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Reason for change and expected benefits/business motivation:

TIPS offers the possibility to query a previously submitted or received Instant Payment transaction or Positive Recall Answer in U2A mode via the TIPS GUI using the Payment transaction status query as described in chapter 4.1.4. of the TIPS User Handbook. In order to retrieve information about a transaction, the search screen requires both the Originator BIC and the Transaction Reference.

TIPS allows actors to query only payment transactions that are still available in the production system, i.e. before they are purged after a data retention period set to five calendar days.

Banks have identified the need to be able to retrieve transaction information using other search criteria than the combination of Originator BIC and Transaction Reference – particularly against the background that the Transaction Reference might not be available in all cases.

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Description of requested change:

It is requested to offer a possibility to query payment transactions by using the following search criteria (individually or in combination):
- Amount
- Interbank Settlement Date
- Time range for the Acceptance Timestamp
- Status
- Error Code
- Debtor BIC
- Creditor BIC

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The transactions should be available to be queried for three months. A certain delay in making the data available after processing will be considered acceptable by the TIPS CG if this significantly reduces the implementation costs for the change.

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Submitted annexes / related documents:

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Proposed wording for the Change request:

1) **UDFS v2.1.1 - §1.2.5 Graphical user interface**

TIPS offers a set of functions accessible via a dedicated Graphical User Interface (GUI) in U2A mode. Authorised users are able to access TIPS functions and data via the GUI based on their access rights profile.

The following table provides the exhaustive list of TIPS U2A functions provided through the GUI.

Each TIPS Actor may trigger all or only a subset of these functions depending on the participant type (e.g. Central Bank, TIPS Participant, etc.) and only in relation to the objects in its own data scope. These functions, <u>with the exception of the Advanced Payment Transaction status query which may be subject to a less restrictive service level agreement,</u> are available on a 24/7/365 basis.

Table 1 – TIPS U2A functions

Function	Actor
Block/Unblock Participant	CB, TIPS Operator[1]
Block/Unblock TIPS Account	CB, TIPS Operator[Error! Bookmark not defined.]
Block/Unblock Credit Memorandum Balance	TIPS Participant, Instructing Party[2], CB, TIPS Operator
Adjust Credit Memorandum Balance Limit	TIPS Participant, Instructing Party[3], CB, TIPS Operator
Query Account Balances and Status	TIPS Participant, Instructing Party, CB, TIPS Operator
Query CMB Limit and Status	TIPS Participant, Instructing Party, CB, TIPS Operator
Query Payment Transaction Status	TIPS Participant, Instructing Party, CB, TIPS Operator
<u>Advanced Payment Transaction Status query</u>	<u>TIPS Participant, Instructing Party, CB, TIPS Operator</u>
Liquidity Transfer Status	TIPS Participant, Instructing Party, CB, TIPS Operator
Initiate Outbound Liquidity Transfer	TIPS Participant, Instructing Party, CB, TIPS Operator

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[1] TIPS Operator can block TIPS Participants and TIPS Accounts in contingency and upon request of the responsible Central Bank.

[2] An Instructing Party acting on behalf of a TIPS Participant may block/unblock CMBs owned by the relevant TIPS Participant, unless restricted via access rights.

[3] An Instructing Party acting on behalf of a TIPS Participant may adjust the limit of the CMBs owned by the relevant TIPS Participant, unless restricted via access rights.

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2) UDFS v2.1.1 - §1.5.1 General concepts

[…]

Queries, with the exception of the Advanced Payment Transaction status query which may be subject to a less restrictive service level agreement, are available on a 24/7/365 basis, and allow users to access data in real time. TIPS provides ~~four~~five types of queries:

- Account balance and status query;
- CMB limit and status query;
- Payment transaction status query;
- Advanced Payment transaction status query;
- Liquidity transfer status query.

With the only exception of the Payment transaction status query, Advanced Payment transaction status query and the Liquidity transfer status query, which are available in U2A only, the remaining queries can be triggered both in U2A and A2A mode.

