Dear Clients,

The KELER Service Development Program (hereinafter: 'KSDP') is jointly tested by KELER and market participants in two rounds of the Market Test (hereinafter: 'MAT'). Following the completion of the first round of Market Tests (MAT1) in July, another major milestone will be reached soon, as the second phase of the Market Business Acceptance Test (hereinafter: 'MAT2') will start on 1 September 2021.

The documents required for the MAT tests and referenced below can be found on the KELER website under the *Client Information and Related Documents* menu item of the Strategy/KSDP - KELER Service Development Program:

https://english.keler.hu/Strategy/KSDP - KELER Service Development Program/

Please note the following important information on MAT2 testing.

The purpose of the MAT

The objective of the MAT is to test the functionality of the services and function sets that are changing with the IT developments implemented by KELER in the KSDP based on interface connections, to test the coordinated functioning between the participants of the securities settlement system and KELER's IT systems, to test the effectiveness of the IT developments and, last but not least, to test the transactions used in live business in an integrated manner in line with the market practice of the counterparties by performing full process tests.

Testing is also mandatory for those participants who do not make enhancements but only access KELER through the KID interface. Manual testing of changes to the KID system interface and of transactions and processes that are part of daily live business is also mandatory for this client group in view of the significant changes.

Participation in MAT

Participation in the market test is mandatory for all clients with a securities account in KELER and accessing the settlement system through the KID (eKID), SWIFT or WARP applications.

Clients who successfully pass the connectivity test are eligible to participate in the MAT test, which covers business process testing.

MAT2 period

The second round of market testing will take place between 1 September 2021 and 5 November 2021.

Access to MAT environment

During the MAT tests, KELER will provide full process tests aligned with the instant payment test environment of MNB and GIRO, adapting to the opening hours of VIBER. Due to the closure of VIBER at 16.00, KELER's MAT test environment will be available from 10:00 to 16:00 from Monday to Thursday. On Fridays, due to installation and maintenance work in the test environment, the market test will not be available.

In order to ensure the smooth and efficient execution of the integrated business process tests conducted during MAT2, testing will continue during the autumn period on the **HUH VIBER test system**, which has been set up by the MNB specifically for this purpose. In this way, the tests related to the KSDP will be transferred from the internal testing at the MNB to a test environment less affected by separate deployments and maintenance, thus ensuring the widest possible test environment availability.

The clients concerned were informed during the summer about the need and reasons for joining the HUH CUG group.

Reference data (e.g. securities, account numbers, WARP settings and passwords) and balances corresponding to the end of day production closing on 26 February 2021 were loaded into the KSDP MAT test environment.

After the MAT1 phase, securities and cash account balances were not modified and transactions tested during this period will still be available in the MAT environment during MAT2.

MAT2 connectivity

The MAT test environment provided by KELER is available through the following channels:

- via the new KID thick client
- via the new eKID thin client
- via SWIFT connection
- via the WARP system

The technical connectivity requirements for KID, eKID and SWIFT systems have been published prior to the MAT tests (KSZP_CONNECTIVITY_IT.PDF).

During the MAT2 tests, the **transition to Future mode** in SWIFT message communication **(i.e. compliance with the SWIFT Release 2021) will take place on 4 October 2021.** In this context, we ask our clients to start the necessary preparations in time to ensure a smooth transition and to avoid any disruption of testing. The expected KSDP interface changes for the SWIFT 2021 release have been announced on the MyStandards interface. Independently of the testing and going live of KSDP KELER will go live with compliance with the SWIFT 2021 release on 20 November 2021 also in its existing live systems.

Access to the current live system test version of WARP has been discontinued, instead the WARP version with functional enhancements to the KSDP will be provided during MAT testing.

From 1 June 2021, the WARP application for the KSDP will be accessible at the following address, with the current live or test certificate:

https://warp.test.keler.hu/warp

With a live username and associated email address, users can request a new password for themselves in case of an unsuccessful login, and additional users can be created by client-side IT administrators.

Please use the URL https://ekid.test.keler.hu to log in to the eKID test system.

