STOXX iSTUDIO

APRIL 2020

STOXX® iSTUDIO USER GUIDE

Version 3.0

CONTENTS

1. Getting started

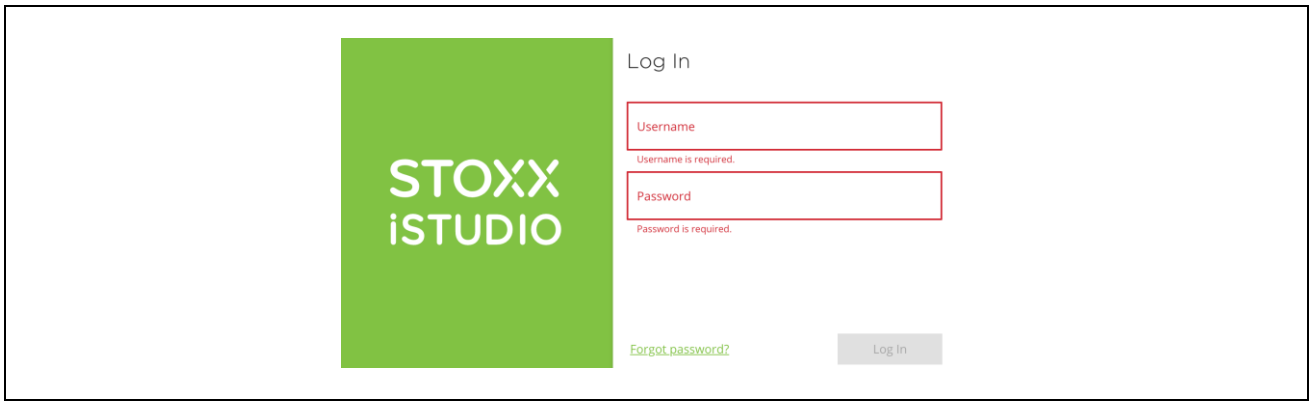

Figure 1-1. Login page

iStudio is a web-based state-of-the-art index creation and management tool designed for STOXX internal users and external self-directed customers. iStudio is compatible with the major web browsers (up-to-date versions): Google Chrome, Mozilla Firefox, Microsoft Edge, and Apple Safari. It is recommended to use Chrome browser for the best user experience.
iStudio's public URL is at https://istudio.stoxx.com/. External users must register at the STOXX website (https://www.stoxx.com/) to gain access credentials to the iStudio and STOXX websites.

Note: after registering at the STOXX website, a user shall request necessary iStudio permissions and entitlements from the STOXX sales team.

At the login page, a user needs to enter own username and password as shown on Figure 1-1. Forgot password link will direct to the STOXX website to restore a password in case the user forgets a password.

Figure 1-2. User authentication loading

If the user inputs a valid username and password, then the user will see an authentication loading page as shown on Figure 1-2 and redirected to iStudio Dashboard page.

An inactive user session may last up to 24 minutes, after that, a session will end by logging out from iStudio. In the last 2 minutes, a user will be warned about a session timeout and an option to extend the session will be given (Figure 1-3).

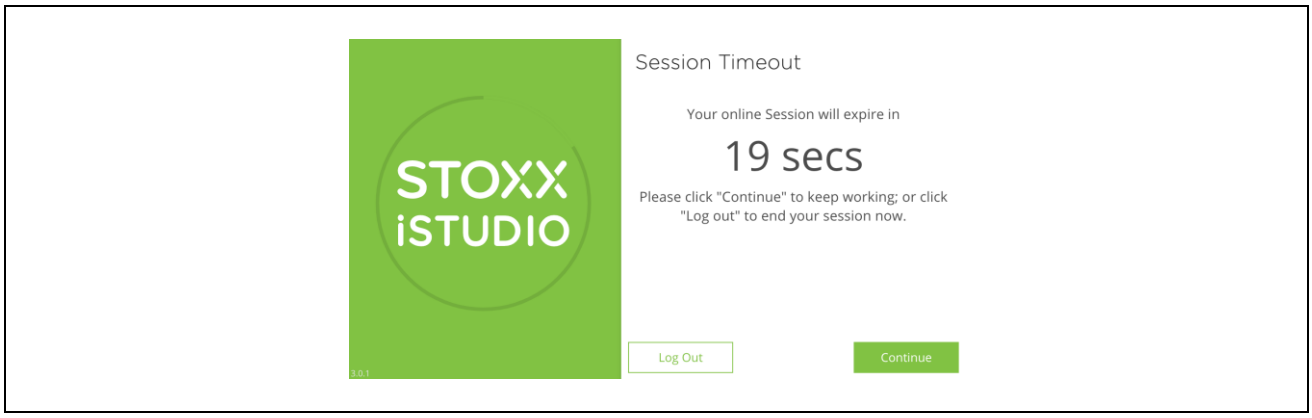

Figure 1-3. Session Timeout: press Continue button to extend a session or Logout button to log out

On the Dashboard, the user can have an overview of iStudio features and access to its functionalities placed in different tabs. In the following chapters, every tab will be described separately.

2. Dashboard

Dashboard provides a user-friendly overview of iStudio features. A user can start a new project by clicking on the Start Project button (opens Creator tab) or go to a Finder to search for a specific index project by clicking on the Finder button. There are three sections below: Did you know, My last activities, News & Stories.

- Did you know – contains short facts about iStudio
- My last activities – three last modified index projects, can be opened by click on one of them
- News & Stories – links to news, announcements related to iStudio and STOXX company

On the top right corner, there are three buttons to switch iStudio's color scheme: Light, Dark, and High Contrast buttons. Light theme is a default selection in iStudio. Dark theme is a new feature starting from version 3.0. High Contrast allows switching the user interface to high contrast theme to ensure accessibility for people with visual impairments (WCAG 2.1 recommendations).
The buttons are accessible from any page of iStudio and the selected option will be saved as a personal system preference.

Figure 2-1. Dark mode

3. Creator

In the Creator tab, a user can create an index by defining its parameters and applying rules. This is accomplished by filling out all mandatory fields with valid values in CREATOR BAR left-side panel shown on Figure 3-1. The panel can be hidden/expanded by clicking on the pizza slice-like button (top left corner) for the user´s convenience.

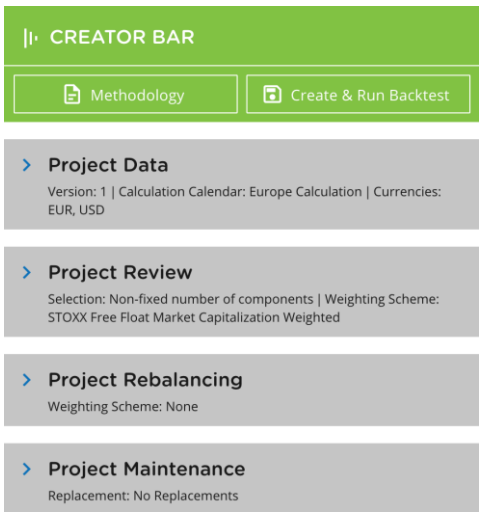

Figure 3-1. Creation Bar panel

There are four sections: Project Data, Project Review, Project Rebalancing, Project Maintenance.

- Create & Run Backtest button becomes clickable after the user starts filling out the fields in the sections. It might be disabled when there is an error in any input field.
- Methodology button opens STOXX® INDEX METHODOLOGY GUIDE (PORTFOLIO BASED INDICES) pdf-file on the new tab of a browser so the user can get additional information on STOXX Index methodologies.

Each of the four sections is expandable. In the unexpanded state, all entered values are visible for the user for a preview. If any field in an unexpanded section is either empty or contains invalid input, then the user will be warned with "Validation failed" error message and an exclamation mark symbol (Figure 3-2).

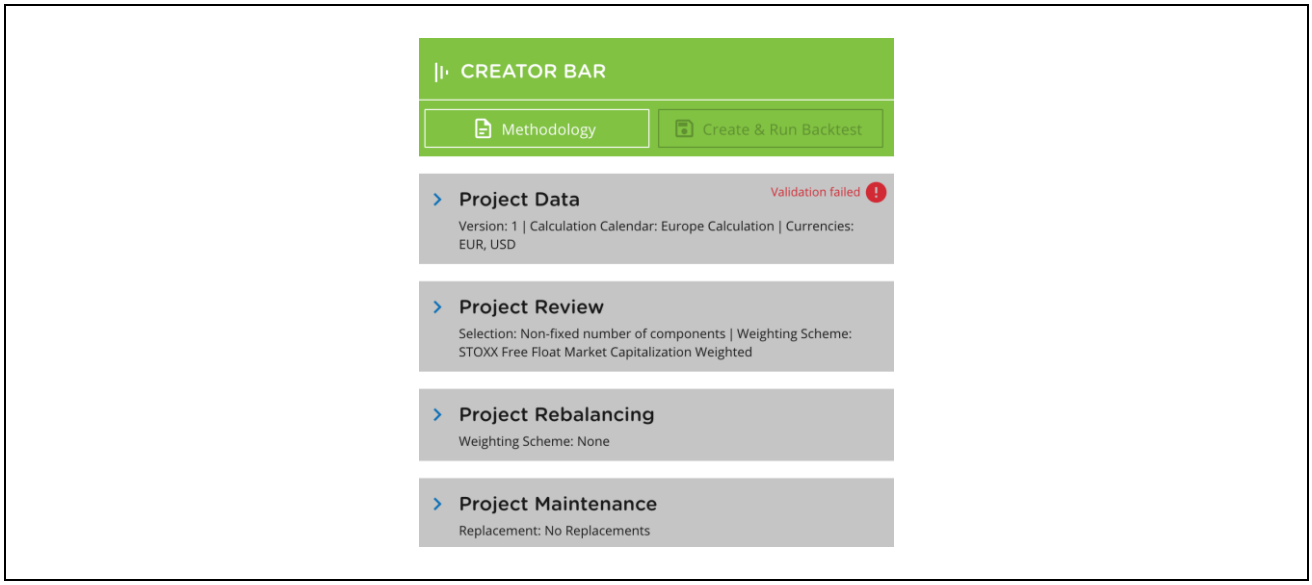

Figure 3-2. Creator Bar sections

3.1 Project Data

- Project Name: a user-defined Index project name that must be unique (not used for other iStudio projects) with a length of at least 10 and up to 50 UTF-8 characters. For users' convenience, this field displays warning messages to give a hint. When the field is empty "Project Name is required." message is shown. After the user starts typing, "At least 10 characters must be entered." warning message is displayed until the minimum length of 10 characters is reached. The name cannot be changed once a backtest is performed.

Note: a user should not use "TR", "NR", "GR", "NTR", "PR" as a term, currency codes like "USD", "EUR" as a term, and "Dummy", "Test", "Demo", "Index" in any part of the project name. Some examples of bad project naming: TR xxxxxxx, xxx USD xxx, xxxdemoxxx, etc.

