

Mutual Funds Reporting

User Guide

ISSUE 4.0

12 DECEMBER 2016



CONTENT

1	INTRODUCTION.....	3
1.1	Requirements	3
1.2	E-mail addresses.....	3
1.3	Reporting historic fund information.....	3
1.4	External identifiers	3
2	RECEIPTS AND ERROR MESSAGES	4
2.1	Errors	4
2.2	Warnings.....	5
3	AUTOMATIC NOTIFICATION OF MISSING UPDATES	5
4	MS EXCEL FUND UPDATE APPLICATION	6
4.1	Requirements	6
4.2	Initial configuration	6
4.3	Historic and daily updates	7
4.4	Entering fund update information	7
4.4.1	Missing dates.....	7
4.5	Sending the update	7
4.6	Using a different data entry form.....	8
4.7	Error in Visual Basics.....	9
5	MESSAGE FORMAT	10
5.1	Field values	11
5.2	Aggregate type mapping	11
5.3	Mapping definitions	11
5.4	Passwords.....	13
5.5	Message transfer encoding	13

1 INTRODUCTION

This document specifies the mechanism for updating fund information.

The delivery of fund updates is done via e-mail. Once processing of the fund updates has been completed a receipt and error messages, if any, are e-mailed back to you.

Oslo Børs provides a fund update application in the form of an Excel spreadsheet. This application will encode and send fund update messages automatically. See section 4 for details.

If integration with existing solutions is required, fund update messages may be encoded and delivered from within your own applications. Such messages are encoded according to the standard described in section 5.

1.1 REQUIREMENTS

Using the fund update mechanism requires the ability to send and receive e-mail. The customer needs to register with Oslo Børs to use the service. Upon registration, the necessary configuration information is supplied.

1.2 E-MAIL ADDRESSES

fundupdate@oslobors.no is used for daily updates (processed automatically).

fundhistupdate@oslobors.no is used for historic fund updates (processed manually by Oslo Børs).

1.3 REPORTING HISTORIC FUND INFORMATION

The service is also used to update historic fund information when required. Such updates are processed manually by Oslo Børs, and must be submitted to a separate e-mail address. See section 1.2 for a list of these addresses.

1.4 EXTERNAL IDENTIFIERS

The following table shows the external identifiers used by customers:

Identifier	Description
CID (Customer identifier)	The company's short name, as supplied by Oslo Børs
Fund ID	The fund's identifier string, as supplied by Oslo Børs

2 RECEIPTS AND ERROR MESSAGES

A receipt is delivered back to the customer via e-mail once the fund update message has been processed.

Note: If the supplied password is incorrect or the message content is incorrectly formatted, no receipt is issued, and the Oslo Børs administrators are notified. This is a security consideration.

The receipt might contain a number of error and warning messages. These are sorted by fund update line (and field position where applicable). Each receipt contains a summary at the end of the message that explicitly lists the number of errors and warnings issued while processing the update.

If no errors or warnings were issued during the processing of the fund update, the receipt will contain the following content:

"Job processed with 0 errors and 0 warnings."

2.1 ERRORS

An erroneous update line is always ignored, meaning that none of the values on that line are updated. There is a maximum of one error per update line. If more than one error condition applies, whichever comes first in the list following list is reported:

The number of aggregate type mappings and the number of field values differ.

Error (update line #15):

The number of fields is incompatible with the mapping. Ignoring line.

The date specified in an update line and the time of processing differs by more than two trade days.

Error (update line #23):

Updates older than 2 trade day(s) are not accepted.

Ignoring line.

The company given as CID does not manage the specified fund.

Error (update line #29):

The fund having ID [<fund ID>] is not managed by <cid>.

Ignoring line.

2.2 WARNINGS

A warning is issued whenever a given aggregate value differs from the previous value found in Oslo Børs database by more than 5%. The warning refers to an update line and field position. It is only meant as a protective mechanism, and the value is still updated in Oslo Børs database. In the event of a warning, the receipt will contain one or more of the following messages:

Warning (update line #2, field #1):

Fund ID [<fund ID>]

New value (1233.00) differs from previous value (1030.00) by 19.71

3 AUTOMATIC NOTIFICATION OF MISSING UPDATES

Customers are able to subscribe to an automatic notification service that issues reminders via e-mail if updates are not received for several days. The notification message lists all such funds. Sample:

From: Fund update <fundupdate@boers.no>

Subject: Oslo Børs fund update service: REMINDER!