[…]

3) UDFS v2.1.1 - §1.5.5.1 Queries

[…]

In order to check the status of a previously submitted or received Instant Payment transactions or Recall Answers the following quer~~y~~ies ~~is~~are available in U2A mode only:

- Payment transaction status query~~;~~;
- Advanced Payment transaction status query.

[…]

Actor	Account Balance and Status Query	CMB Limit and Status Query	Payment Transaction Status Query and Advanced Payment Transaction Status Query	Liquidity transfer status query
Central Bank	Accounts under the CB's responsibility	CMBs under the CB's responsibility	Payment transactions which involve either as originator BIC or as beneficiary BIC one of the TIPS Actors belonging to the data scope of the given Central Bank.	All liquidity transfers affecting accounts in their books

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Actor	Account Balance and Status Query	CMB Limit and Status Query	Payment Transaction Status Query and Advanced Payment Transaction Status Query	Liquidity transfer status query
[…]	[…]	[…]	[…]	[…]

[…]

The Payment transaction status query allows the authorised actor to get the detailed information for one payment transaction, specifying as input parameter (i) the Originator Participant or Reachable Party BIC and (ii) the payment transaction reference.

The following data shall be displayed on the screen:

- Originator BIC of the payment transaction;

- Beneficiary BIC of the payment transaction;

- Payment transaction reference;

- Payment transaction status;

- Amount of the payment transaction;

- Settlement timestamp (if available).

The Advanced Payment transaction status query allows the authorised actor to get the detailed information for the payment transactions, based on the selected combination of search criteria.

For each payment transaction, the following data shall be displayed on the list screen:

- Payment transaction reference;

- Originator BIC of the payment transaction;

- Beneficiary BIC of the payment transaction;

- Amount of the payment transaction;

- Acceptance Timestamp;

- Amount of the payment transaction;

- Settlement business date (if available);

- Status of the payment transaction;

- Error code (if available).

4) **UDFS v2.1.1 - §2.7 Queries**

[…]

The section covers the scenarios in which a Participant or Instructing Party queries the system in order to obtain information belonging to the balance and the status of an account or to the limit and the status of a CMB. This process is characterized by ~~four~~five different types of query:

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- Account balance and status query;
- CMB limit and status query;
- Payment transaction status query;-
- Advanced Payment transaction status query;
- Liquidity Transfer status query.

5) UDFS v2.1.1 - §2.7.1 Examples

[...]

For a detailed description of the (i) Payment transaction and status query and (ii) Advanced Payment transaction status query U2A screens, the reader may refer to the User Handbook (see **Error! Reference source not found.**).

[...]

6) UHB v2.1.1 – New Advanced Payment Transaction Status Query screen

4.1.5 Advanced Payment transaction Status Query

The Advanced Payment transaction status query allows the authorised actor to get the detailed information of payment transactions. TIPS allows actors to query payment transactions in the production system within the last three calendar months, in near-real time.

4.1.5.1 Advanced Payment transaction status query – Search/List screen

Context of Usage	This screen contains the search criteria that can be used to retrieve the relevant information on payment transactions. The user can used multiple search criteria jointly in order to restrict the returned data set of payment transactions. In order to reduce the risk of performance issues, in case of too loose search criteria that may lead to the retrieval of a large number of transactions, the inquiry will limit the displayed result to the most recent 100 payment transactions. However, in the event of payment transactions, which match to the selected search criteria, exceeding the abovementioned threshold the user will be informed by a pop-up that more results are available. Therefore, the user will have the possibility to refine the research by using (i) more restrictive or (ii) different search criteria.
	TIPS shall allow the Originator Participant, the Instructing Party acting on behalf of the Originator Participant, the Beneficiary Participant and the Instructing Party acting on behalf of the Beneficiary Participant to query the status of payment transactions, which match the selected search criteria.
	This function is available in U2A mode only. In case the user is not entitled to view the data on the transactions looked up an error code is returned. As a general remark, each payment transaction is eligible to be retrieved if either the Originator BIC or the Beneficiary BIC (or both) belong to the data scope of the requestor.
Screen Access	� Payment transaction >> *Advanced Search/List* Screen