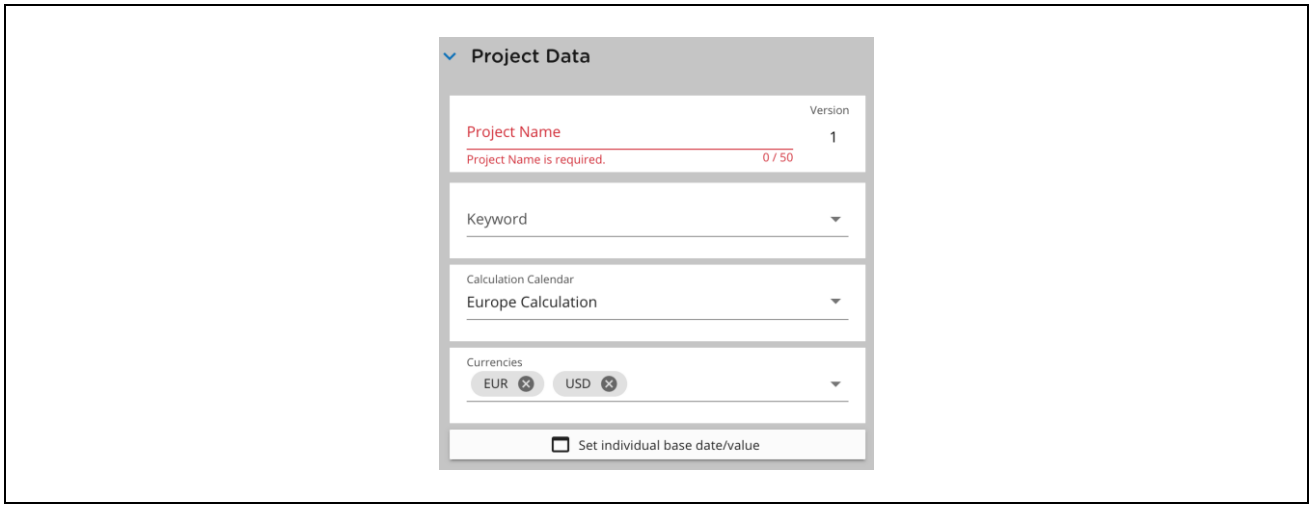

Figure 3-3. Project Data input fields

- Version: indicates a current version of the index project. It can't be changed directly by a user. It's incremented by one each time a user changes some parameters and runs a backtest.
- Keyword: an optional field that can be filled with one or several keywords. Each keyword must have at least 3 and to up to 50 UTF-8 characters. After each label press "Enter" key to enter the next one. Once a backtest is performed, this field becomes immutable like the Project Name field.
- Calculation Calendar: select one out of the pre-defined regional calendars: Americas, Asia, Europe Calculation calendars. The difference is trading/non-trading days with specific regional holidays being considered. Each calendar has its description for a user's information. For more details, refer to STOXX Calculation Guide, Chapter 3.1.
- Currencies: select one or several currencies for an index price and returns calculation. By default, USD and EUR currencies are pre-selected.
- Set individual base date/value: a button that opens a pop-up window with two input fields – Base Date and Base Value. Base Date is the date on which index value will be rebased to Base Value (any positive numeric value defined by a user) or by default 1000. The default value for the Base Date is the Implementation date of the first Review date of the index.

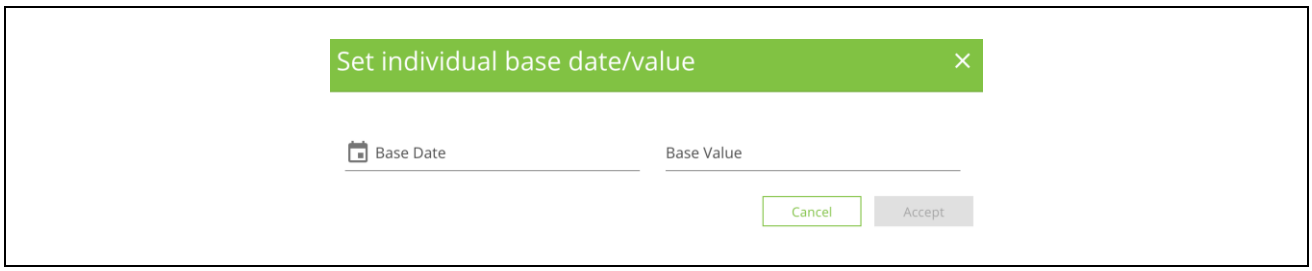

Figure 3-4. Set individual base date/value pop-up window

Note: If Base Date value is not in a range of a backtesting period, then the default value of Base Date will be applied. Base value applies for all index return types (Net, Gross) and index price and all selected currencies.

3.2 Project Review

Project Review consists of four sections: Universe, Selection, Review Calendar, and Review Weighting.

i. Universe

Select up to four parent indices from the dropdown list by clicking on a checkbox. Each parent index in the list has a name, index symbol, and its description.

Figure 3-5. Universe: with selected parent index

As shown on Figure 3-5, selected parent index will be displayed in the Universe and can be removed by clicking on the close button. For multiple parent selection, the resulting set will be a union of them, not an intersection.
Parent Index Selector helps a user to select parent indices from the universe by clicking on Parent Index field. Parent indices can be sorted by external data (Axioma, ESG, RBICS) availability by selecting from External Data drop-down box.
Also, parent indices can be searched by typing a keyword in Search field. If typed keyword matches with either a parent index name or its description, then it will be filtered dynamically in the parent index list. Reset button is to clear both External Data and Search fields from entered values.

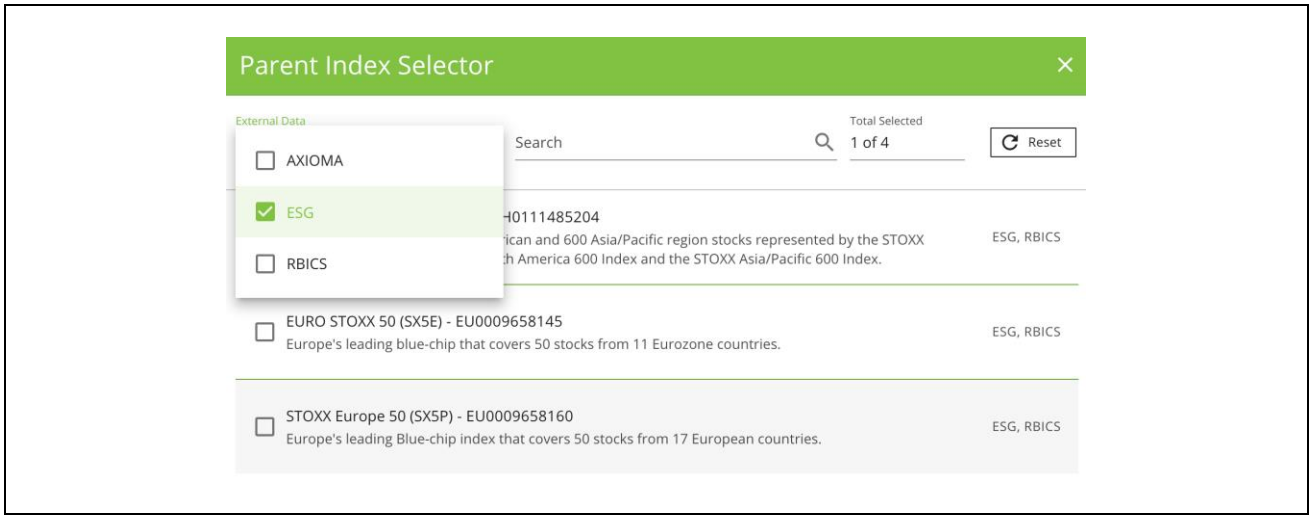

Figure 3-6. Parent Index Selector

Universe offers a list of well-established STOXX indices with extensive historical data:

Parent index	Data available from	ESG	RBICS
EURO STOXX 50 (SX5E)	January 1, 2009	Yes	Yes
STOXX Europe 50 (SX5P)	January 1, 2009	Yes	Yes
STOXX Eastern Europe 300 (EEBP)	June 1, 2009	-	-
STOXX BRIC 400 (SXBBMP)	January 1, 2012	-	-
STOXX China A 900 (SXCNA9P)	March 1, 2014	-	-
STOXX East Asia 1800 (SXEA18P)	June 1, 2013	-	-
STOXX Global 1800 (SXW1E)	January 1, 2009	Yes	Yes
STOXX Global 3000 (SXGBMP)	January 31, 2011	-	-
STOXX Global Total Market (TW1P)	January 1, 2012	-	Yes
STOXX China A Total Market (SXCNATP)	June 18, 2012	-	Yes
STOXX China B Total Market (SXCNBTP)	June 18, 2012	-	Yes
STOXX China H Total Market (SXCNHTP)	June 18, 2012	-	Yes
STOXX China Red Chips Total Market (SXCNRTP)	June 18, 2012	-	Yes
EURO STOXX Total Market (BKXE)	January 1, 2002	-	-
STOXX Europe Total Market (BKXP)	January 1, 2008	-	-
STOXX Canada 240 (SX24CP)	April 16, 2012	-	-
EURO STOXX (SXXE)	January 1, 2008	-	-
STOXX Asia Pacific 600 (SXP1E)	July 19, 2010	-	-
STOXX Europe 600 (SXXP)	January 1, 2008	-	-
STOXX North America 600 (SXA1E)	October 22, 2010	-	-
STOXX USA 900 (SX90UP)	April 16, 2012	-	-

Table 3-1. Parent indices with historical data start dates and ESG/RBICS data inclusion

Note: parent indices with ESG & RBICS data allows to use ESG & RBICS specific rules: Rank by ESG scores, Sustainalytics ESG Filter, Sustainalytics ESG Percentile Filter, Sustainalytics Involvement data Filter, and RBICS L6 Filter.
Axioma factor rules can be applied to all parent indices listed in Table 3.1.

ii. Selection

First, define the size of an index project, by choosing between Non-fixed number of components and Fixed number of components options on the toggle button.
For Non-fixed number of components indices, the user can apply selection rules from Selection Rules although not mandatory.
The size of a created index is not fixed by any number and could vary depending on applied selection rules and parent indices.

For Fixed number of components indices, three more input fields must be filled out by a user: Target Count, Upper Buffer, Lower Buffer. Condition Upper Buffer < Target Count < Lower Buffer must be satisfied when setting values.

By default, Target Count is 50, Upper Buffer is 40, and Lower Buffer is 60 as shown on Figure 3-6. This means we are about to create an index with 50 components (Target Count), the largest 40 stocks (Upper Buffer) on the selection list qualify for selection. The remaining 10 stocks (Target Count minus Upper Buffer) are selected from the largest remaining current companies ranked between 41 and 60 (Lower Buffer). If the number of stocks selected is still below 50, the largest remaining stocks are selected until there are enough stocks to fulfill the Target Count.
For more details, refer to Chapter 5.4 and example on page 32 of STOXX Index Methodology Guide.

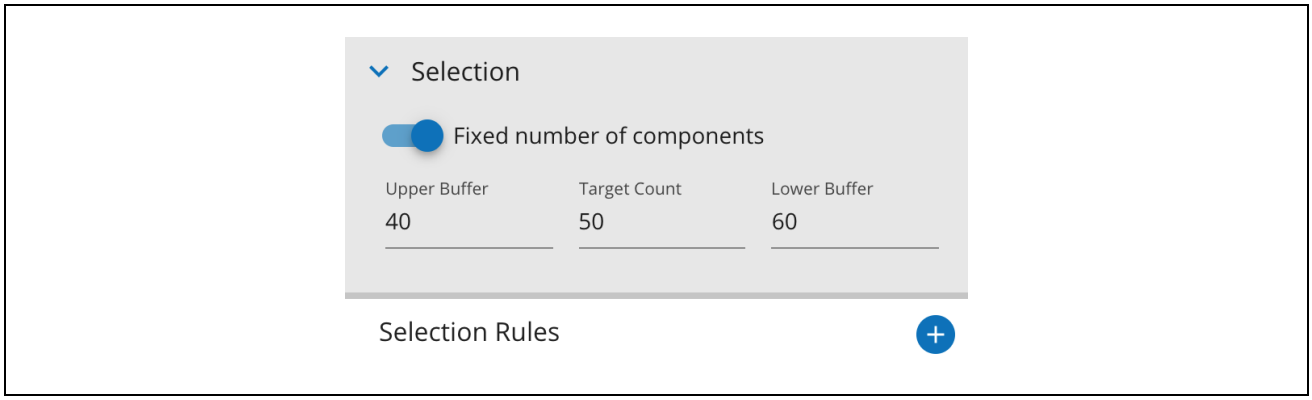

Figure 3-7. Fixed number of components option

Note: for an index with Fixed number of components, Rank rule must be applied. This allows us to rank securities in a selection list and set Tie breaking criteria in case two securities will have an equal rank and one of them must be selected.

Selection Rules can be grouped into Rank, Remove, Reduce To categories. Rules under the Rank category help to rank/sort securities in a selection list and being mandatorily applied for the index projects with a fixed number of components. Remove rules are applied to delete securities from the selection list if conditions are met. Reduce To rules are vice a verse to Remove and applied to pick securities from the selection list based on defined conditions.

