

# SECURITISED DERIVATIVES NETWORK (SDN)

## SECURITISED DERIVATIVES NETWORK (SDN) USER GUIDE

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# Contents

## About this document

Intended readership

In this document

Feedback

## Contents 3

<b>1.</b>	<b>Introduction.....</b>	<b>7</b>
1.1	Data contained.....	7
1.2	Functions contained.....	7
1.2.1	SDN Basic.....	7
1.2.2	SDNplus.....	8
1.3	System requirements.....	8
1.4	Access.....	9
1.5	Login.....	9
<b>2.</b>	<b>Main navigation.....</b>	<b>11</b>
2.1	Settings.....	12
<b>3.</b>	<b>Functions.....</b>	<b>13</b>
3.1	Overview Pages.....	13
3.2	Customization.....	15
3.2.1	Overview Pages Layout configuration.....	15
3.2.2	Module Library.....	16
3.2.3	Layout Ruler.....	16
3.2.4	Module configuration.....	16
3.2.5	Mouse-Over View.....	20
3.2.6	Function Menu.....	21
3.2.7	Page Menu.....	22
3.3	Watchlist Page.....	23
3.4	Comparison.....	24
3.5	Portfolios (SDNplus version only).....	25
3.6	Object Sharing (SDNplus version only).....	27
3.7	Alerts (SDNplus version only).....	28
3.8	SDN Data Link (SDNplus version only).....	29
3.9	Glossary.....	29
3.10	Ticker.....	30
3.11	CSV Download.....	31
3.12	Printing.....	31

3.13	Mailto Function.....	31
<b>4.</b>	<b>Search and search matrix .....</b>	<b>32</b>
4.1	Direct Search .....	32
4.2	Derivative Screeners.....	33
4.3	Matrix Search .....	34
4.4	Saved Searches.....	35
4.5	Result List .....	36
4.6	Pop Up Search.....	37
<b>5.</b>	<b>Detail Pages .....</b>	<b>38</b>
5.1	Overview .....	39
5.2	Times & Sales .....	39
5.3	Scenario Calculator.....	41
<b>6.</b>	<b>Appendix .....</b>	<b>43</b>
6.1	Classification Scheme .....	43
6.2	Chart Indicators.....	43
6.2.1	Oscillators.....	43
6.2.2	Momentum Indicators.....	44
6.2.3	Overbought / Oversold Indicators.....	44
6.2.4	Accumulation Distribution Line (ADL).....	44
6.2.5	Aroon Up, Aroon Down (ARUD).....	45
6.2.6	Aroon Oscillator (ARO).....	45
6.2.7	Average Directional (Movement) Index (ADX).....	45
6.2.8	Average True Range (ATR).....	45
6.2.9	Bollinger Bands .....	45
6.2.10	Chaikin Oscillator (CHO) .....	46
6.2.11	Commodity Channel Index (CCI).....	46
6.2.12	Directional Movement Indicator (DMI) .....	46
6.2.13	Envelopes.....	46
6.2.14	Exponential Moving Averages .....	47
6.2.15	Fast Stochastics (STOF) .....	47
6.2.16	Historical Volatility (HV).....	47
6.2.17	Momentum (MOM) .....	47
6.2.18	Money Flow Index (MFI).....	48
6.2.19	Moving Average Convergence / Divergence (MACD) .....	48
6.2.20	On-Balance Volume (OBV) .....	49
6.2.21	Rate of Change (ROC).....	49
6.2.22	Relative Strength Index (RSI) according to Welles Wilder.....	49
6.2.23	SAR Parabolic (SAR) .....	49
6.2.24	Simple Moving Average (SMA) .....	49
6.2.25	Ultimate Oscillator (UO).....	50
6.2.26	Volume (VOL).....	50
6.2.27	Williams % R (WILL) .....	50
6.2.28	Zig Zag .....	50
6.3	SDN Permission set (TBD Refinitiv) .....	50



## About this document

### Intended readership

This guide is for all users of Securitised Derivatives Network.

### In this document

This document describes all the functionality available within Securitised Derivatives Network.

### Feedback

If you have any comments on this document please contact the [Refinitiv TPG Documentation team](#).

# 1. Introduction

## 1.1 Data contained

The primary purpose of SDN is **visualising** data of **securitised derivatives** traded on **Euwax**, **Frankfurt Zertifikate**, **SIX Structured Products Exchange** and **Vienna** and the corresponding **Contributor** quotes. Coverage will be extended to other markets in the future. **Underlying data** is presented and details can be displayed, but screening and searching for non-derivatives are not included in this **add on** to your desk top application.

Quote updates for Euwax - Stuttgart Stock Exchange and Frankfurt Zertifikate is retrieved via **direct feed connections** to the exchanges.

## 1.2 Functions contained

### 1.2.1 SDN Basic

- Integration of “**Trading Structured Products**” community.
- **Search** function for all derivatives by name, code (WKN, Valoren, ISIN), Issuer, Underlying
- User configurable **market overviews**. Content **modules** can be placed at will on overviews using **drag & drop** technology. Content to be displayed can be configured in those modules.
- The following modules are available:
  - Charts
  - Derivative Gainers/Losers
  - Comparison of marketplaces that you define as combination of exchanges
  - Most Traded Derivatives at a marketplace
  - Largest Volume Derivatives at a marketplace
  - Market Statistics at a marketplace
  - Watchlists
- **Real-time** price information about more than 800,000 derivatives and the corresponding underlying instruments additionally according to the user's permission.
- **Intraday** and historical charts in several different styles
- **Risk Return Charts** for Screener Results
- **Real-time** ratios and **greeks** calculation, all master data from **EUWAX**
- **Times & Sales** data
- Real time **news** related to the underlying instrument of the derivative
- Time Series CSV **download**
- **Screener** on master data and ratios specific for derivative subtypes
- “**Compare All Fields**” function for product analysis
- **Glossary** with price development graph for all derivative categories.
- Print function: all pages can be presented in a special view optimised for printing

## 1.2.2 SDNplus

- **SDN Data Link** for Microsoft Excel pushing quote updates and static data into Excel Sheets.
- **Streaming** updates for all quotes
- **Portfolio** calculating portfolio values according to instrument buys and sells
- **Alerts** for quote and price limits carried in pop up and email
- **Object Sharing** for portfolios and watchlists

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**Note:** All calculations in SDN are based on the BID price. For infrequently traded instruments the BID price can be considered a more reliable price indicator than the LAST price. The BID has a closer relationship with current market drivers, such as the price of the underlying instrument. In contrast the LAST price will in many instances be hours away from the current trading price of the underlying instrument. The BID is also the performance indicator of choice within commonly used trading applications.

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## 1.3 System requirements

SDN is an internet-based application. A java applet is used to provide push updates to the frontend.

Requirement	Minimum	Recommended
	Per user: 64 kb/s	1 user: 256 kb/s 10 users: 1 Mb/s 100 users: 10 Mb/s
<b>Processor</b>	Core Duo	Core 2 Duo
<b>RAM</b>	2 GB	4 GB
<b>Video Resolutions</b>	1024 x 768 Pixel	1280 x 1024 Pixel
<b>Browser</b>	Microsoft Internet Explorer Version 9.0	Latest version of <ul style="list-style-type: none"> <li>• Microsoft Internet Explorer</li> <li>• Mozilla Firefox</li> <li>• Google Chrome</li> </ul> and additional popular browser
<b>Browser Settings</b>	<ul style="list-style-type: none"> <li>• Allow cookies for session (medium security level)</li> <li>• Activate Java Script</li> <li>• Activate Java Virtual Machine</li> <li>• Activate Active Scripting</li> </ul>	
<b>Microsoft Office (for Excel Link)</b>	<ul style="list-style-type: none"> <li>• Microsoft Excel 2007 (32bit)</li> <li>• Microsoft Excel 2010 (32bit)</li> <li>• Microsoft Excel 2013 (32bit)</li> </ul>	
<b>Mobile OS</b>	<ul style="list-style-type: none"> <li>• Google Android</li> <li>• Apple iOS</li> <li>• Blackberry OS</li> </ul>	
<b>Mobile Video Resolution</b>	420 x 320 Pixel	
<b>Mobile Connection Bandwidth</b>	UMTS/HSDPA	WLAN



## 1.4 Access

SDN is password-protected. A user must be registered with Refinitiv in order to use SDN. In this context, he/she receives a user ID and password. With this data the user can login using the internet address <http://sdn.refinitiv.com>. The application can operate separately along with other Refinitiv products (e.g. Refinitiv 3000Xtra) or may be integrated into those using the published technologies.

Customer access is made by DACS, the globally deployed authorization system of Refinitiv, and meets the authorization requirements of the international stock exchanges and issuers. The user will have the content and time delay of the data available to him set by a contact person at Refinitiv. Data in SDN is available in Streaming or Snap mode.

## 1.5 Login

In order to be able to use SDN, an internet connection must exist (chapter 2). The address <http://sdn.refinitiv.com> has to be entered into a browser. The login screen will come up where user is asked to enter his user ID as well as his personal password (fig. 1):

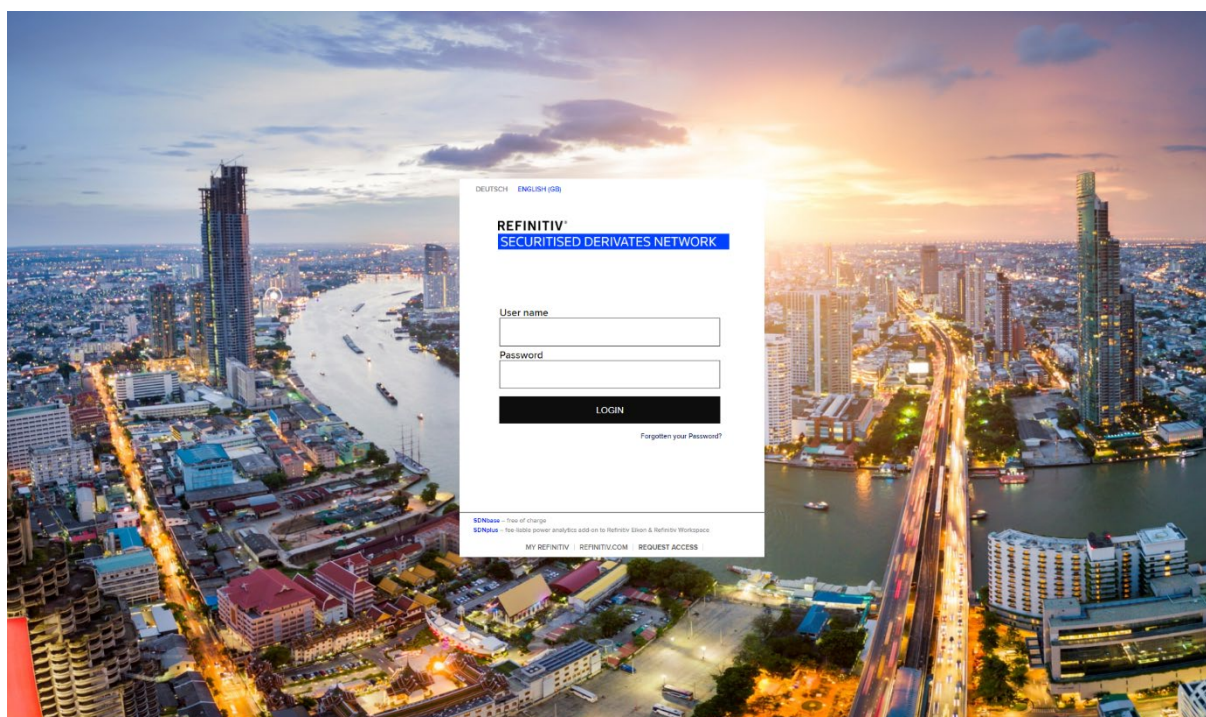


Figure 1 – SDN log-in screen

After successful login, a new session is opened for the corresponding user. An existing session with the same user ID at the same time is closed. You can specify on the login page which language SDN should use.

A session is ended in one of the following ways:

- A user logs out using the link “Logout” in the main navigation bar.
- A user is inactive for more than 10 hours
- A user logs in for a second time with the same user ID.

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**Note:** SDN and all browsers open on the computer should be closed once the work is completed (at least once a day), as only during the start of SDN and the browser updates will be loaded thus avoiding the use of an outdated version.

SDN uses AJAX (asynchronous communication) extensively. From time to time it can happen, that processes are stopped due to erroneous handling of the asynchronous communication between browser and server. If you examine any problems with the application try first to reload the site with F5 or do even a “hard” reload with [Ctrl-F5]

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## 2. Main navigation

After a successful login the SDN home page appears.

