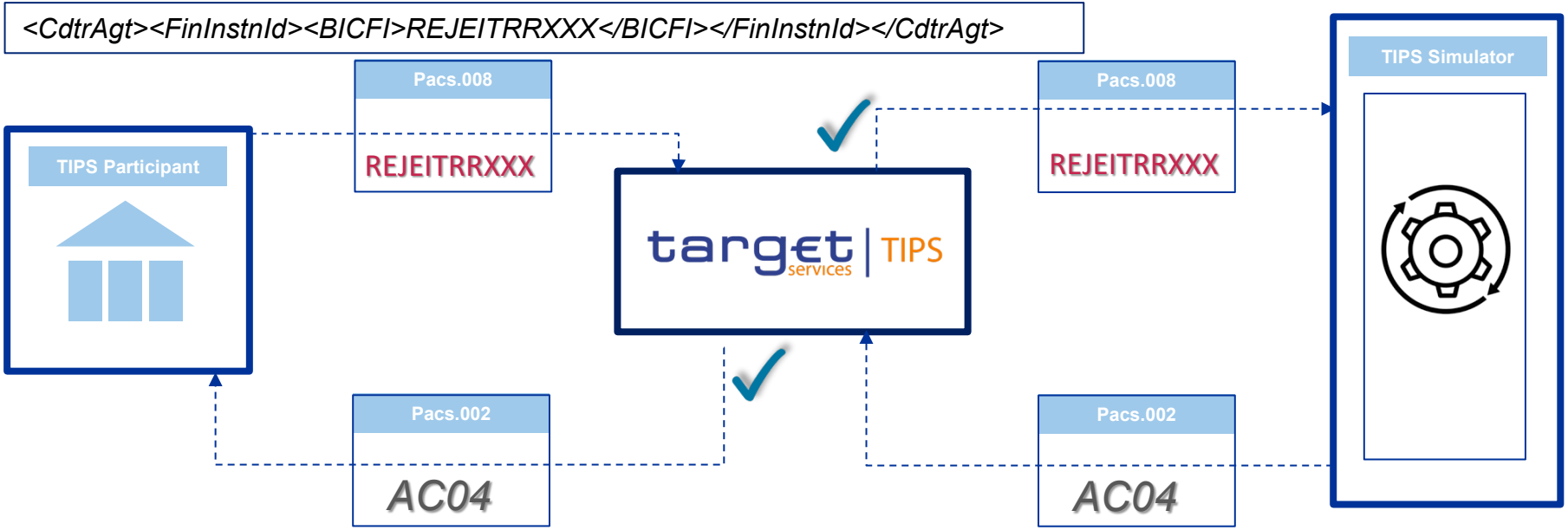
Simple scenarios:

1. Acceptance of an outgoing pacs.008 by the Simulator (i.e. using 'ACCPITRRXXX')
2. Rejection of an outgoing pacs.008 by the Simulator (i.e. using 'REJEITRRXXX')
3. Duplication of an already sent outgoing pacs.008
4. **Rejection of an outgoing pacs.008 by the Simulator with a customized error code**

Scenario 4 - Rejection of an outgoing pacs.008 by the Simulator with a customized error code

*<EndToEndId >CERR**AC04**xxxxxxxx</EndToEndId>*

<CdtrAgt><FinInstnId><BICFI>REJEITRRXXX</BICFI></FinInstnId></CdtrAgt>



Demo

Scenarios that can be tested: from the simples one to the more advanced ones

Advanced scenarios:

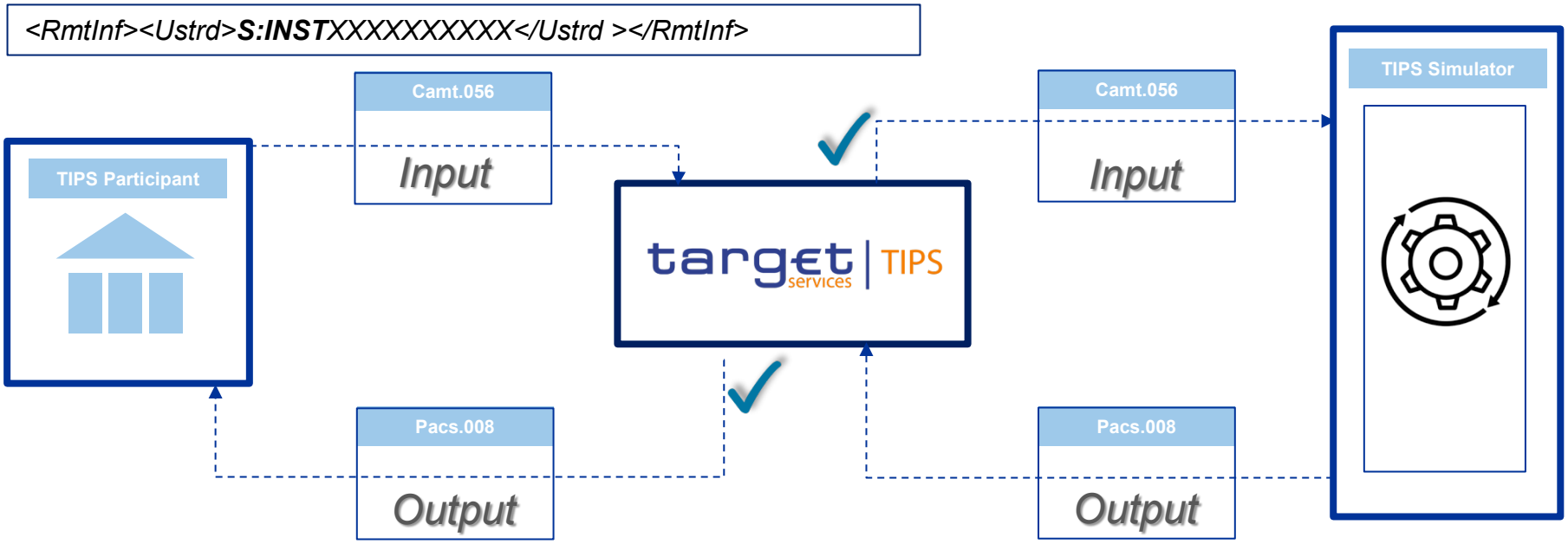
1. Delivery of camt.056 to trigger a pacs.008 in the reverse direction
2. Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction (no response from the Simulator due to missing tags)
3. Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction
4. Delivery of camt.056 to trigger a negative recall response camt.029 in the reverse direction
5. Delivery of camt.056 to trigger a camt.056 in the reverse direction

Scenarios that can be tested: from the simples one to the more advanced ones

Advanced scenarios:

1. **Delivery of camt.056 to trigger a pacs.008 in the reverse direction**
2. Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction (no response from the Simulator due to missing tags)
3. Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction
4. Delivery of camt.056 to trigger a negative recall response camt.029 in the reverse direction
5. Delivery of camt.056 to trigger a camt.056 in the reverse direction

Scenario 1 - Delivery of camt.056 to trigger a pacs.008 in the reverse direction



Demo

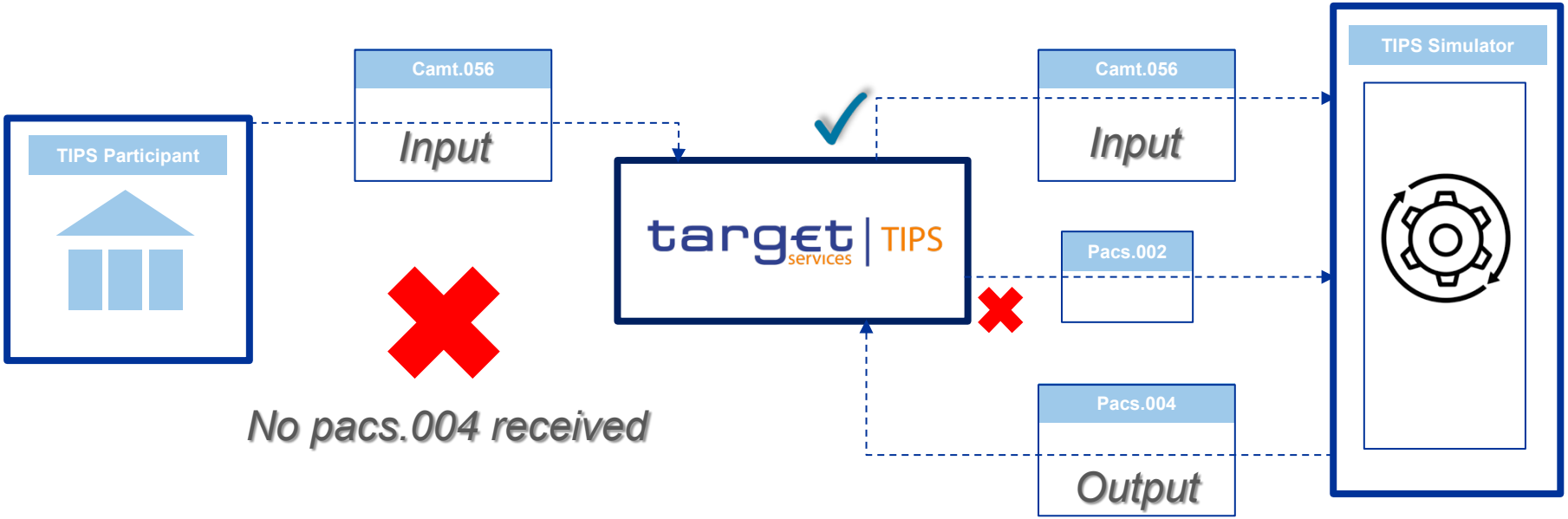
Scenarios that can be tested: from the simples one to the more advanced ones