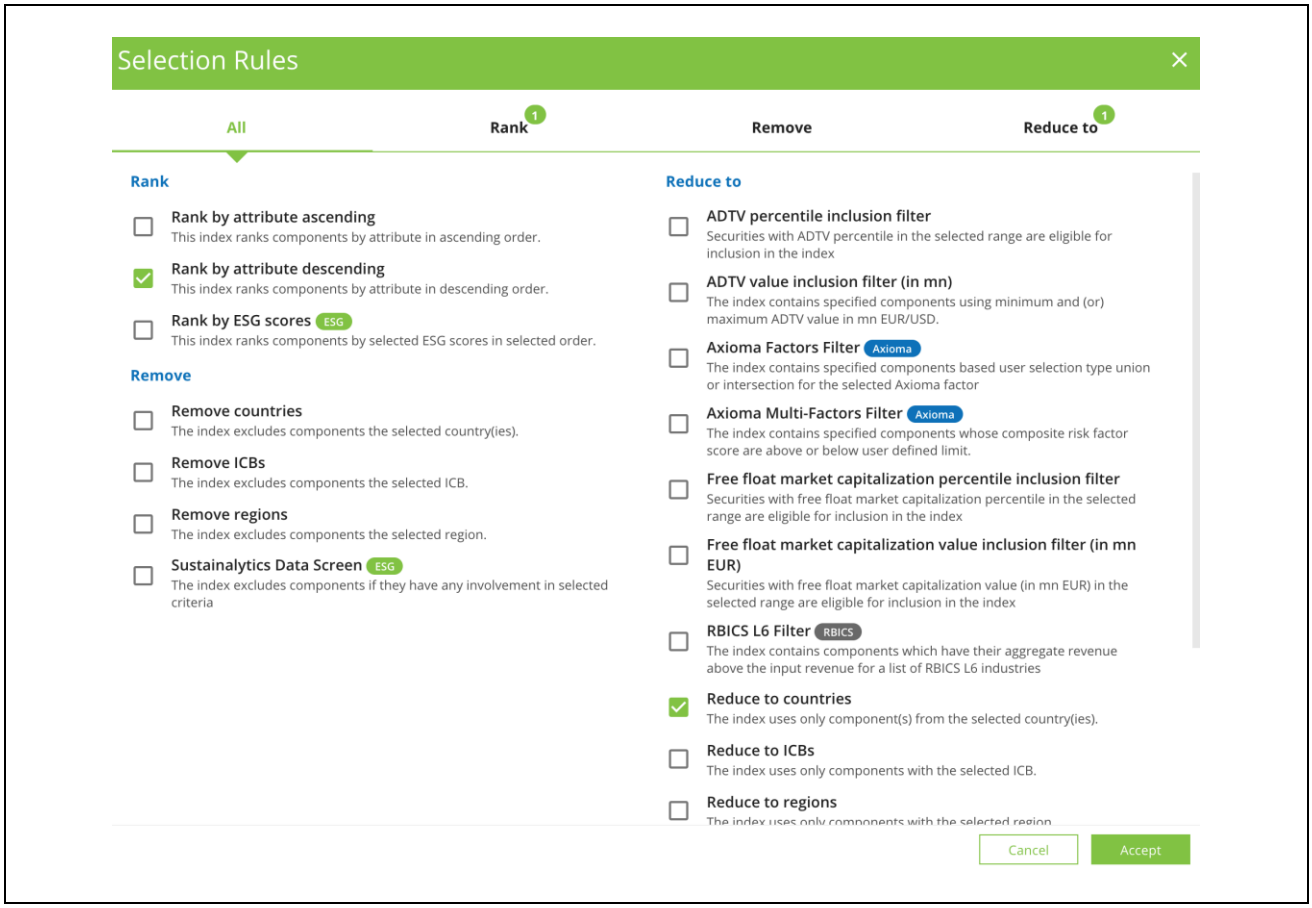

Figure 3-8. Selection Rules

Select all necessary rules from a Selection Rules pop-up window (Figure 3-8) and press the OK button. All rules will be placed under Selection Rules, each newly added rule will be placed under the selected rules.

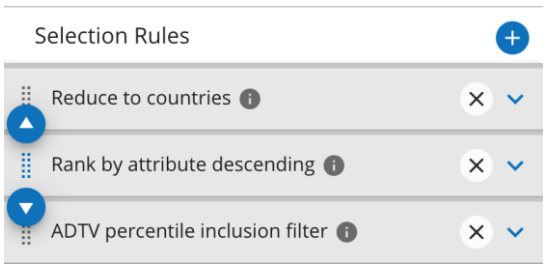

Figure 3-9. Selected rules

Depending on a selected parent index, some rules might not be available. Such rules will be disabled for choosing by the user. For example, ESG/RBICS filters are be available only for certain parent indices with ESG or/and RBICS labels in Parent Index Selector (Figure 3-6).

If two or more rules are selected, they can be re-ordered by a drag-and-drop or by special buttons to move up and down as shown on Figure 3-9. Rules can be removed or added by a user anytime during an index creation.

Sustainalytics ESG filters

There are three rules: Sustainalytics ESG Filter, Sustainalytics ESG Percentile Filter, Sustainalytics Data Screen, and Sustainalytics Product Involvement Percentage Filter.

Sustainalytics ESG Filter & Sustainalytics ESG Percentile Filter rules are dependent on each other, meaning only one of them can be selected. After selecting one of them, the other rule will become disabled.

Sustainalytics ESG Filter allows to define a score (Total ESG, Social, Governance, and Environment) threshold to filter out securities. A user can select from one to four scores and define scores (by default, the score thresholds are set to 0).

Sustainalytics ESG Percentile Filter uses the percentile rank of the score values (Total ESG, Social, Governance, and Environment) in a selection list. The formula used to find the percentile rank of the scores corresponds to Excel function (PERCENTRANK). A user can select from one to four scores and define scores (by default, the score thresholds are set to 0).

For Sustainalytics ESG Filter and Sustainalytics ESG Percentile Filter, selected options will be displayed as separate columns in Components tab (Figure 3-10).

RBICS agg. revenue	Total ESG Score	Governance Score	Social Score	Environment Score
100.0000 %	65.7300	64.7000	64.3400	68.6700
100.0000 %	53.5200	59.0400	52.8400	50.6500
19.0227 %	73.2000	72.9300	77.7100	70.3400
100.0000 %	78.7100	81.1500	70.8300	85.9800
100.0000 %	75.4100	68.4800	76.9900	82.5100

Figure 3-10. Components tab with added ESG & RBICS columns

Sustainalytics Data Screen is a rule to remove securities from an index based on Sustainalytics involvement criteria like – Overall Global Compact Compliance Status, Controversial Weapons Compliance Status (see Help section for a description), Thermal Coal, Tobacco, and Nuclear. Some criteria (Thermal Coal, Tobacco, and Nuclear) could be hidden from the list if enabled in Sustainalytics Product Involvement Percentage Filer.

Sustainalytics Product Involvement Percentage Filter is a rule that reduces securities in an index based on the following options: Compliant if no PI Data available/ Non-Compliant if no PI Data available, Tobacco Products, Nuclear, and Thermal Coal.

- Compliant if no PI Data available/ Non-Compliant if no PI Data available – a user given a choice to include or exclude securities that don't have Product involvement data provided by Sustainalytics. If the toggle button is set to Compliant if no PI Data available, then such securities will be treated as complaint and remain in an index. Otherwise, they will be excluded from the index.
- Tobacco Products, Nuclear, and Thermal Coal – have the following levels of involvement for a security exclusion: >0%, >=5%, >=10%, >=25%, and >=50%. If a security revenue exceeds from a selected Product Involvement and its level, then it will be excluded from an index. None means securities are not excluded based on a selected criterion.

Note: Sustainalytics Data Screen and Sustainalytics Product Involvement Percentage Filter have dependent fields, where one gets disabled if another dependent field is enabled. Example: if a user selects Tobacco in Sustainalytics Data Screen then Tobacco Products in Sustainalytics Product Involvement Percentage Filter will be disabled for a user selection and information message "PI criteria is currently set in Sustainalytics Data Screen rule" will be displayed.
When a user selects an option in Sustainalytics Product Involvement Percentage Filter then a dependent option will disappear from the list in Sustainalytics Data Screen.

RBICS L6 filter

RBICS L6 Filter allow a user to set RBICS Level 6 Sub-industry values to filter securities from a selection list.

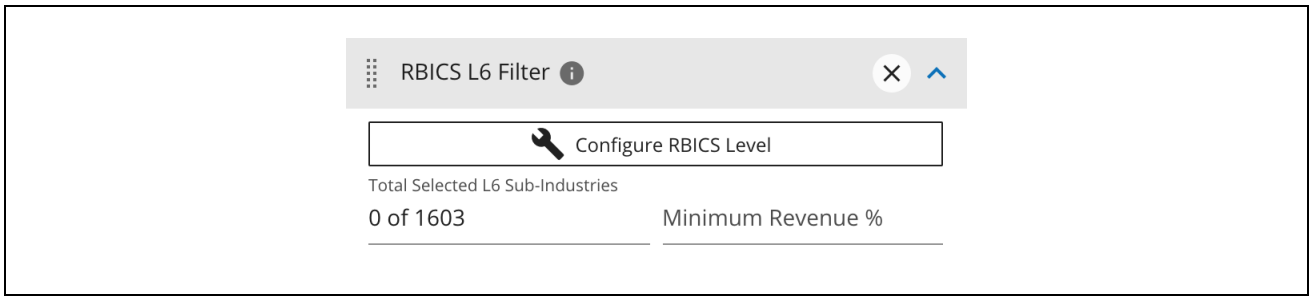

Figure 3-11. RBICS L6 Filter

Click on **Configure RBICS Level** button to set parameters on RBICS Filter pop-up window as shown on Figure 3-12. **Minimum Revenue %** field must be filled with a numeric value greater than 0 and less than 100. **Total Selected L6 Sub-Industries** shows count of selected and the total number of Level 6 industries available.

The main area contains three tabs: **Hierarchical Selection**, **L6 Sub-Industry Selection**, and **L6 Sub-Industry Manual Insert.**

- **Hierarchical Selection** structures/groups RBICS industry classifications by levels (from Level 1 to Level 6) which allows a user to find desired options by drilling down through different groups.
- **L6 Sub-Industry Selection** groups RBICS industry classification by Level 1 and allows searching for specific Level 6 sub-industry.
- **L6 Sub-Industry Manual Insert** allows a user to enter RBICS Level 6 sub-industry codes. If the code is invalid, then **Confirm** button disabled.

