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Introduction

Bookmap is an innovative market depth analysis software. Bookmap delivers consolidated visualization of past and present order book and order flow utilizing an adjustable gray scale and colored heat map. Bookmap keeps record of the order book activity over time and displays it to traders together with current depth of market. The visualization of the evolving order book and order flow activity significantly enhances traders ability to analyze market dynamics and patterns as well as assessing the perpetual strength and weakness of different price levels.

Example of the Bookmap interface with specific feature call outs
1. **System Requirements**

The following hardware and software specifications are the minimal requirements for installing and using Bookmap:

a) Windows Vista, 7, 8 and 10.
b) Minimum of 1280x960 display resolution
c) Video card of minimum 516 MB memory supporting OpenGL 3 (introduced in 2008) or higher. To check which OpenGL version your system use, you can install an OpenGL extension viewer.
d) Minimum of 4GBRAM and 1 GB free disk space.
e) Intel Core 2 DUO (or equivalent), 2.0 GHz or above+
f) Stable internet connection. Minimal speed 1Mb/sec
g) A mouse with a middle button is required for the one-click trading add-on feature.
h) .NET 3.5

2. **Bookmap Main Window**

The Bookmap Main Window is where you control your Bookmap active data connections and your instruments subscriptions. For more details on how to run Bookmap with your platform / infrastructure and view the instruments of your choice please refer to Section 3 “Running Bookmap”. Instruments added to the main window are added as separate tabs. Each instrument can be detached from the tab display and be presented as a separate window. To add a detached chart window back to the tab display, just close the detached window.

The Bookmap Main Window has some useful setups and links described below:

**File Menu**

<table>
<thead>
<tr>
<th>File</th>
<th>Connections</th>
<th>Settings</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create New Workspace</td>
<td>Ctrl+N</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open Workspace</td>
<td>Ctrl+O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Save Workspace</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Save Workspace As...</td>
<td>Ctrl+Shift+S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export...</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>List cross instrument trading pairs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alerts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Show log file</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open user folder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refresh Bookmap</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exit</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
• Show current log under File → Show log file. This might come in handy when trying to pinpoint operational problems. Previous sessions log files are kept in the user folder under the Logs folder.

• User Folder. This folder stores the Bookmap log files, configuration files, feed files recorded during Bookmap sessions, saved screenshots of your Bookmap chart and more. To access the user folder go to File → Open user folder.

• Workspace. Users can save their current workspace with all of the symbols subscriptions and settings. Bookmap will always open with the last saved workspace and subscribe to all the symbols in the workspace automatically.

  Users can save multiple workspaces and can open specific workspaces from the File menu on the Bookmap Main Window

• Cross Instruments. Bookmap enables traders to trade a mini or micro instrument (e.g. mini DAX futures) from the chart of the major instrument (e.g. DAX futures). To view the list of available cross instruments click File → List cross instrument trading pairs. See more on cross instrument trading in Section 6.1 below.

• Data refresh. The data refresh feature allows users to define when to reset the inflow of data and start the accumulation of data anew. To set data refreshes click File → Refresh Bookmap. For more on data refresh see Section 4.3 below.

• Alerts. List all generated voice alerts.

• Export. Allows you to export data and order from Bookmap to a file. You can define which data and the specific time segment to export.

**Connections**

The Connection menu is where you setup the platforms and data feeds to which Bookmap connect. For more details see Section 3 “Running Bookmap”
**Settings Menu**

- Setup options for colors, time zone used, restore configuration, control of chart refresh rate and rendering method.

  When Bookmap is connected through CQG Continuum, Rithmic and S5, the setting menu will also include an Account Info item. The account info panel displays different information relating to your account, such as P&L, trades history, open positions etc.)

- Replay startup action. Defines which data file to load when starting Bookmap in Replay mode.

- Load Recorded Orders

- Order Confirmation. Defines which order types require trader’s confirmation prior to order submission.

- Configuration

- Memory Allocation
• Under Help tab, click the **Bookmap Resources** to be redirected to the members portal on the Bookmap website. If you wish to use your Bookmap copy on a different machine, click Help>>**Deactivate** to deactivate your current license. After the license has been deactivated simply install Bookmap on another machine and enter your license key once prompted to activate Bookmap on the new machine. In addition, when you open Bookmap on a new machine while having your license active on a different machine you will be prompted to either deactivate Bookmap on the currently active machine or terminate your attempt to open Bookmap on the new machine.

• Click the **User Guide** menu item to get your current version user guide.

• Click **Updates** to get the latest available version of Bookmap.

• Click **Symbols** for a list of symbol formatting on different platforms compatible with Bookmap.
3. **Running Bookmap**

3.1 **Bookmap run modes**

Bookmap supports the following 3 modes of operation:

*Replay data / Trading simulated by Bookmap:* this mode of operation is independent of your trading platform and operates as a standalone product. It allows you to replay market depth data files of previous live sessions you recorded. Traders can place and execute simulated orders to evaluate how their trading decisions and strategies fit their analysis of the market based on Bookmap insights.

*External data / Trading simulated by Bookmap:* this mode of operation allows you to trade with internal Bookmap simulator while acting on real time data transmitted from your supported trading platform.

*External data / Trading through your brokerage account (real simulated):* this mode of operation presents real time market depth data and orders transmitted from your supported trading platform. It also supports the transmission of limit orders to your supported trading platform through one-click order placement directly from the Bookmap chart. This mode requires the one-click trading add-on feature (see section 6.1 for details).

![Bookmap Run Options](image)

3.2 **Connecting Bookmap to multiple platforms**

3.2.1 Both live data modes allow connection to multiple platforms / APIs (depending on the platforms available on your licenses). To connect to any given platform or API select any of the live run modes. Make sure to tick the recording checkboxes if you want to record your data and orders for later analysis on the Replay mode.

3.2.2 Next click Connections tab and select configure. In the configuration window select the platform you want
to add to your connections, add the relevant credentials for the selected platform. If the credentials are to a demo account then make sure to tick the demo account checkbox. Finally click Add Connection. You have now set a new connection. After adding all the connection you want click OK to close the configuration window.

![Connectivity Configuration](image)

3.2.3 Next click the Connections tab and tick any of the connections you want activate. Once active you will be able to subscribe to any of the instruments available through any of the active connections.

![Connections](image)
3.2.4 To add an instrument click the + sign at the top of the Bookmap main window to open the subscription window. On the subscription window select the relevant platform and type in (or select) the instrument you want to subscribe to.

Depending on the specific instrument the subscription window may include additional setup option, such as tick size and size granularity. In addition, you can load historical data when subscribing to an instrument. The length of available historical data depends on the specific market and your Bookmap plan. Bookmap can also load data you recorded for the specific instrument so you will not lose accumulated data if you Bookmap session is unexpectedly interrupted.

When you are done with subscription setup, click Subscribe to add the chart of the selected instrument to the Bookmap main window.

3.2.5 All added connection will be kept in configuration until removed by the user so the process of adding and activating a connection does not have to be repeated in subsequent sessions of Bookmap.
4. **Operating Bookmap**

The screenshot below provides an overview of the main elements on the Bookmap chart and columns. The sections below provide more details on each of these elements and additional features.

![Bookmap Chart](image)

**Legend:**

1. **Best bid-ask lines**
2. **Last executed trade**
3. **Current time line**
4. **Traded volume dots**
5. **Historical order book heat map**
6. **Current order book heat map**
7. **Volume bars**
8. **User definable columns B**
9. **Upper limit of exchange transmitted range**
10. **Bottom limit of exchange transmitted range**
4.1 Bookmap Chart

4.1.1 Order Book Heat Map

Application:

The Bookmap chart displays the best bid and ask lines on top of a gray shade or colored heat map of the instrument’s order book. In contrast to other order book applications, which only display the latest instance of the order book, Bookmap records every instance of the order book and color codes it based on its relative size. This forms a heat map of the order book, which allows traders to observe the evolution of the market depth over time and detect different patterns that may help in evaluating short term price action.

Interpretation:

Every price level displays a color shade based on the relative size of the pending orders resting at that level. For instance the gray scale heat map ranges between complete black to complete white. The larger the relative size of the pending orders the whiter the gray scale of that price level. As another example, in a colored heat map, such as the blue-yellow-orange heat map, the smaller size are represented by dark blue shades while larger size would be get more yellow to complete orange color.

The dynamic nature of the current order book is reflected in Bookmap by the changing color shade. In other words, traders can gauge the variations of liquidity at each level based on the changes of the color shade representation of each level. Such changes are either the result of an increase or decrease in the number of the pending orders at that price level or changes in the relative size of that price level compared to the entire visible order book.