MAT2 test support, defect reporting

During the MAT test, our clients can use the **KELER ServiceDeskPlus** (hereinafter: 'SD system') to report errors. The registration form and a description of the system (connection, login, menu items, recording requests, monitoring, etc.) have been published ("KSDP_SDME_client_form.v1.0").

A version of the SD System User Guide for MAT test ("KSDP_SDME_Client_Guide_v2") has also been published earlier to facilitate the testing and reporting process.

Reported defects or questions raised in the context of testing will be made available for tracking by all clients during MAT to avoid duplications.

Defect reports and questions submitted during MAT1 will be answered and information on bug fixes will be continuously announced. We kindly request that the business cases included in the notifications with the status "retest/retestable" are tested during MAT2 and that the results are reported to KELER.

The fixes related to the following SD bug reports are still in progress and will be communicated in due course on their successful retesting and transfer to market test:

- SD536
  – When NMAT-CMIS status message is returned, the following message is displayed on the KID interface: "Matched settlement amount: xxx HUF". The message display will be changed from "Matched" to "To be matched".

- SD625
  – After modification of the H/R of the REPO expiring leg, an unnecessary PEND/FUTU message will be sent for the initial leg after settlement.

- SD603, 607
  – The cancelled linked FOP becomes unmatched again.

- SD590
  – For FOPs linked on eKID, a convenience feature is under development to upload items in quick succession.

- SD587
  – Status indicator (dot) on eKID is still under development, clicking on an order shows the current status for the moment.

MAT2 business content

The business content of the first phase of MAT (MAT1) consisted of the transaction types and functionalities related to the <u>settlement in KELER of Hungarian securities issued in KELER (without payment or against foreign currency other than EUR)</u> and the end-of-day securities account statements (EP01, E761). During MAT2, these processes, functionalities and reports will continue to be tested and will be complemented by the following from 1 September:

- Multinet transactions guaranteed by KELER CCP simple positive case
- Multinet transactions guaranteed by KELER CCP with partial settlement
- KELER business day operations, operating time management
- Reverse billing related message communication
- Disposition of account
  – Account operator model operation on SWIFT
  – Use of the cash account of another participant for DVP and PFOD transactions
- End-of-day client holding and transaction reports (pdf and txt format by default, XML or SWIFT format depending on the setting of the declaration)
  – EP01 securities account statement (pdf and xml or SWIFT)
  – EP02 daily settled securities transactions statement (pdf and xml or SWIFT on request)
  – EP03,04 daily statement of pending and cancelled securities transactions (pdf and xml or SWIFT on request)
  – EP05 daily statement of executed blockings (pdf and xml on request)
  – EP06,07 daily pending and cancelled blocking instructions (pdf and xml on request)
  – KID reports in text format as detailed in the service description

The following business processes and functions are still being tested within KELER, therefore market testing is not yet available with the start of MAT2:

- Securities account operations in KID (planned: from 04.10.2021)
  – New securities account opening
  – modification of securities account details
- settlement of EUR-based DVP type transactions in T2S (planned from 04.10.2021)
- Multinet default transactions (planned: from October 2021)
- Calculation, settlement, reporting of penalties (planned: from November 2021 as part of the market test following the closure of MAT2)
- Ad hoc reports (planned from October 2021)

No test cases supporting MAT testing will be defined by KELER and the number of test cases to be implemented will not be limited. During MAT, any number of instructions can be submitted during the availability of the test environment. Bulk, volume or performance testing is neither intended nor expected. If required, please consult in advance with KELER staff via the client test support application.

The transaction types and function groups compiled for MAT1, which are part of **Annex 1** ("Test Statement"), are provided to assist in the compilation of the testing scenarios. In general, it is mandatory for all participants to test the securities transfer (FOP), securities delivery (DVP) and bilateral cancellation of securities settlement transactions as well as the relevant end-of-day client reports.

For the optional test items, we recommend testing the transactions and functions used in live business operations.

For clients who have not yet filled in the form, please send the declarations without delay to kszp@keler.hu for record keeping, indicating the processes and functions to be tested. Furthermore, we kindly request that the final test results are documented by completing and signing the previously published KSDP MAT Test Protocol (KELER_KSDP_MAT_test_protocol.xls) as appropriate and returning it by the end of the MAT2 test.