Advanced scenarios:

1. Delivery of camt.056 to trigger a pacs.008 in the reverse direction
2. **Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction (no response from the Simulator due to missing tags)**
3. Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction
4. Delivery of camt.056 to trigger a negative recall response camt.029 in the reverse direction
5. Delivery of camt.056 to trigger a camt.056 in the reverse direction

Scenario 2 - Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction (no response from the Simulator)

Missing Tag <FIToFIPmtCxlReq/Undrlyg/TxInf/OrgnlTxRef/CdtrAgt> - which is optional as for camt.056 XSD but is mandatory due to existing 'TIPS Usage' on pacs.004 mapped tag <PmtRtr/TxInf/OrgnlTxRef/CdtrAgt>

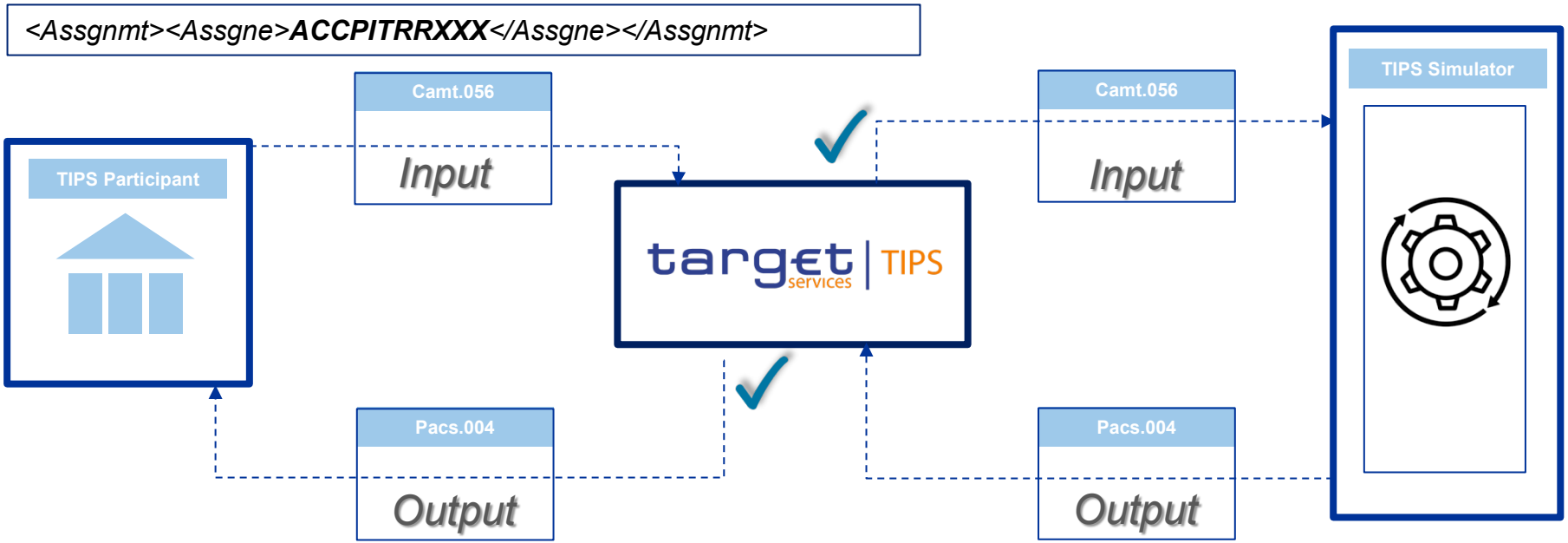


Scenarios that can be tested: from the simples one to the more advanced ones

Advanced scenarios:

1. Delivery of camt.056 to trigger a pacs.008 in the reverse direction
2. Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction (no response from the Simulator due to missing tags)
3. **Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction**
4. Delivery of camt.056 to trigger a negative recall response camt.029 in the reverse direction
5. Delivery of camt.056 to trigger a camt.056 in the reverse direction

Scenario 3 - Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction

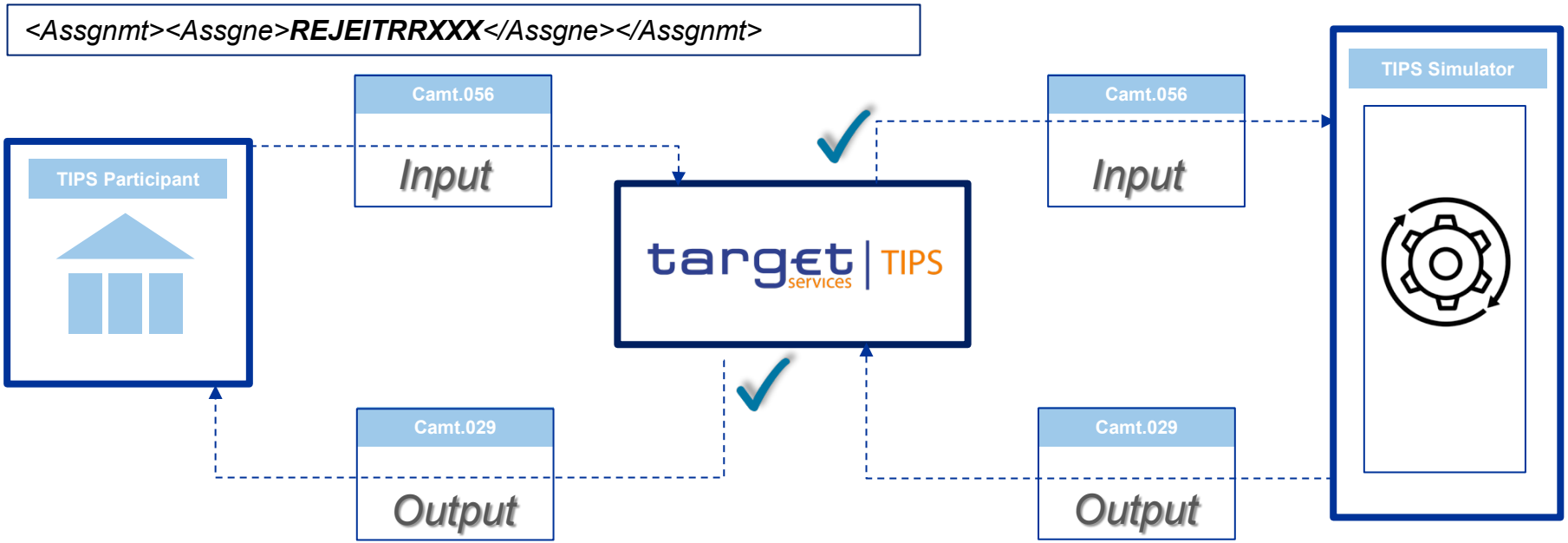


Scenarios that can be tested: from the simples one to the more advanced ones

Advanced scenarios:

1. Delivery of camt.056 to trigger a pacs.008 in the reverse direction
2. Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction (no response from the Simulator due to missing tags)
3. Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction
4. **Delivery of camt.056 to trigger a negative recall response camt.029 in the reverse direction**
5. Delivery of camt.056 to trigger a camt.056 in the reverse direction

Scenario 4 - Delivery of camt.056 to trigger a negative recall response camt.029 in the reverse direction