The main navigation bar is found in the top margin of the browser window and is visible on all pages of SDN:



Figure 2 – Navigation Tool bar

- On the right side, the following menu items are positioned:
  - **Home:** leads back to the page defined as home page,
  - **Settings:** individual configuration of SDN; please enter your details and preferences here. The email address is used for alerts and delivery of new passwords.
  - **User Guide:** Downloads this User Manual.
  - **Logout:** direct logout - to be selected upon completion of the work in SDN.
- The next line shows the main groups – the level 1 navigation items
  - **My SDN** – preconfigured and personal pages
  - **Search**
  - **Comparison**
  - **Tools**
  - **Exchanges**
  - **Issuers**
- The **Direct Search** is attached to the right (4)
- The next two lines of the menu showing level 2 and level 3 navigation items depend on the previously selected main groups.

## 2.1 Settings

The top line of the navigation bar contains the “Settings” link which calls up a dialog where you can change your settings.

Figure 3 – Settings menu

- **Last Name / First Name / Title** – possibility to entry personal data (optional)
- **Email Address** – entering the email adress used for example for alert emails or password backups (optional)
- **Mobile Phone / Phone** – possibility to entry personal data (optional)
- **Standard Language** – changes the language of TRWMG
- **Standard News Languages** – specifying in which languages news shall be displayed
- **Standard Currency** – configuration of preferred currency
- **Style** – choice between white and dark background
- **Start Page** – shows which page is configured as start page
- **Additional Informations:**
  - **Show Mouseover-Window** – see chapter 3.2.5
  - **Show General Ticker** – see chapter 3.10
  - **Show Personal Ticker** – see chapter 3.10

## 3. Functions

### 3.1 Overview Pages

Overview Pages are available in the areas “MY SDN” and “EXCHANGES”. A set of preconfigured Overview pages is placed in a static navigation hierarchy.

- MY SDN
  - Certificates
  - Warrants
  - Watchlists
  - Portfolios
  - Alerts
- EXCHANGES
  - EUWAX – Stuttgart Stock Exchange
  - Frankfurt Zertifikate
  - SIX Structured Products Exchange
  - Vienna Stock Exchange
    - With the following subpages
      - Overview
      - Largest Volume
      - Most Traded
      - Underlying Matrix
      - Issuers Matrix

After login SDN always starts with an overview page that is configured as “home” in the user settings. After first login, this is the “Certificates” page of the “MY SDN” area.

Overviews contain modules displaying data.

- Overview Modules
  - Chart
  - Derivative Gainers/Losers
  - Most Traded Derivatives
  - Largest Volume Derivatives
  - Derivative Market Statistics
  - Derivative Market Data
  - Watchlist
  - Multiple Watchlists
  - Alert module
  - Portfolio overview

- Portfolio
- Cross Rates
- Layout Ruler

The following picture shows the EUWAX overview giving an example for a page that is constructed with modules.

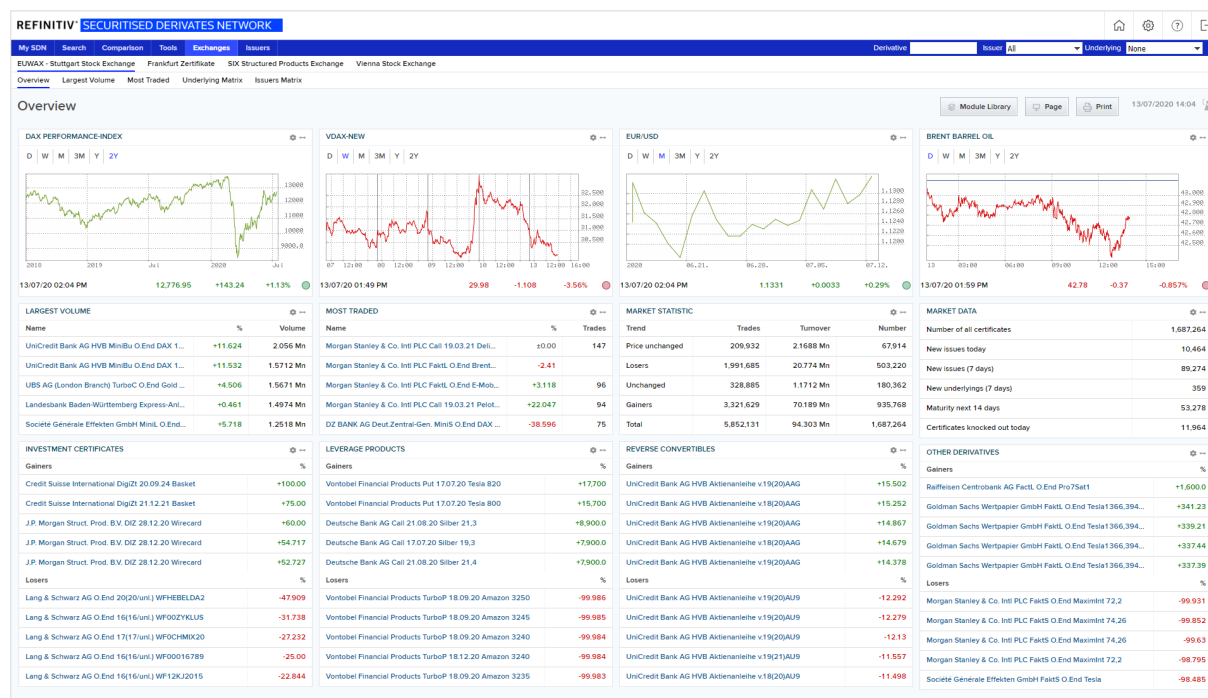


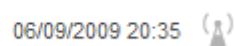
Figure 4 – Overview Page

**Note:** (see No. 1 in screenshot)

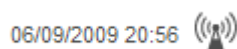
SDN works in snap or streaming mode according to your permission set. An icon showing a radio mast indicates if you receive streaming or snap data. With snap mode the contents need to be updated manually by doing a browser refresh. Thus the date and time of the last refresh can be found on all pages next to the radio mast.

Streaming mode is indicated by flashing rays around the radio mast. If flashing stops streaming is technically disrupted. Please press F5 and if this does not repair the streaming, please contact the Refinitiv Helpdesk.

This radio mast indicates snap mode, last refresh at 08:35 PM.



This radio mast shows streaming mode, last refresh at 08:56 PM.



## 3.2 Customization

### 3.2.1 Overview Pages Layout configuration

Users can change all pages according to their respective needs. The title bar of each module offers four functions:

1. Click and hold on title bar ➡ Drag the module to another position. Other modules are arranged automatically according to your action.
2. Move cursor to the right edge of the title bar until it becomes an arrow, click and hold ➡ drag the module to change the width.
3. Click on pencil ➡ Opens the configuration dialogue to control the module's content.
4. Click on cross ➡ Delete Module.

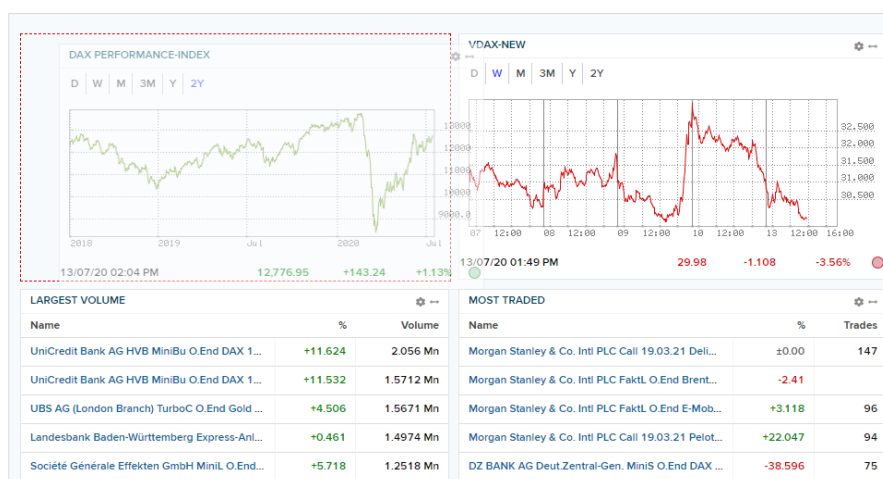


Figure 5 - The red dashed frame shows where the module is located when the mouse button is released

New modules can be placed onto the overview page using the icon labelled “Module Library” on the top right corner of the page. It opens a dialogue that allows to select a module and to drag it to the desired position.

## 3.2.2 Module Library

New modules can be added for display on the overview page by clicking on the icon marked "Module Library" at the top right-hand corner of the page. This opens a menu in which you can select the required module and then drag it to the desired position on the page.

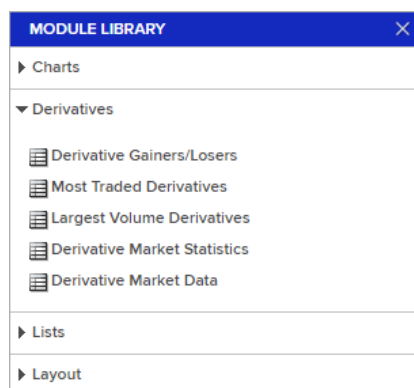


Figure 6 - Module Library

## 3.2.3 Layout Ruler

Modules can be placed side by side in so called page columns of equal width. As described above the width of modules can be extended to 2, 3 or four page columns. Modules always attach to the next module above.

The Layout Ruler is a thin line that can be used to arrange modules horizontally if the modules above the new modules are of different height. Therefore the Layout Ruler is also called "clothesline". The Ruler can be broadened from one page column to the complete page width – like the other modules.

LARGEST VOLUME			MOST TRADED			MARKET STATISTIC				MARKET DATA	
Name	%	Volume	Name	%	Trades	Trend	Trades	Turnover	Number	Number of all certificates	
UniCredit Bank AG...	+11.538	2.056 Mn	Morgan Stanley & Co. L...	-0.588	152	Price un...	216,991	2.2307 ...	67,913	New issues today	10,464
UBS AG (London B...	+4.506	1.8519 Mn	Morgan Stanley & Co. L...	+2.941	100	Losers	2,086.7...	21.981 ...	501,711	New issues (7 days)	89,274
UniCredit Bank AG...	+11.195	1.5712 Mn	Morgan Stanley & Co. L...	+22.047	97	Unchan...	379,499	794,664	183,978	New underlyings (7 days)	359
Landesbank Baden...	+0.451	1.4974 Mn	Morgan Stanley & Co. L...	-2.41	96	Gainers	3,463.5...	73.602 ...	933,662	Maturity next 14 days	53,278
Société Générale E...	+5.634	1.2518 Mn	DZ BANK AG DeutZent...	-37.343	78	Total	6,146.7...	98.609 ...	1,687,264	Certificates knocked out today	11,978
			Morgan Stanley & Co. L...	+20.00	66						
			UniCredit Bank AG HV...	-0.887	57						
INVESTMENT CERTIFICATES			LEVERAGE PRODUCTS			REVERSE CONVERTIBLES				OTHER DERIVATIVES	
Gainers	%		Gainers	%		Gainers	%			Gainers	%
Credit Suisse International DigiZi 20...	+100.00		Vontobel Financial Products Put 17.0...	+17,700		UniCredit Bank AG HVB Aktienanlei...	+16.151			Raiffeisen Centrobank AG FactL O.En...	+1,500.0
Credit Suisse International DigiZi 21...	+100.00		Vontobel Financial Products Put 17.0...	+15,700		UniCredit Bank AG HVB Aktienanlei...	+15.902			Goldman Sachs Wertpapier GmbH F...	+319.30

## 3.2.4 Module configuration

By clicking on the pen in the upper right corner, the user can configure the content of the modules by selecting parameters.



### 3.2.4.1 Chart

Shows charts of selected instruments.

Parameters:

- Instrument (enter RIC or press magnifier glass 🔍 opens a name/code pop up search window, see chapter 4.6)
- Period (Intraday to 1 Year)

### 3.2.4.2 Derivative Gainers/Losers

Shows a list of instruments containing the gainers and losers of selected exchanges.

Parameters:

- Certificate Type, multiple selection is allowed
- Market Segment, allows selection of all exchanges or one
- Title, free text
- Underlying, accepts RICs and provides name/code search
- Underlying type, allow selection of all or one underlying asset class
- Number of winners, allows the selection of preset values or entered custom numbers
- Number of losers, allows the selection of preset values or entered custom numbers
- Available Columns, allows the selection of desired fields of the list

### 3.2.4.3 Most Traded Derivatives

Shows a list of instruments containing the most traded instruments of selected exchanges.

The sorting of most traded is based on the number of moves field.

Parameters are the same as for Gainers/Losers except the Number parameters. Only one number can be entered defining the length of the list.

- Number, allows the selection of preset values or entered custom numbers

---

**Note:** On derivative markets Number Of Moves is not always defined as counted client trades containing a volume or/and turnover. Please refer to the specific exchange rules if you encounter unexpected behavior.

---

### 3.2.4.4 Largest Volume Derivatives

Shows a list of instruments containing the instruments with highest volume of selected exchanges.

The sorting of highest volume is based on the turnover field.

Parameters are the same as for Gainers/Losers except the Number parameters. Only one number can be entered defining the length of the list.