Customer: Full customer name

CID: CID1

The funds in the following list have not been updated recently:

Full name of fund 1 [NL0000009454]: 12/12/1997 [aggr id: 107]

Full name of fund 2 [NO9109000012]: 12/12/1997 [aggr id: 107]

The "aggr id" is an internal identifier used by Oslo Børs. It is used to indicate which aggregate value type the message line refers to.

4 MS EXCEL FUND UPDATE APPLICATION

The MS Excel fund update application is provided to enable interactive use of the new fund update service. Before use, the customer must configure the spreadsheet according to information supplied by Oslo Børs.

4.1 REQUIREMENTS

Using the MS Excel-based fund update application that is integrated with Windows Messaging requires the following:

- MS Excel 97
- MAPI compliant messaging client, such as MS Outlook
- MS Active Messaging library¹
- An e-mail profile that is set up to be able to deliver outgoing messages to an Internet mail server

There is an alternative version that is not integrated with Windows Messaging. This version requires users to copy & paste text between the Excel application and the e-mail client.

4.2 INITIAL CONFIGURATION

The “config” sheet is used to set up the spreadsheet before use. Three configuration items are entered:

- Customer Identifier (supplied by Oslo Børs)
- Password (supplied by Oslo Børs).
- The e-mail address to which updates are sent. See section 1.2 for details.

Having configured the spreadsheet for use, use the “registration” sheet to enter fund updates.

The “mappings” sheet should not be changed. Customers will receive further details if changes to this sheet become necessary.

¹ Installed with MS Outlook v8.01 and higher, and MS Exchange client installation. Available separately at <ftp://ftp.microsoft.com/Services/TechNet/samples/BOES/BO/MAILEXHG/exchange/appfarm/ACTMSG.EXE>

4.3 HISTORIC AND DAILY UPDATES

The Oslo Børs Excel spreadsheet can be used to produce both daily and historic updates. The customer needs to properly configure the spreadsheet, depending on the type of update that is to be submitted to Oslo Børs.

4.4 ENTERING FUND UPDATE INFORMATION

Fund updates are entered using the interface shown below.

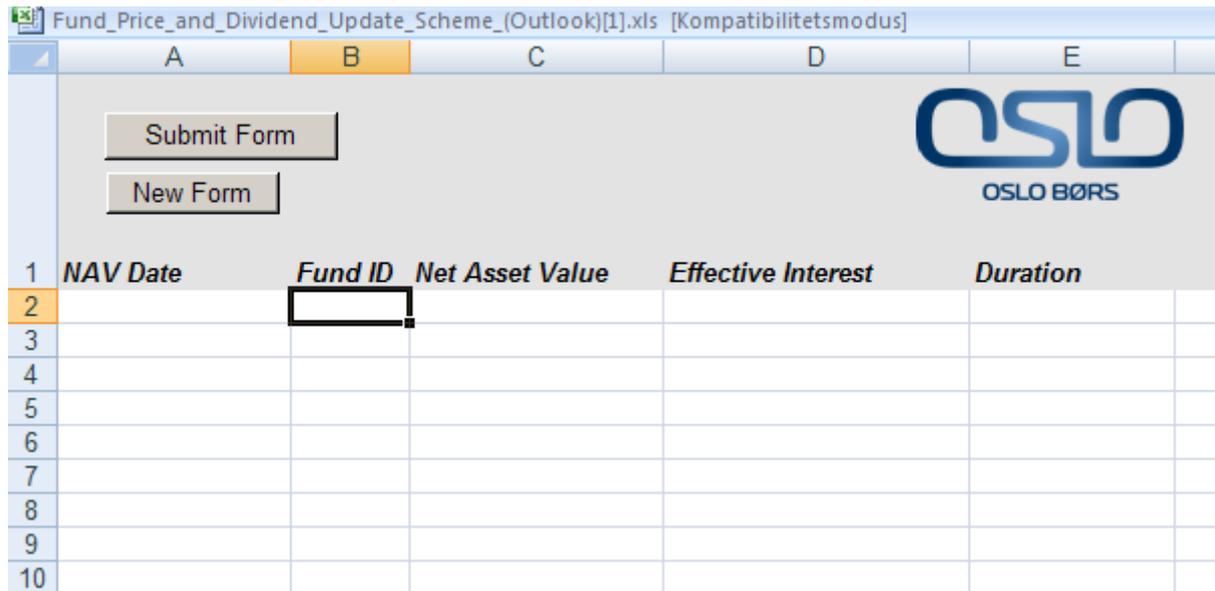


Figure 1: MS Excel fund update application

Starting on the first blank row, enter the updates successively. The row before the first blank row is interpreted as the last update row, so failing to do this will lead to an incomplete update being sent upon submitting the form.