The order book heat map is divided by a vertical moving or static time line. Everything left of the vertical time line is the historical view of the order book and price action, while the area right of the vertical line represents the color shade scaling of the current order book. The last trade size is displayed as a color configured number on the right side of the vertical time line at the relevant price level. To choose between a moving time line and static time line display click Settings → Configuration. On the configuration panel check (or uncheck) the static time line check box at the lower part of the configuration window.

The image below illustrates the historical changes in liquidity for the S&P 500 emini futures. Note how the bright white areas of thick liquidity at 2136 and 2135.50 change to gray just after 19:14. This clearly illustrates pending orders that were pulled away from the market at that price level. Conversely, the white bands of heavy liquidity at 232 and 2131.50 remain unchanged indicating stable liquidity. Lastly, the gray scale at 2134.75 around 19:19 changes from black to bright white indicating liquidity that has been added to that price level.
4.1.2 Candlestick View

Bookmap uses a candlestick view of price that can be layered over the heat map view to combine the traditional price view with that of the market depth. The combined view can assist traders accustomed to candlestick with proper orientation and can also enhance traders trading by applying multiple discipline analysis.

To display candlestick click the studies icon above the chart and select candlestick bars. Set candlesticks attributes by clicking the candlesticks box in the studies panel and configure the relevant parameters on the right side of the studies panel. Available parameters are:

- OHLC display based on trades or combination of trades and bid ask prices
- Candlestick bar width and candlestick interval.
- Layering of VWAP information relating to the candlestick specific time period
4.1.3 Settings and Supporting Features

Chart contrast

An internal algorithm automatically adjusts the contrast of the order book heat map based on the maximum size on the order book and the distribution of pending orders at the different price levels.

Users can also determine how often Bookmap will adjust the heat map contrast. It can be set at predefined frequencies and at every time the chart recenters. To control these settings click the contrast icon above the chart and check the adjustment options you want to use.

In addition, users can control the contrast and brightness of the display by using the applicable sliders on the contrast settings window.

For more control over the heat map display user can control white and black cut off and also define the degree of discernibility of price levels with relatively large number of pending orders.

White and black cut off define the sizes which will be displayed with a solid color reserved for representing the highest (and lowest) liquidity sizes on the order book (e.g. white or black in case of a gray scale heat map). The values of the cut off can be controlled by either a percentage slider or by manually entering an exact number of contracts. When the you enter an exact size of contracts Bookmap will assign a solid color to any price level with an equal or greater (or smaller) number of pending contracts, while price levels with smaller (or bigger) sizes will be assigned with varying color shades according to their relative size. If you use the percentage slider instead, Bookmap will assign a solid color to any value at or above (or below) the percentile you selected on the slider (e.g. if 95% is selected for the white cut-off in a gray scale heat map, Bookmap will assign a white color to the top 5% sizes in the order book; if 5% is set for the
black cut-off, Bookmap will assign a black color to the bottom 5% sizes in the order book. Note that while exact size is an absolute value the sizes represented by percentile values keep changing as the order book changes.

Black cut off slider can be placed on the toolbar to save the need for using the contrast window. Check the Black cut off on toolbar to display the slider on the toolbar.

The slider **Large Size Highlight** controls the range of gray shade assigned to price levels with relatively larger size of pending orders. Use the higher end of the slider to make the differences between these price levels and other levels more distinguishable. This can help traders put more emphasis and focus on the more liquid levels in the order book.

![Bookmap Contrast Configuration](image)

**Bookmap Contrast Configuration**

*Heat map Vertical Filter*

To enable more flexibility in consuming the heat map at zoomed out (especially extreme zoom out) views, Bookmap enables users to apply a vertical filter to the heat map. To access the vertical filter options click the studies icon above the chart and select Heat map. The vertical filter setting will be on the right side of the window.
Choosing **None** will display the heat map without filters, whatever the zoom level is. Choosing **Smoothing** will apply a smoothing Gaussian filter to the heat map with whatever sigma pixel value the user defines. When choosing **Auto**, Bookmap will apply a Gaussian filter automatically based on the zoom level used.

**Extended Order Book** - by checking or unchecking the "Show extended Order Book" checkbox, users can also select whether or not to display an extended view of the order book. When checked, Bookmap will show price levels that are out of the exchange transmitted range. The values used for these extended levels will be the last transmitted values of these levels during the session.

**Aggregate Order Book** - normally, the heat map will display the size of each price level separately. When checking the "Aggregate Order Book" checkbox, the heat map will switch to accumulated display. Each price level will display the aggregate number of pending orders at that price level together with the total number of pending orders at all the preceding price levels.
Heat map with no vertical filter

Heat map with Gaussian filter
Heat map with aggregated order book
Depth Reset Configuration

The exchanges transmit data of limited number of price levels above and below the best ask and best bid. This is referred to as the market depth active range. The active range varies between exchanges and symbols. Since most data providers do not transmit the value of the active range Bookmap uses an internal algorithm to calculate the active range based on data update patterns. In addition, in contrast to most order book applications, Bookmap keeps record of the last update of out-of-range price levels and displays these values on the current order book (COB column) as well as on the heat map. This allows traders to keep track of the last known size of out of range price levels.

By using the Depth reset configuration, traders can control both the calculation of the active range and the display duration of inactive range, which will mostly be those that are out of range hence lacking exchange updates.

To access the depth reset configuration click the studies icon above the chart and select Heat map. The configuration options will be on the right side of the window:

Keep all check boxes unchecked for no depth reset. Bookmap will keep displaying the last update of each price level.

Choose Reset inactive and set the number of minutes for the reset interval. Bookmap will reset price levels out of the active range for which no update was received during the last set number of minutes.

Choose Reset at the end of day to reset depth data of the out-of-active-range price levels at the end of the regular session. Note that this option is only available when connecting to a data provider that provides indication of the end of the trading session. Currently this applies only when Bookmap is connected to Rithmic.

Click Reset Now to manually reset price levels that are out of the current active range.

To override the Bookmap calculated value of the Exchange active range, check the Override order book depth and set a lower number of levels to be considered as the active range. The active range will be marked with 2 horizontal lines on the COB column.

VWAP

To draw a VWAP line on the chart click the studies icon above the chart and check the VWAP checkbox. You can set the line color and reset interval for the VWAP line.
VWAP Configuration panel

**POC**
The point of control (POC) is the price level that had the largest size of a measured activity during the sampled period. For example, if the measured activity is traded volume, POC will the price level at which the largest aggregate volume size was traded during the sampled period.

Bookmap supports POC indication for the Volume, Trade Counter and Quote Counter columns. The POC line is drawn on the chart and is session based (i.e. it cannot be activated when the column is based on the visible chart range). To draw the POC line, right click any of the 3 supported columns and select Format Column. On the column configuration window check the “Show POC on Chart” checkbox.

Column configuration window
**Voice Alerts**

Voice alerts are available for Iceberg detector and for large trade alerts. Both can be found under the studies panel. Click studies icon above the chart and choose either Iceberg Detector or Large Trade Alert and set the voice alerts on the right side of the panel.

---

**Drag Mode and Zoom in-out**

a.) To zoom in Bookmap chart, click the and buttons or use the mouse scrolling wheel.

b.) Use the icon in the toolbar to scroll the chart sideways. When drag mode is active the hand icon will have a concaved depression . To switch off drag mode and go back to current price, click the hand icon once more to deselect it.

c.) While in drag mode users can scroll back as far as the start of their Bookmap session, depending on memory capacity. Left click and hold the mouse while scrolling left and right. The arrows keys can also be used to scroll. Each arrow key stroke moves the chart 1 pixel in each direction. Using the arrow keys while holding the shift key will scroll the chart 10 pixels in the relevant direction.

While in drag mode, users can also zoom in and out to view specific details within the historical order book. When zooming in using the scrolling wheel Bookmap will keep the chart centered on the cursor location. Traders can also use the zoom in and out icons while in drag mode. In this case Bookmap will keep the presentation anchored to the middle point of the current chart view. To switch off the drag mode just click again the hand icon above the chart.

d.) Users can also manipulate the time and prices axis by left click and hold and moving the mouse cursor left or right (time axis) or up and down (price axis).
**Time Slices**

The Bookmap chart includes dotted vertical lines marking the area between major two time stamps on the time axis. The length of time between vertical lines is dependent on the actual time range of the chart. To quickly set the chart range, click the stopwatch icon above the chart and choose the desired range. Note that this setting will also affect any synched charts.

*Bookmap Time Slice Options*
**Snapshot Generator and Social Network Sharing**

Use either the icon above the chart or ctrl+S to take a screenshot of your current Bookmap chart view. Snapshots are automatically saved to the user folder. The default path is C:\Bookmap\Screenshots.