- Number, allows the selection of preset values or entered custom numbers

### 3.2.4.5 Derivative Market Statistics

Shows totalised figures for trades, volume and number of instruments grouped by trend like unchanged, gainers, losers. Parameters are:

- Certificate Type, multiple selection is allowed
- Market Segment, allows selection of all exchanges or one
- Title, free text
- Underlying, accepts RICs and provides name/code search
- Underlying type, allow selection of all or one underlying asset class

### 3.2.4.6 Derivative Market Data

Shows totalised numbers of instruments for the categories:

- All instruments
- New issues (today)
- New issues (7 days)
- New underlyings (7 days)
- Maturity next 14 days
- Knocked-out instruments today

Parameters are identical to the parameters of the Derivative Market Statistics Module except the time period.

### 3.2.4.7 Watchlist

Watchlists shows a list of instruments defined by the user.

Parameters:

- Watchlist
- Sorting (Position in watchlist or name)
- Available columns (data fields)

### 3.2.4.8 Multiple Watchlists

Watchlist Module with an additional drop down menu for selection of the watchlist.

Parameters:

- Watchlist multiple selection
- Available columns (data fields)
- Sorting field (Position in watchlist or name)
- Number of lines

### 3.2.4.9 Alert Module

Shows a list of user-owned alerts.

Parameters:

- “Number of Lines” provides the selection of a value from the drop-down list.
- “Configure columns” opens a list where data fields to be shown can be selected.
- “Create and edit alerts” permits the creation of new alerts directly in the module.

ALERT MODULE									
1-4 of 4									
Name	Exch.	ISIN	Field	Limit	Comment		In effect until		Alert Time
Xetra-Gold	Xetra Level 1	DE000A0S9GB0	Price	100.00		⬆	13/10/2020		
Bayerische Motoren Werke A...	Xetra Level 1	DE0005190003	Price	200.00		⬆	13/10/2020		
Morgan Stanley & Co. Intl PL...	European Warrant Exchange (EUWAX)	DE000MC7KLX4	Price	30.00		⬆	13/10/2020		
Facebook Inc. Shares A USD ...	Xetra Level 1	US30303M1027	Price	200.00		⬆	30/10/2020	!	14/07/2020 14:29
<div>Create New Alert...</div> <div>Selected Alerts <span>Delete</span></div>									

Figure 7 – Alert Module

### 3.2.4.10 Portfolio Overview

Shows a list of all portfolios created by the user.

Parameters:

- “Show other users’ portfolios” shows next to the users’ portfolios the ones that have been shared by other users.
- “Configure columns” opens a list where data fields to be shown can be selected.

PORTFOLIO OVERVIEW					
Title		Since inception €	S. inc. €%	S. inc. €% p.a.	
Portfolio 1	➔	-27,797.00	-70.65%	-30.33%	☑
Portfolio 2	➔	+1,417.00	+5.88%	+1.70%	☑
Portfolio 3	➔	-50.64	-30.29%	-11.93%	☑

Figure 8 – Portfolio Overview

### 3.2.4.11 Portfolio

Shows the holdings of a selected user portfolio. Special columns are available in the settings dialogue, like purchase dates and sizes of positions.

Parameters:

- “Portfolio” offers the users’ portfolio for selection.
- “Show other users’ portfolios” shows next to the users’ portfolios the ones that have been shared by other users.

- “Configure columns” opens a list where data fields to be shown can be selected.

PORTFOLIO 2 <span>⚙️</span>									
M	Title	ISIN	Buying Date	Buying Price	Price Date	Value	Diff. buy	Diff. buy %	
	LINDE (LING.DE)		23/02/2017 1...	15,400.00 EUR		15,400.00 EUR	±0.00 EUR	±0.00%	☑
	BAY MOT WER...	DE0005190003	23/02/2017 1...	8,678.00 EUR	15/07 10:58	5,823.00 EUR	-2,855.00 EUR	-32.90%	☑

Figure 9 – Portfolio

### 3.2.4.12 Cross Rates

Shows a table with cross rates. Desired currencies can be selected from a list.

### 3.2.4.13 Layout Ruler

The "Layout Ruler" module is a sort of thin ruler which can be used to separate the modules horizontally if the modules above the newly-added module are of different heights. For this reason, the layout ruler is also called the “washing line”. The width of the line can be adjusted similarly to the module width.

BAYERISCHE MOTOREN WERK... 58.20 <span>→</span> +0.47 <span>☑</span>							
WATCHLIST <span>⚙️</span>				PORTFOLIO OVERVIEW <span>⚙️</span>			
Name	Price		Pert. %	Title	Since inception €	S. inc. €%	S. inc. €% p.a.
DAX PERFORMANCE-L...	12,803.22	<span>→</span>	+0.83 <span>☑</span>	Portfolio 1	-27,803.00	-70.66%	-30.34% <span>☑</span>
				Portfolio 2	+1,415.00	+5.88%	+1.70% <span>☑</span>
				Portfolio 3	-50.68	-30.33%	-11.94% <span>☑</span>

Figure 10 – The layout ruler being used to push the “Portfolio Overview” module downwards.

### 3.2.5 Mouse-Over View

Pointing with the mouse on an instrument name in the modules opens a quick view on detailed data of that instrument: chart, ratios and underlying news. If desired, parts of the mouse-over view can be faded in and out using the buttons on the right side of the tile. The quick view disappears after the mouse is removed from the instrument name.

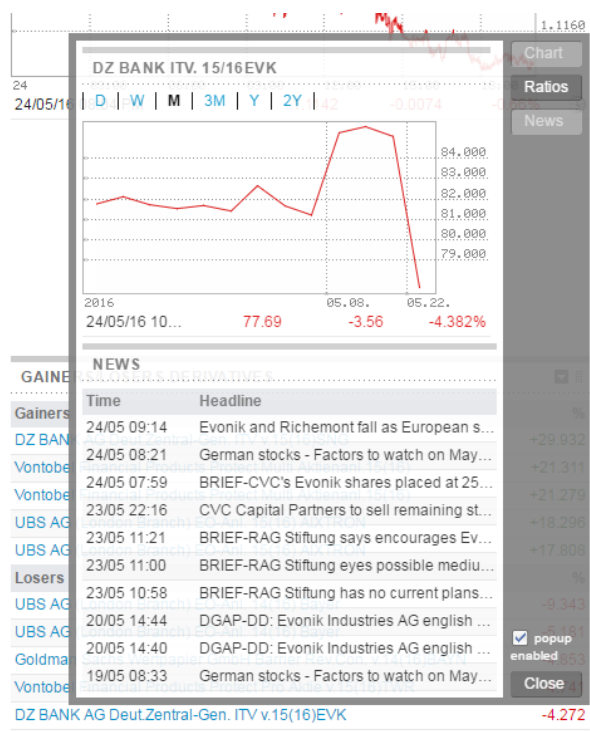


Figure 11 – Mouse-Over view

### 3.2.6 Function Menu

The function menu is available on Detail Pages (see 5) in watchlists, portfolios, screener result lists and in list modules of overview pages (only if selected in the list of “Available Columns”). The function menu offers quick links to the following functions:

- To watchlist/portfolio
  - Adds the instrument to a watchlist or portfolio
- For comparison
  - Adds instrument to comparison list
- Set price alarm
  - Adds an alert for that instrument
- Associated instruments

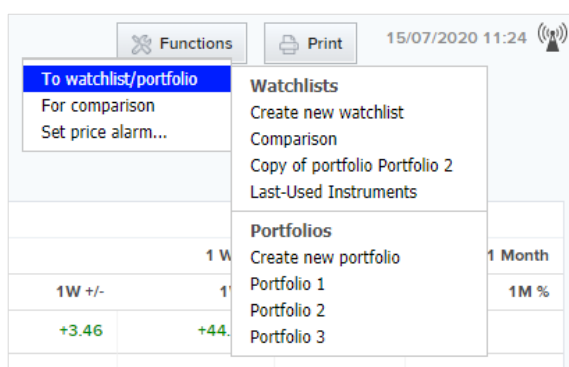


Figure 12 – Function Menu

### 3.2.7 Page Menu

The page menu is placed menu in the top right corner of the overview page.

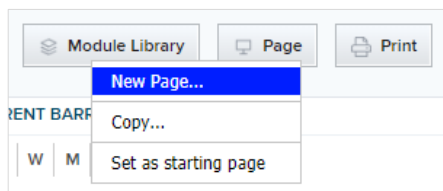


Figure 13 – Page Menu

#### 3.2.7.1 Individual Overview Pages

The user can create her/his own overview pages. The menu offers two options:

- “New Page ...” creates a new overview page and places a link into the navigation. The new overview is blank and can be filled with modules at will.
- “Copy Page ...” copies the modules of the current selected overview page to a new page. Modules can be changed as usual.

In both cases the user is asked to define a name for the new page.



Figure 14 - A new page called "My Testpage" has been created

Individual Pages can be renamed and deleted from the page menu.

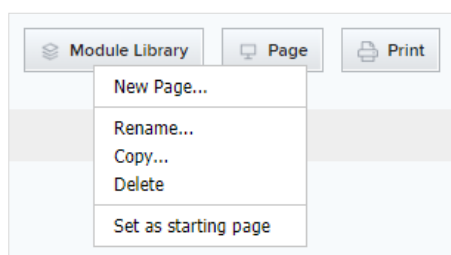


Figure 15 – Page menu for individual pages

#### 3.2.7.2 Resetting Pages

The changes applied to an overview page can be set to delivery status by selecting the “Reset” option.

### 3.2.7.3 Start Page

The start page that appears after login can be set by clicking the “Set as starting page ...” option from the page menu of the desired page.

## 3.3 Watchlist Page

Watchlists can be created and are stored persistently. The administration of watchlists is located in:

- MY SDN
  - Certificates
  - Warrants
  - **Watchlists**
  - Portfolios
  - Alerts

Watchlists can be created using the button “CREATE NEW WATCHLIST ...”. After entering a name the new watchlist is ready to be filled with securitized derivatives.



Figure 16 – Watchlists

Watchlists can be created using the button “CREATE NEW WATCHLIST ...”. After entering a name the new watchlist is ready to be filled with securitized derivatives.

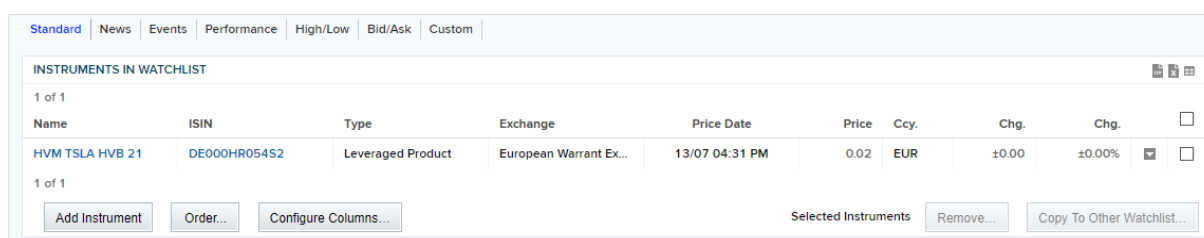


Figure 17 – Own Watchlists

The button “ADD INSTRUMENT ...” opens a Pop Up Search (see chapter 4.6) to find an instrument.

The button “ORDER ...” allows for changing the order of the instruments in the watchlist.

The button “CONFIGURE COLUMNS ...” allows the selection of desired fields of the list.

Via the button “Add to Watchlist” on the Detail page the displayed Instrument can be shifted into a watchlist.

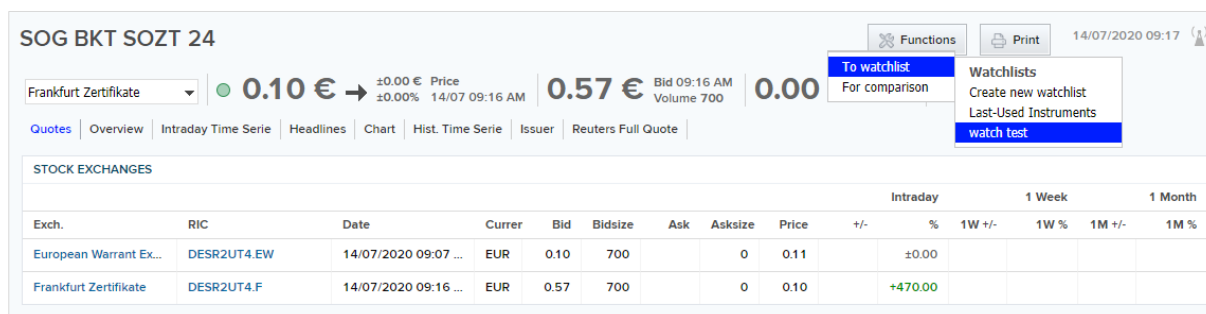


Figure 18 – Functions menu: To watchlist/portfolio

A watchlist can be displayed with several preset columns or with customized columns. The selected watchlist can be loaded into the ticker when the entry “Show in ticker” is selected.