4.4.1 MISSING DATES

If there are missing date fields upon sending the update (i.e. fund ID is defined but date is not), you are asked whether blank dates are to be interpreted as today's date. If you select "no", the fund update is not sent. You must then manually fill in all the missing dates. If you select "yes", all blank date fields are set to today's date and the fund update is then sent.

4.5 SENDING THE UPDATE

When "Send" is pressed, the application encodes and sends the fund update message to Oslo Børs. The application will not allow empty updates, and will show an error dialogue whenever sending of an empty update is attempted.



Figure 2: "No updates"

Once the update has been sent, the message box shown in Figure 3 is displayed.

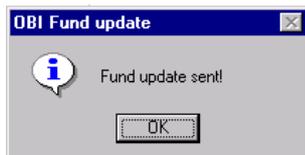


Figure 3: "Update sent"

4.6 USING A DIFFERENT DATA ENTRY FORM

Pressing the "New" button produces a dialogue where a new data entry form template can be selected.



Figure 4: Selecting a new aggregate mapping table

When "OK" is pressed, a blank data entry form is produced. The table below lists the forms currently available.

Name	Used when updating
NED	NAV date Net asset value Effective interest Duration
SRNED	NAV date Subscription price Redemption price Net asset value Effective interest Duration
SRNEDWE	NAV date Subscription price Redemption price

	Net asset value Effective interest Duration Weighted average life Actual modified duration
DIVIDEND	Dividend ex-date Dividend per share NAV on last ex-date
TOTCOST	Total cost date (month end) Total cost Total cost profit share
ACTIVE	Active share date Active share

Note: The list of selectable forms and their definitions are maintained manually in the "Mappings" sheet, based on information received from Oslo Børs on the availability of such forms.

4.7 ERROR IN VISUAL BASICS

In some versions of Microsoft Outlook, the Object Library may have another number than 14. This will cause the following error:

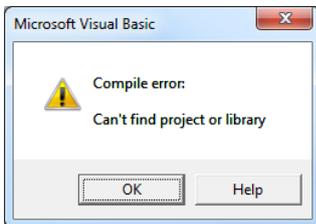


Figure 5: VB Error

If you receive this error, please follow the steps below:

Open Visual Basics in Excel

- Go to "Tools" and choose "References"
- Find the "MISSING: Microsoft Outlook 14.0 Object Library" and remove the check mark.
- Locate the Reference with the same name, but different version number, and select the check mark.
- Click "OK" and save the Visual Basic Project.

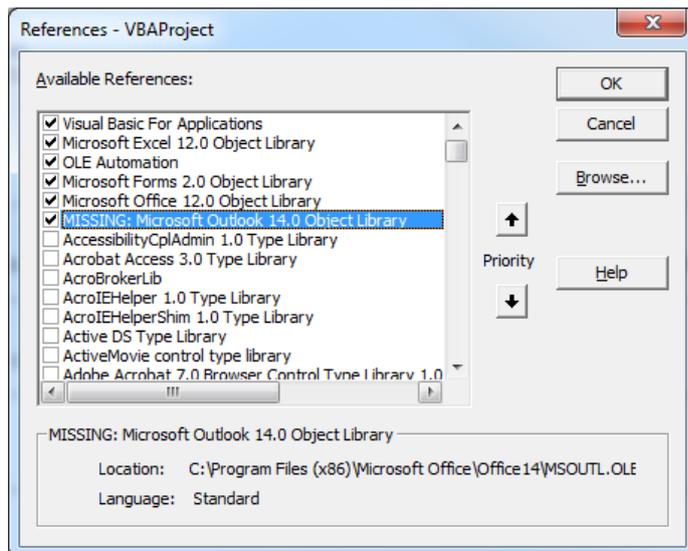


Figure 6: References in VB.

5 MESSAGE FORMAT

This section defines the message format used for fund updates. Should the customer wish to implement custom fund update submission mechanism, this section provides all the details required to do so. If the MS Excel application is used to submit fund updates, there is no need to read this section.