Clicking the icon will also give you the option to share your screenshot in twitter or facebook.

![Snapshot Generator and Social Network Sharing](image)

**Color Settings**

Custom color settings can be set for all Bookmap elements. Click the Setting menu and select Color Settings. Click on the color of any item and select the desired color change, or click the eye drop button to select any color available on your computer screen. Click “Save as” to save your color selections. Click “import” to import previously saved color profiles. To reset default colors, click the specific “Restore” color button or Restore All.”
**Information bar and tool tip**

The information bar at the bottom of the chart provides accurate data on the number of pending orders and the number of contract executed at every point on the chart. Simply hover with the mouse cursor over a specific price level and time (left of the vertical timeline) to get the information on the number of pending contract. Similarly, the Information Bar can also display the volume of each transaction by hovering over an individual volume dot with the mouse cursor. Be sure to carefully position your mouse pointer on the center of the dot to view the VWAP of the specific transaction.
The data displayed in the information bar can also be displayed with a tool tip over the Bookmap chart. To display the tooltip click the icon above the chart and place the cursor over any point in the chart for which you want to display detailed information.

**Limitations:**

As noted by default Bookmap keeps records of the order book size at each price level and displays it with the relevant gray shade. Whenever a certain price level goes out of the price range transmitted by the relevant exchange (for example, CME transmits only the best 10 levels of bid and ask), Bookmap will continue displaying the last transmitted size at the out-of-range price level and will update the size once this price level returns to the transmitted range. This allows traders to estimate market depth even beyond the exchange transmitted range, however please note that it is only an estimation (or more accurately, a record of the last transmitted size) of size. Users can override this default behavior and opt to reset out of range levels or only display depth for the active range. See section 4.1.1 above for details.

**Crosshair and Drawing Tools**

Click the icon above the chart to switch to crosshair cursor. Click the icon for various drawing tool options. When the Single Figure Mode checkbox is ticked Bookmap will exit drawing mode after the first drawing element is completed. Use the Change Drawing Style menu item to control drawing elements attributes.
Configure Visible Components

The Bookmap chart displays various overlaid components. To control the visible components click the icon above the chart and choose what component to display and what display to turn off.

Control visible components

4.1.4 Traded Volume Visualization

4.1.4.1 Volume Dots

Application:

Bookmap displays transacted volume using the volume dots. Each dot represents the aggregate volume that has been executed during a time period that is equivalent to a single pixel slice of the user’s screen. This time unit will change based on the level of zoom applied to your Bookmap chart: the more zoomed in the view is the shorter the time period represented by a single pixel slice will be and vice versa.

The size of the volume dots circles is determined by configuration (as explained below) and by an algorithm that scales the aggregated volume of executed trades at a specific pixel time unit in relation to the instrument’s average volume.

Interpretation:

User can gauge the volume dots to gain information on the relative size of executions at specific time and price areas and which side has been more aggressive in these transactions. The precise location of the dot’s center is determined by time (on the X axis) and by the Volume Weighted Average Price (VWAP) of executions at the relevant time unit (the Y axis). The identity of the aggressor side can be
determined by the color of the dot which is set on a gradient scale of 2 configurable colors representing buyers and sellers. A stronger color represents a more aggressive action by the side associated with that color.

User can assign the colors they want for the buyers and sellers. See the Color Setting section above for more information.

**Settings:**

To display or hide the volume dots, click the studies icon above the chart and check the volume dots option on the studies panel.

![Volume Dots Configuration Panel](image)

Various settings of the volume dots can be accessed from the studies panel when clicking the Volume Dots item:

i. **Minimum accountable dot volume:** this parameter defines the threshold of aggregate volume required to paint a volume dot.

ii. **Dot size:** defines the scaling of the volume dots.

iii. **Transparency:** sets the opacity level of the volume dots.

iv. **Volume Dots Drawing Type:** defines how the classification of aggressor side will be indicated on the volume dot.

- **Gradient** displays the relative size of the aggressor side (buy and sell) as a scale of the 2 colors representing buyers and sellers.


- **Solid** displays the relative size of the buy and sell aggressor trades as a split of two solid colors.
- **Pie** displays the relative size of the buy and sell aggressive orders as a split pie.

v. **Dots Clustering**: defines whether dots are clustered or not and the method of clustering. There are 3 clustering methods:

  - **Smart** using an internal algorithm Bookmap aggregates together several adjacent or overlapping dots into a single dot display that is positioned on the chart based on weighted averages of the trades values and execution time. Use the slider to define the level of aggregation.
  - **Volume** Bookmap will create a volume dot whenever the number of traded contracts reaches the number defined by the user. Thus, volume dots will have a similar size but they will appear in different frequency depending on market activity. Note that the volume dot can represent more contracts traded than the configured number in case the last trade exceeds the configured volume size. For example, if the configured volume size is 100 but the volume dot is comprised of 2 single sequential trades of size 50 and 100, the volume dot will show 150 contracts traded and not 100.
  - **Time** Bookmap will paint a volume dot every configurable period of time.
  - **Price** Bookmap will aggregate the trades (regardless of aggressor side) in a single dot as long as they occur at the same price.

Click **Apply to Bars** to apply the volume dots clustering setting to the volume bars or click **Inherit from Bars** to align the volume dots clustering setting with that of the volume bars.

4.1.4.2 Volume Bars

**Application:**

Bookmap also displays transacted volume using volume bars painted on the lower part of the heat map. Each bar dot represents the aggregate volume that has been transacted during a time period that is equivalent to the pixel width of the bar. This time period will change based on the pixel width configured for the bar and the level of zoom applied to your Bookmap chart: the more zoomed in the view is the shorter the time period represented by a single pixel slice will be, and vice versa.
**Interpretation:**

User can gauge the volume bars to gain information on the relative size of executions at specific time and price and which side has been more aggressive in these transactions. The identity of the aggressor side can be determined by the color of the bar which is set on a gradient scale of 2 configurable colors representing buyers and sellers. A stronger color represents a more aggressive action by the side associated with that color.

User can assign the colors they want for the buyers and sellers. See the Color Settings section above for more information.

**Settings:**

To display or hide the volume bars, click the studies icon above the chart and check the volume bars option on the studies panel.

i **Bars Width:** by default the bars width is set to 1 pixel. Use the setting window on the studies panel to change the width of the bars up to a max width of 15 pixels.

ii **Volume Bars Drawing Type:** defines how the classification of aggressor side will be indicated on the volume bar. Use Gradient to display the relative size of the aggressor side (buy and sell) as a scale of the 2 colors representing buyers and sellers. Use Solid to display the relative size of the buy and sell aggressor trades as a split of two solid colors.

iii **Bars Clustering:** defines whether volume bars are clustered or not and the method of clustering. There are 3 clustering methods:
Smart

using an internal algorithm Bookmap aggregates together several adjacent bars into a single bar positioned on the chart at the time weighted averages of executions.

Volume

Bookmap will create a volume bar every set number of contracts traded. Note that the volume bar can represent more contracts traded than the configured number in case the last trade exceeds the configured volume size. For example, if the configured volume size is 100 but the volume bar is comprised of 2 single sequential trades of size 50 and 100, the volume bar will show 150 contracts traded and not 100.

Time

Bookmap will paint a volume bar every configurable period of time.

Click Apply to Dots to apply the volume bar clustering settings to the volume dots or click Inherit from Dots to align the volume bars clustering setting with that of the volume dots.

In order to set the height of the volume bar display, hover with the mouse cursor over the volume bar area and drag the red line to the desired height. The number on the right represents the max volume bar value during the displayed range.

4.1.5 Indicator and Widget Pane

4.1.5.1 Display and Setting

The indicator and widget pane currently displays position and P&L indication and cumulative volume delta (CVD). It will host additional indications as they become available or ones developed via API (see section 7 for details of the API).
To display the Indicator and widget pane click the small triangle mark at the bottom of the price ladder.

To control various widget / indicator settings either click the gear icon on the upper left corner of the widget window and then set the relevant widget or right click the widget itself and select the relevant item on the list.

To display / hide specific line indication click the gear icon on the upper left corner of the widget window and then click the bars icon of the relevant indicator on the settings window. To display / hide specific widget indication click the gear icon on the upper left corner of the widget window and then click the lines icon of the relevant indicator on the settings window.

To have the indicators or widget display data based on a chart range or full session right click the relevant widget and select Indicator Range.

4.1.5.2 Cumulative Volume Delta

The Cumulative Volume Delta (CVD) displays the cumulative volume changes based on the volume traded by sell aggressors versus buy aggressors and is displayed on the indicator and widget pane.

