DEUTSCHE BUNDESBANK
EUROSYSTEM

Trigger Solution
Process Description Document

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Versions

Version	Chap-ter	Change information	Date	Name and departmental ID num-ber
1.0	All	Created	10/11/23	Deutsche Bundesbank
1.1	All	Publication	13/12/23	Deutsche Bundesbank

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How to read this document

This document provides further details on the Trigger Solution. Chapter 1 provides an overview on the ecosystem of the Trigger Solution and an example how a DVP transaction could be settled using the Trigger Solution. Chapter 2 provides a deep dive into the various process steps of a delivery-versus-payment process. Chapter 3 contains a description of the Operational Day Schedule for the Trigger Solution.

1 Ecosystem and Process flow

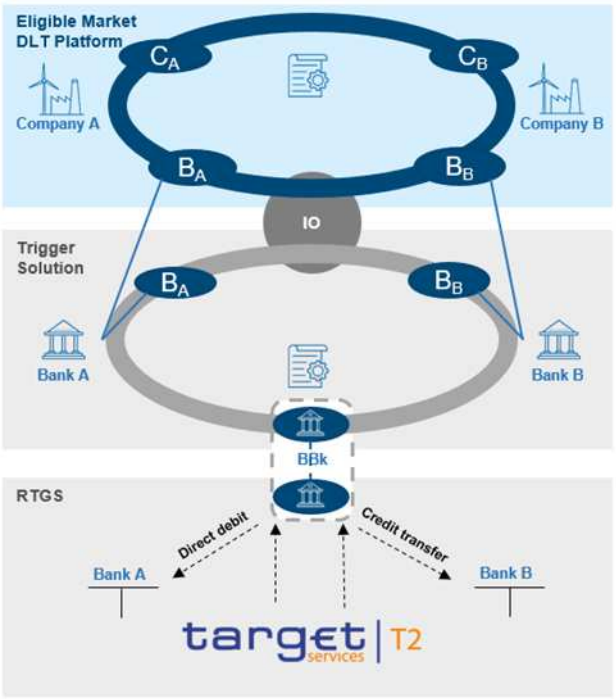
The Eligible Market DLT Platform will be operated by an Eligible Market DLT Operator (as defined by the Eurosystem)

- Eligible Market Participants and companies might participate
- The underlying business transaction (e.g. exchange of securities) takes place in the Eligible Market DLT Platform.
- Eligible Assets will be defined by the Eurosystem

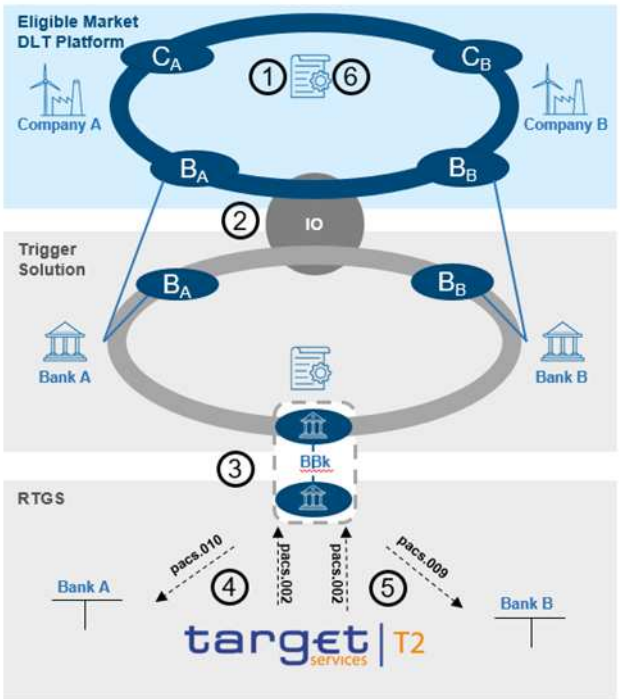
The Trigger Solution is operated by Deutsche Bundesbank

- Only Eligible Market Participants and Eligible Market DLT Operators (as defined by the Eurosystem) participate in the Trigger Solution
- The Trigger Solution is technically agnostic with regard to the business/assets in the Eligible Market DLT Platform.

The settlement of the cash leg takes place in T2/RTGS on the RTGS DCAs of TARGET participants



1. Buyer and Seller agree on the exchange of Eligible Assets against EUR in an external Eligible Market DLT Platform.
2. According to the Interoperability Mechanism, a Payment Instruction will be created through a smart contract in the Trigger Solution.
3. Deutsche Bundesbank converts the Payment Instruction in the Trigger Solution into ISO20022 messages and submits them via ESMIG to T2/RTGS.
4. A direct debit is sent via the Network Service Provider (NSP) to T2 in order to debit the payer bank's RTGS DCA and credit an interim account of Deutsche Bundesbank. Information on the successful or failed settlement will be sent to the Trigger Solution.
5. A credit transfer is sent via the Network Service Provider to T2 in order to debit the interim account of Deutsche Bundesbank and credit the payee bank's RTGS DCA. Information on the successful or failed settlement will be sent to the Trigger Solution.
6. The status of the Payment Instruction is transferred to the Eligible Market DLT Platform, where the assets are finally transferred.



Participants:

- The following actors are allowed to participate in the Trigger Solution:
  - Eligible Market Participants according to the Eurosystem definition[1]
  - Eligible Market DLT Operators according to the Eurosystem definition[2]
- In Eligible Market DLT Platforms, Eligible Market Participants as well as companies might – depending on the decision of the Eligible Market DLT Operator – participate.
- In case an actor is active in Eligible Market DLT Platforms and it is not (allowed to be) part of the Trigger Solution, there needs to be a legal agreement between that actor and the respective participant in the Trigger Solution. Bundesbank as Solution Provider for the Trigger Solution is not verifying the existence of such an agreement. This needs to be ensured by the participants in the Trigger Solution and the participants on the respective Eligible Market DLT Platform.

Underlying business transaction:

- The Trigger Solution is agnostic with regard to the assets in the Eligible Market DLT Platforms and does not impose technical requirements on Eligible Market DLT Platforms. However, for the purpose of the Eurosystem exploratory work related to ntw CeBM settlement (new technologies for wholesale Central Bank Money settlement) only Eligible Delivery versus Payment transactions over Eligible Assets[3] and Eligible Payments[4] will be allowed.