The message format is case insensitive. Individual elements are separated by the character ";". A sequence of more than one separator is interpreted as a single separator, so ";;" equals ";".

```

FORMAT-ID=FMT01;
CID=<company short name>;
ACTION=UPDATE;
MAPPING-ID=<mapping ID>;

<yyyyMMdd>;<fund ID>;<field 1 val>;<field 2 val>; ... ;<field N val>;/END;
[...]
<yyyyMMdd>;<fund ID>;<field 1 val>;<field 2 val>; ... ;<field N val>;/END;

/END-MSG;
    
```

Tag	Description
FORMAT-ID	Facilitates extensions to the basic format. Currently, the format ID is always "FMT01", as shown above.
CID	Set to the company's short name.
ACTION	Facilitates alternative message types. For fund updates, always set to "UPDATE".
MAPPING-ID	Refers to a mapping that defines how field positions are mapped to aggregate types. For more information about mapping identifiers, see section 5.2.

5.1 FIELD VALUES

Each defined field value must have an explicitly defined value. A value is defined as one of:

- A floating point number
- The string "<null>", indicating that the value is to be deleted

Example:

19981022;NL0000009454;1223.03;1221.11;<null>;21.54;/END;

5.2 AGGREGATE TYPE MAPPING

Each field position is mapped to an aggregate type according to a mapping specification. A mapping specification is referred to by name. The list of valid mapping names and definitions is given in section 5.3. Messages containing unknown mapping identifiers are rejected.

5.3 MAPPING DEFINITIONS

Mapping ID: "NED"

Field position	Aggregate type
Field 1	Net asset value
Field 2	Effective interest
Field 3	Duration

When this mapping identifier is specified in the message ("Mapping-ID=NED"), each of the update lines are interpreted as follows:

<yyyyMMdd>;<fund ID>;<net asset value>;<effective interest>;<duration>;/END;

Mapping ID: "SRNED"

Field position	Aggregate type
Field 1	Subscription price
Field 2	Redemption price
Field 3	Net asset value
Field 4	Effective interest
Field 5	Duration

When this mapping identifier is specified in the message ("Mapping-ID=SRNED"), each of the update lines are interpreted as follows:

```
<yyyyMMdd>;<fund ID>;<subscription price>;<redemption price>;<net asset value>;<effective interest>;<duration>;/END;
```

Mapping ID: "SRNEDWE"

Field position	Aggregate type
Field 1	Subscription price
Field 2	Redemption price
Field 3	Net asset value
Field 4	Effective interest
Field 5	Duration
Field 6	Weighted average life
Field 7	Actual modified duration

When this mapping identifier is specified in the message ("Mapping-ID=SRNEDWE"), each of the update lines are interpreted as follows:

```
<yyyyMMdd>;<fund ID>;<subscription price>;<redemption price>;<net asset value>;<effective interest>;<duration>;<weighted average life>;<actual modified duration>;/END;
```

Mapping ID: "DIVIDEND"

Field position	Aggregate type
Field 1	Dividend per share
Field 2	NAV on last ex-date

When this mapping identifier is specified in the message ("Mapping-ID=DIVIDEND"), each of the update lines are interpreted as follows:

```
<yyyyMMdd>;<fund ID>;<dividend per share>;<NAV on last ex-date>;//END;
```

Mapping ID: "TOTCOST"

Field position	Aggregate type
Field 1	Total cost
Field 2	Total cost profit share

When this mapping identifier is specified in the message ("Mapping-ID=TOTCOST"), each of the update lines are interpreted as follows:

```
<yyyyMMdd>;<fund ID>;<total cost>;<total cost profit share>;/END;
```

Mapping ID: "ACTIVE"

Field position	Aggregate type
Field 1	Active share

When this mapping identifier is specified in the message ("Mapping-ID=ACTIVE"), each of the update lines are interpreted as follows:

```
<yyyyMMdd>;<fund ID>;<active share>;/END;
```

5.4 PASSWORDS

A plaintext password is used. The originator of the message is required to put the password into the message "subject" field. Passwords are case-sensitive.

5.5 MESSAGE TRANSFER ENCODING

The e-mail message must be encoded as plain text: not as an attachment etc. Messages must contain only the fund update message. No additional signature, message etc is allowed.