To display CVD click the studies icon and check Cumulative Volume Delta CVD settings are controlled from the right part of the CVD studies panel. Following settings are available:

Add CVD indication – use the + sign to add more different CVD indications per symbol

Minimum accountable volume size – CVD will take into account trades that are equal or greater than the selected size.
Maximum accountable volume size – CVD will take into account trades that are smaller than selected size

Indicator Range – controls the data range referred to for calculation of CVD, either chart range or session based.

Reference Points – allows users to define reset time and reset frequencies. CVD will start accumulation from zero at these points in time. CVD can also be reset immediately by clicking the Reset Now button at the bottom of the window.

Split Buyers / Sellers – displays split CVD indications for buyers and sellers

Colors – set CVD colors for positive and negative values. The eye drop icon allows selection of any color on the screen to apply to the relevant indication display.

4.1.6 Chart Synchronization

Application:

If you have multiple Bookmap charts open, you can synchronize the charts together. One chart is defined as a master chart and the viewing range of all other open charts is synchronized with it. Any change applied to the chart range of the master chart will automatically be reflected in the subordinate charts.

Interpretation:

Traders can use the synchronization feature to look for deviations in price or liquidity behavior of correlated instruments or viewing various legs of spread trades.

Settings:
Once all relevant charts are open, click the sync icon above the chart you want to designate as the master chart. Any change of range you make on the master chart (whether by dragging or zooming in and out) will be reflected on the subordinated charts. Note that all charts should have the same size window for the synchronization to be complete. To deactivate the sync mode simply click again the sync icon.

**Limitations:**

- It is recommended that all synchronized charts are the same size in order to have a complete synchronization.
- All open charts are affected by the synchronization feature; one chart acts as a master chart and the rest are subordinated to the master chart.
- Dragging or zooming in and out on a subordinate chart will break the synchronization of that specific chart in relationship to the master chart.

### 4.1.7 Chart Refresh Rate, GPU Acceleration and Smoothing

Bookmap utilized advanced GPU to efficiently and rapidly render the visual information on the chart. It could be that some users’ machine will be less equipped to handle the resources required for rapid chart refreshes, whether because of lack of advanced GPU support or low video memory. The default refresh rate of Bookmap chart is 40 FPS (frames per second) or every 25 milliseconds. If you experience resource burden using the default refresh rate, adjust the refresh rate to make it less frequent. However, setting FPS below 15 (refresh rate above every 67 ms) will make the refresh noticeable by human eye. To change the refresh rate, click **Setting >> Chart refresh rate** from the Bookmap control panel, and choose an in-range rate from the refresh rate setting panel.

Bookmap normally works with OpenGL 3 and above. Not all video cards support this OpenGL version or may have outdated drivers. If you cannot update your video card to support this OpenGL requirements Bookmap can still work with older video card but that will require more CPU utilization. To allow Bookmap to work without GPU acceleration click the Settings menu on the Bookmap control window and deselect the GPU acceleration option on the menu.

### 4.1.8 Presentation Mode

This mode is intended to improve the quality of the presentation of Bookmap with video capture or screen sharing software. It allows recording of Bookmap sessions with video capture software (e.g. Camtasia) or screen sharing Bookmap over Skype or similar screen sharing software, while maintaining the original Bookmap chart frame rate instead of lower frame rate enforced by these software.

To use this presentation mode, click **Settings>>Chart refresh rate** and check the “Presentation Mode” checkbox.
4.2 Bookmap Columns

Application and Interpretation:

Bookmap displays configurable columns to right of the Bookmap chart. Each column can be configured to display the following column types: Current Order Book, Volume, Trades Counter, Quotes Counter, Quotes Delta and Custom Notes

- **Current Order Book (COB)**

  This column displays a graphical representation and numeric values of the pending orders of the current book with bars (COB). Users can interpret the size of pending orders by comparing the relative size of the graphical bars.

- **Volume (CVP, SVP)**

  This column displays a colored volume profile. The colors represent the aggressor side (buyers or seller). Users can interpret the aggressor trading side by looking at the colors of the volume bars. Note the radio button choices available for volume: Session Accumulation (SVP), Chart Range Accumulation (CVP). Session accumulation displays the volume from the beginning of the Bookmap session. Chart range accumulation displays just the volume related to the visible data of the current Bookmap window. If you zoom in or out, you will notice how the volume changes to the data within the visible chart.

- **Trades Counter (CTC, STC)**

  This column displays the number of trades accumulated at each price level. The colors represent the aggressor side (buyers or seller). Similar to volume, Trades Counter can be displayed by either Session Accumulation or Chart range accumulation.

- **Quotes Counter (CQC, SCQ)**

  This column displays the number of quotes refreshed at each price level. The colors represent the aggressor side (buyers or seller). Quotes Counter can be displayed by Session Accumulation (SQC) or Chart range accumulation (CQC).

- **Quotes Delta (+/-)**

  This column displays the size of pending orders added or pulled from the active bid and ask range (the range below and above that is transmitted by the exchange). Each price level shows the number of contracts added or pulled from it since the last best bid or ask update. The best bid and ask price levels are marked with a rectangular of a matching color.
The delta number reset after each update of the best bid or ask. The top and bottom most numbers on either side of the active range is the total sum of the delta since the last best bid or best ask update.

- **Time and Sale**

This column displays Time and Sale table.

- **Custom Notes (CN)**

This column displays user notes for each price level.

- **Trading DoM**

This column allows placing trades directly from the DoM. For more details refer to Section 6.2 “Trading DoM”

Columns showing volume profile, trades count and quotes count also display a horizontal line that mark the VWAP calculated from the start of the Bookmap session or for the chart range displayed (depending on the view method set by the user for the specific columns). To view the VWAP line on these columns, open the Format Column panel from the column right click menu and check the Show VWAP line check box.

Layered Bookmap charts with different column options

For the COB column Bookmap displays at the top of the column a number that corresponds to the number of contracts represented by the full pixel width of the COB column. This should give users a
reference number to gauge the contract sizes represented by the different bars.

In the example below, the max width of the COB column is 1000. A bar that would have filled the entire width of the column would have represented a size of 1000 contracts.

To choose between columns types, right click any of the column and select the column type to display and, where applicable, whether to use session or chart range data accumulation.

See the screenshot on the next page of the columns right click menu.
**Settings**

Users can set the colors representing buyers and sellers for the volume profile, trades count, quote counts, current order book bars and time and sale. For details, see [Color setting](#) section above.

Users can also control various aspects of the column display: (i) display the data as a single or split histogram; (ii) display the data as bars or number or both; (iii) alignment of the bars and numbers; and (iv) inverse data display; (v) displaying only bid or ask sides or both.
For the COB column only users can also select an aggregate display and extended displays:

Aggregate Display - instead of presenting the size of each individual price level, each level represents the cumulative size of its own size and the aggregate size of preceding levels (i.e. level 3 represents the size of Level 1+2+3). When choosing aggregate view, Iceberg and Large Lot indications will not be visible.

Extended display – user can choose to present only the active range or an extended range which will be displayed based on the last updated size for out-of-active-range price levels.

To control all these display options, right click on the relevant column. At the top of the menu click Format Column and set your display preferences from the format column dialogue box.

![Format Column Dialogue Box](image)

The data on the Volume, Quotes and Trades columns can be reset by the user using different options:

Manual reset – right click on the relevant column and click the Reset menu option and then click Reset Now.

Reset Configuration – right click the relevant column and click the Reset menu option then click Reset Configuration. There are two options to configure: Scheduled Reset at predefined frequency and Conditional Reset that will reset the selected price level if the time between two trades at that level is greater than the selected period (in milliseconds)

Reset on Double Click – right click the relevant column and click the Reset menu item, then tick the Reset on Double Click checkbox. As long as this option is checked users will be able to reset the column by double clicking it.
Time and Sale – the columns display the stream of executed orders. Bookmap reconstructs the tape based on the order of data transmission so that even if a single trade is broken into several executions it will still be displayed as a single trade with the total contract size. Users can filter time and sale to show only executions on the bid or ask or filter based on contract maximum and minimum size.

The Time and Sale window is detachable. If detached it can be set back to column display by closing the detached Time and Sale window.
Custom notes - to add notes, set the column type to Custom Notes. Once set, right click the custom notes column at the relevant price level and click the top option Add/Edit Notes. Use the custom note dialogue box to set your note and style it.
You can also import notes from a csv file. To import your notes set the column type Custom Right click on the Custom Notes column and select import notes. Browse for your notes csv file and click open. This will populate the Custom notes column with the notes from the file. You should use a specific csv template to import notes from. A cutom_notes_template.csv can be found in C:\Bookmap\Config. Please note that you should enter the Symbol and Price Level in the file in the exact format they appear on your platform and the Bookmap chart. Values for Foreground Color, Background Color and Text Alignment are optional. If not filled, default values will be used. Color values can either be entered as hex codes or names (list of colors names can be found in Annex 2).