Interoperability mechanism:

- The information exchange between an Eligible Market DLT platform and the Trigger Solution is facilitated by an Interoperability Mechanism.
- The Interoperability Mechanism‘s role is to interact with the Payment Instruction Smart Contract.
- The Interoperability Mechanism is determined by the Eligible Market DLT Operator and can be designed to best fit the underlying business transaction.

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[1] Eligible Market Participant means any entity with access to TARGET, within the meaning of Article 4 and Article 7, Annex 1 Part I of the TARGET Guideline

[2] Eligible Market DLT Operator means (i) CSDs, authorised under the CSDR, operating a Securities Settlement System based on DLT / operating a DLT platform (incl. CSDs subject to a derogation of the contractual and regulatory framework of T2S), (ii) operators of a DLT settlement system or a DLT trading and settlement system as authorised under the DLT Pilot Regime Regulation (Regulation 2022/858), and (iii) investment firms and market operators and other licensed financial institutions operating a DLT platform, as duly licensed under the national law transposing MiFID II or under other relevant national legal frameworks and subject to assessment.

[3] Eligible Assets means financial instruments, denominated in euro, listed and unlisted alike, within the meaning of Article 4(1), point (15), of the MiFID II, that could be either issued as a native digital assets or as tokenised representation of an existing asset.

[4] Eligible Payments means Wholesale Payments between euro central bank money and euro or non-euro central bank money or euro or non-euro commercial bank money, including in the form of token

- The Trigger Solution supports different Interoperability Mechanisms implemented by Eligible Market DLT Operators, in particular Hash Time Lock Contract (HTLC).
- Eligible Market DLT Operators can bring their own solution (on-chain and off-chain). In this case the concrete interaction between the Eligible Market DLT platform and the Payment Instruction Smart Contract needs to be discussed by Deutsche Bundesbank and the Eligible Market DLT Operator. To support the implementation of other Interoperability Mechanisms, additional smart contracts can be deployed by the participants to the Trigger Solution.
- For the Trigger Solution two approaches have been implemented:
    - A basic approach for the life timing of payment instructions. All process steps described in the following chapter 3 are part of the basic approach.
    - The “Hash Time Lock” function for the life timing of payment instructions (supporting HTLC-based Interoperability Mechanisms on the Eligible Market DLT Platform). All steps that are only valid when using this “Hash Time Lock” function are introduced by mentioning HTLC marked in green.
      The described flow is just an example how HTLC could be used. The functionalities can be used by other Interoperability Mechanisms accordingly.

Connection to the Trigger Solution:

- The following options exist to connect to the Trigger Solution:
    - Using an API
        - Participants that do not have an own node can use this API to communicate in U2A mode via a Graphical User Interface provided by Bundesbank.
        - This API can also be used to communicate in A2A mode.
    - Operating an own node and using the own software implementation
- The functionalities in the various process steps as described in chapter 2 can be performed by the participants regardless of the chosen connection to the Trigger Solution.
- To receive updates about the status of the payment instructions, the participants in the Trigger Solution that use the API have to query the current status information. Participants in the Trigger Solution operating an own node can get a notification via an event about the status update of payment instructions.

2 Description of a *Delivery-versus-Payment* process

Step 1: Agreement on the trade in the Eligible Market DLT Platform

- Two actors, e.g. company A and company B (that could also be credit institutions), agree on the trade of assets in the Eligible Market DLT Platform. Both accept the trade of tokenised assets. Company B owns the asset token in the Eligible Market DLT Platform.
- The participants in the Eligible Market DLT Platform can identify the trade by a Correlation ID. The Correlation ID is mandatory for the creation of the payment instruction.
  The following format restrictions apply for the Correlation ID (to be followed by the participants):
    - text{4,35}
      [0-9a-zA-Z/\-\?:\(\)\.,'\+](|[0-9a-zA-Z/\-\?:\(\)\.,'\+]|[0-9a-zA-Z/\-\?:\(\)\.,'\+]{1,33}[0-9a-zA-Z/\-\?:\(\)\.,'\+])
    - The first three characters identifying the Eligible Market DLT Platform will be provided by the Bundesbank beforehand; the remaining 32 characters are free to use. It is recommended to fill the remaining characters with an existing ID already available on the Market DLT platform (i.e. using an UUID by removing the "-").

Step 2: Initialisation of the trade in the Eligible Market DLT Platform and blocking of the assets

- Via using a smart contract[5] in the Eligible Market DLT Platform, the seller blocks the assets.
- When using the HTLC on the Eligible Market DLT Platform and the "Hash Time Lock" (HTL) function for the life timing of the payment instruction:
    - The seller transfers the assets in the Interoperability Smart Contract in the Eligible Market DLT Platform.
    - The assets are blocked and assured using a *hash lock*. The hash algorithm used is SHA-256.
    - This hash is generated by the seller based on a pre-image, the so called *secret*.
    - The pre-image to the hash will be revealed by the seller bank to the buyer bank after the respective funds have been blocked (see chapter 2 step 7).
    - Besides that, the hash is combined with a Timeout T_1, defining the time until which the assets remain blocked awaiting transfer to the buyer.
    - The assets will be transferred with the correct pre-image of the hash but only in case Timeout T_1 has not been reached.

[5] In general, this smart contract for blocking the assets can be a different one than the Interoperability Smart contract.

- The Trigger Solution does not check the correct blocking of the assets. This lies in the responsibility of company A and B in the Eligible Market DLT Platform.