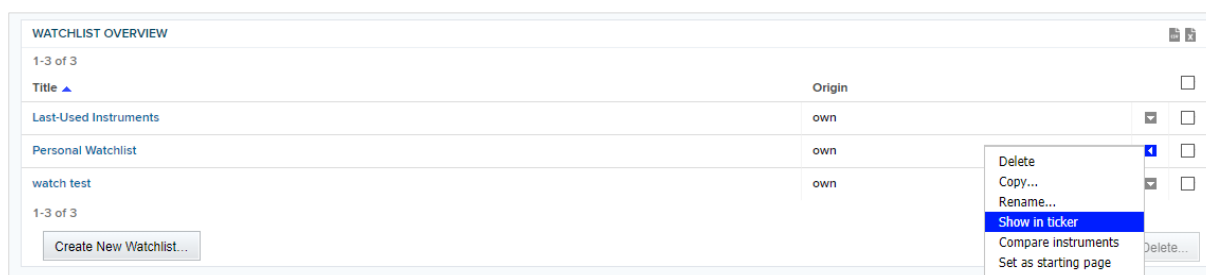


Figure 19 – Activating the “Show in ticker” function for a watchlist

### 3.4 Comparison

SDN offers a special page to compare securitized derivatives with each other. The Comparison page can be found in the 1<sup>st</sup> level navigation:

Instruments can be added to the comparison basket via the function menu on the Detail page and in lists or using the check boxes and the “Compare” button in the screener result.

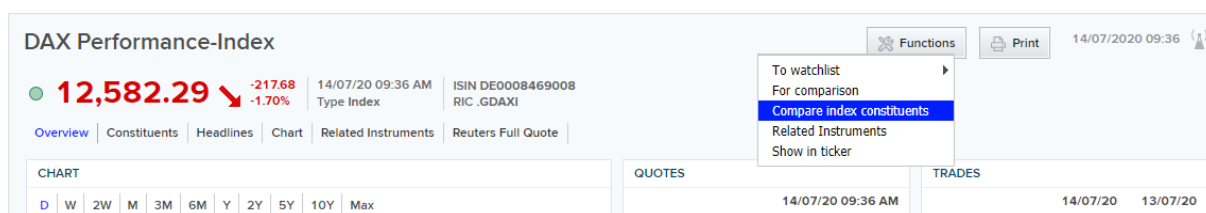


Figure 20 - Starting a comparison

The comparison function consists of three pages

- Ratios
  - A table with up to 5 columns, each for one instrument
  - Expandable data blocks



- Identification
  - Quotes
  - Spread
  - Master Data
  - Attributes
  - Underlying
  - Ratios
  - Warrants
  - Volatilities
- History
    - A chart showing all selected instruments
  - Risk-Return-Chart

On top of each comparison page a list is provided to select the instruments of interest. The selected instruments are shown in the analysis tools.

My SDN Search Comparison Tools Exchanges Issuers Derivative Issuer All Underlying None

Fields History Risk-Return-Chart

Comparison - Fields

Print 14/07/2020 09:59

INSTRUMENTS FOR COMPARISON

1-4 of 4

	ISIN	Name	Type	Bid	Ask	Price		
1	DE000LB2R7Y3	Landesbank Baden-Württemberg Express-Anleihe 20(24)...	Certificate (exchange traded)	101.91	103.15	102.01		
2	DE000TT1WYS9	TUB SX5E DSZT 20	Certificate (exchange traded)	26.69	26.70	26.73		
3	AT0000A2AN89	RFS MNA 19/21	Certificate (exchange traded)	68.62	69.11	67.89		
4	DE000HW0SC42	HVM DAX TUB OEC	Certificate (exchange traded)	12.10	12.11	12.09		

1-4 of 4

Remove All

Add Instrument

FIELDS

	1	2	3	4
Identification				
Name	Landesbank Baden-Württemberg E...	TUB SX5E DSZT 20	RFS MNA 19/21	HVM DAX TUB OEC
RIC	DELB2R7Y.EW	DETT1WYS.EW	DERC0VZN=EW	DEHW0SC4.EW
ISIN	DE000LB2R7Y3	DE000TT1WYS9	AT0000A2AN89	DE000HW0SC42
WKN	LB2R7Y	TT1WYS	RC0VZN	HW0SC4
Exchange	European Warrant Exchange (EUW...	European Warrant Exchange (EUW...	European Warrant Exchange (EUWA...	European Warrant Exchange (EUWA...
Currency	Euro	Euro	Euro	Euro
Instrument Type	Certificate (exchange traded)	Certificate (exchange traded)	Certificate (exchange traded)	Certificate (exchange traded)
Quotes				
Data Quality				
Update	14/07/20 09:18 AM	14/07/20 09:17 AM	14/07/20 09:17 AM	14/07/20 09:58 AM
Last Price	102.01	26.73	67.89	12.09

Figure 21 - Comparison page

## 3.5 Portfolios (SDNplus version only)

The Portfolio function can be found in

- MySDN
  - **Portfolios**

With the “Create new Portfolio” button a new portfolio is opened and positions can be entered. The dialogue “Add Item to ‘PortfolioName’” allows to search for instruments and adjust parameters Title (displayed in the portfolio view), Instrument (name), Quantity, Price, Fees, Total Price, Date, Time and Currency of position and portfolio.

Figure 22 – Dialog Box “Add Item”

A portfolio consists of a number of positions and the performance of the portfolio is calculated taking into account the performance from buy dates and past sells. Portfolios are shown with different views like:

- Inventory
- Structure
  - Pie Charts for the categories
    - Investment Types
    - Currencies
    - Sectors
    - Countries
  - Clicking on a piece of a pie chart opens the subsequent breakdown of the categories.
- News: (lists latest news for the portfolio holdings)
- Events (upcoming events for the portfolio holdings)
- Chart (shows the historical performance of the portfolio)
- Price Comparison (list with a selected set of columns)
- Performance (list with a selected set of columns)
- High/Low (list with a selected set of columns)

- Bid/Ask (list with a selected set of columns)
- Custom (blank list open for user's choice of columns to configure)
- History (sold positions)
- Profit/Loss (list with a selected set of columns and portfolio calculations)

## 3.6 Object Sharing (SDNplus version only)

Watchlists and Portfolios can be shared with other users.

On the portfolio and watchlist displays the shared objects can be hidden.

Figure 23 – Portfolio sharing

If a portfolio or watchlist is shared to or provided from other users, this is shown in columns of the standard watchlist or portfolio table.

**Portfolios**

4,321.64 € | Since previous day -23.92 € | Since first investment on 26/04/2017 -10.11 €

1-2 of 2

Title	Value	Value €	Since yesterday €	S. yst. €%	Since inception €	S. inc. €%	S. inc. €% p.a.	Origin	Approval / Clearance
Portfolio1	4,321.64 EUR	4,321.64 →	-23.92	-0.55%	-10.11	-0.30%		own	Approval / Clearance
Portfolio2								own	Approval / Clearance

1-2 of 2

**FILTER**

☒ Show portfolios of other users

Create new portfolio...

Figure 24 – Accessibility by other users

In order to share objects the desired lists must be selected with the checkbox. After pushing the button “EDIT SHARING” a dialogue box is opened and the appropriate users can be selected from a list. New users can be added to the list by entering the user name or email address.

Figure 25 – Edit sharing dialog

## 3.7 Alerts (SDNplus version only)

SDN offers an alerting function where you can define limits. When a limit is reached, a pop up message is shown and an email is sent to the address that is defined in the settings section (see Chapter 3.13). The Alerts page can be found here:

- MY SDN
  - Certificates
  - Warrants
  - Watchlists
  - Portfolio
  - **Alerts**

With the “NEW ALERT” button the dialogue for definition of a limit is opened with input controls for

- Instrument
- Field (Price, Bid, Ask, Volume)
- Value
- Current Value (automatically filled after selection of an instrument and exchange)
- Direction (Upper or Lower)
- Comment

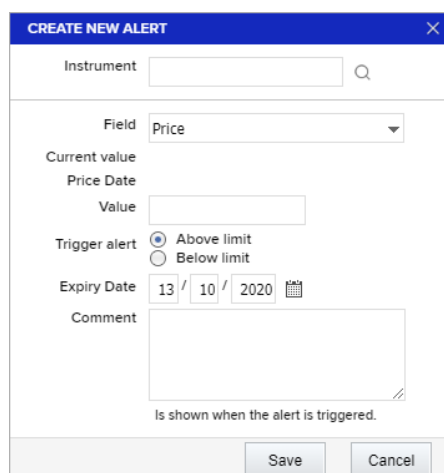


Figure 26 – Setting Alert

Alerts can be administered in the alert list. After selection of an alert with the checkbox the alert can be edited, duplicated or deleted.

ALERT MODULE <span>⚙️ ↔</span>									
1-4 of 4									
Name	Exch.	ISIN	Field	Limit	Comment		In effect until	Alert Time	<input type="checkbox"/>
Xetra-Gold	Xetra Level 1	DE000A0S9GB0	Price	100.00		⚠️	13/10/2020		<input type="checkbox"/>
Bayerische Motore...	Xetra Level 1	DE0005190003	Price	200.00		⚠️	13/10/2020		<input type="checkbox"/>
Morgan Stanley & ...	European Warrant ...	DE000MC7KLX4	Price	30.00		⚠️	13/10/2020		<input type="checkbox"/>
Facebook Inc. Shar...	Xetra Level 1	US30303M1027	Price	200.00		⚠️	30/10/2020	! 14/07/2020 14:29	<input type="checkbox"/>
<button>Create New Alert...</button>							Selected Alerts <button>Delete</button>		

Figure 27 – Alert Overview

### 3.8 SDN Data Link (SDNplus version only)

With the SDN Data Link the quotes and trades can be streamed into MS Excel. The SDN Data Link must be installed on your local machine. A download is offered at:

- TOOLS
  - Matrix
  - **SDN Data Link**
  - Glossary

The functionality of the SDN Data Link is documented in a specific user manual that is included in the installation package. After installation the Add-In it is located in the program path.

SDN Data Link is set up by default to connect via the Internet. You can also use a MPLS connection. Details on configuration change are described in the SDN Data Link manual.

### 3.9 Glossary

The Glossary is located in the Tools section:

- TOOLS
  - Matrix
  - SDN Data Link
  - **Glossary**

The glossary shows a lexicon with brief descriptions and diagrams of the different securitized derivative types.

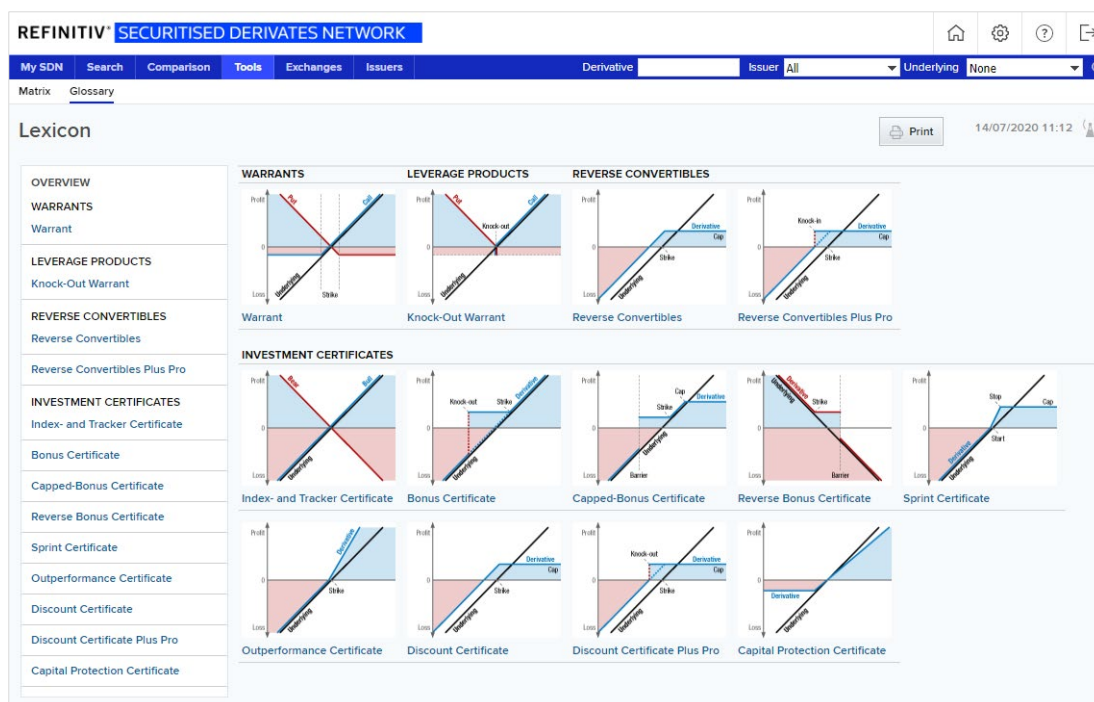


Figure 28 - Glossary

## 3.10 Ticker

If the Ticker is selected in the settings it is shown at the bottom line of the browser window.