**Alerts** - To add price alerts right click the custom notes column at the relevant price and click the notification tab. Then set the following values:

i.) Set the offset from price where you want the alert to trigger. Use positive offset for distance above price and negative offset for distance below price.

ii.) Check notify only once if you want the alert to be triggered once. If notify only once is not checked, choose the interval at which you want the alert to be triggered again.

iii.) Choose the sound for the alert. This can be either the default system alert or any sound file added to the sound folder.

![Alerts Panel](image)

**Adding and deleting columns** - To add or delete any column type, right click on any column and select Insert Column or Hide Column. Initially, the column that is added is a replica of the column from which the Insert column option has been selected. User can then configure this column as they prefer. You can also rearrange the order of the columns by left click and hold the column title and dragging the column to the desired place. Columns can be dragged to either side of the Bookmap chart.
4.3 Data Recording and Data Refresh

Data Recording

Bookmap provides the ability to record your live session's data into a file and replay it later for analysis and training purposes using Bookmap replay mode.

With the exception of Bookmap for NinjaTrader, to record your session's data simply check the "Record Live Data" checkbox on the Bookmap Run Options window. When you close Bookmap the data file will be closed as well and will be ready for replay. Data files are located by default in C:\Bookmap\Feeds. See section 5 - Replay data / Simulated trading mode - for further instructions on how to use Bookmap replay to view data files.

Another option to activate data recording, which is also applicable to NinjaTrader users using Bookmap and indicator, is directly from the Bookmap chart. Click the recording icon on the bottom right corner of the chart and click Start Recording. Choose the recording option from the recording setup window and click start.

Order Recording

Users who have the one click trading addon can record their own orders and later view their trading activity on the chart in replay mode. To record your orders make sure first to record the session by checking the “Record Live Data” check box on the run options window. After you launch Bookmap make sure that the “Record orders” Settings menu item is selected.

After you finish recording close Bookmap and reopen it in replay mode. Select the relevant data file you want to replay, and make sure the “Replay recorded orders” Settings menu item is selected.
Data Refresh

The data refresh feature allows users to define when to reset the inflow of data and start the accumulation of data anew. This can be done manually or at a preset time. If the user is recording the data, each refresh will close a data file and will start recording the new data in a separate file.

To activate the refresh feature go to File>>Restart Bookmap and click either Now for an immediate manual refresh or Schedule for an auto scheduled refresh.

When adding a scheduled refresh, check the “Alert before refresh” if you want to be alerted before a refresh is done (you will then have a chance to cancel the refresh) and set how many seconds before the refresh to pop-up the alert. Then click “Add refresh” and set the refresh time. You can set the refresh as a one-time event or a recurring daily event. Note that the scheduled refresh will not start while the configuration window is open.

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5. **Replay data / Simulated trading mode**

   Bookmap offers the ability to replay and trade pre-recorded market data. This is a great training tool. All settings and features are fully functional within Replay mode.

   *Running Bookmap in replay mode:*

   a.) Open Bookmap. This will open the Bookmap run options window:

   ![Bookmap Run Options window](image)

   *Bookmap Run Options window*

   Choose Replay data / Simulated trading and click ok. This will open Bookmap Main Window.
b.) On the main window, click “Load Feed File”. This will open a new window. Choose one of the text feed files and click “Open”. Each feed file represents a prerecorded trading session.
c.) The feed loads the recorded sessions. Give it a moment to load. The recorded instruments will open as tabs. Click any of your desired instruments to open the relevant chart. The chart starts replaying as soon as the feed file loads.

d.) A control slider will open above the chart. User can manipulate the slider to go forward or backwards inside the recorded data. Hovering over the slider will open additional replay control options. You can either pause or choose varying replay speeds using the various controllers on the replay panel. Use the pin icon on the right side of the replay panel to keep the panel always visible or to auto hide it.

e.) The replay panel includes the ability to jump to the next data point in the file. This is useful in micro second analysis or to skip end of day period in case recording stretches overnight. Currently the skip to next data point button refers to the entire record file and not to the specific instrument viewed.
6. Bookmap Add-ons

6.1 Bookmap one-click trading add-on

This Bookmap addon enables placing limit and stop orders with one click action directly from the Bookmap chart or from the Trading DoM column (see section 6.2). This offers a tremendous advantage for pinpointing trade location and expediting trade execution.

Cyan dots mark the entry of buy orders. The cyan line extends from the entry time until the order is either filled or cancelled. A filled buy order is marked by cyan triangle.

Magenta dots mark the entry of sell orders. The magenta line extends from the entry time until the order is either filled or cancelled. A filled sell order is marked by magenta triangle.

It is possible to define what type of order information will be displayed on the chart. By default, pending, cancelled and executed orders are all presented on the chart. To change the default settings click Settings → Configurations and uncheck the relevant information on the Order Display section. See the figure below for details of the various orders markings on the chart:

Legend:

1. Pending(sell) order
2. Pending (sell) stop order
3. Pending (buy) stop order
4. Cancelled (sell) order
5. Executed(buy) order
6. Number of contracts & (Number of orders)
Placing limit and stop Orders:

Every time the Bookmap chart opens the one-click trading feature is disabled for precautionary measures. To enable one click trading click the lock icon above the Bookmap chart. This will open the Trading Configuration Panel. Check Enable One-Click Trading and specify the number of contracts per click (Size box).

Note that when one-click trading is enabled the lock icon will open.

Trading Configuration Panel
To follow up on your orders, position and P&L status you can either use the Trading Configuration Panel or the Trade Status Panel. To open or close the Trading Configuration Panel, use the lock icon above the chart. To close or open the Trade Status Panel click Settings → Configuration and check/uncheck the "Show Trade Status Panel" checkbox.

The Bookmap chart is divided into 2 areas separated by the current time line. Orders can be placed with one click action only from the area right vertical time line. To place an order, follow the instructions below:

a) To place a **Buy Limit** order, click the left mouse button at or below the current bid at the desired price level. Note that clicking the left mouse button at or above the current ask will result in a buy at current market price.

b) To place a **Sell Limit** order, click the right mouse button at or above the current ask at the desired price level. Note that clicking the right mouse button at or below the current bid will result in a sell at market price.

c) To place a **Buy Stop** order, press SHIFT + left mouse button at or above the current ask at the desired stop price level. To place a **Sell Stop** order, press SHIFT+ right mouse button at or below the current bid at the desired stop price level. Note that stop orders can be either stop market of stop limit orders, as explained below.

d) A single mouse click places an order for the number of contracts specified by the trader in the trade configuration settings window. Each additional mouse click will add another order for a similar number of contracts.

**Quick order entry**

Use the quick order entry to place market buy or sell orders or place buy or sell limit at the bid or ask.
Quick Order Entry
Stop order types

a.) A stop order can be placed as either stop market or stop limit. A stop market becomes a market order once the stop trigger price is reached. A stop limit order becomes a limit order once stop price is reached.

b.) To choose between the two stop order types set the stop order type on the Trading Configuration Panel to either MKT for a stop market order or LMT for a stop limit order. When using a stop limit order set the stop order offset to indicate the limit price. Note that offset can also be negative. A negative offset mean that once the stop trigger is met the limit order is below the trigger price (for buy stop) or above the stop trigger price (for sell stop).
Send order confirmation

By default a pop confirmation window will appear after sending orders. The order needs to be confirmed before it is actually sent for execution via the connected trading platform or API. To disable the order confirmation pop up click Settings >> Orders Conformation and uncheck any order type for which you do not want to get a pop up order confirmation window.

Order duration

a.) There are 4 different order duration that can be set in Bookmap through the Trading Configuration Panel:
   - Day – order expires at the end of the regular session
   - GTC – order stays in effect until cancelled
   - FOK – fill or kill
   - IOC – immediate or cancel

b.) NOTE that order duration setup will be kept for all orders until changed or until the one-click trading is disabled in which case the duration setup will revert to default.

c.) NOTE that stop order duration is set separately from limit order duration to allow greater flexibility. The stop order setup will be kept for all stop orders until changed or until the one-click trading is disabled in which case the stop order setup will revert to default.