Please note that during the MAT period separate scenarios will be prepared for testing transactions instructed by market infrastructures (BSE, KELER CCP, KELER) and entered into the KELER system after being matched. Based on the returned test declarations, our clients planning to test these transaction types will be informed of the planned settlement dates and testing dates through the relevant reports in the KID/SWIFT systems.

The transactions and functions indicated in the declaration may be compared and, where appropriate, supplemented with the records of KELER.

MAT2 test groups

To facilitate efficient testing, we have divided our clients into test groups. Please ensure that participants in the same groups contact each other for data reconciliation of successful transaction and functional runs to be tested during MAT. The assignment of the groups can be found in **Annex 2**. Transactions can be executed between clients in different test groups if justified. For privacy reasons, it is not possible to provide contact persons and contact details for the organisations indicated in the test groups.

When testing primary market transactions and linked FOP transactions, the clients concerned will of course have the possibility to test with the State Debt Management Agency, as a counterparty, regardless of the group assignment.

BIC code list

The current list of BIC codes for BIC code-based counterparty identification and matching is provided in **Annex 3**.

MAT success criteria

The MAT success criteria are the successful test cases run by our clients in relation to the transactions and function groups pre-defined in the test declaration and validated by KELER. The test protocol with duly documented and reference numbered test cases supporting successful testing will be requested **by the end of MAT2 at the latest**.

Clients participating in MAT1, who have successfully completed transaction settlement related tests, are not required to retest their previous successfully completed test cases. However, it is recommended to repeat the tests, especially if they have not yet performed, or have not completed, an integrated process test as part of the testing of their KSDP system development.

Clients who start market testing in MAT2 are required to complete all mandatory and pre-specified optional test cases in the autumn period.

Services not covered by MAT

The current development phase of the KSDP only covers securities settlement orders and related functionalities, therefore the following services are not subject to testing:

Scope of services	Service
Issuer services	ISIN code issuance Services for demat securities Services related to the encouragement of long-term shareholder engagement Corporate action management related services Payment and securities transfer management services related to demat procedures Dividend payment Shareholders registration (disclosure) Paying agent services
General depository services	Custody of physical securities
Settlement services related to foreign securities	Cross border securities settlement and corporate action management services
Payment operations	HUF and FX account operations (e.g. credit, debit, IG2, IG3, VIBER, FX)
Other services	Collateral management and valuation services Trade reporting (TR) LEI code issuance
Fee calculation, invoicing	

Test environment parameters

The parameters required for successful and efficient testing, which have been set in KELER's test environment, are detailed below:

Parameter	Parameter value
Default client priority assigned to instructions	4
KELER BIC code (= place of settlement or matching BIC)	KELRHUH0XXX
Sender ID of KELER for messages sent to clients registered for Reverse Billing	ZYAKHUH0XXX
KELER settlement bank BIC code (returned in confirmations)	KELRHUH0ABC
Technical BIC code allocated by KELER to clients without dedicated matching BIC codes	KELEHUH1XXX
BIC code of KELER CCP	KSZFHUH0XXX
Number of future business days from the date of submission of the instruction until which the planned settlement date can be accepted	20
Number of past business days from the date of submission of the instruction for which the planned settlement date can be accepted	20
Number of recycling days for matched transactions	3
Number of recycling days for an unmatched instruction	3
Start and end of time windows allowed for partial settlement	11:00 - 11:15 12:00 - 12:15 13:00 - 13:15 14:00 - 14:15 15:00 - 15:15
Reverse Billing BIC code should only be sent in these messages	MT544, MT545, MT546, MT547, MT548, MT578, MT598,
Time elapsed after unsuccessful matching, after which the Allegement is sent	15 seconds
Settlement tolerance level	Below EUR 100,000 = > EUR 2 Above EUR 100,000 => EUR 25; Below HUF 36,389,000 => HUF 728 Above HUF 36,389,000 => HUF 9,097; Below USD 122,710 => USD 2.45 Above USD 122,710 => USD 30.68 (For tests in other currencies, please consult our colleagues in advance.)
Securities account settings required to generate automated FOP transfer	Setup according to the live operation

Master data settings based on client declarations

Default communication channel

Status and settlement confirmation messages referring to settlement instructions submitted by our clients are returned by KELER on the same communication channel on which the instruction was submitted, i.e.:

- on SWIFT for instructions submitted according to ISO15022 standard,
- on KID for instructions submitted according to ISO20022 standard.