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Privileges   To use this screen, the following Privileges are needed:

    ▌ TIP_Query

    ▌ TIP_QueryReachable

Screenshot

    Screenshot to be added

Field description

Advanced Payment transaction status query - Search criteria	
Object	**Required Format**
Originator BIC	Field where to enter the BIC of the owner of the debited TIPS account. Format is BIC11. References for error messages: [▶]: **▌** R002
Beneficiary BIC	Field where to enter the BIC of the owner of the credited TIPS account. Format is BIC11. References for error messages: [▶]: **▌** R002
Settlement business date	Field where to enter the RTGS business date of the payment transaction as a lookup criterion.
Amount	Field where to enter the amount of the payment transaction as a lookup criterion.
Currency	Field where to enter the currency of the payment transaction as a lookup criterion, from the list of settlement currencies active in TIPS. Default value is EUR.
Acceptance Timestamp[4] From	Field where to enter the lower bound for the Acceptance timestamp of the instant payment. Required format is: YYYY-MM-DD hh:mm:ss
Acceptance Timestamp**Error! Bookmark not defined.** To	Field where to enter the upper bound for the Acceptance timestamp of the instant payment. Required format is: YYYY-MM-DD hh:mm:ss
Status	Select the status of the payment transaction from the possible values: **▌** All **▌** Settled (default value) **▌** Failed **▌** Rejected **▌** Rejected by the Beneficiary **▌** Expired
Error Code	Select the error code of the payment transaction from the possible values:

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[4] Since the Acceptance Timestamp field is only relevant for the pacs.008 message, its usage as search criterion will limit the inquiry to the instant payment transactions only (i.e. excluding any recall answer).

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	▐ All (default value)
	▐ AB05
	▐ AB06
	▐ AB08
	▐ AG09
	▐ AM02
	▐ AM05
	▐ AM23
	▐ MS01
	▐ TBL1
	▐ TBL2
	▐ CNOR
	▐ DNOR

Advanced Payment transaction status query - List	
Payment Transaction reference	Shows the reference of the payment transaction
Originator BIC	Shows the BIC code of the Originator Bank of the given payment transaction.
Beneficiary BIC	Shows the BIC code of the Beneficiary Bank of the given payment transaction.
Settlement business date	Shows the RTGS business date at which the transaction is settled. Displayed format is: YYYY-MM-DD The field is empty in case the transaction is not settled.
Payment transaction amount	Shows the amount of the payment transaction.
Payment transaction currency	Shows the currency of the payment transaction
Acceptance Timestamp	Shows the Acceptance timestamp of the instant payment. Displayed format is: YYYY-MM-DD hh:mm:ss:µsµsµsµsµs
Status	Shows the status of the payment transaction from the possible values: ▐ Settled ▐ Failed ▐ Rejected ▐ Rejected by the Beneficiary ▐ Expired
Error Code	Shows the error code of the payment transaction from the possible values: ▐ AB05 ▐ AB06 ▐ AB08 ▐ AG09 ▐ AM02

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	❙ AM05
	❙ AM23
	❙ MS01
	❙ TBL1
	❙ TBL2
	❙ CNOR
	❙ DNOR
	The field is empty in case the payment transaction is settled.

Buttons

Search	This function enables the user to retrieve the information on the selected payment transactions. References for error messages: [▶]: ❙ R010
Reset	This function enables the user to set the search criteria fields to their default values.

7) URD v1.1.1 – §7.2 General requirements

ID	**TIPS.UR.07.020**
Name	Availability for queries in user-to-application mode
Requirement	TIPS shall accept the following queries from the Graphical User Interface on a 24/7/365 basis:
	• Account Balance and Status Query (see TIPS.UR.07.060);
	• CMB Limit and Status Query (see TIPS.UR.07.070);
	• Payment Transaction Status Query (see TIPS.UR.07.080);
	• Advanced Payment Transaction Status Query (see TIPS.UR.07.081).

