EUROPEAN CENTRAL BANK

EUROSYSTEM

T2S CHANGE REQUEST FORM		
General Information (Origin of Request) ☒ User Requirements (URD) or GUI Business Functionality Document (BFD) ☐ Other User Functional or Technical Documentation (SYS)		
Request raised by: 4CB	**Institute:** 4CB	**Date raised:** 20/12/2022
Request title: Penalty Mechanism calculation and storage extension		**Request No.:** T2S 0802 URD
Request type: Common	**Classification:** Regulatory compliance	**Urgency:** Fast-track[1]
1. Legal/business importance parameter[2]: High		**2. Market implementation efforts parameter[3]:** Low
3. Operational/Technical risk parameter[4]: Low		**4. Financial impact parameter[5]:** Very high
Requestor Category: Eurosystem		**Status:** On hold

Reason for change and expected benefits/business motivation:

The T2S Penalty Mechanism (PM) relies on data provided by CRDM related to the Securities under each CSD's responsibility. A part of this reference data, notably Securities Subject to Cash Penalties (SSTCP) and Daily Prices, are provided by CSDs on a daily basis; this data is used for the daily processes related to the calculation of new penalties, recalculation of existing ones, and regular reporting.

SSTCP is the reference data object that defines the eligibility of an ISIN to the calculation of penalties in the PM. Each CSD configures a SSTCP instance related to the ISINs under their responsibility that should be subject to cash penalties. Daily Prices is the reference data object used for the calculation of penalties. Each CSD provides the Daily Prices of the ISINs under their responsibility.

Given the standard purging logic in T2S, Daily Prices are automatically purged after 3 months (92 days)[6]. This purging, together with the possibility to appeal cash penalties detected in a given month until the 13th business day of the following month, lead to limiting the data in T2S that are taken into account for the calculation and recalculation of penalties to 40 days, resulting from the subtraction of 52 calendar days (from 1st day of the month to the 13th day of the following one) to the 92 days of maximum availability for Daily Prices. This way, penalties calculated taking into account data up to 40 days in the past, can be recalculated until the last day of their appeal period with the same set of data that was used for their initial calculation. Consequently, if T2S is to compute a Late Matching Fail Penalty (LMFP) with an Intended Settlement Date (ISD) of more than 40 days in the past, the applicable business days for the time period covering the days between 41 days in the past and the (ISD) will be based on the reference data in T2S referring to the 40th day in the past.

The ECB approached ESMA in September 2022 to request regulatory guidance on how far in the past T2S should calculate LMFPs with the accurate reference data. The regulators will consider a clarification on this matter in the Level 2 text (Commission Delegated Regulation (EU) 2017/389) and potentially in the CSDR as it cannot be clarified in the short term via supervisory convergence measures. Until such clarification is available, the data that

[1] Fast-track approach justification: This change should be implemented as soon as possible so that the time compliance gap is the minimum possible.
[2] Legal/business importance parameter was set to 'High' because it will significantly reduce the regulatory compliance gap with CSDR.
[3] Market implementation effort parameter was set to 'Low' because a long implementation period is not foreseen on the side of Participating CSDs, CBs and their communities in order for them to check that the new calculation and storage extension is applied.
[4] Operational/technical risk parameter was set to 'Low' since this change is not expected to threaten the Service Level for Participating CSDs or CBs or to have significant operational impact on the Participating CSDs, CBs or 4CB.
[5] Low < 100kEUR < Low-Medium < 200 kEUR < Medium < 400kEUR < High < 700kEUR < Very high
[6] Given that, if the price for a Security is not provided, T2S will consider the latest available one (i.e. the latest one loaded in CRDM Data) within the validity period of the relevant SSTP, a price older than 3 months won't be automatically purged if still relevant for penalty calculations (i.e. if no newer applicable prices covering the retention period have been provided for the same ISIN)"

T2S takes into account for the calculation and recalculation of penalties should be increased to 92 days already now. This change aims, at minimum, to limit T2S's potential regulatory compliance gap with CSDR.

As explained above, taking into account the period during which a penalty is in its appeal period, and in order to ensure that each penalty can be recalculated until the last day of such appeal period with the same set of data that was used for their initial calculation, then the purging of the respective reference data must also be increased to 144 days [7] resulting from the addition of the 52 calendar days of the appeal period to the increased purging period for 92 days for Daily Prices.