Demo

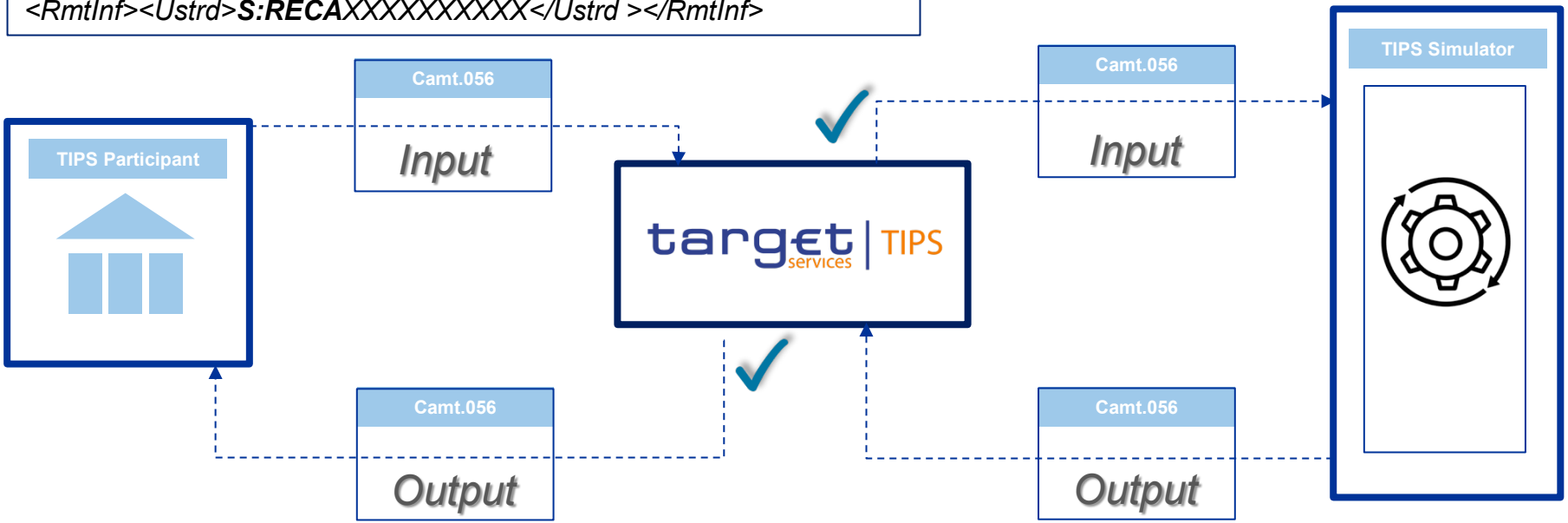
Scenarios that can be tested: from the simples one to the more advanced ones

Advanced scenarios:

1. Delivery of camt.056 to trigger a pacs.008 in the reverse direction
2. Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction (no response from the Simulator due to missing tags)
3. Delivery of camt.056 to trigger a positive recall response pacs.004 in the reverse direction
4. Delivery of camt.056 to trigger a negative recall response camt.029 in the reverse direction
5. **Delivery of camt.056 to trigger a camt.056 in the reverse direction**

Scenario 5 - Delivery of camt.056 to trigger a camt.056 in the reverse direction

<RmtInf><Ustrd>**S:RECA**XXXXXXXXXX</Ustrd ></RmtInf>



Demo

Thank you for your attention!

Agenda overview

1. What is the TIPS Automatic Counterparty Simulator?
2. How does the Simulator work?
3. How to reach the Simulator? CRDM steps
4. Scenarios that can be tested: from the simples one to the more complex ones
5. Annex – How to set-up ad-hoc BICs for the simulator

ANNEX - How to set-up ad-hoc BICs for the simulator

Network Service - if ad-hoc BICs are being used (not needed with default BICs)

- **Configuration for TIPS Simulator Functionalities:**
  - Parties configured as receivers of trigger messages must be set up with:
    - FT1 Network Service: For triggering positive recall responses
    - FT2 Network Service: For triggering negative recall responses

- **Technical Address Link:**
  - These network services must be linked to the respective DN through a Technical Address-Network Service Link at the Party level.

→ Both FT1 and FT2 services can also be used to trigger instant payments and recall requests as needed.