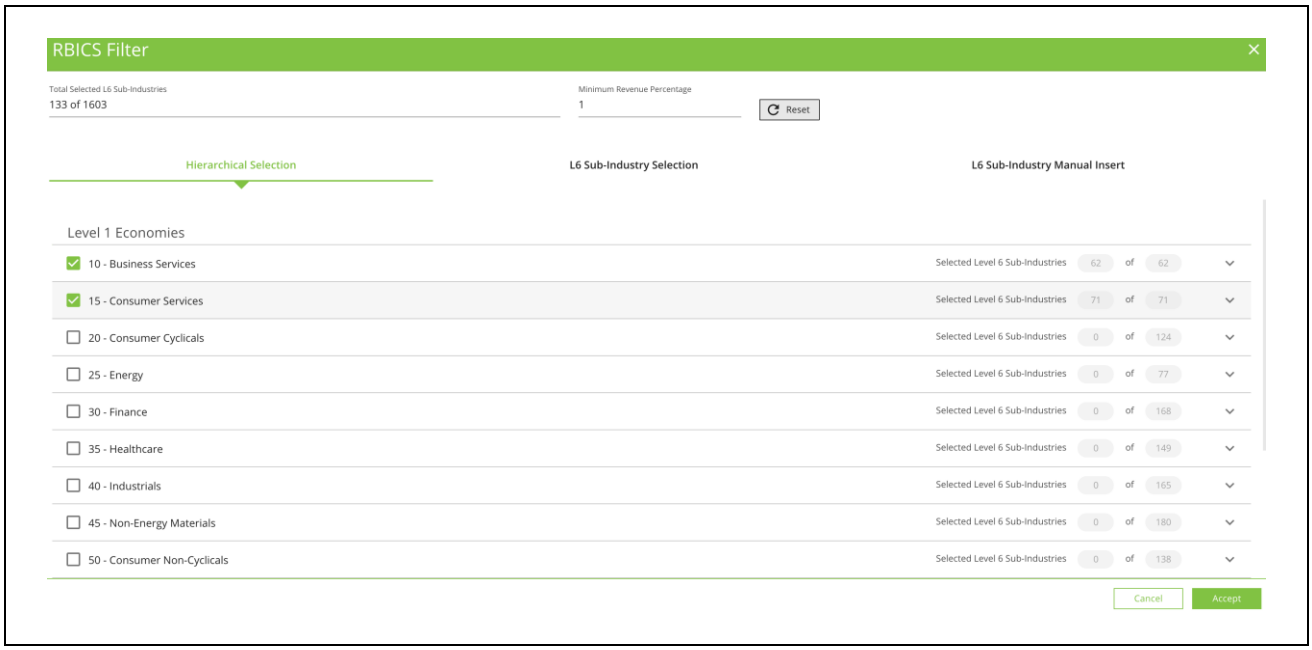

Figure 3-12. RBICS L6 Filter

ADTV filters

ADTV (Average Daily Trading Value) of a security is the average traded value in a day or over a specified duration.
There are 2 ADTV filters: **ADTV percentile inclusion filter** and **ADTV value inclusion (in mn) filter**. If one of them selected, then the second filter will be disabled for a user selection as it is not allowed to use them both at the same time.

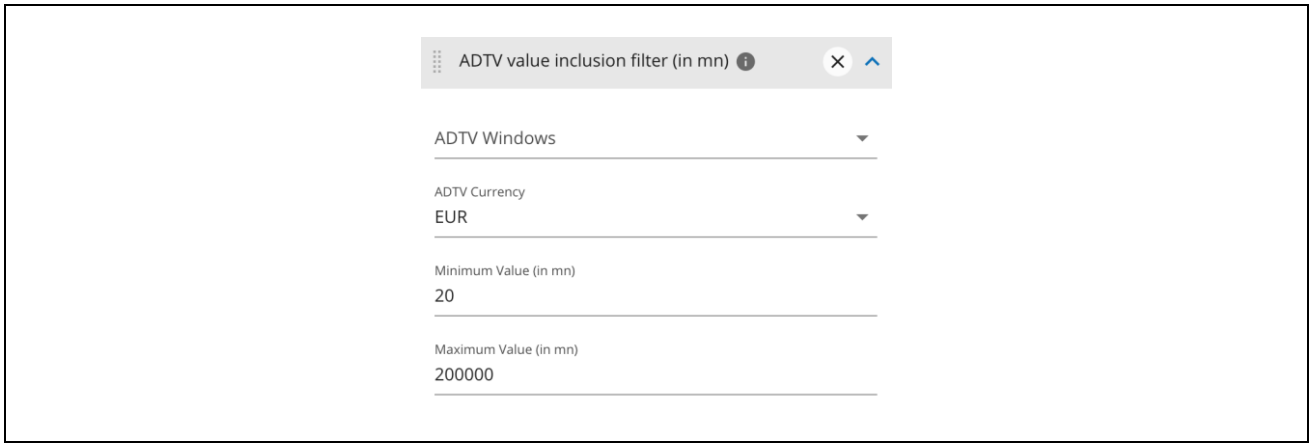

Figure 3-13. ADTV percentile inclusion filter

ADTV percentile inclusion filter allows a user to set ADTV Windows (3, 6, 9, and 12 months) and its minimum/maximum percentile values. By default, the percentile values are 0 and 100 accordingly. It is mandatory to have at least on of minimum/maximum percentile values to be set. If user sets only minimum percentile value, then a range between minimum percentile value and 100 will be considered. If only maximum percentile value is set, then a range between 0 and maximum percentile value will be considered. If both values are set, then a range from minimum percentile value and maximum percentile value inclusively will be considered. A security´s percentile value can be calculated by PERCENTRANK Excel function using ADTV values.

For ADTV value inclusion filter (in mn), the same filtering logic is applied as in ADTV percentile inclusion filter. Instead of percentile values, security´s ADTV values are used for filtering. Minimum Value (in mn) and Maximum value (in mn) with default values 20 and 200000 of a selected currency (EUR or USD) in ADTV Currency.

Free float market capitalization filters

There are 2 filters: Free float market capitalization value inclusion filter (in mn EUR) and Free float market capitalization percentile inclusion filter. If one of them selected, then the second filter will be disabled for a user selection as it is not allowed to use them both at the same time.

Free float market capitalization percentile inclusion filter allows a user to set minimum and maximum percentile values (between 0 and 100) to compare against a security´s relative percentage rank in an index. If a security´s relative rank is between the minimum and maximum percentile rank inclusive, then security remains in an index otherwise it is excluded. A security´s relative percentile rank calculation corresponds to Excel´s PERCENTRANK function.

For Free float market capitalization value inclusion filter (in mn EUR), the same filtering logic is applied as in Free float market capitalization percentile inclusion filter. Instead of percentile values, security´s Free float market capitalization value in Euro (counted in million) is used. Minimum Value (in mn EUR) and Maximum value (in mn EUR) with default values 2000 and 200000.

Axioma Factors filters

There are two filters: **Axioma Factors** and **Axioma Multi-Factors** filters available for any iStudio parent index. In **Axioma Factors Filters**, there is a list of selection factors that can be selected single or multiple options by a user. Selected options relation is defined in **Selection Type** field: **Union** or **Intersection**. **Selection Type** is enabled when two or more factors are selected. **Union** selection type selects all securities that comply with defined parameters of any selected factors into the final selection list. **Intersection** selection type selects only those securities that comply with all selected factors parameters. **Type of Screening** (Top or Bottom) and **Size of Selection** are for filtering out a list of securities. If a user selects **Top** as **Type of Screening** and 1% for **Size of Selection**, then the selection list that is ordered by a selected factor will be reduced to top 1% with the highest Axioma scores of a selected factor.

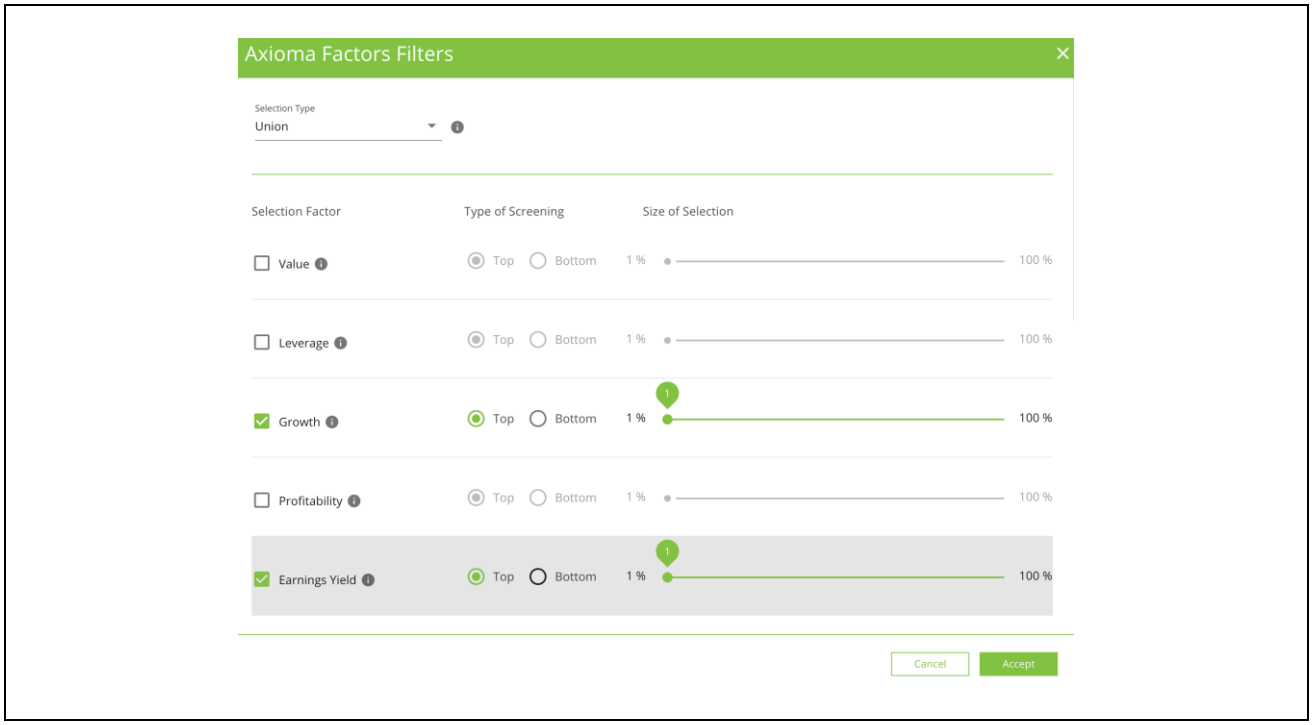

Figure 3-14. Axioma Factors Filter: Configure Factors window

Axioma Multi-Factor Filters

This filter consists of **Type of Screening**, **Size of Selection,** and **Selection Factor** with **Weighting** components. **Type of Screening** and **Size of Selection** values are applied to the composite score that is calculated based on selected factors (values range from -100 to 100, 0 is excluded). As a result, a selection list will be reduced to the size defined in **Size of Selection**. The composite score for a single factor is calculated by multiplying a selected factor's score to a user-defined value in **Weighting**. If multiple factors are selected, then after multiplication to **Weighting** values they will be added with each other to compute the composite score. Selected Axiom factors will be displayed for each security on **Components** table.

