Subject: Information on BSE's MiFID2 preparation

Dear Member,

Being in line with the new regulation of MiFID2 and MIFIR - entering into force on 3rd of January 2018 - is a high priority task within BSE. Hereby we would like to inform you about the status of the ongoing project and also provide you a picture of the most significant changes.

As you may already know, the new regulation will have an impact on many parts of the operation related to investment firms as well as to market operators. In order to comply with these new requirements BSE has continued the preparation in a more formal manner since January 2017. As a part of this new project we would like to build up an active communication with our members.

Therefore we would like to ask you to dedicate at least one contact person who we can turn to in case of any MiFID2 question. Please also give us the contact information too (email address and phone number)

On BSE side in case of any MiFID2 question you can contact:

Project manager:
Attila Varga-Balázs, Consultant to the Business Development Deputy CEO, (+36-1-429-6855; vargab@bse.hu)

Questions related to trading system and membership:
Miklós Kardos, Trading and Business Development Division - Director (+36-1-429-6877, kardosm@bse.hu)

Vendor data:
Noémi Lusztig, Market Data Sales Division- Director (+36-1-429-6725, lusztign@bse.hu)

Besides above contacts BSE set up a new email address that you can use to submit your written questions and remarks. Please use this email address to help BSE to have your queries on the fastest way and to forward it to the most appropriate colleagues: MIFID@bse.hu

In the appendix attached to this letter we give you information on project schedule and a short summary of the most significant subject affecting the exchange members and BSE respectively.

Budapest, 13 March 2017

Kind Regards,

Attila Varga-Balázs
MiFID2 project manager
Budapest Stock Exchange

Appendix

1. Milestones of the project

We expect the following preliminary timeline <u>in connection with developing and testing the trading system</u>. Please note that information contained by the table is not finalized yet, and may vary during the project.

Date	Cash market (Xetra)	Derivative market (MMTS 2)
Beginning of July	Functional and technical descriptions	MMTS 2 User guide, K2 technical specification
End of August	Interface specification provided by DBAG	
Beginning of September		Start of member's functional and DEA testing
Beginning of October	Start of member's testing, CEESEG FIX specification	
End of October	Interface specifications (final version), start of CEESEG FIX testing	
November		Implementation of algo testing
End of November	Deploying the new system	
Beginning of December		Deploying the new system

We also would like to draw your attention that in case of the cash market we have to align to the schedule and functionality set up by WBAG (DBAG) for partner exchanges. However BSE could follow his own schedule in case of derivative market, we are trying to come up with similar solutions for both platforms. This means that developing of MMTS2 is highly influenced by the project schedule of WBAG as well.

We expect the following timeline <u>in connection with BSE rules.</u>

Date	Cash market (Xetra)
Beginning of July	Implementing MiFID2 into national law
End of August	Amending BSE internal rules (General Terms of Service of BSE and other rules)
September	Discussions with National Bank of Hungary and market participants
Beginning of October	Approving the new BSE rules by management board, preliminary announcement
Beginning of November	Approving the new BSE rules by Competent Authority, official announcement with effective date of 3rd of January 2018

2. The most important changes with regards to the trading system

New order entry fields

According to the new rules BSE has to keep a detailed records of every orders submitted to its system.

MiFIR 25 (2):
„The operator of a trading venue shall keep at the disposal of the competent authority, for at least five years, the relevant data relating to all orders in financial instruments which are advertised through their systems. The records shall contain the relevant data that constitute the characteristics of the order, including those that link an order with the executed transaction(s) that stems from that order and the details of which shall be reported in accordance with Article 26(1) and (3)."

In order to be in line with the new regulation market operators need to receive additional information at the moment of order submission which has to be created and submitted by the exchange member.

These new (planned) order entry fields – that will be deployed in the frontend and interface of Xetra and MMTS2 respectively – are the following:

- Client Identification Code
- Execution within firm
  (in case of an algorithm it's the algo ID)
- Investment decision within firm
  (in case of an algorithm it's the algo ID)
- Flagging DEA orders

Creating these new fields are still under decision, but we are about to giving a solution that enables exchange members to fill particular fields in a separated channel in advance and update the related information (Client ID, Execution, Investment decision fields) only at the end of each trading day. Solely a short code needs to be provided by the member at the moment of order submission and BSE will implement a mapping process afterward.