All queries accessible via U2A are available during the operating hours of the TIPS service, i.e. 24/7/365, except for Advanced Payment Transaction Status Query which may be subject to a less restrictive service level agreement.

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8) URD v1.1.1 – New requirement for Advanced Payment Transaction Status Query

ID	**TIPS.UR.07.081**
Name	Advanced Payment Transaction Status Query
Requirement	TIPS shall provide an *Advanced Payment Transaction Status Query* to TIPS actors, which supports advanced filter criteria on payment transactions.

The query should support the following selection criteria:
- RTGS business date
- Amount
- Time range for the Acceptance Timestamp
- Status
- Error Code
- Debtor BIC
- Creditor BIC

The query should return at least the following information for each payment transaction:
- Payment transaction reference;
- RTGS business date
- Amount
- Acceptance Timestamp
- Status
- Error Code (if available)
- Debtor BIC
- Creditor BIC

Error! Reference source not found. lists actors' permissions regarding access to the underlying data. The same permissions defined for Payment Transaction Query apply also to Advanced Payment Transaction Status Query.

9) URD v1.1.1 – §8.2.1 General requirements – Amendment of Table 14

Type	Description	Section	U2A	A2A
[…]	[…]	[…]	[…]	[…]
Query	Payment Transaction Status Query	**Error! Reference source not found.**	24/7/365	N/A
Query	Advanced Payment Transaction Status Query	7.3	24/7/365	N/A

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Type	Description	Section	U2A	A2A
Reference Data	Report subscription	**Error! Reference source not found.**	Limited time[5]	N/A
[…]	[…]	[…]	[…]	[…]

10) URD v1.1.1 – §8.2.2 U2A Queries

ID	**TIPS.UR.08.040**
Name	Query functions available in user-to-application mode at any point in time
Requirement	TIPS shall provide the following queries in U2A mode: • CMB Limits query and Status Query; • Account Balance and Status Query; • Payment Transaction Status Query; • Advanced Payment Transaction Status Query.

The detailed requirements related to those queries are documented in chapter **Error! Reference source not found.**.

11) TIPS User training – FN.020_Access to TIPS – slide 8 and slide 17

New U2A function for Advanced Payment transaction Status Query

12) TIPS User training – FN.070_Query report and notifications – slide 5

New use case for Advanced Payment transaction Status Query

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High level description of Impact:

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[5] Limited time refers to the opening hours of the common reference data module.

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A new search/list screen for *Advanced Payment transaction status query* is envisaged in order to meet the requirement of extending the research capability on payment transactions from the TIPS GUI. The new screen allows to using a combination of search criteria and it shows the list of payment transactions retrieved in "near real-time" time.

The query will allow performing historical queries on payment transaction handled in TIPS within the last three calendar months and depending on the requestor's data scope. Taking into account the near real-time assumption, there might be a temporal gap in which, despite the payment transaction reached a final status in TIPS, it cannot immediately be retrieved from the *Advanced Payment transaction status query* screen.

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Impacts on other projects and products:

A new component of the TIPS platform need to be realised, enhancing the current informational database capabilities in order to:

- Store all payment information continuously ("near real-time"), in order to copy with all current and future needs for querying and investigating in the three-months retention period having information up to date;
- Allow free queries with multiple search conditions and combination of such search conditions;
- Provide such services 7/24/365 with no disruptions even in case of maintenance of the system.

For such a reason, the list of TIPS components in the table on page 11 has been updated adding the "informational database" line.