Cancelling pending Orders and exiting all positions

Pending orders can be cancelled and open position closed either by one-click interaction on the Bookmap chart or from the Trading Configuration Panel

Cancelling orders and closing an open position from the chart:

a.) To cancel pending orders, place the mouse pointer over the relevant price level and click the middle mouse button. When multiple orders are placed on the same price, Bookmap will cancel the last order placed.

b.) To cancel all of the pending orders at a certain price level place the mouse pointer over the relevant price level and press CTRL + middle mouse button.

c.) To cancel all pending orders click the Cancel All button on the Trading Configuration Panel. To cancel just buy or sell orders click the buy or sell X buttons on the Trading Configuration Panel.

d.) To exit all open positions, click the Flatten button on the Trading Configuration Panel. This will also cancel all
pending orders.

Cancelling Orders & Closing Position
Bracket Orders

To send bracket orders users need to check the Brackets checkbox on the Trading Configuration Panel and check the type of orders to send as brackets and their distance in ticks from the executed price of the leading order. Bracket orders can be either or both of take profit limit order and stop order. Note that bracket orders will be sent for every filled order that was placed when the Bracket checkbox was already checked.

The duration and type of the stop limit bracket order will be as was set for any stop order when the leading order was sent to the market. The duration of the take profit limit order will be the same as was set for any limit order when the leading order was sent to the market.

Once triggered the bracket orders will function as OCO orders. The price of each OCO leg can be changed individually. When one leg is cancelled the other leg will be cancelled as well. Size modification of a single leg may or may not result in a similar change of the other OCO leg, depending on the platform to which Bookmap is connected. See Annex III for details. Note that size can only be modified downwards, i.e. you can only reduce the size of the order but not increase it.

For some of the platforms and APIs supported by Bookmap, the bracket orders are server side, i.e. the instruction to send a bracket order following the execution of the leading order is not stored internally in Bookmap but on the broker / execution platform side. At the same time, some other platforms and APIs do not support server side bracketing, in which case the bracket orders will be client side, i.e. kept in Bookmap until sent to the market. Whether bracket orders are server or client side has implications on the submission of orders when Bookmap becomes unavailable due to loss of connection, involuntary or voluntary shutdown, system crush or any other reason. When bracket orders are kept on the client side, they will be lost when Bookmap becomes unavailable and will not be sent to the market when the triggering condition has been met. Traders’ caution and discretion is advised when using client side bracket orders. See Annex III for details on which platform / API supports server side brackets. When working with other platforms / APIs the brackets will be client side.

OCO Orders

When OCO check box is checked, traders can enter two linked orders that will cancel each other when filled. Once the trader designate the first OCO leg price the trader will be guided to designate the second OCO leg price. Only when both OCO leg has been designated both OCO orders will be sent.

The price of each OCO leg can be changed individually. When one leg is cancelled the other leg will be cancelled as well. Size modification of a single leg may or may not result in a similar change of the other OCO leg, depending on the platform to which Bookmap is connected. See Annex III for details. Note that size can only be modified downwards, i.e. can only reduce the size of the order but not increase it.

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2 Changing the price of a stop order to invalid price, i.e. a price that does not fit its attribute as a stop order, is not allowed
3 Changing the price of a stop order to invalid price, i.e. a price that does not fit its attribute as a stop order, is not allowed
For some of the platforms and APIs supported by Bookmap, the OCO conditions is **server side**, i.e. the condition to cancel one order when the other gets filled is not stored internally in Bookmap but on the broker / execution platform side. At the same time, some other platforms and APIs do not support server side OCO, in which case the OCO condition will be **client side**, i.e. kept in Bookmap. Whether OCO is server or client side has implications on whether the cancelling of the relevant OCO leg will be done when Bookmap becomes unavailable due to loss of connection, involuntary or voluntary shutdown, system crush or any other reason. When OCO is kept on the client side, it will be lost when Bookmap becomes unavailable and an order that should have otherwise been cancelled when the other OCO leg gets filled, will be kept in the market. Traders' caution and discretion is advised when using client side OCO. See Annex III for details on which platform / API supports server OCO. When working with other platforms / APIs the OCO will be client side.

**Trailing Stop**

For trailing stops users need to check the TS checkbox on the Trading Configuration Panel. A trailing stop will be executed for every stop order that was placed when the TS checkbox was already checked. The trailing parameter controls the steps at which the stop order is updated and is measured in tick distance. Note that stop orders placed to open a position will not be affected by trailing stop.

For some of the platforms and APIs supported by Bookmap, the trailing stop is **server side**, i.e. the trailing stop instructions are not stored internally in Bookmap but on the broker / execution platform side. At the same time, some other platforms and APIs do not support server side trailing stop, in which case the bracket orders will be **client side**, i.e. kept in Bookmap. Whether trailing stop is server or client side has implications on the trailing stop availability when Bookmap becomes unavailable due to loss of connection, involuntary or voluntary shutdown, system crush or any other reason. When trailing stop is kept on the client side, it will be lost when Bookmap becomes unavailable. Traders' caution and discretion is advised when using client side trailing. See Annex III for details on which platform / API supports server side trailing stop. When working with other platforms / APIs the trailing stop will be client side.
Brackets, OCO and Trailing Stop
Order modifications

Price Modifications

a.) To modify the price of an existing order hover with the mouse cursor over the order line mark at the area left of the vertical time line. When over the order left click and drag the order marking to the new price, then release the left click to change the order price. **NOTE: order modification is done from the area left of the vertical timeline. Performing this action from the area right of the time line will result in a new buy limit order, which may be executed immediately.**

b.) If there are multiple orders at a single price level, the order modification will apply to the newest order at that level. To move all order resting at the same price level, hold CTRL + middle mouse click and drag the orders to the new price.

Quantity Modifications

a.) To change the quantity of a pending order hover with the mouse cursor over the order line mark at the area left of the vertical time line. When over the order line mark left click and release. This will open an order size ladder. Click the new order size you want to change the order.

b.) If there are multiple pending orders at a single price level, modification will first apply to the newest order.

c.) To change the order size of new orders either use the size box on the Trading Configuration Panel or use the number buttons below it for a quickly adding or reducing size. When adding size simply click the relevant size buttons; when reducing size, SHIFT+click the relevant size buttons. User can set any preferred number on the size buttons. Simply right click any of the size button and then click “customize sizes”. Enter any size of preference and close the customize sizes window.
Orders Price and Size modifications
Size modification buttons
Cross Instrument Trading

Bookmap enables traders to trade a mini or micro instrument (e.g. mini DAX futures) from the chart of the major instrument (e.g. DAX futures). The eligible pairs are not configured by the trader but are predefined. In case of an eligible instrument pair, the symbol box on the Trading Configuration Panel of the major instrument will include both the major and the mini or micro instrument. To trade the mini or micro instrument off of the major instrument chart, the user must first subscribe to the mini (or micro) instrument through the Bookmap control window. Once subscribed, both instruments will appear active in the symbol box on the Trading Configuration Panel.

Once the major and mini (or micro) instruments are active, the trader needs to click the Start button in order to trade the mini or micro instrument from the major instrument’s chart. The symbol presented in the symbol box will be the tradable one.

Since the tick sizes of the major instrument and the mini (or micro) instrument may be different, the price clicked on the major instrument’s chart is rounded to the next compatible value of the traded mini (or micro) instrument. Using the Round box on the Trading Configuration Panel, traders can define whether to round the price into the market (TO) or away from the market (OFF).

To view the available pairs for cross instrument trading click File >> List of cross instrument trading pairs
Cross Instrument Trading Settings
Order Display

a) Your trading data is displayed in the window above the chart. It shows your current position, Average Price, the open number of Buy and Sell orders in the current market, the amount of volume you've traded, and your Profit and Loss.

b) Orders generated directly from your trading platform will also be displayed and updated on the Bookmap chart opened for the same instrument.

c) You can control from the general configuration panel what on-chart indication of trades will be displayed on the chart itself. Click Settings → Configuration for the general configuration panel.

![Image of configuration panel](image-url)
Approximation of Order Queue:

When the one click trading add-on Bookmap is enabled Bookmap can display an approximation of the position of the trader’s orders in the queue. Bookmap approximates the position in the queue according to a FIFO matching algorithm using a more pessimistic scenario relating to cancelled orders. The ability to display a more accurate position in the queue ultimately depends on the quality of data provided through the trader’s trading platform.

Bookmap presents queue approximation with white vertical lines on top of the current order book histogram. The place in the queue is illustrated by the position of the line over the bar representing the current size of pending order at any given price level.

In order to activate the presentation of the queue approximation, click Settings → Configuration and check Orders Queue.
Trading Configuration Panel

The Trading Configuration Panel controls various settings related to trading with the Bookmap platform. Most of these settings are detailed throughout the one-click trading addon section. The 2 figures below detail the various setting and control option on the Trading Configuration Panel. The items displayed on the Trading Configuration Panel are customizable – by right clicking each component on the Trading Configuration Panel, users can control which component (or component elements) to show or hide and can rearrange the order of components by dragging and dropping them on the Trading Configuration Panel.