Index "GDAXI"	-1.48%	200.10 €	LINDE PLC	-2.43%	108.60 €	MERCK KGAA	-2.32%	151.40 €	MTU AERO ENGINES A	-0.35%	230.80 €	MÜNCHENER RÜCKVEI
---------------	--------	----------	-----------	--------	----------	------------	--------	----------	--------------------	--------	----------	-------------------

Figure 29 - Ticker

The upper line is the Personal Ticker the line below is the General Ticker. The content of the General Ticker can be changed by the SDN administrator only.

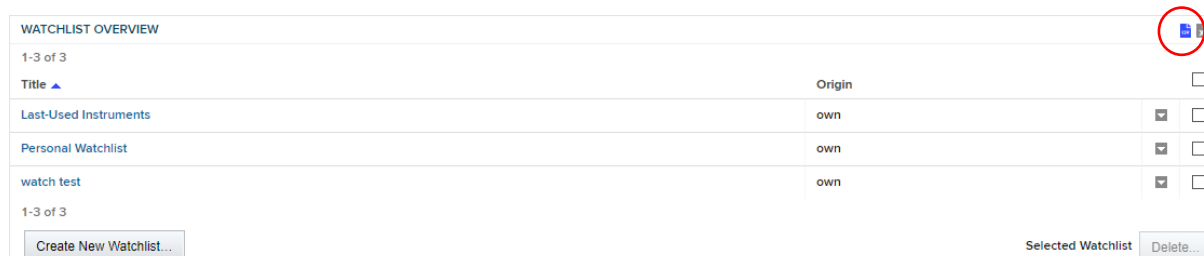
The list of instruments to be shown in the Personal Ticker is defined on the Watchlist Page.

WATCHLIST OVERVIEW	Origin			
1-3 of 3				
<b>Title</b> ▲				
<b>Last-Used Instruments</b>	own		<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Personal Watchlist</b>	own		<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>watch test</b>	own		<input checked="" type="checkbox"/>	<input type="checkbox"/>
1-3 of 3				
<input type="button" value="Create New Watchlist..."/>				

Figure 30 - Adding watchlist items to a personal ticker

## 3.11 CSV Download

The SDN data tables (except for the tables on market overviews and detail pages) can be downloaded in CSV file format if the download icon appears in the top right corner of the table. The character used as list separator can be adjusted in the Settings menu. This might be necessary for different Excel versions or other clients to open the file correctly.



WATCHLIST OVERVIEW			
1-3 of 3			
Title ▲	Origin		<input type="checkbox"/>
Last-Used Instruments	own	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Personal Watchlist	own	<input checked="" type="checkbox"/>	<input type="checkbox"/>
watch test	own	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1-3 of 3			
Create New Watchlist...		Selected Watchlist Delete...	

Figure 31 – CSV-Download

## 3.12 Printing

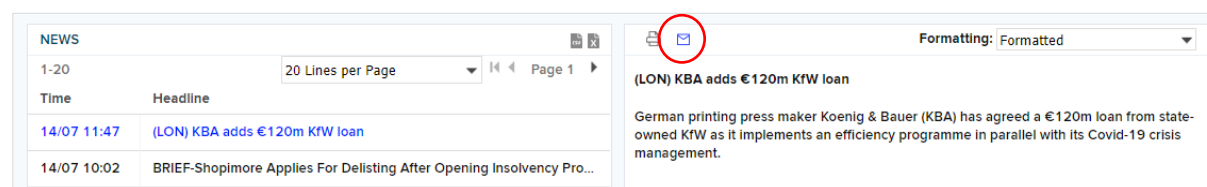
SDN offers print previews on all pages. This function is opening a new browser window with an optimized view of the page to be printed. The icon for the print preview is placed on the top right corner of all pages.



Figure 32 – Printview

## 3.13 Mailto Function

TRWMG provides the possibility for all news to send a link to other users via the mailto function. The link leads to the original news. To open a new email that contains the link the user has just to click on the email icon on the right-hand side of a news window.



NEWS		Formatting: Formatted	
1-20	20 Lines per Page	Page 1	
Time	Headline		
14/07 11:47	(LON) KBA adds €120m KfW loan		
14/07 10:02	BRIEF-Shopmore Applies For Delisting After Opening Insolvency Pro...		

Figure 33 – Mailto Function

## 4. Search and search matrix

SDN offers 3 convenient tools to find an individual instrument or a group of instruments:

- search using the main navigation bar (direct search)
- screeners
- prepared issuers/instruments matrices

### 4.1 Direct Search

The Direct Search is part of the navigation and hence is available from every page in the application.

Figure 34 – Direct Search in the navigation bar

It is suitable for users with some knowledge about the derivatives to find. Key data of the instrument or group of instruments can be entered quickly. One or more of the following parameters can be entered or selected via input fields:

- Instrument name, WKN, ISIN, Valor
- Issuer, selection from drop down list of all accessed/available issuers
- Underlying, combo box that allows for selection from a list of the most popular underlying instruments or text entry for a name/code search on underlyings

The search is initiated by clicking on the arrow symbol and provides the result either as a results list or, in case of ambiguous results, as a summary of available types of derivatives matching the search criteria. Clicking on a derivative instrument type leads to the result list then. XXX

Selected search parameters: Derivative BMW	
16950 Warrants	11108 Certificates
16427 Equity	5508 Investment Certificates
10829 Call	2670 Discount Certificates
5598 Put	3 Discount Certificates Plus Pro
20 Indices	1011 Bonus Certificate
1 Bond	1544 Capped Bonus Certificates
502 Others (Exotics)	214 Reverse Bonus Certificates
493 Call	66 Index Certificates
9 Put	2996 Leverage Products
	1864 Knocked-out-Product-Long
	1132 Knock-out-Product-Short
	1874 Reverse Convertibles
	1532 Reverse Convertibles
	342 Reverse Convertibles Plus Pro
	297 Express Certificates
	433 Other Certificates

Figure 35 - The list of search results is sorted according to instrument types



## 4.2 Derivative Screeners

Screeners offer a detailed search by selecting specific criteria. The screener page is opened by clicking on the “SEARCH” menu item in the main navigation bar.

The screener page offers diverse screeners for different derivative types. The desired type can be selected in the navigation of the screener page. The input mask for each screener is divided into two groups of search parameters:

- “DEFAULT FILTER” with search parameters available for all derivative types
- “EXTRA FILTER” with specific search parameters for the selected derivative type

After a parameter is defined by entering values or selecting items from drop down lists the specific count of matches is displayed on the right side of the same line. The intersection of all matches is displayed on a separate button at the bottom of the search masks. If the number of joint matches is less than 1001 the button is labelled “VIEW x MATCHES” and clicking on it retrieves the results list. If the number exceeds 1000 the button is labelled “MORE THAN 1000 HITS”. In this case the search needs to be specified more precisely in order to reduce the joint result.

All entered values can be deleted with the button “RESET FIELDS”

DERIVATIVES SCREENER
Reset All Fields
More than 5,000 Hits (1,907,391). Please add more filter criteria to reduce the amount of matches.

Default Filter

Type	All Types	
Exchange	All Exchanges	
Symbol Name/Code		
Underlying Value Type	All	
Underlying Value Name/code		
Issuer	All	
Issue date DD/MM/YYYY		to
Final Valuation Date DD/MM/YYYY		to
Maturity Date DD/MM/YYYY		to

Additional filters

Maturity Date Open-end		
Strategy	All	
Exercise Type (E/A)	All	
Bid		to
Ask		to
Cap / End of Outperformance		to
StrikePrice / Bonus Level (BL) / Start of Outperformance / Strike		to
Barrier Level / Barrier Level (Bar. Lev.) / Barrier		to
Barrier	None	
Participation Factor		to
Nominal Value (Nom.)		to
Interest Rate p.a.		to
Leverage		to

Figure 36 – Derivatives Screener

---

**Note:** “All” in the section “Exchange” defines, that an instrument is found if it is available at least at one exchange. It does not deliver all results of all exchanges.

---

A risk-return chart can be faded in between the search parameter panel and the search result list. It shows all results by default. A subset of instruments to be shown in the risk return chart can be selected with the checkboxes on the right side of the result list,

## 4.3 Matrix Search

The search using the instruments and issuers matrix is one of the core functions of SDN. Matrices are available at several places in the application.

- TOOLS
  - Matrix
    - Underlying: Matrix of all derivative instruments grouped by major underlyings
    - Issuers: Matrix of all derivative instruments grouped by issuers
- EXCHANGES
  - Exchange Name
    - Underlying Matrix: Matrix of derivative instruments of the selected exchange grouped by major underlyings
    - Issuers Matrix: Matrix of derivative instruments of the selected exchange grouped by issuers
- ISSUERS
  - Issuers: Matrix of all derivative instruments grouped by issuers

The various derivative types are found in the column labels which is arranged according to their risk classification (red = highly speculative, green = low risk). Groups of underlyings are found in the rows, like e.g. Equity Germany or Currencies. By clicking on the plus sign next to the underlying group, lists open up with individual items of that particular group, like e.g. Dax constituents in Stocks Germany. The issuer matrix offers issuer names instead of underlyings.

MATRIX														
Basic product	Leverage products							Investment products						
	All	Warrants		Knockouts		Index certificates		Sprint and outperform certificates	Express certificates	Bonus certificates	Reverse convertible	Discount certificates	Capital Protection certificates	Miscellaneous
		Call	Put	Long	Short	Long	Short							
Stocks - Germ...	371,95	82,576	43,454	51,054	28,092	1,080		31	6,197	53,380	46,164	54,360	1	5,561
Stocks - Austria	5,175	912	336	775	479				67	460	1,070	607		469
Stocks - Great ...	7,863	1,621	850	779	763	12			265	1,230	730	1,064		549
Stocks - Europe	294,85	62,471	30,558	37,677	20,663	852		27	5,902	48,923	37,170	43,740	1	6,873
Stocks - Ameri...	39,463	16,715	7,883	4,448	2,996				46	1,990	237	2,538		2,610
Stocks - Asia	571	290	1	268										12
Indices - West...	261,73	42,043	39,113	44,745	26,158	502	10	668	4,350	62,425	1,700	35,614	76	4,329
Indices - Easte...	105	8	3	21	6	35						3		29
Indices - Scan...	416	118	243	8	1	2								44
Indices - Ameri...	79,944	18,253	17,951	23,186	10,763	56			49	4,916	33	2,907	6	1,824
Indices - Asia	1,485	321	250	443	215	47		4				80		125
Sector Indices	1,605	396	289	172	243	51		63	86	107	39	82		77
Currencies	41,183	9,305	8,688	11,734	10,596									860
Commodities/...	38,708	9,430	7,002	13,945	5,476	76	2			109	6	1,048	3	1,611

Figure 37 - Underlying Matrix of the EUWAX

Clicking on the number of matches displayed in the matrix cells opens the results list with the individual instruments. The implicitly selected search parameters like exchange place, derivative type and underlying or issuer are set in the screener masks.

## 4.4 Saved Searches

At the bottom of the screener mask the button “SAVE SEARCH” can be selected if a search shall be stored for reuse. After entering a name for the saved search the screener setting is available via a link placed in the screener navigation bar.

The screenshot shows the 'DERIVATIVES SCREENER' interface. At the top, there is a 'New' button and a 'Daimler' button (highlighted with a red circle). To the right is a 'Save Search' button. Below these are sections for 'Default Filter', 'Additional filters', and 'RISK-RETURN-CHART'. The 'SEARCH RESULTS' section shows a table with 27 results (1-20 of 27). The table has columns: ISIN, Underlying V, Issuer, Type, Redemption, Final Valuat, Issue Date, Cap, Strike, Bar. lev., PR, Nom., and Coupon. The first row shows: CH0483..., Daimler ..., Bank Juli..., Warrant, 18/09/2..., 18/09/2..., 07/06/2..., , 60.00, , , , , .

Figure 38 – Saved Search “Daimler”

When a saved search is selected, new options are available:

- SAVE CHANGES: If parameters were changed
- CHANGE TITLE: Renames the saved search
- REMOVE SEARCH: Deletes saved search

## 4.5 Result List

The result list shows one line per ISIN found with the selected parameters. It appears under the screener masks that are shown in collapsed state. The masks can be expanded with a click on the “+” sign.