Outcome/Decisions:

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L3 analysis - General Information	
Impact on TIPS	
Business Interface	
	A2A Interface
x	U2A Interface
Settlement Engine	
	Payment Transaction
	Liquidity Transfer
	Recall
Queries and Reports	
x	Queries
	Reports
x	Informational database
Other functions	
	Local Reference Data Management
	Statistics
	Complex Queries and Reports
	Mobile Proxy Look-up
Common Components	
	ESMIG
	CRDM
	Archiving
	Billing
	DMT
Operational Tools	
	SLA Reporting
	TMS
	Technical Monitoring
	Change Management
	Capacity Management
Infrastructure request	

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	Application components impacted	
	Application components not impacted	
Operational activities		
	Business activities impacted	
	Technical activities impacted	
New functionalities		

Impact on documentation		
Document	**Chapter**	**Change**
UDFS	§1.2.5 §1.5.1 §1.5.5.1 §2.7 §2.7.1	The new U2A *Advanced Payment transaction status query* is added to the relevant chapters describing query functionalities.
UHB	New chapter	New search/list screen for *Advanced Payment transaction status query*
Training documentation	- FN.020_Access to TIPS - FN.070_Query report and notifications	New Advanced Payment transaction status query use case
Other documents		

Overview of the impact of the request on TIPS (L2 view)

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Summary of functional, operational, development, infrastructure and security impacts

Summary of functional impact:

A new search/list screen for *Advanced Payment transaction status query* is envisaged in order to meet the requirement of extending the research capability on payment transactions from the TIPS GUI. The new screen allows to using a combination of search criteria and it shows the list of payment transactions retrieved in "near-real" time.

The query will allow performing historical queries, in near-real time, on payment transaction handled in TIPS within the last three calendar months and depending on the requestor's data scope. Taking into account the near real-time assumption, there might be a temporal gap in which, despite the payment transaction reached a final status in TIPS, it cannot immediately be retrieved from the *Advanced Payment transaction status query* screen.

Moreover, a potential synergy with TIPS CR-0027 has to be taken into account, as they are both part of the same business scenario (i.e. advanced query/response on payment transactions). Therefore, it is suggested to envisage a possible joint deployment of CR-0026 and CR-0027 with the same batch.

Summary of operational impact:

The implementation of a new informational database for TIPS, used to meet the requirements of the new Advanced Payment transaction query, will have an impact on the operational procedures currently in place for statistics and operational support. In particular, there will be the need of modifying/rebuilding the set of queries used for investigation on payment status and for requests of extractions coming from ECB or Central Banks.

Summary of application development impact:

The current "Query Payment Transaction" function is based on the TIPS Operational database. The design of the "Advanced Payment Transaction Status Query" function cannot use the same component for the following reasons:

- It only includes payments of the last 5 days
- It is not possible to directly access data using search criteria different from those that are currently allowed. This because of the nature of the database (a NoSQL database optimized for the accesses needed by the processing of payments).

On the other hands, the retention of TIPS payments for three months is ensured by a second-level database, the Informational database, which cannot be accessed by the new function for the following reasons:

- It is not continuously updated (data are copied every three hours);
- It cannot be directly accessed by TIPS on-line functionalities because it has been designed for batch processing of statistics (e.g. EPC stats, reports, billing item calculations) and it does not full meet the TIPS requirements for 7/24/365 operations.

. The realisation of the "Advanced Payment Transaction Status Query" need to implement a new Informational database having the following characteristics:

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- It continuously receives and inserts/updates data coming from the Operational database (this must be realized implementing technological solutions that minimizes the disturbance to the TIPS payment processing);
- It is built with the same principles of redundancy and distribution (*sharding*) of data adopted for the design of the Operational database, having the same level of availability (7/24/365) and allowing maintenance without service disruption);
- It allows SQL access to data (counterbalancing the unavoidable loss of performances compared with the Operational database).

Summary of infrastructure impact:

Choose, design and implement a new Informational database having the above-mentioned features and procure the hardware resources.

Extend the available disk space (roughly of the same quantity assigned to the current Informational database).

Acquire and install the middleware components responsible for the data transfer between the Operational Database and the Informational Database (i.e. procure install and deploy an Aerospike Connect for Kafka);

Deploy of new Open Systems servers including the related Red Hat Enterprise Linux licenses.

Summary of security impact:

See Change Request analysis.