However, for unsolicited messages related to settlement instructions (excluding reports), the communication channel selected by our clients as default is used at the main account level. In relation to settlement orders, the following unsolicited messages may be sent to our clients:

- Notification of unmatched transaction (allegement), its cancellation, withdrawal
- In the case of already matched settlement orders not initiated by a clients on KID/SWIFT, status notification messages and settlement confirmation messages sent to the client concerned (Multinet settlement, FISZER, BSE fixed and auction transactions, WARP settlement orders)
- Status notifications and settlement confirmations for FOP transactions for securities accounts with automatic credit transfer option

Please indicate the default communication channel (KID/SWIFT) you wish to use for your main account (or for each of the main accounts in case of multiple main accounts) on the data sheet provided in **Annex 4**. If SWIFT is selected as the default communication channel, unsolicited messages will be sent to all BIC codes included in the Sender BIC list for the main account.

If the declaration is not completed, the default communication channel will be set to KID at the start of MAT2.

Report delivery details

With the implementation of KSDP it is possible to choose the delivery channel (KID /SWIFT) for reports, and in some cases the language of the reports at the main account level.

The above parameters are set in a market test environment based on the declarations of our clients.

PDF, XML and MT reports selectable during MAT2:

- EP01N - Securities account statement - daily, Hungarian
- EP01NA - Securities account statement - daily, English
- EP02N - Report of settled securities transactions - daily
- EP03,04 - Report of pending and cancelled securities transactions
- EP05 - Report of settled blocking instructions
- EP06, EP07 - Report of pending and cancelled blocking transactions

Please provide the following data for each report on the data sheet provided in **Annex 5**:

- Main account number
- Channel (KID/SWIFT)
- BIC code (for SWIFT channel)

Please note that delivery to e-mail or postal addresses is not possible during market testing.

If the declaration is not returned, only the pdf reports in Hungarian available on the KID system will be set as default (in addition to the current text type extracts).

Securities and Cash account mapping

Based on the current cash account usage practices of our clients, KELER has set up the default cash account numbers for the settlement transactions with cash flows in the test environment serving the MAT tests according to the following rules:

- for credit institutions for HUF settlement: MNB account number
- for credit institutions for foreign currency settlement: KELER account number (own/principal) segregated
- for clients other than credit institutions for all foreign currency settlements: KELER account number by segregation
- cash account assignments for a specific transaction type with inheritance of the current settings (Primary transactions)

The specified linkings take effect if the cash account is not specified in the instruction submitted to KELER.

Deviations from the above default settings will be made on the basis of specific client requests, please indicate such requests on the data sheet provided in **Annex 6**, specifying the details.

Data sheet completion guide

Main account number:	First four characters of the securities account held with KELER (main account).
Segregation:	O or P notation (own/principal). The setting is applied to all own or all principal securities accounts linked to the main account. (If a specific securities account is specified instead of the main account, the segregation type does not need to be provided.)
Securities account:	Securities account held with KELER in 10 characters. Optional if the cash account assignment is made at the main account + segregation level.
Transaction type:	Possible set of values: • DVP TRAD (Securities Purchase and Sale) • KELR/PRMT (Primary market transaction) • REPU, RVPO (Delivery repo) • \<ALL\>

Currency:	The currency of the cash account assigned to the securities account/main account.
IBAN:	IBAN identifier of the cash account assigned to the securities account/main account.

Any combination other than the default settings can only be set after receipt of the form.

Migration

For the purpose of going live due to the developments covered by KSDP, we will provide our clients during September with a detailed scenario on the migration of value date, pending, or booked (e.g. blocking), or still open (expiring repo) transactions that are in the process of being settled.

Sincerely,
KELER Ltd.