Step 3: Creation of a payment instruction in the Trigger Solution

- Based on the trade in the Eligible Market DLT Platform, a participant in the Trigger Solution creates a payment instruction in the Trigger Solution.
- The participant in the Trigger Solution, which creates a payment instruction can either be
    - one of the counterparts of the trade, i.e. the payer bank or the receiver bank of the trade or
    - a third party (i.e. another participant in the Trigger Solution).
- All functionalities around the life timing of a payment instruction (starting with the creation) are provided by a Smart Contract in the Trigger Solution.
- The payment instruction contains all necessary information that is needed to create the payment messages for the whole payment process. It also contains the Correlation ID to identify the underlying trade in the Eligible Market DLT Platform. The Correlation ID has to follow the format specified in step 1. The details of the trade itself and the contractual partners are not part of the payment instruction.
- When using HTLC on the Eligible Market DLT Platform and the “Hash Time Lock” function for the life timing of the payment instruction:
    - The payment instruction includes in addition a Timeout T_2 (where T_2 always finishes before a presumed T_1 on the asset side). The whole payment process should be finished successfully before the Timeout T_2 runs up (meaning the amount has been transferred from the RTGS Dedicated Cash Account (DCA) of the payer bank to the RTGS DCA of the receiver bank within that time). T_2 is defined between the two counterparties of the trade in the Eligible Market DLT Platform, it can be a date in the future and the time of T_2 has to end before the close of the trial settlement window.
- The following fields are mandatory and have to be filled with the following format:

Field	**Content**	**Format**
Payer bank	BIC of the RTGS DCA to be debited	Swift format: text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}[A-Z0-9]{3,3}

Receiver Bank	BIC of the RTGS DCA to be credited.	Swift format: text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}[A-Z0-9]{3,3}
Amount	Amount to be transferred	Decimal separator as ".", without thousands separator, max. 16 characters
Currency	Currency of the amount to be transferred	Currency according to the ISO Code: "EUR" to be used
Correlation ID	Via the Correlation ID the underlying trade in the Eligible Market DLT Platform can be identified	Format and restrictions please refer to step 1; the first three characters have to fit to one of the Market DLT platforms.
Creation Date and Time	The date and time when the payment instruction is created	This field is automatically set by the Trigger Solution (reflected • in the API U2A in the format YYYY-MM-DD hh:mm:ss; • in API A2A mode or as peer user it is in the format UNIX-epoch
HTLC Hash	When using HTLC: The hash which is used to block the assets in the Eligible Market DLT Platform (SHA-256 hash of the pre-image which is used in the HTLC interoperability mechanism).	[0-9a-f]{64,64}
HTLC Time Out Date and Time	When using HTLC: It reflects the Timeout T2, defining the time until which the liquidity remains blocked on the BBk interim account awaiting transfer to the seller.	Format: • in the API (U2A and A2A) the format is YYYY-MM-DD hh:mm:ss; • as peer user it is in the format UNIX-epoch Restrictions for this field: • the HTLC Time Out Date has to be a valid business date (see chapter 3)

	• the HTLC Time Out time has to be at least 15 minutes in the future, 15 minutes after the start of day and before the close of the trial settlement window.

- The following fields are optional and have to be filled with the following format:

Field	**Content**	**Format**
Ordering customer	This represents the customer who is prior to the first agent in the payment chain.	Text, max. 1024 characters
Beneficiary customer	This represents the customer who receives the liquidity at the end of the payment chain.	Text, max. 1024 characters

- For further information regarding the operational day schedule, including until when within the business day a payment instruction can be created for a settlement on the same business day, please refer to chapter 3.
- A modification of the created payment instruction is possible until its approval. In case the 4-eyes mode is used, a modification is possible before the approval by a second user. In case of a modification after the initial approval has been done, the approval process has to start again (i.e. two different users have to approve).
- The creator of a payment instruction, the payer bank or the receiver bank can *modify* an existing payment instruction.
- Only the following data of a payment instruction can be modified:
    - the amount,
    - the currency,
    - the HTLC Hash as well as the HTLC Time Out Date and Time (in case of using HTLC).
- In case of mistakes in all other fields, the created payment instruction needs to be *cancelled* and recreated with the correct content.
    - The creator of a payment instruction, the payer bank or the receiver bank can cancel an existing payment instruction. This is only possible until the approval of

the payment instruction. In case the 4-eyes mode is used, a cancellation is possible before the approval by a second user.
    - The status of the cancelled payment instruction is “Cancelled”.
- The status of the created (or modified) payment instruction is (stays) “Prepared”.

Step 4: Approval of the payment instruction in the Trigger Solution

- After the creation of the payment instruction it has to be approved. This can be done by the payer bank or by a third party that has been authorised by the payer bank. A third party can only approve a payment instruction that was created by itself.
- During the approval of the payment instruction a signature of the payment instruction is created and added with the certificate[6] of the approving participant.
- The approval can be done either in 2-eyes or in 4-eyes mode. In case of 4-eyes mode the payment instruction has to be approved by two different users of the payer bank or by two different users of the third party (that is authorised to act for the payer bank).
- In case of 4-eyes mode, the status of the payment instruction changes to “Initially approved” after the approval of the first user. When the second user has approved the payment instruction the status changes to “Approved”.
- After the final approval (in case of 4-eyes mode, after the approval of the second user) it is not possible to modify or cancel the payment instruction anymore and the status of the payment instruction changes to “Approved”.
- Based on the signature of the payment instruction, the Trigger Solution checks whether the payer bank or an authorised third party has approved the payment instruction.
- After the final approval, the creator of a payment instruction, the payer bank or the receiver bank can mark the payment instruction with the status “Submitted” by using the “Submit”-function.

Step 5: BBk-node receives the created and approved payment instruction and validates the payment instruction

- As soon as the payment instruction is marked as “Submitted”, the Trigger Solution starts processing the payment instruction by providing a value date (date and time). The payment instruction status changes then to “Triggered”.