DERIVATIVES SCREENER													
+ Default Filter													
+ Additional filters													
+ RISK-RETURN-CHART													
SEARCH RESULTS													
1-20 of 27								20 Lines per Page		Page 1			
ISIN	Underlying V	Issuer	Type	Redemption	Final Valuat	Issue Date	Cap	Strike	Bar. lev.	PR	Nom.	Coupon	
CH0483...	Daimler ...	Bank Juli...	Warrant	18/09/2...	18/09/2...	07/06/2...		60.00					<input type="checkbox"/>
CH0483...	Daimler ...	Bank Juli...	Warrant	18/09/2...	18/09/2...	07/06/2...		52.00					<input type="checkbox"/>
CH0498...	Daimler ...	Bank Juli...	Warrant	18/09/2...	18/09/2...	04/10/2...		44.00					<input type="checkbox"/>
CH0524...	Daimler ...	Bank Juli...	Warrant	18/09/2...	18/09/2...	27/02/2...		36.00					<input type="checkbox"/>
CH0528...	Daimler ...	Bank Juli...	Warrant	18/09/2...	18/09/2...	10/03/2...		36.00					<input type="checkbox"/>

Figure 39 – Search mask in shrunken form

The fields shown in the result list are specific to the selected derivative type. In some cases fields are added or replaced automatically dependent on the selected search parameters. Thus the interesting values are always included in the list. The list can be sorted by clicking on the column header. (Due to technical constraints this does not work for the Issuers column)

DERIVATIVES SCREENER													
+ Default Filter													
+ Additional filters													
+ RISK-RETURN-CHART													
SEARCH RESULTS													
1-20 of 27								20 Lines per Page		Page 1			
ISIN	Underlying V	Issuer	Type	Redemption	Final Valuat	Issue Date	Cap	Strike	Bar. lev.	PR	Nom.	Coupon	
CH0483...	Daimler ...	Bank Juli...	Warrant	18/09/2...	18/09/2...	07/06/2...		60.00					<input type="checkbox"/>
CH0483...	Daimler ...	Bank Juli...	Warrant	18/09/2...	18/09/2...	07/06/2...		52.00					<input type="checkbox"/>
CH0498...	Daimler ...	Bank Juli...	Warrant	18/09/2...	18/09/2...	04/10/2...		44.00					<input type="checkbox"/>
CH0524...	Daimler ...	Bank Juli...	Warrant	18/09/2...	18/09/2...	27/02/2...		36.00					<input type="checkbox"/>
CH0528...	Daimler ...	Bank Juli...	Warrant	18/09/2...	18/09/2...	10/03/2...		36.00					<input type="checkbox"/>

Figure 40 – Result List

If an underlying was selected, it's price/quotes are shown on top of the screener.

The result list is organized in pages. The number of lines per page can be selected from a drop down menu in the top right corner of the list. Navigation between pages can be controlled there as well.

## 4.6 Pop Up Search

The Pop Up Search is called to find an instrument to be displayed in an overview chart or in a watchlist. The search result list shows all derivatives that contain the string entered into the textbox. Name, ISIN and RIC are allowed.

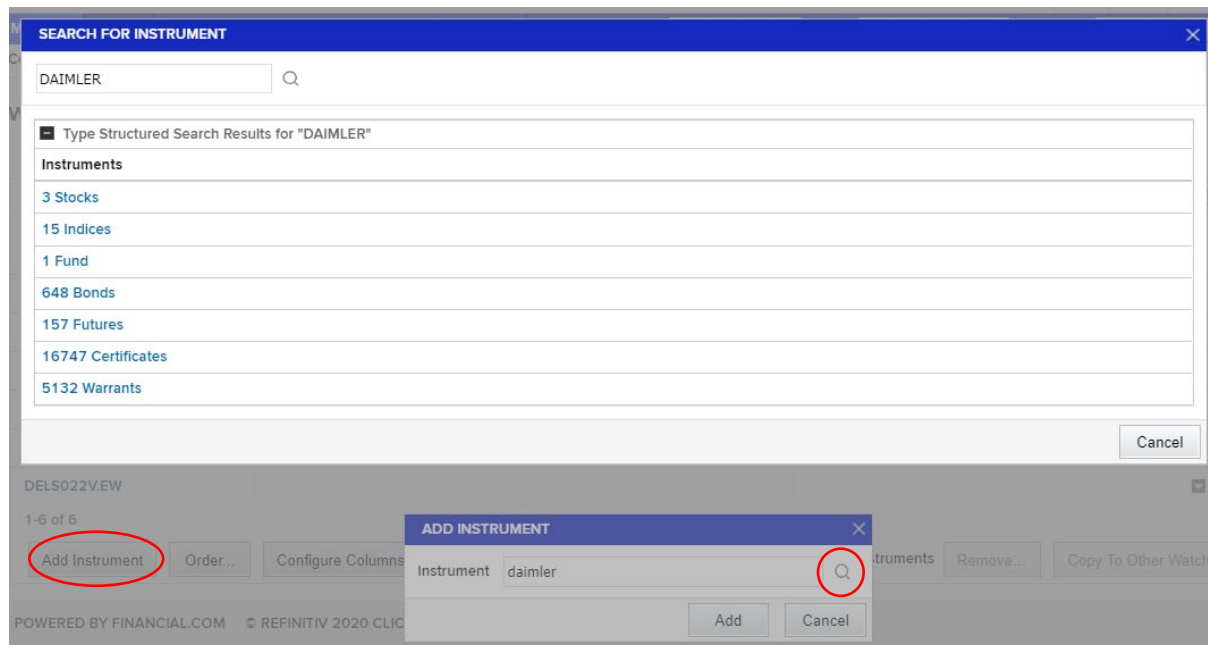


Figure 41 – Pop Up Search

## 5. Detail Pages

After clicking on a chart or any line containing an instrument in the list modules of the overview pages or in the search result, the Detail Page for the instrument is opened. The Detail Page consists of a so called Quote Banner and underneath some tabs structuring the content.

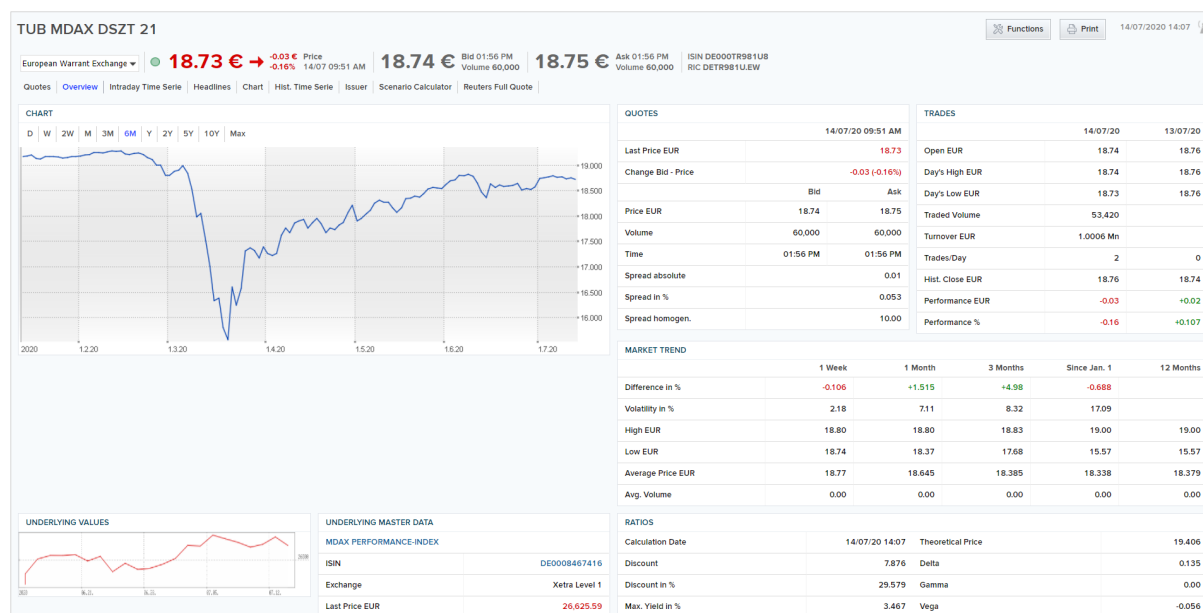


Figure 42 – Detailpage Overview

The Banner is showing:

- Exchange traded only: Last, Change, Percentage Change, Time and Date
- Bid, Bid Volume and Bidtime
- Ask, Askvolume and Asktime, ISIN and RIC

The Exchange Place can be selected directly via a drop down menu in the banner.

The content tabs show data:

- Overview (see Chapter 5.1)
- Times & Sales (see Chapter 5.2)
- Headlines – shows news headlines related to the underlying
- Ratios – shows calculated ratios and greeks for Warrants only
- Chart
- Hist. Time Series
- Time Series – shows a table of historical values
- Issuer – shows contact details of issuer

- Scenario Calculator
- Refinitiv Full Quote

## 5.1 Overview

The overview shows data in sections “Chart”, “Quotes”, “Trades”, “Market Trend” and “Underlying”. The additional two sections “Ratios” and “Master Data” are different for some classified derivative types. The classification structure is described in the appendix (chapter 6.1).

A click in the underlying section retrieves the Detail Page of the underlying instrument.

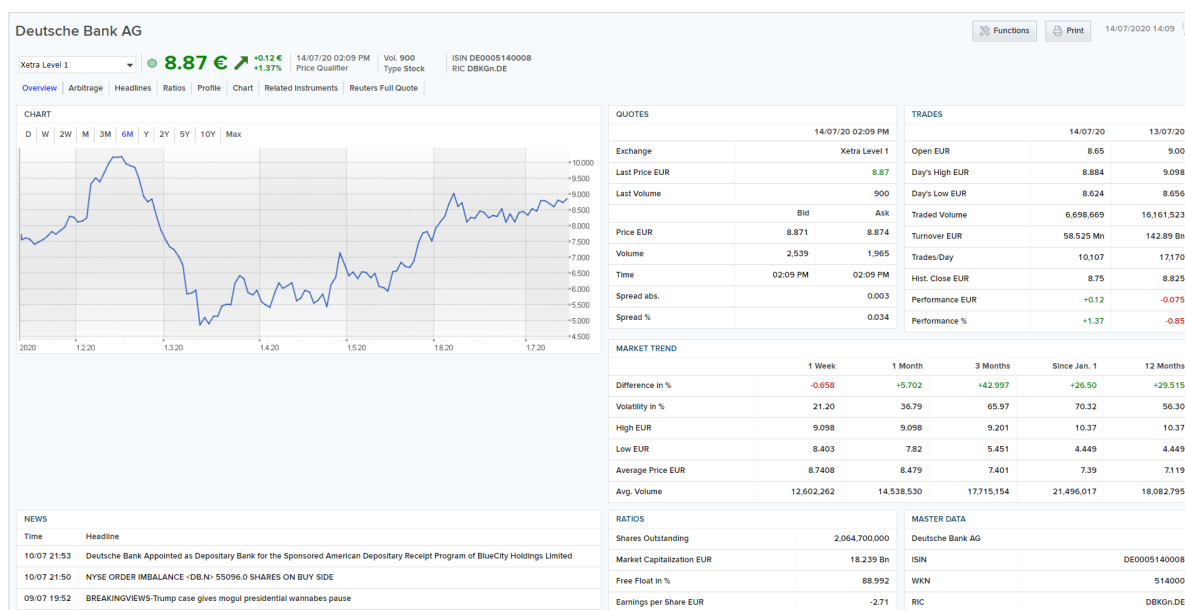


Figure 43 – Overview

## 5.2 Times & Sales

The Times & Sales function shows all prices that were received during the last ten trading days. Due to conflation possibly not each individual trade is noted in the list.

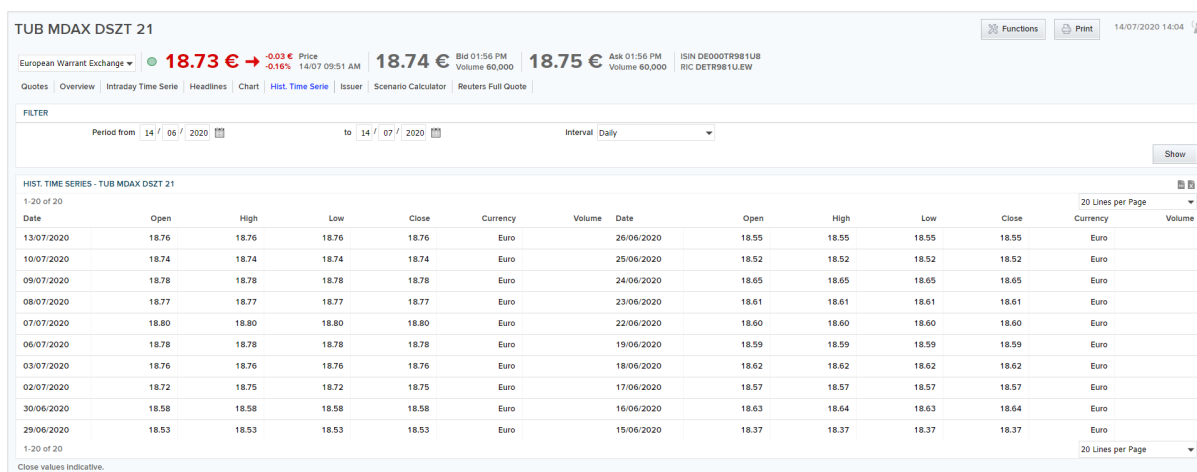


Figure 44 – Times &amp; Sales

## Parameters:

- **Interval** – sets the time span for accumulation of data. All ticks received during the interval are added and the mid price and accumulated volume is calculated.
- **Date** – sets the start date for displaying intraday data
- **Time** – sets the start time for displaying intraday data
- **Period** – sets the length of the time frame after the start time

The list shows one line for each accumulated interval with date and time, price and volume.