- Detailed rules contained by the annex of RTS24
  http://ec.europa.eu/finance/securities/docs/isd/mifid/rts/160624-rts-24-annex_en.pdf

New pre-trade control functions

Exchange members must be able to set upper limits regarding the order quantity and order value (max order quantity, max order value) they submit, that automatically prevent them to place uncommonly large and mispriced orders into the trading system. These pre-trade control functions will reject orders that breach the pre-set parameters.

Although a part of above functions have been already incorporated in Xetra and MMTS2, BSE needs to revise and amend those control mechanisms to comply with the new regulation.

- Detailed rules contained by: MiFID 48 (4) and RTS 7 Article 20:
  http://ec.europa.eu/finance/securities/docs/isd/mifid/rts/160714-rts-7_en.pdf

OTR (Order to trade ratio)

Market operators are obliged to set up a new system that observes OTR in order to decrease the risk of trading venue's capacity overload caused by HFTs after MiFID2 enters into force. OTR, somewhat simplistically is the ratio of all submitted orders and all transactions. Trading venues should calculate the ratio of unexecuted orders to transactions effectively incurred by their members or participants at the level of each financial instrument traded on them. This ratio will be calculated for the order volume (OTRvol) and order number (OTRno) as well where the calculation period shall be one trading day.

BSE is authorised to specify the maximum value of OTRs for both value and number (MaxOTR) at its own discretion. In case of a member violates either one or both of the predetermined maximum OTRs the stock exchange may use sanctions. BSE will take into consideration the liquidity of the given instruments as well as the role of the particular exchange members (higher maxOTRs will apply to market makers) when determining the maximum OTRs.

- Detailed rules contained by: MiFID 48 (12) and RTS 9:
  http://ec.europa.eu/finance/securities/docs/isd/mifid/rts/160518-rts-9_en.pdf

Tick size regime

A new European tick size regime will enter into force that will basically specifies „higher" tick sizes but has a restricted power only to particular group of instruments (shares, depositary receipts and, exchange traded funds) as a result this new regulation impacts only the cash market on BSE.

As the table shows below the new tick sizes will be defined by a two-dimensional scale (price and liquidity band) which depicts only the minimum required values, meaning that market operators (as BSE) could use higher values if it's deemed appropriate.

Price ranges	Liquidity bands					
	0 ≤ Average daily number of transactions < 10	10 ≤ Average daily number of transactions < 80	80 ≤ Average daily number of transactions < 600	600 ≤ Average daily number of transactions < 2000	2000 ≤ Average daily number of transactions < 9000	9000 ≤ Average daily number of transactions
0 ≤ price < 0.1	0.0005	0.0002	0.0001	0.0001	0.0001	0.0001
0.1 ≤ price < 0.2	0.001	0.0005	0.0002	0.0001	0.0001	0.0001
0.2 ≤ price < 0.5	0.002	0.001	0.0005	0.0002	0.0001	0.0001
0.5 ≤ price < 1	0.005	0.002	0.001	0.0005	0.0002	0.0001
1 ≤ price < 2	0.01	0.005	0.002	0.001	0.0005	0.0002
2 ≤ price < 5	0.02	0.01	0.005	0.002	0.001	0.0005
5 ≤ price < 10	0.05	0.02	0.01	0.005	0.002	0.001
10 ≤ price < 20	0.1	0.05	0.02	0.01	0.005	0.002
20 ≤ price < 50	0.2	0.1	0.05	0.02	0.01	0.005
50 ≤ price < 100	0.5	0.2	0.1	0.05	0.02	0.01
100 ≤ price < 200	1	0.5	0.2	0.1	0.05	0.02
200 ≤ price < 500	2	1	0.5	0.2	0.1	0.05
500 ≤ price < 1000	5	2	1	0.5	0.2	0.1
1000 ≤ price < 2000	10	5	2	1	0.5	0.2
2000 ≤ price < 5000	20	10	5	2	1	0.5
5000 ≤ price < 10000	50	20	10	5	2	1
10000 ≤ price < 20000	100	50	20	10	5	2
20000 ≤ price < 50000	200	100	50	20	10	5
50000 ≤ price	500	200	100	50	20	10

Liquidity band is the average number of transactions of a given instrument executed on the most relevant marker in terms of liquidity which is determined by the related Competent Authority once in every year. Consequently BSE will annually revise the tick sizes and will amend them if necessary.