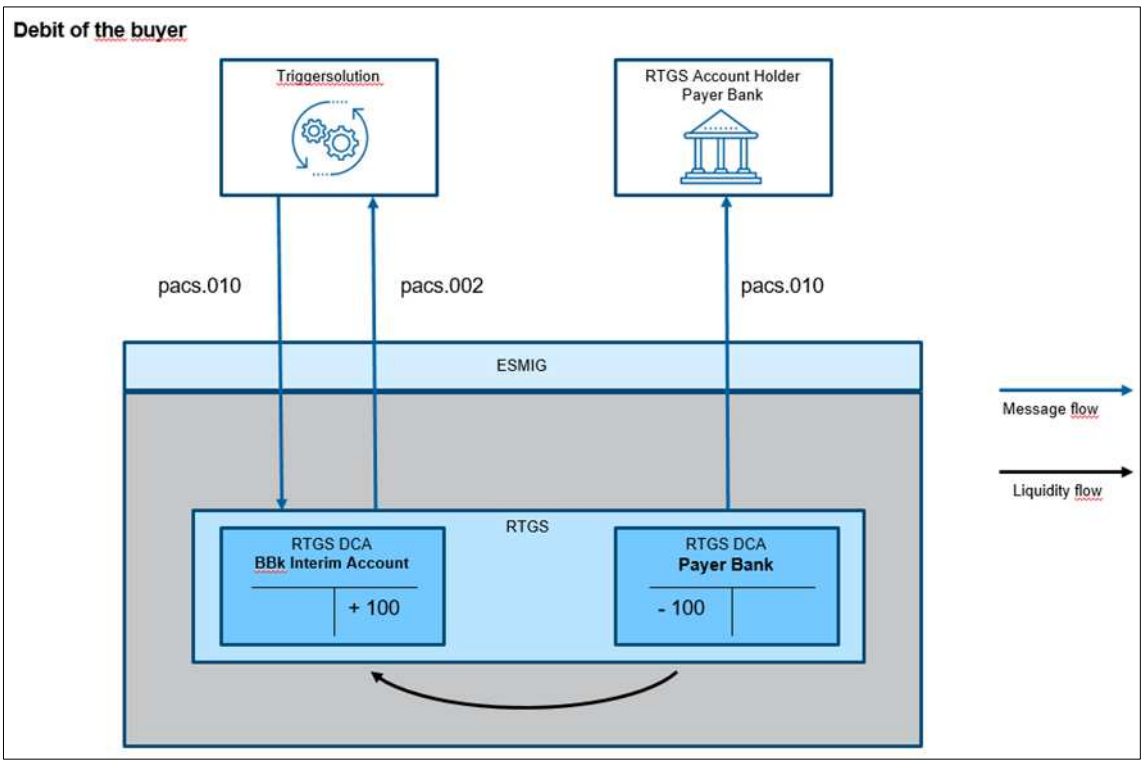
[6] The necessary certificates will be provided during the onboarding process.

- The value date of the payment instruction is the date, when the payment should settle (when in a first step the RTGS DCA of the payer bank is debited and in a second step the RTGS DCA of the receiver bank is credited).
- The value date can either be the same day as the creation of the payment instruction or a future date. The buffering of a payment instruction with a future value date is handled by the participant
  - either via submitting the payment instruction at a later point in time
  - or via using the Hash Time Lock functionality and setting the Timeout T_2 with a date in the future (but before the Timeout T_1 runs up).
- In case the payment instruction has been marked as “Submitted” outside of the business hours of the Trigger Solution (see chapter 3), the value date is set to the next business day.

- The Trigger Solution checks whether the payment instruction contains all necessary information that is needed to create the payment messages for the whole payment process. This check encompasses not only the information needed to create a direct debit message (pacs.010 to debit the RTGS DCA of the payer bank) but also covers the information needed for the creation of a credit transfer message (pacs.009 to credit the RTGS DCA of the receiver bank).

Step 6: The Trigger Solution sends the direct debit (pacs.010) to T2

- The Trigger Solution sends the direct debit (pacs.010) via the Eurosystem Single Market Infrastructure Gateway (ESMIG) to T2.
  The Trigger Solution always sets the reject time of the direct debit to 5 minutes. At the latest after 5 minutes, the pacs.010 has settled successfully or has been rejected.

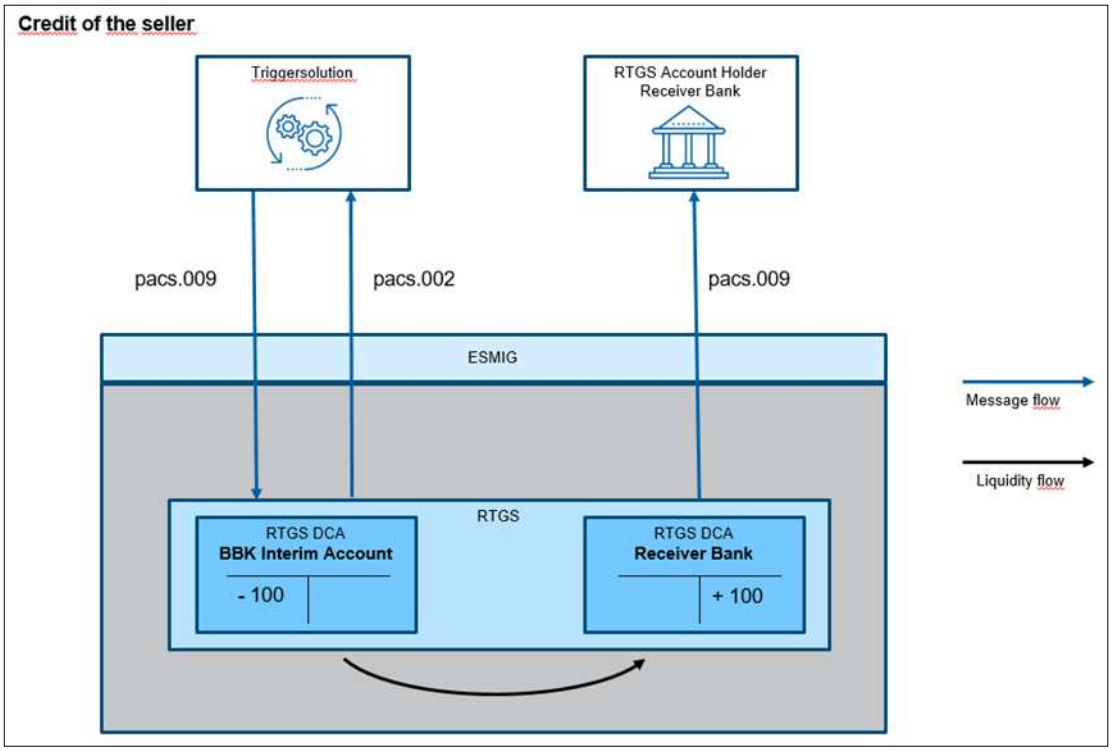


- In case of a successful validation of the pacs.010 in T2, the RTGS Dedicated Cash Account (DCA) of the payer bank is debited and the BBk interim account is credited.
- When using HTLC, after receiving the positive payment status report (pacs.002) from T2 the payment instruction status changes to “Payment Locked”.
- In case the pacs.010 could not settle successfully, a negative payment status report (pacs.002) with respective error codes and error descriptions is sent by T2 to the Trigger Solution. The status of the payment instruction changes to “Failed” and the additional information about the error code and error description are included into the payment instruction.
- The creator of a payment instruction, the payer bank or the receiver bank can transfer the information about the (interim) status of the payment instruction to the Eligible Market DLT Platform according to the Interoperability Mechanism used.