Description of requested change:

The parameter that defines the data that are taken into account for the calculation and recalculation of penalties will be increased from 40 to 92 calendar days. Consequently, the purging of reference data in T2S will be increased from 92 to 144 calendar days (increase affecting Daily Prices[8], as it has been already foreseen for SSTCPs with PBI225429)

It has to be mentioned that further increases of the parameter that defines the data to be provided for the calculation and recalculation of penalties (i.e. more than 144 days for Penalty Reference Data Purging) and the corresponding increase in the parameter that defines the data that are taken into account for the calculation and recalculation of penalties would lead to additional processing burden on the daily data extraction for calculations that will likely not be sustainable with the current design; the assumption is that the CRDM provision of data would have to be redesigned completely if the calculation parameter is to be further extended in order to maintain the agreed KPIs and deadlines for the provisioning of the reports; in addition, the feasibility of such a change cannot be assumed in principle.

Submitted annexes / related documents:

The annexed clarification note SDD-PBR-0077 relates to a change implemented within R5.3 (February 2022), before CR-0802 will be implemented. It introduces the purging of Daily Prices to the standard 92 days and the update of the calculation of LMFPs to 40 business day in the past for penalties related to prior business days.

SDD-Clarification Note SDD-PBR-0077 Automatic purge for penalty mechanism related data and consequent update on calculation of LMFPs with applicable BD in the past

SDD-PBR-0077 - PBI-218927 [FI] T2S p

Outcome/Decisions:

*ECB on 20 December 2022: the ECB team checked the completeness of the CR template, assigned change request number CR-0802 and informed the CR initiator.
*CRG on 7 March 2023: the CRG agreed to recommend CR-802 for authorisation by the T2S Steering Level, following a fast-track approach.
*PMG on 14 March 2023: the PMG agreed to request the detailed assessment of CR-0802 in view of R2023.NOV, subject to the positive resolution to authorise CR-0802 by the Steering Level.
*AMI-SeCo on 16 March 2023: the AMI-SeCo agreed with the CRG recommendation of CR-0802 for T2S Steering Level Authorisation.
*CSG on 17 March 2023: the CSG agreed to authorise CR-0802.
*NECSG on 17 March 2023: the NECSG agreed to authorise CR-0802.
*MIB on 20 March 2023: the MIB agreed to authorise CR-0802.
*CSG on 14 November 2023: the CSG agreed to put CR-0802 on hold since more clarity from the Regulators was needed. In particular, how long in the past T2S should calculate Late Matching Fail Penalties. The CRG was also presented with some figures related to penalties in T2S and it was acknowledged that there were very few penalties that were beyond the 40 business days and 90 business days in the past and which CR-0802 aimed to include in the calculation.

Documentation to be updated:

UDFS section 1.6.3.3.4 Reference data archiving and purging
[…]

[7] The T2S operator introduced a purging mechanism of expired SSTCPs with a purge parameter of 144 days on 21 January 2023. This purge parameter (PBI225429) already anticipated a part of the changes that will be introduced by T2S-0802-URD for the calculation parameter.
[8] This entails a transition period of 2 months during this data is built up.

- T2S can purge some reference data objects without the need for these objects to be deleted by a duly authorised user. For example, T2S can purge an eligible counterpart CSD link or a securities valuation even if they have not been deleted. More precisely, T2S purges these reference data objects three calendar months after the end of their validity period. In this case the triggering condition is the expiration of the validity period . In some specific cases (i.e. Securities Subject to Penalties) the triggering condition is also the expiration of the validity period, but due to the specificities of the Penalty Mechanism the purging period is extended to 144 days. .

TABLE 161 – PURGE TRIGGERING CONDITIONS

AREA	OBJECT	TRIGGERING CONDITION
…	…	…
Securities penalty data	Securities subject to cash penalties	~~Deletion~~End of validity period (144 calendar days retention applied)
	Security penalty rate	Deletion
	Cash discount penalty rate	Deletion
	Daily price	~~Deletion~~End of validity period of related Securities Subject to Cash Penalties object (144 calendar days retention period applied) or end of validity period (provided a newer price has been configured for the same ISIN)
	SME Growth Market	
	Euro Foreign Exchange Reference Rate	Deletion
		Deletion
…	…	…

UDFS Section 1.6.1.14.5 Penalty Calculation

[…]

The required reference data for the Calculation Method (and if needed foreign exchange rates) is retrieved taking into account that the maximum period penalty reference data remains in the system without being purged is 144~~3~~ calendar days, and that a penalty can be 52 calendar days in its appeal period. Consequently, in case a Settlement Instruction is matched in T2S with an ISD more than ~~40[310]~~ 92 calendar days (3 ~~calendar days~~ months) in the past (i.e.: in case of a LMFP), T2S will compute the LMFP:

I Using, for the business days that are within the last ~~40~~ 92 calendar days (3 ~~calendar days~~ months), the reference data of the corresponding business day; and

I Using, for the business days that are before the last ~~40~~ 92 calendar days (3 ~~calendar days~~ months), the reference data of the business day equal to current business day minus ~~40~~ 92 calendar days

~~Footnote 310 40 being the result of substracting the 52 calendars a penalty can be in its appeal period, to the 92 calendar days set as Retention Period.~~

GFS section3.4.7.2 Description of the module / 2 – Penalty Calculation

Sub-amount Preparation:

Reference Id	**LCMM.PEM.CAL.4.1.**

Upon reception of the Sub-amounts of a Penalty, either from the Penalties Preparation sub-function or from the Selection for Recalculation function, this sub-function retrieves all the necessary information for each of them. First, the sub-function checks if the Security is Subject to Penalties for each Sub-amount (i.e. for the Date of each Sub-amount) and stores the result in the Security subject to penalties flag of the relevant Sub-amount.

I For Sub-amounts with Security subject to penalties flag is "False" the processing ends.

I For each Sub-amount with Security subject to penalties flag "True", the sub-function retrieves and stores the necessary Penalty Reference Data for Securities attributes and Static data information to calculate the Penalty. Note that in case of LMFPs, if any of the Sub-amounts has a Date before ~~40~~92 days in the past (e.g.: Sub-amount Date is "d-98", being "d" the current business day), the Penalty Reference Data retrieved and stored for calculation is the first available one {T2S.22.240} i.e.: data from "d-~~40~~92".

URD section 22.4.2 Late Matching Fail Penalty (LMFP)

Reference price used for computation of LMFP

Reference ID	T2S.22.240

T2S shall use the reference price of each business day where the settlement instruction was due to settle, i.e. the reference price from each relevant business day from ISD until the matching business date. The maximum period where historical prices can be considered is 144 calendar days ~~3 calendar months~~, i.e. the period the penalty reference data remains in the system without being purged.
Consequently, in case a settlement instruction is matched in T2S with an ISD more than 92 calendar days (3 ~~calendar~~ months) in the past (i.e.: in case of a LMFP), T2S will compute the LMFP:

- Using the prices available for the business days within the last 92 calendar days (3 ~~calendar~~ months) and;
- For the prices for the business days before the last 92 calendar days (3 ~~calendar~~ months) that are not available because these prices have already been purged, T2S will use in the computation of the penalty the oldest price available.

Preliminary assessment:

n.a.

Detailed assessment:

EUROSYSTEM ANALYSIS – GENERAL INFORMATION

T2S Specific Components		Common Components
LCMM		
	Instructions validation	
	Status management	
	Instruction matching	
	Instructions maintenance	
	Penalty Mechanism	
Settlement		
	Standardisation and preparation to settlement	
	Night-time Settlement	
	Daytime Recycling and optimisation	
	Daytime Validation, provisioning & booking	
	Auto-collateralisation	

Liquidity Management			
	Outbound Information Management		
	NCB Business Procedures		
	Liquidity Operations		
T2S Interface *(as of June 2022 without Static Data Management, Communication for SDMG, Scheduler, Billing)*		**Eurosystem Single Market Infrastructure Gateway** (from R6.0 June 2022)	
	Communication		Communication
	Outbound Processing		Outbound Processing
	Inbound Processing		Inbound Processing
Static Data Management *(until June 2022)*		**Common Reference Data Management** *(from R6.0 June 2022)*	
	Party data management		Party data management
	Securities data management		Securities data management
	Cash account data management		Cash account data management
	Securities account data management		Securities account data management
	Rules and parameters data management	X	Rules and parameters data management
Statistics and archive		**Statistics and archive**	
	Statistical information (until June 2022)		Short term statistical information
	Legal archiving (until June 2022)		Legal archiving (from R6.0)
			Data Warehouse (from R6.0)
Information *(until June 2022 containing reference data)*		**CRDM business interface** *(from R6.0 June 2022)*	
	Report management		Report management
	Query management		Query management
			Communication
			Outbound Processing
			Inbound Processing
Operational Services			
	Data Migration (T2S DMT)		Data Migration (CRDM DMT, from R6.0)
	Scheduling (until June 2022)		Business Day Management (from R6.0)
			Business Day Management business interface (from R6.0)
	Billing (until June 2022)		Billing (from R6.0)
			Billing business interface (from R6.0)
	Operational Monitoring		Operational and Business Monitoring
	MOP Contingency Templates		