## 5.3 Scenario Calculator

The Scenario Calculator calculates the price of an instrument according to freely definable parameters:

- Underlying Price
- Implied Volatility in %
- Calculation Day

The current values are filled into three scenario columns. Sometimes the implied volatility is not available due to missing master data. Now you can vary those values and press the button “CALCULATE SCENARIOS” and retrieve the appropriate price.

SCENARIO CALCULATOR				
All fields are mandatory for a Scenario Calculation.				
	Current	Scenario 1	Scenario 2	Scenario 3
Underlying Price in EUR	289.80 Euro	289.80 EUR	289.80 EUR	289.80 EUR
Implied Volatility / Historical Volatility (%)	28.35 %	28.35 %	28.35 %	28.35 %
Calculation Day	15/07/2020	15 / 07 / 2020	15 / 07 / 2020	15 / 07 / 2020
Bid/Price	244.34 / 243.96 EUR			
Abs. Price Change				
Rel. Price Change				
				<input type="button" value="Delete All Items"/> <input type="button" value="Calculate Scenarios"/>

MASTER DATA		UNDERLYING MASTER DATA	
BNP Paribas Em.-u.Handelsg.mbh DISC.Z 24.12.20 L'Oréal 250		ORÉAL S.A., L'	
ISIN	DE000PZ84360	ISIN	FR0000120321
WKN	PZ8436	Exchange	Paris Stock Exchange
RIC	DEPZ8436.EW	Last Price EUR	289.70
Instrument Type	Certificate (exchange traded)	Instrument Type	Stock
Certificate Type	Gen. Discount Certificate		

Figure 45 – Scenario Calculator

The scenario calculator is available for the following derivative types:

### Bonus Certificates

- 1 long zero strike call option (ratio=1)
- 1 long down-and-out-put-option (barrier=bonusBarrier, strike=bonusStrike, ratio=1)

### Capped bonus certificate

- 1 long zero strike call option (ratio=1)
- 1 long down-and-out-put-option (barrier=bonusBarrier, strike=bonusStrike, ratio=1)
- 1 short call option (strike=bonusCap, ratio=1)

### Discount certificate

- 1 long zero strike call (ratio=1)
- 1 short call option (strike=discountCap, ratio=1)

### Outperformance certificate

- 1 long zero strike call (ratio=1)
- 1 long call option (strike=outperformanceStrike, ratio=outperformanceParticipation-1)

## Reverse convertible

- 1 long zero bond (nominal=rcNominal, coupon=rcCoupon, ratio=1)
- 1 short put option (strike=rcStrike, ratio=rcShares)

## Sprint certificate

- 1 long zero strike call (ratio=1)
- 1 long call option (strike=sprintStrike, ratio=sprintParticipation-1)
- 1 short call option (strike=sprintCap, ratio=sprintParticipation)

## Turbo certificate

- 1 long down-and-out-call option (barrier=turboBarrier, strike=turboStrike, ratio=1)

## OR

- 1 long up-and-out-put option (barrier=turboBarrier, strike=turboStrike, ratio=1)

## European or American option (Warrant)

- 1 long call/put european or american option (strike=warStrike, ratio=1)

## 6. Appendix

### 6.1 Classification Scheme

Matrix Category	Matrix Column	Screener	Detail Page	Certificate Type
Leverage Products	Warrants	Warrants	Warrants	Warrants
Leverage Products	Knockouts	Leverage	Turbos	Turbos
Investment products	Reverse Convertibles	Reverse Convertibles	Reverse Convertibles	Reverse Convertibles
Investment products	Reverse Convertibles	Reverse Convertibles	RC Reverse Convertibles	Reverse Convertibles + PRO
Investment products	Guarantee Certificates	Guarantee	Guarantee	Guarantee
Investment products	Index Certificates	Index	Index	Index
Investment products	Bonus Certificates	Bonus	Bonus	Bonus
Investment products	Bonus Certificates	Bonus	Bonus	Reverse Bonus
Investment products	Bonus Certificates	Bonus	Bonus	Capped Bonus
Investment products	Sprint and Outperformance	Sprint	Sprint	Outperformance
Investment products	Sprint and Outperformance	Sprint	Sprint	Sprint
Investment products	Discount Certificates	Discount	Discount	Discount + PRO
Investment products	Discount Certificates	Discount	Discount	Discount
Investment products	Express Certificates	Express	Other	Express
Investment products	Express Certificates	Express	Other	Easy Express
Miscellaneous	Miscellaneous	Other	Other	Capped Warrant
Miscellaneous	Miscellaneous	Other	Other	Capped Guarantee
Miscellaneous	Miscellaneous	Other	Other	Capped Reverse Bonus
Miscellaneous	Miscellaneous	Other	Other	Twin Win
Miscellaneous	Miscellaneous	Other	Other	Airbag
Miscellaneous	Miscellaneous	Other	Other	Endless Turbos

### 6.2 Chart Indicators

#### 6.2.1 Oscillators

The name of this group of indicators is derived from the Latin word *oscillare* (= to swing), which is one of the basic characters of these indicators. All indicators contained in this group swing - regularly to a greater or lesser extent - around a reference line, which does not necessarily have to be zero.

The methods of calculation for these indicators vary, however, the basis for the calculation is always the underlying original (price) series. Purchase or sell signals can be generated at certain points of the oscillator curve, depending on the indicator and the interpretation regulations.

Most technical indicators are oscillators and belong to one of the sub-groups “Momentum Indicators” or “Overbought / Oversold Indicators”. In most cases, the latter are referred to as oscillators (Larry Williams oscillator).

An essential difference is that momentum indicators move around a reference line (zero line), oscillators rather move within a certain margin (0 - 100). The relatively well-known stochastics indicators also function in accordance with this principle and also belong to the “Overbought / Oversold indicators” and/or to the umbrella group of oscillators.

Oscillators always serve the purpose of generating signals to act in order to benefit from trend fluctuations.

## 6.2.2 Momentum Indicators

Momentum indicators belong to the most frequently used technical indicators within the umbrella group of oscillators. They are suitable for the evaluation of price curves as they clearly indicate the dynamics of price fluctuations. With momentum indicators, the discontinuation of a price movement (= diminishing dynamics) can be relatively well forecast. They are calculated based on a continuous calculation of the difference between the current price and a price of a few days in the past. These values can be calculated nominally and as a percentage value.

Basically, it is just a graphic presentation of a change rate, calculated on a continuing basis; that means a momentum indicates the gradient of a price curve. Due to this method of calculation, the momentum curves adjusted to the respective cycle length generally generate inflexion points before the trend reversal of the original series and thus indicate a trend reversal at an early time.

However, momentum indicators do NOT enable the user to make any statements on the extent of a price movement.

There are many variations / forms of momentum indicators. The most puristic form is the simple ROC (= rate of change), a simple change rate (often built up into ROC indicator). More complex systems additionally generate moving averages of the momentum curve in order to increase the quality of interpretation by points of intersection or they calculate a momentum with a weighting of the individual values in terms of time (Coppock indicator).

## 6.2.3 Overbought / Oversold Indicators

OB / OS indicators (overbought / oversold) are based on a different principle than the momentum indicators. In most cases, they are generated based on differences. In one case, the distance between two moving averages is measured, in another, the distance between closing price and extreme prices during the day, etc.

A decisive feature is the existence of a certain range within which the indicator moves. The indicator reaching the extreme values (or a defined target zone) is the signal for the occurrence of an OB / OS situation.

## 6.2.4 Accumulation Distribution Line (ADL)

The Accumulation / Distribution Line (ADL) must not be mistaken for the A/D line (Advance / Decline Line), which indicates the relation of the risen stocks to the fallen stocks of a particular index / market. The ADL is a trend indicator which is to indicate the existence and/or the stability of market trends. This indicator is not a timing indicator.

The calculation is based on the margin of the trading day by calculating the difference between closing price and the daily low / high. The difference between these two values is then divided by the difference between daily low and daily high (difference). This value is then multiplied with the daily volume (weighted). The result, which can be either positive or negative, will be added to the previous day's value. Thus, the indicator shows similarities with other cash flow indicators (on-balance volume). It is to reflect the liquidity flows.

The interpretation is based on divergences between the price development and the indicator. If, for example, the price continues to rise while the indicator does not follow, this is deemed to be a sign that the price movement is not sufficiently substantiated with liquidity / volume and should be a warning to be careful. Thus, the indicator has a “confirmation function” - timing indications are not possible / feasible.

### 6.2.5 Aroon Up, Aroon Down (ARUD)

The concept is very similar to that of the RSI. The indicator does not calculate the difference between the actual price and the high or low during a certain period of time, but it calculates the period of time elapsed since the last high / low. Thus it is actually a variation of the known RSI.

Starting with certain indicator values, upward trends are indicated by the Aroon UP, starting with certain indicator values, downward trends are indicated by the Aroon Down, at the same time the points of intersection of the indicators are used as signals. The time periods used as parameters show a rather broad range between 1 and 500 days, however, for short-term trends, mostly parameters of up to 30 days are used.

### 6.2.6 Aroon Oscillator (ARO)

The Aroon Oscillator is the difference between the two Aroon indicators. Similarly, the difference between two moving averages can form the basis for the calculation of an oscillator. In contrast to many other oscillators, the indicator makes a trend statement. Values above the zero line indicate an upward trend, values below the zero line a downward trend.

### 6.2.7 Average Directional (Movement) Index (ADX)

This is another variant of another indicator. The ADX is a simple smoothing of the DMI (Directional Movement Index). It is a well-known trend indicator. However, the ADX does not make a trend statement, it only measures the intensity and/or the existence of a trend.

A rising ADX line is deemed to be the beginning of a trend or an increased intensity of a trend, however, no statement as to the direction of that trend is made. A falling ADX indicates the end of a trend or a declining trend intensity.

The greatest benefit of the ADX is the fact that for the indication of a strong, predominant trend, no oscillators, which are to utilise price fluctuations / tertiary trends, are to be used.

It protects the user from following erroneous signals during a predominant, strong trend by using oscillators. However, if the ADX indicates the lack of a strong trend (typically a sideward movement with strongly fluctuating prices), the use of an oscillator is more promising.

### 6.2.8 Average True Range (ATR)

The Average True Range is calculated based on the average of the respective maximum, the period's high minus the previous period's low, the period's high minus the closing price of the previous period and the period's low minus the closing price of the previous period. Extreme ATR values indicate exaggerations and thus potential trend reversal points.

### 6.2.9 Bollinger Bands

With the calculation of so-called Bollinger Bands, an area is to be indicated around the chart within which the prices will most probably move. In order to do so, lines, which are called bands or envelopes, are calculated, which run above or below the original chart.

The calculation is relatively simple: From a moving average of the price chart, the standard deviation is calculated (upper band = moving average + standard deviation, lower band = moving average - standard deviation). The standard deviation is a designation for the medium deviation from the average price - the bands identify the area in which a certain percentage of prices is situated within a

certain time period. If the fluctuation intensity / volatility of the price movement increases, the difference between the lines also grows, in case of declining volatility, the bands converge.

The interpretation of the indicator does not allow for clear timing signals. In general it is assumed that the range will be left only very rarely, but rather that the price chart is pushed away by the limiting band. However, this does not form the basis for the derivation of an action signal, but conclusions on increasing / decreasing intensity of a price movement are possible (example: if the current price movement approximates a band, the intensity of the increase / decrease is expected to slow down).

Experience shows that the interpretation of divergences (different movements indicator / price) between price and band does not lead to useful results.

### 6.2.10 Chaikin Oscillator (CHO)

The Chaikin Oscillator is built on the idea of the Acc / Dis Line, as it is calculated by building the difference between two moving averages of different length which are formed of the Acc / Dis Line. With this construction principle, it is an typical oscillator oscillating around a reference line. The idea behind the oscillator is that trend changes in the Acc / Dis Line, i. e. in the cashflow, are indicated at an early point in time.

Chaikin advised that signals should only be used in accordance with the direction of the trend ("The trend is your friend"), i. e. purchase signals only in an upward trend and vice versa.

### 6.2.11 Commodity Channel Index (CCI)

The CCI, originally stemming from the commodities markets, was developed by Chaikin in order to benefit from cyclical price movements on these markets. The CCI is an overbought / oversold indicator that triggers action signals upon reaching extreme zones.

Basically, the indicator calculates the difference between the price and a moving average. The special feature of this calculation is that the CCI assumes a so-called typical price which is formed from an unweighted average of the highest, the lowest and the closing price. The difference to a moving average then calculated will be the oscillator oscillating around a reference line.

In Chaikin's definition of the CCI, signals are generated if the + 100 / - 100 lines are left (sale: + 100 is broken through from above, purchase: - 100 is broken through from below). If the oscillator moves within these limits without reaching the extreme areas, this is an indication that there is no trend.

### 6.2.12 Directional Movement Indicator (DMI)

The DMI tries to detect trend movements. It is calculated from two different indices, which are called +DI, a line for the upward movement and -DI, a line for the downward movement. The underlying concept is based on the assumption that in an upward trend, today's high is above yesterday's high and in a downward trend, today's low is below yesterday's low. The days on which this is true are called outside / inside days.