Step 7: The Trigger Solution sends the credit transfer (pacs.009) to T2

- When using the basic approach for the life timing of the payment instruction:
    - Directly after receiving the positive payment status report (pacs.002 – meaning the RTGS DCA of the payer bank has been debited successfully) the Trigger Solution creates the respective credit transfer (pacs.009) and sends it via ESMIG to T2.

- When using HTLC on the eligible Market DLT Platform and the “Hash Time Lock” function for the life timing of the payment instruction:
    - When the HTLC Transfer-function has been used by the creator of a payment instruction, the payer bank or the receiver bank, the Trigger Solution checks, whether the following conditions are fulfilled:
        - The Timeout T_2 has not yet passed.
        - The correct pre-image to the hash has been provided with the HTLC transfer-function.
        - The pre-image to the hash (as provided in step 3) has to be entered in the format: [0-9a-zA-Z]{1,1024}
    - Only in case the above-mentioned conditions are fulfilled, the Trigger Solution creates the respective pacs.009 and sends it to T2 and the status of the payment instruction changes to “HTLC Ready”.
    - In case the above-mentioned conditions are not fulfilled (e.g. the Timeout T_2 has passed or the provided pre-image is not correct), the Trigger Solution retransfers the cash from the BBk interim account to the RTGS DCA of the payer bank by sending a payment return message (pacs.004) to T2. The status of the payment instruction changes to “Failed”.
- The Trigger Solution always sets the reject time of the credit transfer to 5 minutes. At the latest after 5 minutes, the pacs.009 has settled successfully or has been rejected.



- In case of a successful validation of the pacs.009 in T2, the BBk interim account is debited and the RTGS DCA of the receiver bank is credited.
    - T2 will send as a response a positive payment status report (pacs.002) to the Trigger Solution. The status of the payment instruction changes to “Completed”.

- In case the pacs.009 could not settle successfully, a negative payment status report (pacs.002) with respective error codes and error descriptions is sent by T2 to the Trigger Solution.
    - In case the error code received by T2 is E076 “Reject time reached”, the Trigger Solution will retry to settle the credit transfer (“resend functionality”).
    - Using the basic approach: If the error code does not match E076 or if the second settlement attempt of the pacs.009 also fails, the Trigger Solution retransfers the liquidity from the BBk interim account to the RTGS DCA of the payer bank by sending a payment return (pacs.004). The status of the payment instruction changes to “Failed” and the additional information about the error code and error description are included into the payment instruction. In case the settlement of the pacs.004 fails, further manual steps have to follow by the operator of the Trigger Solution.
    - Using HTLC: If the error code does not match E076 or if the second settlement attempt of the pacs.009 also fails, the Trigger Solution does not send a payment return (pacs.004) to retransfer the liquidity from the Deutsche Bundesbank’s interim account to the RTGS DCA of the payer bank. The status of the payment instruction remains “HTLC Ready”. In this case, Deutsche Bundesbank will contact the receiver bank to enable the completion of the credit transfer.
- In case of remaining liquidity on the Deutsche Bundesbank interim account after the cut-off (i.e. because of a successful direct debit but an outstanding credit transfer due to the fact that the transfer-function has not yet been used and the status of the payment instruction is “Payment Locked”) there will be an automatic sweep function. This means via pacs.004 (payment return) the already settled direct debits will be retransferred to the RTGS DCA(s) of the respective payer bank(s) and the status of the payment instruction changes to “Failed”.
  The only exception to the automatic sweep function is, where the Trigger Solution did not receive a confirmation from T2 for an already sent pacs.009. In that case Deutsche Bundesbank will investigate the root cause and will manually process the necessary next steps.

Step 8: Status change of the payment instruction

- During the various steps the Deutsche Bundesbank node receives the response messages of T2 and updates the status of the payment instruction on the Trigger Solution. Depending on the result of the payment process the status of the payment instruction changes to “Payment Locked”, “Failed”, or “Completed”.
- The participants in the Trigger Solution that use the API can query the result of the updated status information. Participants in the Trigger Solution operating an own node can get a notification about the status update of payment instructions.

Step 9: Transfer the status of the payment instruction to the Eligible Market DLT Platform and transfer of the assets