Impact on major documentation		
Document	**Chapter**	**Change**
Impacted URD chapter	URD section 22.4.2 Late Matching Fail Penalty (LMFP)	Adaptation according to the new retention period.
Impacted GFS chapter	GFS section 3.4.7.2 Description of the module / 2 – Penalty Calculation	Adaptation according to the new retention period.
Impacted UDFS chapter	1.6.3.3.4 Reference data archiving and purging 1.6.1.14.5 Penalty Calculation	Extension of retention period to 5 months for 'Securities Subject to Cash Penalties' and 'Daily Price' reference data objects. Adaptation according to the new retention period.
Additional deliveries for Message		n.a.

Specification (UDFS, MyStandards, MOP contingency templates)				
UHB			n.a.	
Other impacted documentation (FA Sch. 05, FA Sch. 07)			n.a.	
Impacted GDPR message/ screen fields			No impact identified.	
Other documentations			n.a.	
Links with other requests				
Links	Reference		Title	

OVERVIEW OF THE IMPACT OF THE REQUEST ON THE T2S SYSTEM AND ON THE PROJECT

Summary of functional, development, infrastructure and migration impacts

The retention period for Daily Prices and Securities Subject to Cash Penalties reference data objects needs to be extended from the actual 92 calendar days to 144 calendar days. The T2S operator introduced a purging mechanism of expired SSTCPs with a purge parameter of 144 days on 21 January 2023. This purge parameter (PBI225429) already anticipated a part of the changes that will be introduced by T2S-0802-URD for the calculation parameter.
The following assumptions are binding for the above modification to process the penalties within the agreed times:

- The 99% of the prices arriving each day refers to the previous working day (i.e. the modifications of prices in the past, that cause the recalculation of more days for the relevant penalty, are limited to 1% of the total of the received prices)
- The 90% of the prices and penalties modifications arrive within 07:00; the volumetric assumptions on the process and on the penalties updates via files are respected by the issuer.

The processing of the penalties with the larger data volume and the new physical parameters, with the aim to maintain the current duration of the processing themselves, will need more CPU power and more storage.

The transition from 3 to 5 months of retention period will be done only for existing data at the moment of the switch of the retention from 3 to 5 months. For this reason, there will be no recover of past data that have already been purged.

Main cost drivers:

- Implementation of a technical solution that changes the physical storage properties and parameters of the db2 tables impacted by the increase of the retention period and by the calculations of the penalties. The change will have impact on the db2 access paths used by many CRDM processes and direct impacts of the size of the data (e.g. for the extraction and the purge).
- Impact on the Scheduler because the retention time of the calendar must be increased to 5 months as well (currently is 3 months as it is standard for T2S). The acquisition and processing of the penalty files (Prices and SSTPs) must be updated and tuned to work with the new tables and use the partition index (they are parallel threads). The processing of the PMSD event must be updated to use the partition index and the new computation depth (5 months).
- The extraction files and processing at EOD/SOD must be updated for the tables that changes size; the purging algorithm and the save files must be updated, the CUD for the penalties and the SSTPs, and the penalty rates must be tuned (to use the partition index). The partitions for the tables must be built in such a way to grant a grow capability (the Security IDs in general grow in the higher range and to die in the lower range; this solution introduces the need for periodical (x year, to be determined by the user behaviour in PROD) rebalance of the partitions.
- The processing of the penalties with the larger data volume and the new physical parameters, with the aim to maintain the current duration of the processing themselves, will need more CPU power and more storage.

Impact on other TARGET Services and projects

No impact on T2, TIPS or ECMS.

Summary of project risk

No risk has been identified during DA.

Security analysis

No adverse impact has been identified during security assessment.

30 October 2023

Cost assessment on Change Requests

T2S-802-SYS – Penalty Mechanism calculation and storage extension			
One-off	Assessment costs* - Preliminary - Detailed	 not charged 10,000.00	 Euro Euro
One-off	Development costs	924,696.73	Euro
Annual	Operational costs - Maintenance costs - Running costs	 68,284.40 150,625.00	 Euro Euro

*The relevant assessment costs will be charged regardless of whether the CR is implemented (Cf. T2S Framework Agreement, Schedule 7, par. 5.2.3).