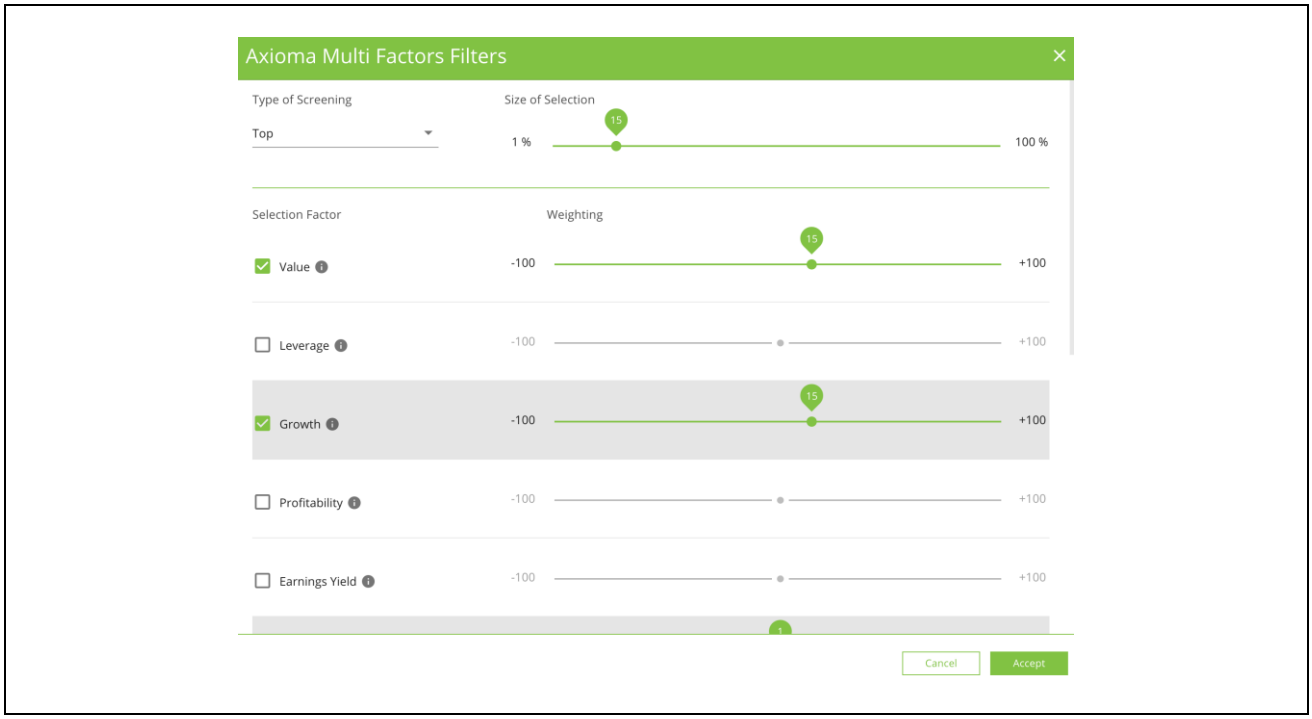

Figure 3-15. Axioma Multi-Factors Filter: Configure Factors window

iii. Review Calendar

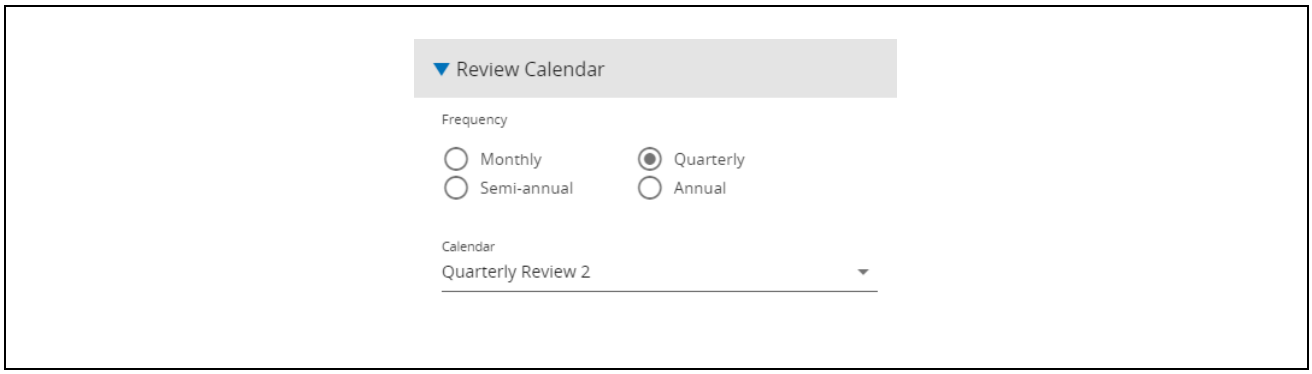

Figure 3-16. Review Calendar

It is mandatory to select an option in the **Review Calendar**. For each **Calculation Calendar** (Europe, Asia, Americas), there are calendars grouped by frequencies (monthly, quarterly, semi-annual, an annual) as shown on Figure 3-16. Review Calendar selection impacts on Rebalancing Calendar options, this dependency will be described in the next chapter.

iv. Review Weighting

Select one of the options in **Weighting Scheme**: **Equal Weighted**, **STOXX Free Float Market Capitalization Weighted**, **STOXX Total Market Capitalization Weighted**, **Attribute tilted Weighted**, and **Attribute Weighted**.

- Equal Weighted: securities weights are distributed equally at the periodic index review
- STOXX Free Float Market Capitalization Weighted: securities weights are determined by Free-Float Market Capitalization value.
- STOXX Total Market Capitalization Weighted: securities weights are determined by Total Market Capitalization value.
- Attribute Weighted: securities weights are determined by a selected attribute from a list in the Attribute for weighting field.
- Attribute tilted Weighted: securities weights are proportional to the product of their free-float market capitalization and the attribute selected from a list in Attribute tilted ffmcap weighting field.

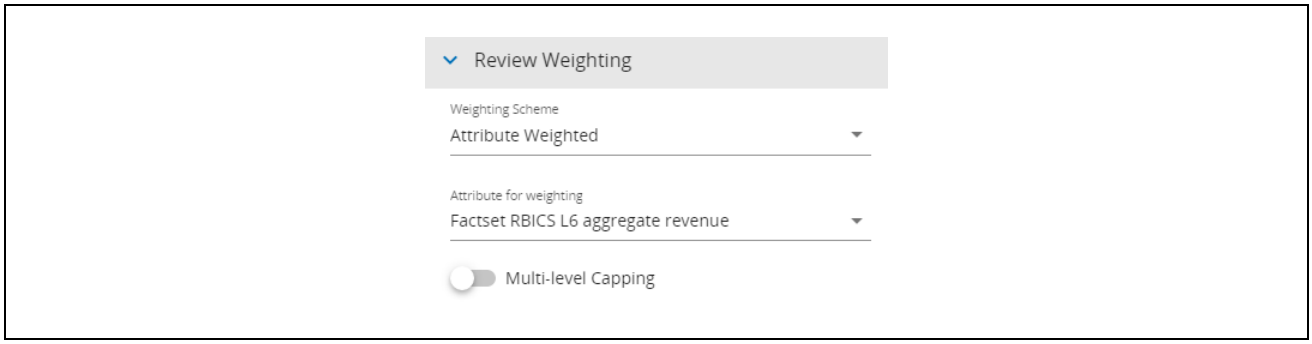

Figure 3-17. Attribute Weighted scheme selection

Attribute Weighted and Attribute tilted Weighted both the same attribute options that only work with ESG and RBICS selection rules. Hence, these weighting schemes are only compatible with parent indices that come with Sustainalytics ESG and FactSet RBICS data. A user can differentiate such parent indices by ESG/RBICS tags in Parent Index Selector component or refer to Table 3.1.

Factset RBICS L6 aggregate revenue attribute can be used only when RBICS L6 Filter selection rule is defined. Otherwise, it shows "RBICS rule cannot be used in weighting without being used in selection" error message after running a backtest calculation.

Environmental Z score, Social Z score, Governance Z score, ESG Z score, Environmental score, Social score, Governance score, ESG score attributes are disabled for a selection if a selected parent index is not provided with Sustainalytics ESG data. If a parent is provided with ESG data, then a user can select one of them and run a backtest. In case, Sustainalytics ESG filter selection rule has not been defined prior to a backtest calculation, it will be added automatically with the same parameter as the attribute in Attribute Weighted or Attribute tilted Weighted with the default value of 0.

Note: Difference between a score and Z-score for Environmental, Social, Governance, and ESG attributes of Attribute Weighted and Attribute tilted Weighted schemes is in a method of a security weighting calculation.
When a user selects one of Environmental, Social, Governance, and ESG scores, a security weight is calculated by dividing the security's score by a total sum of scores of the securities in an index.

For Z-score attributes, the first Z-score will be calculated for each security based on its score and mean/standard deviation values of the index (score – mean then divide by standard deviation), i.e. for **Social Z score** attribute Z-score will be determined based on Social scores provided by Sustainalytics. Then a security's weight will be calculated by dividing its Z-score by a total sum of Z-scores in the index.

Multi-level capping

By enabling it, a user can define constraints on a security, sector and country levels.

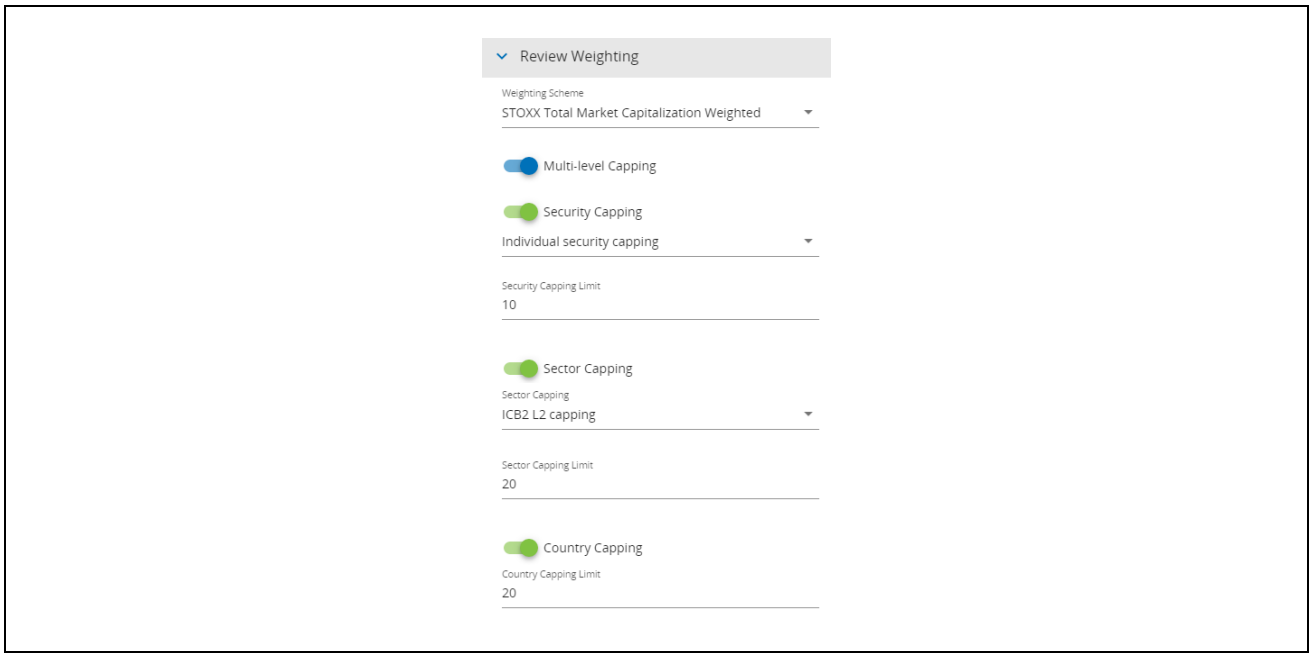

Figure 3-18. Multi-level capping

Security Capping

It offers the following options: **Individual security capping**, **STOXX standard 30%/15% capping**, **Simplified 30%/15% capping**.
Individual security capping limits each security's weight to the value defined in **Security Capping Limit** field (default value is 10). **Security Capping Limit** accepts values from 0 to 100 inclusively. **STOXX standard 30%/15% capping** and **Simplified 30%/15% capping** is both limits the largest component to 30% and the second largest component's weight to 15%. Difference is that **Simplified 30%/15% capping** does not have Intra review capping.

Sector Capping

It offers the following options: **ICB2 L1 capping**, **ICB2 L2 capping**, **ICB2 L3 capping**, **ICB2 L4 capping**. Sector capping limits the number of securities by ICB2 sectors on different levels by defining maximum allowed securities per selected ICB2 option in **Sector Capping Limit** field.

Note: ICB (Industry Classification Benchmark) is a classification provided by FTSE which groups companies that have similar primary revenue sources. In the capping rule notation, ICB2 L1 refers to ICB Industry, ICB2 L2 to ICB Supersector, ICB2 L3 to ICB Sector, ICB2 L4 to ICB Subsector, respectively.

Country Capping

It limits a number of securities per country to the maximum allowed value defined in Country Capping Limit.

Note: all three capping rules in Multi-level capping can be used in any combination. Also, securities' weights shown on Components table can sometimes exceed the defined capping parameters due to weight capping is calculated with different closing prices before review implementation.

3.3 Project Rebalancing

Project Rebalancing consists of two sections: Rebalancing Weighting, Rebalancing Calendar. Project Rebalancing is dependent on Project Review and it takes place only along with the Review process. Therefore, it is not a mandatory section compared to Project Review.

i. Rebalancing Weighting

Select one of three options for Weighting Scheme: Same as Review, Only Capping, and None as a default option.