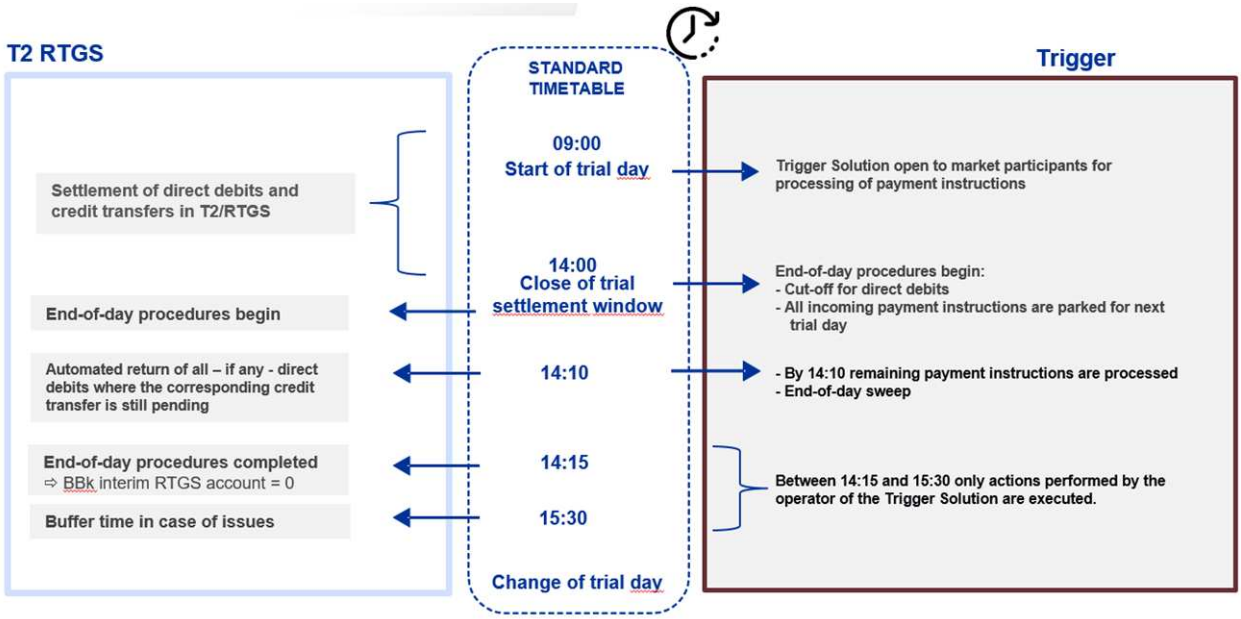
- The creator of a payment instruction, the payer bank or the receiver transfer the status of the payment instruction to the Eligible Market DLT Platform.
- In case of “Payment Locked” payment instructions, the first step of the payment process has been executed successfully. The RTGS DCA of the payer bank has been debited and the Bundesbank interim account has been credited. Step 7 describes the further processing.
- In case of the “Completed” payment the blocked assets in the smart contract will be unblocked and transferred to the buyer.
    - When using HTLC on the eligible Market DLT Platform and the “Hash Time Lock” function for the life timing of the payment instruction, the buyer uses the provided pre-image to the hash (see step 7) within the Timeout T_1 to unblock the security and to transfer it from the smart contract to himself.
- In case of the “Failed” payment the blocked assets in the smart contract will be unblocked and retransferred to the seller.

3 Operational day schedule for Trigger Solution

The Trigger Solution operates on the same days as T2. These are all days except for:

- Saturday,
- Sunday,
- New Year's Day,
- Good Friday,
- Easter Monday,
- 1 May,
- Christmas Day and
- 26 December.

During trial days the Trigger Solution operates according to the following schedule as agreed by the Eurosystem to cater for the lightweight nature of the exploratory work:



Settlement with the Trigger Solution will be available from 09:00 until 14:00. During that time, participants' payment instructions can be processed on the Trigger Solution (e.g. as part of DVP initiated on Eligible Market DLT Platforms) and settled in the RTGS component of T2 in a two-step process (direct debit and credit transfer). This also includes those payment instructions foreseen to settle on that day (defined on the HTLC Timeout Date) and those payment instructions that have been created after the cut-off of the previous business day.

From 14:00 until 15:30, the End of Day trial procedures would be conducted: no new transactions in trials from market participants would be settled during this period. The EoD process would involve:

- completing the settlement process for all payment instructions received until 14.00 (cut-off for direct debits),
- queuing all remaining/new payment instructions for processing during the next trial day and,
- in the specific case, where only the first settlement step in T2-RTGS has occurred (direct debit to the Bundesbank interim account), but not the second step (credit transfer from the Bundesbank interim account to the RTGS DCA of the receiver bank), the reverse transactions to refund the payer via the automated sweep function using the pacs.004 (*estimated end: by 14:15*) will be executed.
- Between 14:15 and 15:30 only actions performed by the operator of the Trigger Solution are executed. This time serves as buffer time in case of issues.

Experiments will be conducted during specific windows tailored to the content of the proposed experiments and within the operational schedule of the T2 UTEST environment.

4 Communication and support

When an Eligible Market Participant or Eligible Market DLT Platform Operator encounters any issue while using the Trigger Solution during Trials or Experiments it will contact its local CB[7] describing the issue.

The local CB will either (i) identify that the issue is not specific to exploratory work and independently affects TARGET Services (e.g. unavailability of RTGS GUI), in which case the regular TARGET procedures shall apply or (ii) identify that the functional or technical issue is specific to the Trigger Solution and notify Deutsche Bundesbank as Solution Provider which shall endeavor to fix it in a timely manner.

[7] Local CB means the Central Bank (i) where the Eligible Market Participant holds its RTGS DCA or (ii) in the country where the Eligible Market DLT Operator is located.

Annex 1 “Message details for participants”

The following parts of this annex provide message details of those messages that will be sent by T2 to the RTGS DCA account holders.

I pacs.010 – direct debit

Publisher	**T2-RTGS (Target Services)**
Collection	**RTGS_pacs_guidelines**
Usage Guideline Name	**pacs.010_InterbankDirectDebit_FinancialInstitutionDirectDebit_pacs.010.001.03**
Base Message	**pacs.010.001.03**

Lvl	Name	XML Tag	Mult	Type / Code	Restr	Remarks Bundesbank
0	Financial Institution Direct Debit V03 (pacs.010.001.03)	<FIDrctDbt>				
1	Group Header	<GrpHdr>	[1..1]			
2	Message Identification	<MsgId>	[1..1]	text{1,35}	T/C	NONREF
2	Creation Date Time	<CreDtTm>	[1..1]	dateTime	T/C	2022-11-24T12:31:28.466+00:00
2	Number Of Transactions	<NbOfTxs>	[1..1]	text {0-9}{1,15}	FV	1
1	Credit Instruction	<CdtInstr>	[1..*]		[1..1]	
2	Credit Identification	<CdtId>	[1..1]	text{1,35}	T/C	CorrelationID (ID of the transaction on the asset chain)
2	Instructing Agent	<InstgAgt>	[0..1]		[1..1]	
3	Financial Institution Identification	<FinInstnId>	[1..1]			
4	BICFI	<BICFI>	[0..1]	text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}([A-Z0-9]{3,3}){0,1}	[1..1] T/C	MARKDEFFTRI
2	Instructed Agent	<InstdAgt>	[0..1]		[1..1]	
3	Financial Institution Identification	<FinInstnId>	[1..1]			