- Detailed rules contained by: MiFID 49 (3) (4) and RTS 11:
  http://ec.europa.eu/finance/securities/docs/isd/mifid/rts/160714-rts-11_en.pdf

Market making

MiFID2 specifies the requirements for algorithmic traders engaged in market making strategies meaning that investment firms pursuing market making strategies are bound by contractual obligations with market operators.

Market maker strategy is defined by the following criteria:
- on own account
- in min. 50% of trading period
- at competitive prices
- with comparable quantities (two sides differs with no more than 50%)

According to the ESMA guideline initiating the conclusion of market making contract is always the investment firm's obligation. Once the contract is concluded market operators will continuously monitor the market maker's performance.

Market making schemes set up by market operator required to have in place only for liquid shares, ETFs, related derivative instruments and futures/options for equity indices.
In case of any other instruments it is up to the market operator to provide market marking schemes accompanied by the mandatory market making agreement.

Rules and instructions regarding market making concept is still not entirely clear and needs to be completed. As a result BSE started active cooperation with the Hungarian Competent Authority and with the Ministry of Economy. The framework of MiFID2 market making concept is expected to be finalized after the discussions.

- Detailed rules contained by: MiFID 17, 48 and RTS 8:
  http://ec.europa.eu/finance/securities/docs/isd/mifid/rts/160613-rts-8_en.pdf

Algo testing

Trading venues shall require their members to certify that the algorithms they deploy have been tested to avoid contributing to or creating disorderly trading conditions prior to the deployment or substantial update of a trading algorithm or trading strategy and explain the means used for that testing. Trading venues shall provide their members with access to a testing environment

- Detailed rules contained by: MiFID 48 (6) and RTS 7 Article 10:
  http://ec.europa.eu/finance/securities/docs/isd/mifid/rts/160714-rts-7_en.pdf

Expanding the scope of cancellation of transactions

Cancellation of transactions – currently only restricted to certificates and warrants – will be expanded to all instrument traded on BSE in exceptional cases. The term of „Exceptional cases" will be defined by BSE.

MiFID 48 (5):
„Member States shall require a regulated market to be able to temporarily halt or constrain trading if there is a significant price movement in a financial instrument on that market or a related market during a short period and, in exceptional cases, to be able to cancel, vary or correct any transaction."

- Detailed rules are not known yet.

Synchronization of business clocks

Operators of trading venues and their members or participants shall synchronise the business clocks they use to record the date and time of any reportable event with the Coordinated Universal Time (UTC)

- Detailed rules contained by: RTS 25 and 3rd title of ESMA guideline
  http://ec.europa.eu/finance/securities/docs/isd/mifid/rts/160607-rts-25_en.pdf
  http://ec.europa.eu/finance/securities/docs/isd/mifid/rts/160607-rts-25-annex_en.pdf
  https://www.esma.europa.eu/sites/default/files/library/2015-1909_guidelines_on_transaction_reporting_reference_data_order_record_keeping_and_clock_synchronisation.pdf

3. Changes affecting member's administration (already known)

Registration of member firms and traders

BSE has to receive and register the LEI code of each exchange members and the „National_ID" of their traders.

- Detailed rules contained by: RTS22 and ESMA guideline 5.5.1:
  http://ec.europa.eu/finance/securities/docs/isd/mifid/rts/160728-rts-22-annex_en.pdf
  http://ec.europa.eu/finance/docs/level-2-measures/mifir-rts-22_en.pdf
  https://www.esma.europa.eu/sites/default/files/library/2015-1909_guidelines_on_transaction_reporting_reference_data_order_record_keeping_and_clock_synchronisation.pdf