The greater the difference between +DI and -DI, the higher the DMI and the stronger the trend intensity. In an upward trend, +DI is above -DI and in a downward trend -DI is above +DI. A smoothed DMI is called an ADX and is an important indicator for the calculation of the trend intensity. Any crossing of +DI and -DI can be interpreted as a trade signal, whereby a crossing of the +DI line with the -DI from below is interpreted as a signal to buy and vice versa as a signal to sell.

### 6.2.13 Envelopes

Envelopes are, similar to the Bollinger Bands, two price bands drawn in a certain identical distance above and below the moving averages.

First, a moving average is calculated; then, the Envelopes are generated by adding / subtracting a fixed or percentage value. An intersection of the price with the Envelopes can be used for signal

generation; however, generally Envelopes are interpreted in such a manner that they indicate signals for turning points.

An approximation to a band indicates that a price movement has already made considerable progress. Precise timing signals cannot be expected, the interpretation is rather similar to that of the OB / OS Indicators.

### 6.2.14 Exponential Moving Averages

These are moving price averages. In contrast to the standard average lines, the prices used for the calculation are weighted differently. This is based on the assumption that newer prices have more influence on the future prices than older ones. Thus, increased weighting is placed thereon. Proportionately lower weighting is placed on the values in the past. In case of a 38-day-average, the highest weighting is given to the most current value, the lowest to the T 38 (i. e. the price of 38 days ago).

Moving averages are very easy to calculate and represent well usable ascertainable indicators. The simplest use / interpretation is the crossing of the price curve through its moving average, which can be interpreted as a signal to purchase / sell.

The number of days used as parameters is taken from a standard book on technical analysis (Edwards / Magee: Analysis of stock trends) and is derived from the Dow theory presented therein. In the theory established by Charles Dow, trends / cycles of different length at the stock markets which superimpose economic cycles were described for the first time.

Dow described so-called primary cycles (long-term: > 2 years), secondary cycles (medium term: 2 months to 2 years) and tertiary cycles (short-term: up to 2 months). He also defined the 200-day-line, which is still in use today, the 100-day-line as well as an 38-day-line, which correspond to the long-term, medium-term and short-term cycles as described above.

There must be sufficient bases for a calculation. These are not available in a 10-year-chart, so that the different exponential moving averages do not correspond to the desired lines of 38, 100 and 200 days, but are superimposed.

### 6.2.15 Fast Stochastics (STOF)

The Fast Stochastics is an oscillator developed by George C. Lane, which consists of two graphs called %K and %D. %D is the smoothed version of %K.

If these two lines cut across each other in the oversold or overbought sector, this can be taken as a signal to purchase or signal to buy.

Fast Stochastics is often used for the analysis during trendless sideward phases.

### 6.2.16 Historical Volatility (HV)

Volatility is a measurement for the intensity of fluctuations of prices / securities within a certain period of time. It can be calculated for different periods of time; normally, it is calculated on an annual basis.

The intensity of the volatility often indicates whether or not there is a trend (declining volatility during very strong trends, as there are not many price movements in the opposite direction).

Often, a strong increase of the historic volatility can be observed during reversals of a trend. This reflects the high uncertainty of the market participants concerning the future price development who thus cause a strong up and down of the prices due to their actions.

### 6.2.17 Momentum (MOM)

Momentum indicators belong to the standard indicators for technical analysis. The consideration on which the calculation is based works on the assumption that price movements weaken before a correction or a possible reversal. It can often be seen and it can theoretically be explained with

aspects related to behavioural psychology that at the beginning of a price movement, the power or acceleration increases and then decreases towards the end of such movement. The core of these explanation attempts is that groups of purchasers / sellers follow and thus boost a price movement and that, towards the end of that movement, they show the opposite behaviour.

In the standard books concerning technical analysis, the example of an apple, which is thrown up into the air, is often used for comparison purposes. The acceleration of the apple declines the nearer it comes to the highest point, however, after it reached the highest point, the acceleration gains speed again. According to the theory, price movements of securities develop similarly.

A momentum is an attempt to express and/or illustrate such acceleration. From an arithmetical point of view, a momentum is the absolute or percentage difference between the current value and a value in the past. This is recalculated and entered into a chart on a daily basis.

Momentum indicators can be interpreted in different ways. On the one hand, divergences between price development and momentum development can be taken as a basis for interpretation, on the other hand, momentum indicators are often used like oscillators. Often, a crossing of the base line is interpreted as a signal. However, better results are achieved based on the calculation of a trigger / signal line which is calculated as a simple moving average of the original momentum.

Crossovers / reversal points can generate signals.

As is the case for most technical indicators, a certain experience / routine in interpreting the instrument leads to better results. Over time and by monitoring the indicator, the analyst must develop a feeling for the probability of movements - he/she anticipates the indicator based on the knowledge of the method of calculation and on the current price movement.

## 6.2.18 Money Flow Index (MFI)

The money flow index is the multiplication of the so-called typical price by the volume. This is another variation, similar to the on-balance volume. The calculated value forms the basis of the Money Flow Index, which is to indicate whether the volume of a security rises or falls.

If today's typical price is higher than yesterday's, this is considered a positive money flow. If today's typical price is lower than yesterday's, this is considered a negative money flow. Now, all the positive money flows of the monitored period are added and the result is then divided by the sum of all negative money flows of the same period. The indicator resulting from this calculation shows whether the closing prices are near the daily high or the daily low.

Correspondingly, a rising money flow index indicates an upward trend, a falling money flow index a downward trend.

## 6.2.19 Moving Average Convergence / Divergence (MACD)

The MACD is also a standard technical indicator. It measures the difference between two moving averages calculated for different periods of time (exponential MAs). In most cases, another moving average (also exponential) is calculated on the MACD line in order to receive a trigger line. Signals are generated by reversal points / points of intersection.

It is a variation of the momentum concept: The increase / decrease of the intensity of a price movement is also indicated by the fact that the averages head toward each other.

As is the case with all other similar indicators, the parameters are determined according to the length of the predominant trend. This - and this is also a characteristic feature of such concepts - entails the risk that a break of the structure and/or a changed length of a trend is not correctly captured, which then leads to erroneous signals.

As a rule, MACDs are used to evaluate medium-term to long-term trends. A large distance to the middle line indicates a high intensity of the trend. The method of calculation based on the distance between two moving averages implies that short-term signals cannot be generated in a reasonable manner.



## 6.2.20 On-Balance Volume (OBV)

The On-Balance Volume is to indicate whether liquidity is flowing into or out of a market and/or a certain stock. The OBV is similar to the Accumulation / Distribution Line. In case of falling prices, the trading volume is subtracted from yesterday's OBV, in case of rising prices, it is added thereto.

The OBV is to anticipate trend changes of the underlying by trend changes in the OBV. Mainly, the divergences between the OBV line and the underlying are monitored. If a new index high or low in the underlying is not confirmed by a corresponding high or low in the OBV line, a trend change will probably occur soon.

## 6.2.21 Rate of Change (ROC)

There are many variations / forms of momentum indicators. The most puristic form is the simple ROC (= Rate of Change), a simple change rate (often referred to as ROC indicator).

The Rate of Change oscillator shows a price change during a certain period as a percentage value. Position and height of the indicator indicate the speed and direction of the price movement. Analogously to other momentum indicators, reversal points of the oscillator indicate a falling trend intensity.

Unsmoothed, the ROC can hardly be used to determine a trend or trigger a signal.

## 6.2.22 Relative Strength Index (RSI) according to Welles Wilder

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**Note:** This indicator is not in any way related to the term "relative strength" - the creation of a relationship of the strength of two price movements. It is a momentum indicator which tries to measure / express the inner strength of a security within a period of time and which is calculated exclusively on the basis of the price curve. Wilder originally chose a period of 14 days.

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The relation of the upward movements within this period to the downward movements within the same period is the indicator value which can range between 0 and 100. A value of zero indicates that there is no "inner strength" of the security, a value of 100 indicates extreme "inner strength". A standardisation of the indicator by a defined and stable fluctuation margin is beneficial for the interpretation of the indicator.

As a rule, the indicator is used to identify so-called "overbought / oversold" situations, i. e. extreme areas in which a reversal of the evaluation by the market participants can be expected in near future. Exact timing indications cannot be generated, however, any reaching or leaving of the extreme zones (20 / 80) is often used for the generation of signals.

## 6.2.23 SAR Parabolic (SAR)

The Parabolic Indicator is a typical trend-following indicator. The underlying idea of the calculation is the calculation of co-called trailing stops. That means analysts calculate stop prices on a continuing basis and/or let them follow the price. An acceleration factor is to regulate the distance between the top and the price movement.

If the stop that is made to follow the price is crossed from below or from above, the side is changed. A stop loss becomes a stop buy. These indicators are often also referred to as SAR indicators - Welles Wilder called this indicator the "stop and reverse" system = SAR.

## 6.2.24 Simple Moving Average (SMA)

The Simple Moving Average is the simplest of the trend-following indicators. The SMA is defined as the arithmetic moving average of the market prices.

Intersections of the SMA line and the line of the market prices and/or another SMA line are a possibility to generate signals to purchase or to sell.

### 6.2.25 Ultimate Oscillator (UO)

The Ultimate Oscillator is a result of the efforts to adjust indicators to different trend lengths. Instead of adjusting the parameters of individual oscillators to trends with different lengths, the Ultimate Oscillator tries to form a weighted total indicator from three individual oscillators with different time periods.

The interpretation is analogous to that of the other oscillators.

### 6.2.26 Volume (VOL)

The Volume is defined as a regulated version of the traded volumes during the period.

In the course of such regularisation, the volumes during the period the value of which would exceed the mean plus a standard deviation in relation of the periods shown, are cut off.

### 6.2.27 Williams % R (WILL)

This indicator is attributed to Larry Williams, but initially it stems from George C. Lane. However, in his book, Williams describes this indicator so comprehensively that it is attributed to him.

The Williams % R is another oscillator variant and closely related to the Stochastics Indicators and the RSI. Accordingly, the interpretation is based on the well-known overbought / oversold principle. Overheat / overcool zones are defined as well as a moving average which can be used for signal generation.

The indicator also describes the difference of the current closing prices within the margin between the high and the low of a certain period, as a percentage value, therefore "Williams %R".

### 6.2.28 Zig Zag

The Zig Zag is not an indicator, as the position and direction of the Zig Zag can change later. Thus, the Zig Zag is only suitable to show and simplify price movements and is often used for the Elliot wave analysis.

The percentage value of the Zig Zag determines as of which price movement a counter-wave is drawn.

## 6.3 SDN Permission set (TBD Refinitiv)

Stock exchange	Client	Quality	Alternative quality (Top version)
<b>Western Europe</b>			
Frankfurt (+ all German regional stock exchanges)	Advisor, Top	delayed	real-time
Amsterdam	Advisor, Top	delayed	
Athens	Advisor, Top	delayed	
Brussels	Advisor, Top	delayed	
EUREX	Advisor, Top	delayed	real-time

Stock exchange	Client	Quality	Alternative quality (Top version)
Helsinki	Advisor, Top	delayed	
Copenhagen	Advisor, Top	delayed	
Liffe	Advisor, Top	delayed	
Lisbon	Advisor, Top	delayed	
London	Advisor, Top	delayed	
Luxembourg	Advisor, Top	end-of-day	
Madrid	Advisor, Top	end-of-day	
Milano	Advisor, Top	delayed	
Oslo	Advisor, Top	end-of-day	
ÖTOB	Advisor, Top	delayed	real-time
Paris	Advisor, Top	delayed	
Stockholm	Advisor, Top	delayed	
Stuttgart	Advisor, Top	delayed	real-time
Vienna	Light, Advisor, Top	delayed	real-time
Zurich	Advisor, Top	delayed	real-time
<b>Americas</b>			
NYSE	Advisor, Top	delayed	real-time
AMEX	Advisor, Top	delayed	real-time
Chicago Board of Trade	Advisor, Top	delayed	
Chicago Mercantile Exchange	Advisor, Top	delayed	
Nasdaq	Advisor, Top	delayed	real-time
Sao Paulo	Advisor, Top	end-of-day	
Toronto	Advisor, Top	delayed	
<b>Asia</b>			
Hong Kong	Advisor, Top	delayed	
Istanbul	Advisor, Top	delayed	

Stock exchange	Client	Quality	Alternative quality (Top version)
Mumbai	Advisor, Top	delayed	
Seoul	Advisor, Top	delayed	
Singapore	Advisor, Top	delayed	
Sydney	Advisor, Top	end-of-day	
Tokyo	Advisor, Top	end-of-day	
<b>CEE</b>			
Bratislava	Advisor, Top	delayed	
Budapest	Advisor, Top	delayed	
Bucharest	Advisor, Top	delayed	
Ljubljana	Advisor, Top	delayed	
Moscow	Advisor, Top	delayed	
Prague	Advisor, Top	delayed	real-time
Sofia	Advisor, Top	delayed	
Warsaw	Advisor, Top	delayed	

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