Lvl	Name	XML Tag	Mult	Type / Code	Restr	Remarks Bundesbank
4	BICFI	<BICFI>	[0..1]	text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}([A-Z0-9]{3,3}){0,1}	[1..1] T/C	BANKDEFFXXX
2	Creditor	<Cdtr>	[1..1]			
3	Financial Institution Identification	<FinInstnId>	[1..1]			
4	BICFI	<BICFI>	[0..1]	text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}([A-Z0-9]{3,3}){0,1}	T/C	MARKDEFFTRI
2	Direct Debit Transaction Information	<DrctDbtTxInf>	[1..*]		[1..1]	
3	Payment Identification	<PmtId>	[1..1]			
4	Instruction Identification	<InstrId>	[0..1]	text{1,35}	[1..1] T/C	ID-OF-THE-PAYMENT-INSTRUCTION (Unique Identifier of the Payment Instruction in the Triggersolution)
4	End To End Identification	<EndToEndId>	[1..1]	text{1,35}	T/C	ID of the transaction on the asset chain, i.e. CorrelationID
4	UETR	<UETR>	[0..1]	text [a-f0-9]{8}-[a-f0-9]{4}-4[a-f0-9]{3}-[89ab][a-f0-9]{3}-[a-f0-9]{12}	[1..1]	UETR of the payment sent by the Triggersolution
4	Clearing System Reference	<ClrSysRef>	[0..1]	text{1,35}	T/C	RTGS booking reference
3	Interbank Settlement Amount	<IntrBkSttlmAmt>	[1..1]	0 <= decimal td = 18 fd = 5	T/C	100.00

Lvl	Name	XML Tag	Mult	Type / Code	Restr	Remarks Bundesbank
4	Property Ccy			text [A-Z]{3,3}		EUR
3	Interbank Settlement Date	<IntrBkSttlmDt>	[0..1]	date	[1..1]	2022-11-24
3	Settlement Priority	<SttlmPrty>	[0..1]	text		HIGH
3	Settlement Time Indication	<SttlmTmIndctn>	[0..1]			
4	Debit Date Time	<DbtDtTm>	[0..1]	dateTime	T/C	2022-11-24T12:31:28.466+00:00
3	Settlement Time Request	<SttlmTmReq>	[0..1]			
4	Reject Time	<RjctTm>	[0..1]	time	T/C	14:35:00+01:00 (winter time) 14:35:00+02:00 (summer time)
3	Debtor	<Dbtr>	[1..1]			
4	Financial Institution Identification	<FinInstnId>	[1..1]			
5	BICFI	<BICFI>	[0..1]	text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}([A-Z0-9]{3,3}){0,1}	T/C	BANKDEFFXXX

II pacs.009 – credit transfer

Publisher T2-RTGS (Target Services)
Collection RTGS_pacs_guidelines
Usage Guideline Name pacs.009_FIToFIFinancialInstitutionCreditTransfer_pacs.009.001.08
Base Message pacs.009.001.08

Lvl	Name	XML Tag	Mult	Type / Code	Restr	Remarks Bundesbank
0	Financial Institution Credit Transfer V08 (pacs.009.001.08)	<FICdtTrf>				
1	Group Header	<GrpHdr>	[1..1]			
2	Message Identification	<MsgId>	[1..1]	text{1,35}	T/C	NONREF
2	Creation Date Time	<CreDtTm>	[1..1]	dateTime	T/C	2022-11-24T12:31:28.466+00:00
2	Number Of Transactions	<NbOfTxs>	[1..1]	text [0-9]{1,15}	FV	1
2	Settlement Information	<SttlmInf>	[1..1]			
3	Settlement Method	<SttlmMtd>	[1..1]	text		CLRG
3	Clearing System	<ClrSys>	[0..1]	Choice	[1..1]	
4	Code	<Cd>	[1..1]	text{1,3}	FV	TGT
1	Credit Transfer Transaction Information	<CdtTrfTxInf>	[1..*]		[1..1]	
2	Payment Identification	<PmtId>	[1..1]			
3	Instruction Identification	<InstrId>	[0..1]	text{1,35}	[1..1] T/C	ID-OF-THE-PAYMENT-INSTRUCTION (Unique Identifier of Payment Instruction in Triggerchain)
3	End To End Identification	<EndToEndId>	[1..1]	text{1,35}	T/C	CorrelationID (ID to identify the underlying business on the Asset Chain)
3	UETR	<UETR>	[0..1]	text [a-f0-9]{8}-[a-f0-9]{4}-4[a-f0-9]{3}-[89ab][a-f0-9]{3}-[a-f0-9]{12}	[1..1]	UETR assigned for the payment sent by Triggersolution
3	Clearing System Reference	<ClrSysRef>	[0..1]	text{1,35}	T/C	RTGS booking reference provided by RTGS
2	Interbank Settlement Amount	<IntrBkSttlmAmt>	[1..1]	0 <= decimal td = 18 fd = 5	T/C	100.00

Lvl	Name	XML Tag	Mult	Type / Code	Restr	Remarks Bundesbank
3	Property Ccy			text [A-Z]{3,3}		EUR
2	Interbank Settlement Date	<IntrBkSttlmDt>	[0..1]	date	[1..1]	2022-11-24
2	Settlement Time Indication	<SttlmTmIndctn>	[0..1]			
3	Credit Date Time	<CdtDtTm>	[0..1]	dateTime	[1..1] T/C	2022-11-24T12:32:03.500+00:00
2	Settlement Time Request	<SttlmTmReq>	[0..1]			
3	Reject Time	<RjctTm>	[0..1]	time	T/C	14:45:00+01:00 (winter time) 14:45:00+02:00 (summer time)
2	Instructing Agent	<InstgAgt>	[1..1]		[1..1]	
3	Financial Institution Identification	<FinInstnId>	[1..1]			
4	BICFI	<BICFI>	[0..1]	text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}([A-Z0-9]{3,3}){0,1}	[1..1] T/C	MARKDEFFTRI
2	Instructed Agent	<InstdAgt>	[1..1]		[1..1]	
3	Financial Institution Identification	<FinInstnId>	[1..1]			
4	BICFI	<BICFI>	[0..1]	text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}([A-Z0-9]{3,3}){0,1}	[1..1] T/C	BANKDEFFXXX
2	Debtor	<Dbtr>	[1..1]			
3	Financial Institution Identification	<FinInstnId>	[1..1]			

Lvl	Name	XML Tag	Mult	Type / Code	Restr	Remarks Bundesbank
4	BICFI	<BICFI>	[0..1]	text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}([A-Z0-9]{3,3}){0,1}	T/C	MARKDEFFTRI
2	Creditor	<Cdtr>	[1..1]			
3	Financial Institution Identification	<FinInstnId>	[1..1]			
4	BICFI	<BICFI>	[0..1]	text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}([A-Z0-9]{3,3}){0,1}	T/C	BANKDEFFXXX

Note: this reflects the payload of the credit transfer message. In the header (head.001) of the pacs.009 the message definition ID will be: <MsgDefIdr>pacs.009.001.08**CORE**</MsgDefIdr>.