- Same as Review: when it is selected no need to provide any additional parameters, overrides settings from Review Weighting.
- None: when it is selected no need to provide any additional parameters.
- Only Capping: when it is selected, the user is required to define the Capping option. There are three capping options: None, 30%-15% Capping, Simplified 30%-15% Capping, and Individual Security Capping. For Individual Security Capping, there is an additional field, capping percentage, that takes numeric values between 0 and 100 exclusively.

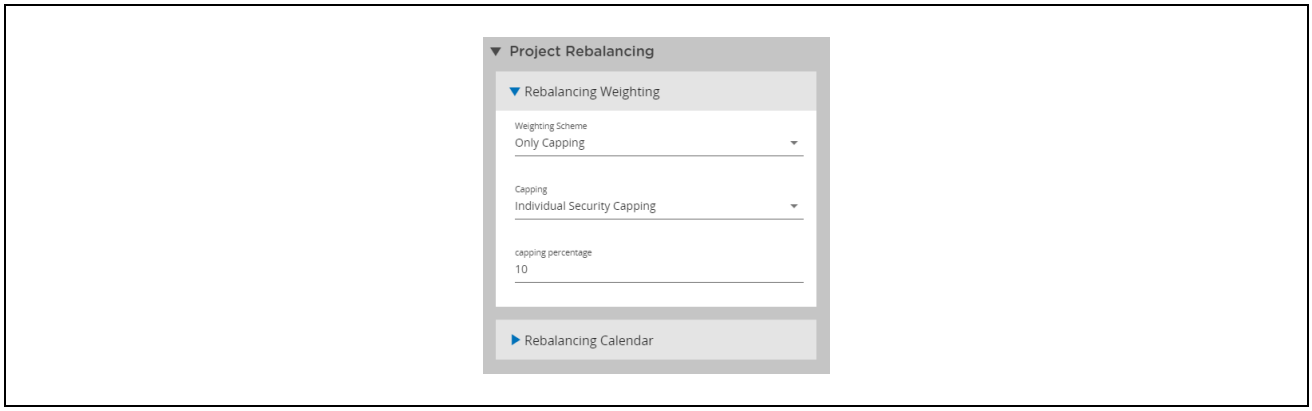

Figure 3-19. Only Capping scheme

ii. Rebalancing Calendar

As mentioned in the previous chapter 3.2, **Rebalancing Calendar** is dependent on **Review Calendar** selected option. **Rebalancing Calendar** frequency must be smaller than **Review Calendar** frequency. So, Monthly < Quarterly < Semi-annual < Annual.

For example, if in **Review Calendar**, a user chooses a quarterly option, then for **Rebalancing Calendar** – only monthly calendar options will be available. If a user selects a monthly calendar in **Review Calendar**, then for **Rebalancing Calendar**, there will be a message – "There are no rebalancing calendar options available for the selected review calendar" as a **Monthly** frequency is the smallest.

Note: **Rebalancing Calendar** is enabled only for the **Only Capping** and **Same as Review** weighting schemas. For None weighting scheme, it is hidden for a user. If a Review Calendar is not defined, then a message "A review calendar has to be selected first" will be displayed.

3.4 Project Maintenance

Select one of the replacement rules for a deleted stock from an index. Replacement rules are only used in case of indices with a fixed number of components. In case of any delisting of security takes place in between the review dates, that security should be replaced as per selected replacement rule. **No Replacements** is a default option and can be applied for both: fixed and non-fixed indices. **Replace by highest ranked non-component** is available for index projects with fixed number of components and used to replace deleted securities with the highest ranked securities from a selection list.

4. Backtesting

4.1 Historical Index Values

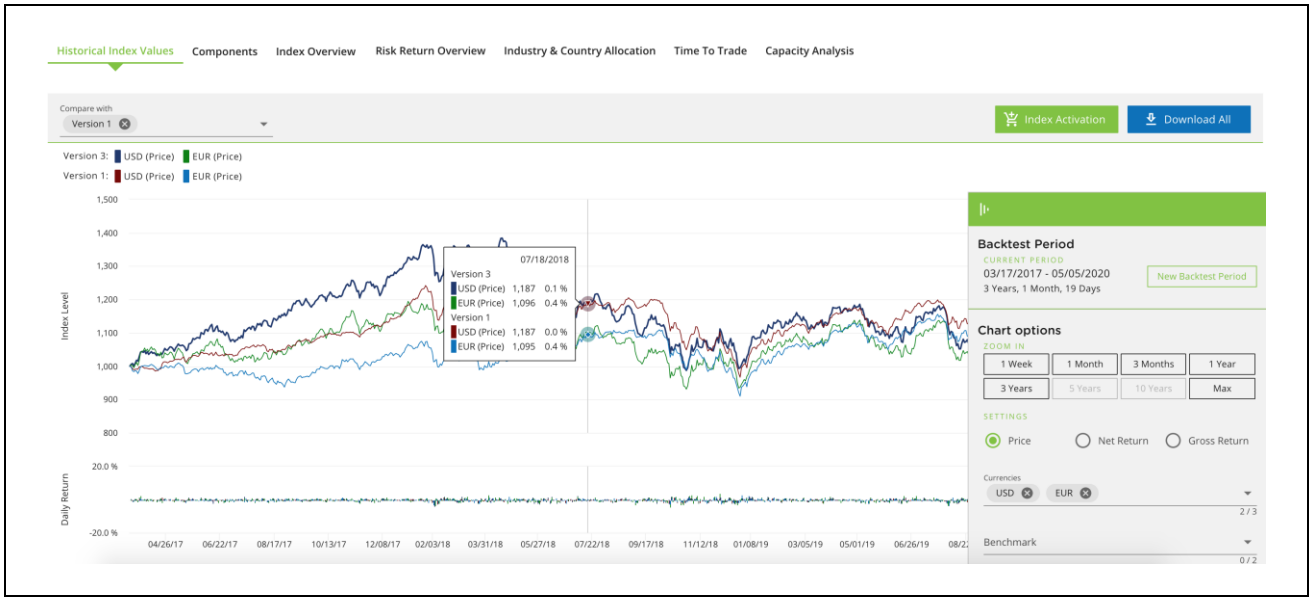

Figure 4-1. Historical Index Values tab with enabled Compare functionality

This tab will be shown after the backtest calculation is completed. Project name, its version, and issues related to the index divided by severity (Error, Warnings, Info and their overall counts) displayed on the top. Compare with will appear after creating other versions of the same index project and contains a list of all current index versions. It allows to compare the current version with the previous versions. Index Activation button will be described in Chapter 6. Click on Download All button to get all backtest data in CSV format for a current index version.

Settings

Settings is an expandable panel on the right side of the chart area. Initially, it is hidden to maximize the chart area. It allows us to set a new backtest period, zoom the chart, display returns and price, select currencies and benchmark indices for comparison.

i. New Backtest Period

Main area is occupied with the charts. The charts will display daily Price, Net and Gross returns over the Backtest period. Each line represents a return type in one of a selected currency.
By default, the Backtest period is set to 3 years when running it the first time. A user can modify the Backtest Period or from a calendar by clicking New Backtest Period. Changing the Backtest Period will trigger the backtesting calculation when the user clicks on Start Backtest button on the calendar. Changing the backtest period does not create a new version of the index project.

ii. Zooming buttons

Allows viewing data on the chart for a week, a month, 3 months, a year, 3 years, 5 years, 10 years or a maximum available from the last day of the Backtest Period by clicking on **1 Week**, **1 Month**, **3 Months**, **1 Year**, **5 Years**, **10 Years**, **Max** buttons respectively. **Max** button will plot charts for a maximum available period.

Note: some buttons might be disabled due to the unavailability of data for a defined period, like 10 years. In this case, **5 Years** and **10 Years** will be disabled and not clickable (Figure 4-2).

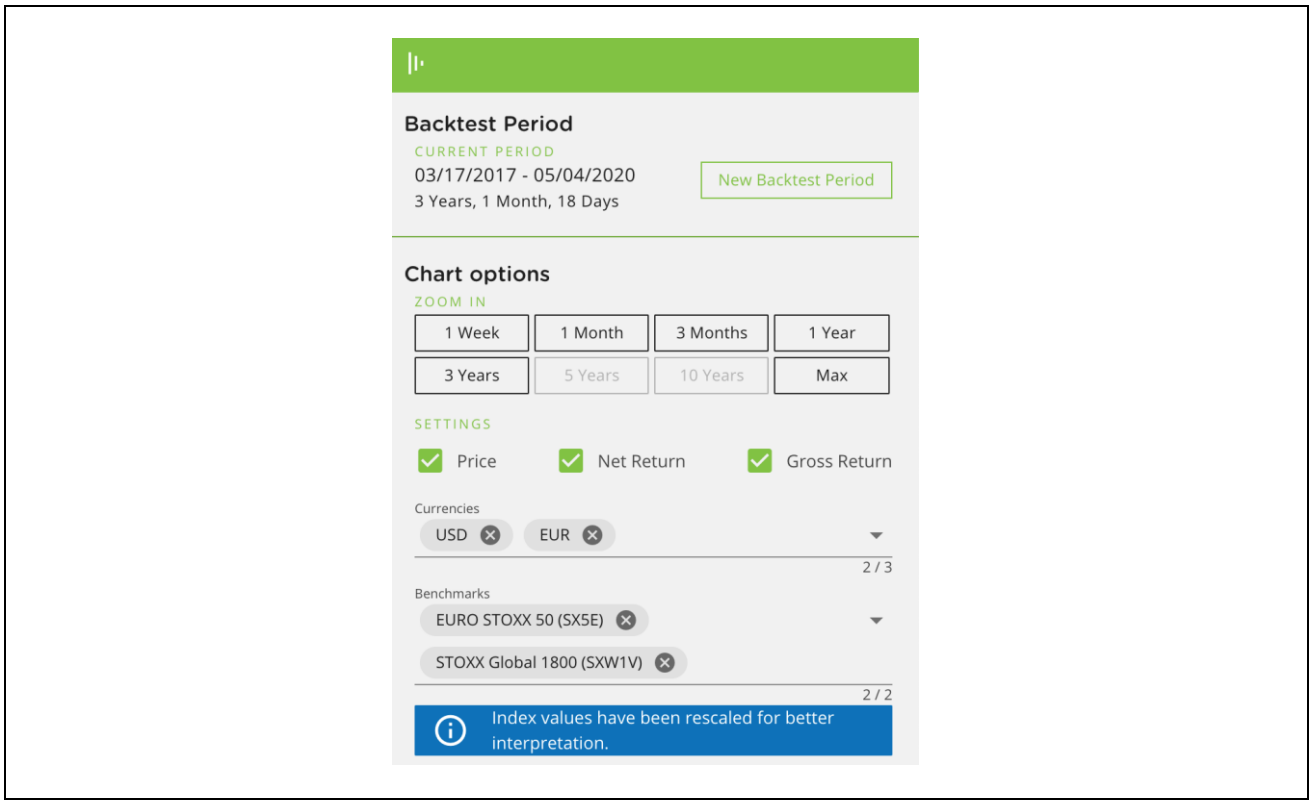

Figure 4-2. Settings

iii. Price, Net Return, Gross Return & Currencies

A user can select/unselect return types (Gross, Net), price (Price) and currencies on the chart. For Currencies, up to three types of currencies can be displayed at a time.

iv. Benchmark

Select up to two indices from **Benchmark** dropdown list or click on filter symbol to open a Benchmark Selector window (Figure 4-3). Selected benchmark index will be plotted in the chart area along with a created index. On Benchmark Selector, benchmark indices can be filtered out by

region, currency, and return type. It is disabled if two benchmark indices are selected. Also, a user can search by a benchmark name and symbol.