1. Enable checkbox. Need to be checked to enable trading functionalities.
2. Trading information. P Current position; A Average price of the open position (based on FIFO model); U Unrealized P&L; T Total P&L (i.e. realized + unrealized P&L); V Total volume traded by the user
3. Size. Set the order size per click.
4. Reset. Click the reset button to set the order size to 0. If the checkbox is checked the size will be reset to 0 automatically after an order is sent.
5. Set order duration for all orders except stop orders
6. Stop order type. Can be a stop market or stop limit, with or without an offset.
7. Set order duration for stop orders
8. Quick order size modifications. Clicking any of the numerical values will add the relevant size to the currently set order size. Clicking SHIFT+ any numerical value will subtract the relevant size from the currently set order size.
9. Cancel all sell orders.
10. Cancel all buy orders.
11. Cancel all orders
12. Cancel all orders and close open position (market exit).
13. Automatic bracketing. When checked, a limit order (take profit) and a stop order (stop loss) will be automatically sent when a new order to open a position is filled (assuming the order for opening the position has been sent after the checkbox has been checked).
14. TP. Set the number of ticks for auto bracketing take profit.
15. SL. Set the number of ticks for auto bracketing stop loss.
16. TS. Set trailing stop in tick increments.
Bookmap enables a trader to trade a mini or micro instrument (e.g. mini DAX futures) from the chart of the major instrument (e.g. DAX futures). The eligible pairs are not configured by the user but are predefined. In case of an eligible instrument pair, the symbol box on the trading panel of the major instrument will include both the major and the mini or micro instrument. To be able to trade the mini or micro instrument, the user must first subscribe to this instrument through the Bookmap control window. Once subscribed, both instruments will appear active in the symbol box on the trading panel.

Once the major and mini (or micro) instruments are active, the user needs to click the Start button in order to trade the mini or micro instrument from the major instrument’s chart. The symbol presented in the symbol box will be the tradable one.

Round. Since the tick sizes of the major instrument and the mini (or micro) instrument may be different, the price clicked on the major instrument’s chart is rounded to the next compatible value of the traded mini (or micro) instrument. The user can define whether to round the price into the market (TO) or away from the market (OFF).

Order Cancel Order & Order Send Order

Quick trade buttons
IV. Orders Recording

a.) With the one-click trading addon you can also record your own orders and later view the in replay mode. To record your order make sure first to record the session by checking the “record live data” check box on the run options window. After you launch Bookmap make sure that the “Record orders” Settings menu item is selected (it is by default).

b.) After you finish recording close Bookmap and reopen in replay mode. Select the relevant data file you want to replay, and make sure the “Replay recorded orders” Settings menu item is selected (it is by default).

[Intentionally left blank]
6.2 Trading from DoM

Instead of trading from the chart as explained above, you can also use the Trading DoM column to place your orders from the DoM. You would still need to follow the same procedures relating to the trading configuration panel as detailed in section 6.1 but the actual placement of order will be done from the DoM.

The DoM trading column includes 5 sub-columns:

- **ORD** – displays your working order. You can modify or cancel your existing orders from this sub-column.
- **BID** – place your orders from this sub-column. Note that you can use this column for buy or sell order or both.
- **ASK** – place your orders from this sub-column. Note that you can use this column for buy or sell order or both.
- **PR** – price ladder
- **T** – displays the last traded size.

Trading DoM Configuration panel

*Right clicking each of* the sub-columns will open a configuration panel with the available setup options for that specific sub-column. Beyond display setup, use this configuration panel to define mouse and key sequence for specific order types (limit, stop, stop limit) on the BID or ASK sub-columns, or specific order modification actions on the ORD sub-column.

Note that as with trading from the chart, market orders are not supported on the Trading DoM column. Place a buy limit order far enough above the best bid for immediate execution or a sell order far enough below the best ask for immediate execution of a sell order.

As with any new trading functionality, we recommend that you first use the Trading DoM column in simulation to experiment with its different options and functionalities.
6.3 Large Lot Tracker

Application:

Bookmap can display an approximation of the largest single pending order at any price level if that order crosses a certain threshold. In order for the Large Lot Trade to be displayed it has to be at least 20% of the total order size at the relevant price level and at least 10% of width of the largest pending orders bar.

Large Lot Tracker is displayed by a vertical white line on the order bars on the COB column. The distance between the vertical line and the base of the bar is an approximation of the size of the Max Order.
White vertical lines indicating large order portion of total size
Interpretation:

This feature can be utilized to identify the presence of a dominant market participant(s) at a certain price level.

Settings:

Once enabled the Large Lot Tracker add-on is activated by clicking the studies panel icon above the chart and checking the “Largest Lot Tracker” checkbox. User can set the thresholds a single order must pass in order to be displayed as a large lot. There are two thresholds to pass: the size of the order relative to the total size at the relevant price level (Minimum percentage at price level) and the size of the order relative to largest total size at any of the visible order book levels (Minimum percentage in Order Book).

Limitations:

The Large Lot Tracker is not based on an exchange transmitted data but rather on an internal algorithm that approximates the largest single order at any price level. Therefore, it is not guaranteed 100% accuracy. It requires the COBB (current order book bars) to be defined as one of the user’s column selections.
6.4 Imbalance Indicators

Application:

The imbalance indicators are located on top right part of the chart. They display the Order Book Imbalance and the Volume Imbalance.

Order book and volume indicators

**Order Book Imbalance** represents the ratio between the average bid order book size versus the average ask order book size. The ratio is calculated as:

\[
\frac{\text{Number of accountable buy orders} - \text{Number of accountable sell orders}}{\text{Number of accountable buy orders} + \text{Number of accountable sell orders}}
\]
**Volume imbalance** represents the ratio between the volume generated by buying aggressors (market order transactions on the offer) versus the volume generated by selling aggressors (market order transactions on the bid). The ratio is calculated as:

\[
\frac{\text{Number of accountable buy volume} - \text{Number of accountable sell volume}}{\text{Number of accountable buy volume} - \text{Number of accountable sell volume}}
\]

The two imbalance indicators are calculated according to the current chart range. Any change to the chart range (either by dragging or by zooming in or out) will affect the readings of the imbalance indicators.

**Interpretation:**

Users can gauge the imbalance indicators to assess when the activity is heavily tilted to a single direction based on the order book and order flow activity. This can help in assessing momentum move or exhaustion points.

**Settings:**

The Imbalance Indicator ratios are displayed on the top right side of the chart. Whenever an imbalance ratio is equal to or greater than 10% the number will appear in the color set for the buyers. If the imbalance ratio is equal or less than -10%, the number will appear in the color set for the sellers. To change the color settings, please refer to the [Color Settings](#) section above.

To enable the imbalance indicator display click the studies panel icon above the chart and check either of the two imbalance indicators. The studies panel also includes settings for the order book imbalance as illustrated below.
The **Limit number of levels to calculate** is used to set the number of levels above and below the bid/offer price that are taken into account when calculating order book imbalances. A setting of 5, for instance, will calculate imbalance of 5 levels above and below the bid/offer.

The **Weight levels exponentially. Decay rate** setting allows the user to control the weighting and significance of levels closer to current price.

Note that if a setting value is not check marked, then the imbalance indicator will generate a calculation for the entire visible book and volume size with no exponential decay rate.

**Limitations:**

The imbalance indicators are set to take into account the entire visible range of the chart. To change the time range taken into account when calculating the imbalance ratios, users must zoom in or out or drag the chart.
6.5 Iceberg Detector

Application:

The Iceberg Detector add-on feature displays hidden volume as numbers on the COB column and as number of hidden contracts on the heat map. Bookmap generates the iceberg indications based on the difference between the actual pending orders offered at that price level and the actual number of orders that transacted at that price level. For example, if the Iceberg Detector displays 43, this signifies that 43 more contracts were transacted than available in the order book at that specific time.

The display of the hidden orders on the COB is based on the chart viewable time range, i.e. the number of hidden order displayed is the number of hidden order identified during the viewable chart range. In contrast the display of the iceberg on the chart does not depend on a specific chart range and is placed at the relevant time and price on the chart.

Interpretation:

Traders can assess the possibility of hidden liquidity at certain price levels with the Iceberg Detector. Since hidden orders are usually associated with the activity of more sophisticated players, traders may also use this information to assess possible short term price action and areas of resistance or support.