III pacs.004 – payment return

Publisher	**T2-RTGS (Target Services)**
Collection	**RTGS_pacs_guidelines**
Usage Guideline Name	**pacs.004_PaymentReturn_pacs.004.001.09**
Base Message	**pacs.004.001.09**

Lvl	Name	XML Tag	Mult	Type / Code	Restr	BBk-internal remarks
0	Payment Return V09 (pacs.004.001.09)	<PmtRtr>				
1	Group Header	<GrpHdr>	[1..1]			
2	Message Identification	<MsgId>	[1..1]	text{1,35}	T/C	NONREF
2	Creation Date Time	<CreDtTm>	[1..1]	dateTime	T/C	2022-11-24T12:31:28.466+00:00
2	Number Of Transactions	<NbOfTxs>	[1..1]	text [0-9]{1,15}	FV	1
2	Settlement Information	<SttlmInf>	[1..1]			
3	Settlement Method	<SttlmMtd>	[1..1]	text		CLRG
3	Clearing System	<ClrSys>	[0..1]	Choice	[1..1]	
4	Code	<Cd>	[1..1]	text{1,3}	FV	TGT
1	Transaction Information	<TxInf>	[0..*]		[1..1]	
2	Original Group Information	<OrgnlGrpInf>	[0..1]			
3	Original Message Identification	<OrgnlMsgId>	[1..1]	text{1,35}	T/C	Original Message ID of the pacs.010 originally sent to debit the buyer. Example: TRI2023-05-02T09:22:00
3	Original Message Name Identification	<OrgnlMsgNmId>	[1..1]	text{1,35}	T/C	Example: pacs.010.001.03
3	Original Creation Date Time	<OrgnlCreDtTm>	[0..1]	dateTime	T/C	Creation Date Time from the original pacs.010 payment. Example 2023-05-02T09:22:00
2	Original Instruction Identification	<OrgnlInstrId>	[0..1]	text{1,35}	T/C	InstructionId from the original pacs.010 payment. Example: ID-OF-THE-PAYMENT-INSTRUCTION
2	Original End To End Identification	<OrgnlEndToEndId>	[0..1]	text{1,35}	[1..1] T/C	EndToEndId from the original pacs.010 payment. Example: Correlation ID
2	Original UETR	<OrgnlUETR>	[0..1]	text [a-f0-9]{8}-[a-f0-9]{4}-4[a-f0-9]{3}-[89ab][a-f0-9]{3}-[a-f0-9]{12}	[1..1]	To be filled with UETR from the original pacs.010 payment. Example: e010b031-59c5-41e9-be4c-d45102fc201e
2	Original Interbank Settlement Amount	<OrgnlIntrBkSttlmAmt>	[0..1]	0 <= decimal td = 18 fd = 5		Amount of the pacs.010 Example: 100.00
3	Xml Attribute Currency	<Ccy>		text [A-Z]{3,3}		EUR
2	Original Interbank Settlement Date	<OrgnlIntrBkSttlmDt>	[0..1]	date		Example: 2023-05-02
2	Returned Interbank Settlement Amount	<RtrdIntrBkSttlmAmt>	[1..1]	0 <= decimal td = 18 fd = 5	T/C	Amount of the pacs.010 Example: 100.00
3	Property Ccy			text [A-Z]{3,3}		EUR

2	Interbank Settlement Date	<IntrBkSttlmDt>	[0..1]	date	[1..1]	Example: 2023-05-02
2	Settlement Time Indication	<SttlmTmIndctn>	[0..1]			
3	Credit Date Time	<CdtDtTm>	[0..1]	dateTime	[1..1] T/C	2022-11-24T12:32:03.500+00:00
2	Clearing System Reference	<ClrSysRef>	[0..1]	text{1,35}	T/C	RTGS booking reference provided by RTGS
2	Instructing Agent	<InstgAgt>	[0..1]		[1..1]	
3	Financial Institution Identification	<FinInstnId>	[1..1]			
4	BICFI	<BICFI>	[0..1]	text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}([A-Z0-9]{3,3}){0,1}	[1..1] T/C	MARKDEFFTRI
2	Instructed Agent	<InstdAgt>	[0..1]		[1..1]	
3	Financial Institution Identification	<FinInstnId>	[1..1]			
4	BICFI	<BICFI>	[0..1]	text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}([A-Z0-9]{3,3}){0,1}	[1..1] T/C	BANKDEFFXXX
2	Return Chain	<RtrChain>	[0..1]		[1..1]	
3	Debtor	<Dbtr>	[1..1]	Choice		
4	Agent	<Agt>	[1..1]			
5	Financial Institution Identification	<FinInstnId>	[1..1]			

6	BICFI	<BICFI>	[0..1]	text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}([A-Z0-9]{3,3}){0,1}	T/C	MARKDEFFTRI
3	Creditor	<Cdtr>	[1..1]	Choice		
4	Agent	<Agt>	[1..1]			
5	Financial Institution Identification	<FinInstnId>	[1..1]			
6	BICFI	<BICFI>	[0..1]	text [A-Z0-9]{4,4}[A-Z]{2,2}[A-Z0-9]{2,2}([A-Z0-9]{3,3}){0,1}	T/C	BANKDEFFXXX
2	Return Reason Information	<RtrRsnInf>	[0..*]		[1..1]	
3	Reason	<Rsn>	[0..1]	Choice	[1..1]	
4	Code	<Cd>	[1..1]	text{1,4}		Example: ED05 means: Settlement failed

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