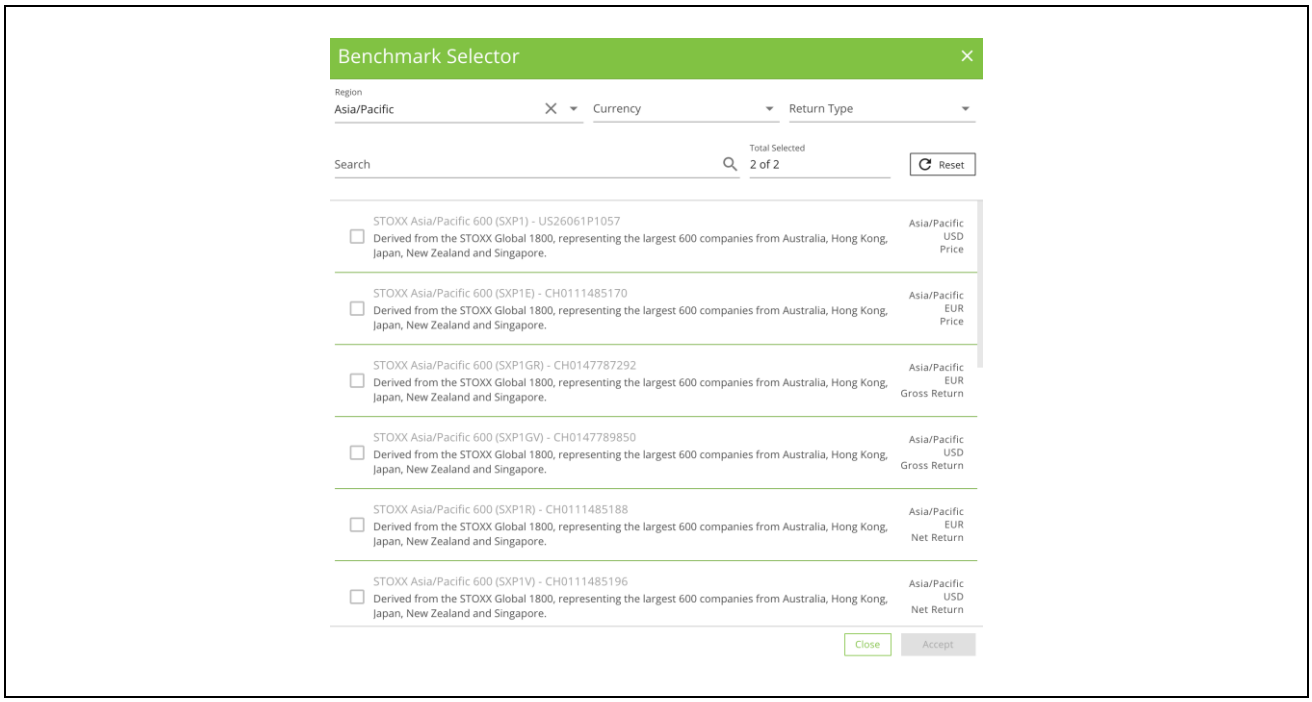

Figure 4-3. Benchmark Selector

4.2 Components

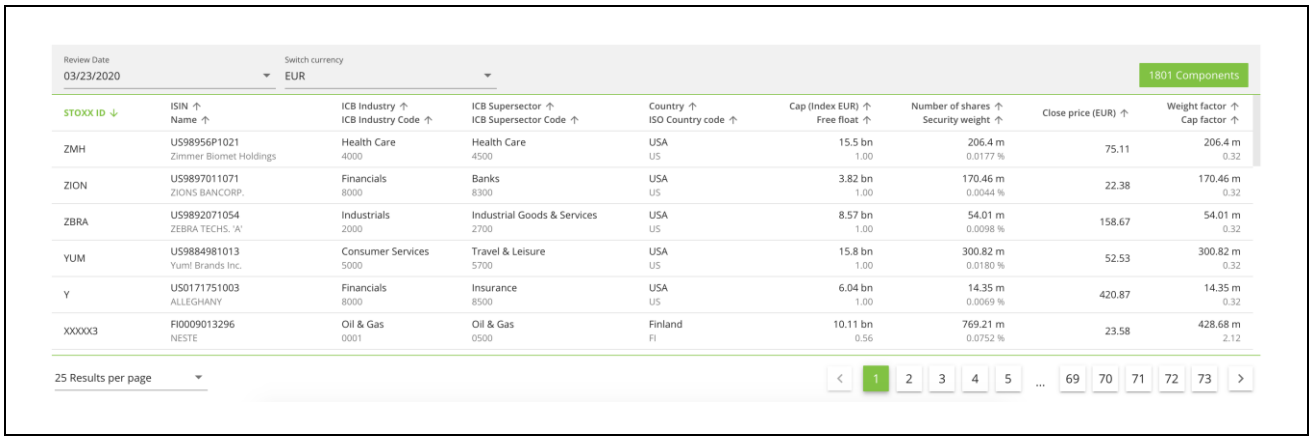

Figure 4-4. Components tab

On this tab, the user can see a list of components in the current index version with all related information as of the date selected in **Review Date**. The review date can be changed from the drop-down list above the components table (Figure 4-4). Each column allows ordering in ascending or descending order by clicking on an arrow: up – ascending and pointed down – descending order. Select the needed date in **Review Date** to view component details on that selected date.

Search bar allows searching across all columns in Components. Matching rows will be displayed dynamically as the user will type in Search. On the top right corner, a user can view number of components in the current version of an index as of selected Review date.
Switch currency provides a list of currencies: AUD, CAD, CNY, EUR, JPY, and USD. By selecting one of them, a user gets all numeric figures in Euro to be converted into a selected currency. By default, Components tab shows in Euro.

4.3 Index Overview

Index Overview consists of four tiles that provide aggregations for the current index version as of Review Date: Annual Returns, Top 5 Countries, Top 5 Industries, Turnover, and Number of Components.

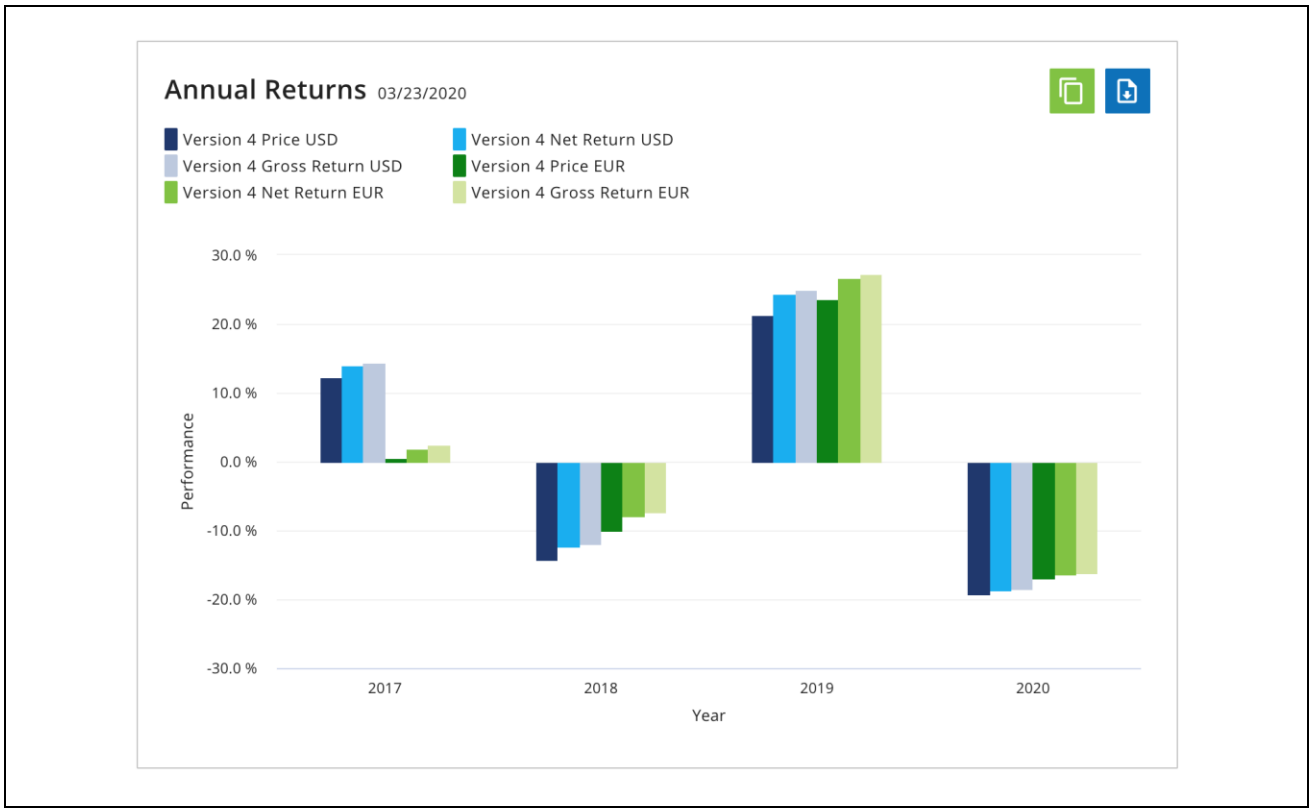

Figure 4-5. Annual Returns for a selected review date

i. Annual Returns

Annual returns per year for Gross return, Net return, and Price of the current index version. The data can be copied into clipboard or downloaded in CSV format by clicking on the buttons on the right top corner (Figure 4-5). For more details, refer to STOXX Statistical Calculations Guide, Ch 3.2.

ii. Top 5 Countries

Top 5 countries and their weights in the index as of Review date for the current index version. The data can be copied into clipboard or download in CSV format by clicking on the buttons on the right top corner.

iii. Top 5 Industries

Top 5 industries and their weights in the index as of Review date for the current index version. The data can be copied into clipboard or download in CSV format by clicking on the buttons on the right top corner.

iv. Turnover

Displays turnover percentage for available review dates of the index. The data can be copied into clipboard or downloaded in CSV format by clicking on the buttons on the right top corner. For more details, refer to STOXX Statistical Calculations Guide, Chapter 4.4.

v. Number of Components

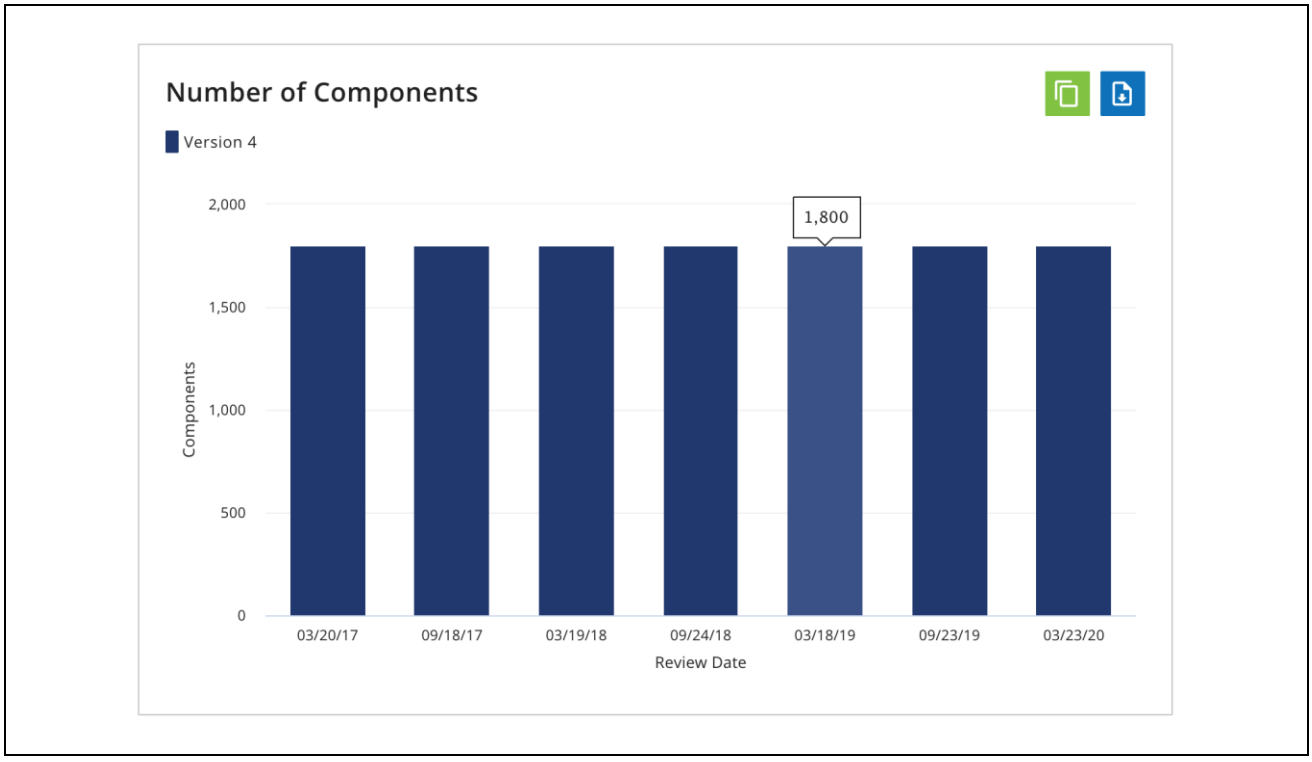

Figure 4-6. Number of Components shows number of components in an index as of Review dates for current version

It shows a total number of components at each review date for the current index version. By hovering over bars, a user can see a number as it shown on Figure 4-6.