Settings:
To enable it click the studies panel icon above the chart and check the Iceberg Detector check box. Users can control the colors of iceberg indications for sell and buy orders. Users can also set voice alerts for icebergs and apply order size filter for the alerts. There are no settings for the Iceberg Detector.

![Iceberg Settings](image)

**Limitations:**

The Iceberg Detector can only display hidden orders after the execution of those orders has taken place; it is not forward looking. It cannot display hidden orders currently resting at specific price levels.
6.6 Correlation Tracker

Application:

Using the Correlation Tracker traders can overlay several instruments on a single chart view to gauge the correlation between them. To open Correlation Tracker click the studies icon above the chart and check the Correlation Tracker checkbox. Then tick the Enable for current instrument checkbox and select the instrument(s) to be overlaid on the chart.

Interpretation:

Traders can assess the correlation between two or more instruments and look for trading opportunities when instruments deviate from expected correlation.

![Bookmap view with correlation tracker](image)

Settings:

Users can set the Correlation Tracker to reference mid-price or last trade and control the time resets for the overlaid instruments lines. Users can also set color and line shape for the overlaid instruments.
Correlation Tracker Settings

Limitations:

Overlaid instrument must be subscribed to in order to be available for correlation display.
7. Bookmap API³

7.1 Getting Started

To verify your account is enabled to Bookmap API look for the icon above the chart. This is the custom strategies and indicators icon. It contains several sample strategies which users can configure. It also serves for importing additional custom strategies or indicators developed via the API. The source for few of the sample strategies can be found at https://github.com/BookmapAPI/DemoStrategies.

In order to be able to edit the sample strategies to gain closer understanding of the API their embedded version needs to be removed from bookmap. To remove the embedded version close Bookmap, then go to C:\Program Files (x86)\Bookmap\lib and delete "bm-strategies.jar", then start Bookmap back. Custom strategies / indicator button should remain in place but sample strategies should not appear there.

Now you will need Eclipse for Java to develop / edit your strategy. Note, that you need to use 32 bit JRE to run Bookmap with your strategy from Eclipse. Technically any IDE will do, but we will use Eclipse for our example.

Import the project into workspace. If you see errors please check that you have the build path of the project configured correctly:

These settings should be there out of the box, but if not they need to be configured.

Now you should be able to export the strategy as a Jar file. Once exported import the jar into Bookmap. You should see this window:

³ Bookmap API is currently in beta phase and is not to be used with real accounts.
Each line item on the list represents a strategy.

You can develop your strategy by editing the project and importing new jar files but that may not be very convenient. An easier way would be to perform the following:

1. Create empty "bm-strategy-package-fs-root.jar" in the folder with your classes (For Eclipse it's <your workspace>\Strategies\bin).
2. Select it in bookmap strategy loading dialog and configure bookmap to load the strategy (e.g. pick the last entry point, make sure "Auto enable" and "auto load" is on and strategy is enabled in bookmap). Now you can remove the file.
3. Configure your IDE to run bookmap. For this configure IDE to:
   - add C:\Program Files (x86)\Bookmap\Bookmap.exe to classpath
   - start velox.ib.Main
   - Add -Xmx1000M to VM options
   - Use C:\Bookmap\Config as working directory

4. Now you should be able to use this configuration to start bookmap with the latest version of your strategy.

Note that the JRE used to start bookmap should be a 32 bit one (you can use a bundled one from C:\Program Files (x86)\Bookmap\jre) and Bookmap.exe should be added as user entry (in Eclipse run configuration):
When Bookmap is started this way the strategy can be debugged from IDE. Here is a screenshot of what you should be able to do (in this example Strategies project to source lookup when Eclipse asked for it. To repeat it place breakpoint into the same place and with "Large orders filter" strategy loaded as explained above send an order of size 11 or larger - it will be "rejected" by strategy and if you are in debug mode you will be able to control it step-by-step):

When running bookmap this way most features of IDE can be used including the one allowing to edit the code in debug mode without restarting the application.

Next step in the process would be to test the provided sample strategies and start creating your own.
7.2 Settings and UI

Some strategies may have to be configured by the user. Apart from a dirty way of creating a window directly from a strategy and displaying it (which should work) the user can integrate with Bookmap UI to some extent.

With current version your strategy can provide a panel that will be displayed inside strategies dialog similar to bookmap Studies window:

![Image of a panel in Bookmap X-Ray]

7.3 Indicators

As a part of bookmap level 1 API users can develop indicators that are displayed over the heat map or in the indicators panel below it. Provided examples are a good starting point but here are few general guidelines:

- Indicators are just a part of a strategy. Any strategy can register any number of indicators.

- Indicators can be displayed over the main chart or over the bottom panel. An indicator can optionally be displayed as a widget as well, as shown in the example below.
A strategy that uses widgets is required to implement OnlineCalculatable interface which contains two important methods:

- `calculateValuesInRange` - this one will be called when your indicator needs data for a specific time range. Usually it happens when user moves the heat map around. This method does not necessarily have to be very fast - if you need to make complex computations you will be able to provide values one-by-one and user will see the computed part of the graph.
  
  In this method you will usually request aggregated data from a storage and process it.

- `createOnlineValueCalculator` - this one is intended for calculating indicator values in real time. You will have to provide a calculator that will react on incremental updates recomputing the last value as necessary.
Annex I – Keyboard Shortcuts

There are several keyboard shortcuts that can be used instead of mouse action in Bookmap:

1. CTRL+S to take a screenshot of the Bookmap chart.
2. ESC to hide the configuration dialogues of the chart, colors, contrast and the log window.
3. SPACE to pause/resume in Replay mode.
4. Left/Right arrows in chart drag-mode to shift the chart pixel by pixel.
5. Shift + Left/Right arrows in chart drag mode to shift the chart by 10 pixels increments.
6. Right click on an empty space of the toolbar to find main window.
7. CTRL+T opens instrument subscription window
8. CTRL+W unsubscribe a specific instrument
9. CTRL+TAB switch between subscribed instruments
Annex II – Color value names

The following colors can be entered in the custom note import file with their names and not just their hex code:

- Black
- White
- Red
- Yellow
- Green
- Blue Light
- blue Cyan
- Magenta
- Brown
- Gray
- Light gray
Annex III – Brackets, OCO and Trailing Stop

**Server-side vs Client-side**

<table>
<thead>
<tr>
<th>Platform</th>
<th>Brackets</th>
<th>Trailing stop</th>
<th>OCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ninja</td>
<td>Client side</td>
<td>Client side</td>
<td>Client side</td>
</tr>
<tr>
<td>TWS</td>
<td>Client side</td>
<td>Client side</td>
<td>Client side</td>
</tr>
<tr>
<td>S5</td>
<td>Server side</td>
<td>Server side</td>
<td>Server side</td>
</tr>
<tr>
<td>TT</td>
<td>Client side</td>
<td>Client side</td>
<td>Client side</td>
</tr>
<tr>
<td>CQG Web</td>
<td>Server side</td>
<td>Server side</td>
<td>Server side</td>
</tr>
<tr>
<td>Rithmic</td>
<td>Server side</td>
<td>Server side</td>
<td>Server side</td>
</tr>
<tr>
<td>Transact</td>
<td>Client side</td>
<td>Client side</td>
<td>Client side</td>
</tr>
<tr>
<td>Simulator</td>
<td>Client side</td>
<td>Client side</td>
<td>Client side</td>
</tr>
</tbody>
</table>

**OCO:**

For all platforms the price of a stop leg of an OCO cannot be modified to an invalid price, i.e. at or above the offer for a buy stop or at or below the bid for a sell stop.

Size increase modifications of OCO orders is not allowed across all platform connections. Allowed price changes can be done on each order individually. Allowed size modifications (decreasing size) can either be done on each individual leg or is automatically updated to the other leg, depending on the platform connection, as detailed below:
<table>
<thead>
<tr>
<th>Behavior</th>
<th>Platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size change of one leg automatically updates the other leg</td>
<td>S5</td>
</tr>
<tr>
<td>Each leg is modified individually, i.e. size modification of a single</td>
<td>CQG</td>
</tr>
<tr>
<td>leg will not automatically update the other leg</td>
<td></td>
</tr>
<tr>
<td>Size change of one leg automatically updates the other leg</td>
<td>Rlthmic</td>
</tr>
<tr>
<td>Size change of one leg automatically updates the other leg</td>
<td>Ninja, TWS, TT, Transact, Simulator</td>
</tr>
</tbody>
</table>

**Brackets:**

Bracket secondary orders behave as OCO orders, as detailed above

**Trailing stop:**

The trailing stop parameter controls the tick steps at which the stop order is updated. Trailing stop will not apply to an entry stop order.

Trailing stop will not apply to a leading (primary) bracket order.