5. Analytics

5.1 Risk Return Overview

Figure 5-1. Risk Return Overview for Price in EUR and comparison with benchmark indices

This tab provides risk-return related metrics defined by Net Return, Price and Gross Return for an index as well as for a selected benchmark index calculated in selected currencies. A user can select/deselect currency and return types. Also, there are download and data copy functionalities available (Figure 5-1).

Benchmarks provides a list of benchmark indices that can be added (up to two) in the table for comparison. Risk return metrics categories: Return actual, Return annual, Tracking error annual, Volatility annual, Dividend yield, Max Drawdown. For Tracking error calculation guidance refer to STOXX Reference Calculation Guide, Chapter 3.6.

Tracking error provides the index developer insights into the index returns against a benchmark. Low tracking error means a portfolio is closely following its benchmark. High tracking errors indicate the opposite. Thus, tracking error gives a sense of how volatile the index is relative to its benchmark.

Tracking error annual statistics are calculated for 1 year, 3 years, 5 years, 10 years and full history time periods based on a backtest calculation. If a backtest calculation duration is 3 years, then the tracking error annual statistics for 5 and 10 years will be shown as “n/a”. Also, a user sees “n/a” for the tracking error when a benchmark index is not selected.

5.2 Industry & Country Allocation

Figure 5-2. Country and Industry Allocation

This tab provides aggregations by countries and industries allocations as of Review Date. Each allocation can be saved as a CSV file or copied into the clipboard by click on right top buttons. Select different dates from Review Date dropdown list, changes will be applied dynamically on the diagrams.

5.3 Time To Trade

Figure 5-3. Time To Trade

Time To Trade provides a number of days needed to fully exit a position in the relevant stock (Security Name) for a given level of investment (Notional Value) and its weight in an index (Security weight) using 25% of Average Daily Traded Value (ADTV) as of selected review date (Review Date) and an index version. By default, a user sees the table as of the latest review date.

Each column can be sorted in ascending/descending order by clicking on an arrow button. Top 5/Bottom 5 of an index can be sorted by clicking on a 25% ADTV Days arrow button. A downwards arrow will sort in descending order and upwards arrow vice a verse. Search field dynamically updates the table when a user starts typing. Typed characters will be compared with all columns.

5.4 Capacity Analysis

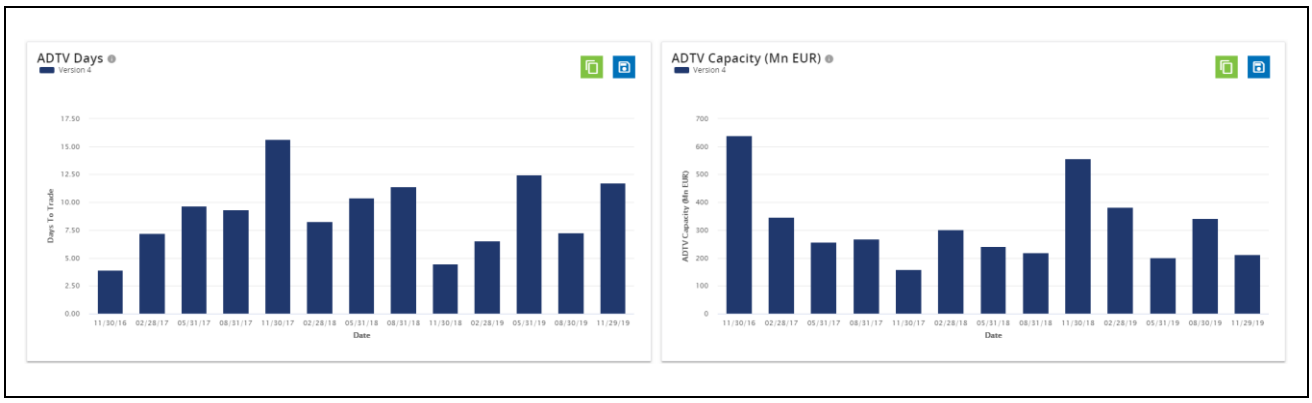

Figure 5-4. Capacity Analysis tab – ADTV Days and ADTV Capacity (Mn EUR) statistics

Capacity Analysis tab contains two charts: **ADTV Days** and **ADTV Capacity (Mn EUR)**. Each chart has two buttons on the top right corner: copy data into a clipboard and save data as a CSV file.

ADTV Days calculated as the count of days needed to fully trade out of 1 Billion EUR position using 100% of ADTV over dates with a frequency of 3 months (end of a month). **Days To Trade** axis represents the number of days and **Date** axis is for date series with a 3-month frequency.

ADTV Capacity (Mn EUR) calculated as the maximum value of a position that can be fully exited over 5 days using 50% of ADTV. **ADTV Capacity (Mn EUR)** axis represents a value of a position in million Euro. **Date** axis as for **ADTV Days** represents dates with a frequency of 3 months.

6. Index Activation

After running a backtest, in **Backtesting** -> **Historical Index Values** page, there is **Index Activation** button available for indices without any issue (**Launch ready** status). The user can set proper index name and its description, add additional services, get a total price for the index, and submit it to activate. Index Activation consists of three steps: **Index Information**, **Launch Options**, and **Activation Request**.

i. Index Information

- Index Name: **Project Name** becomes editable, so the user can set a final index name that will be checked by STOXX and used as it goes live. Same naming rules applied as for **Project Name** in Chapter 3.1.
- Description: enter index description which must be a minimum of 50 characters. After reaching 50-character length, **Continue** button will become clickable. Press **Continue** after both fields are filled.

ii. Launch Options

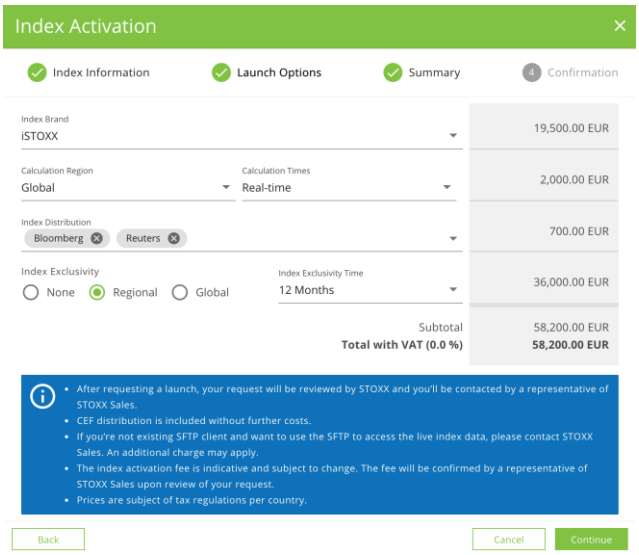

Figure 6-1. Launch Options

- Index Brand: a user can choose only one option from the list: iSTOXX (default option), Omnient. This will determine a license fee.
- Calculation Region: a user can choose only one option from the list of Calculation Regions for an index: Europe (default option), Asia/Pacific, America, and Global. More details in STOXX Calculation Guide, Chapter 3.
- Calculation Times: a user can choose only one option from the list for an index: End-of-Day (once a day at the end of the index dissemination period) and Real-time (every 15 seconds during the index dissemination period).
- Index Distribution: one or more options are selectable from the list: Bloomberg, Reuters.
- Index Exclusivity: a user can choose an exclusivity for an index (Regional or Global) and period until the exclusivity expires by selecting Index Exclusivity Time option 12 months or 24 months.
- Price Indications: a user can see a price for each selected option instantly once selected, Subtotal and Total with VAT prices before continuing to the next step.
- Back, Cancel, and Index request buttons: Back is to return to the previous step Index Information, Cancel is to abort Index Activation process, and Index request will send an index details for activation (Figure 6-2). User will be notified about successful request on Activation Request step.

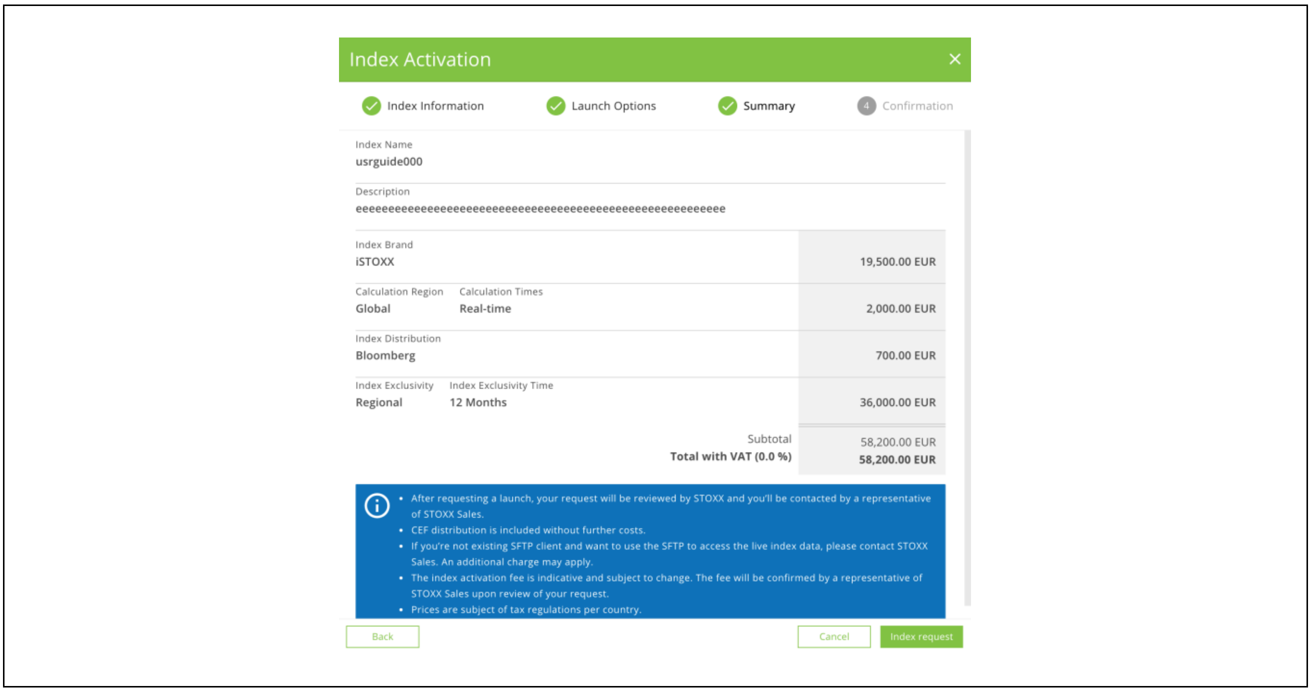

Figure 6-2. Index Request

7. Finder

Finder page provides a user with a list of existing index projects with their version number, status, issues, creation date, and creator details as shown on Figure 7-1. Index projects list view can be optimized with two toggle buttons on the top of the table: first toggle - My Projects (default), second toggle - Only Latest Version (default).

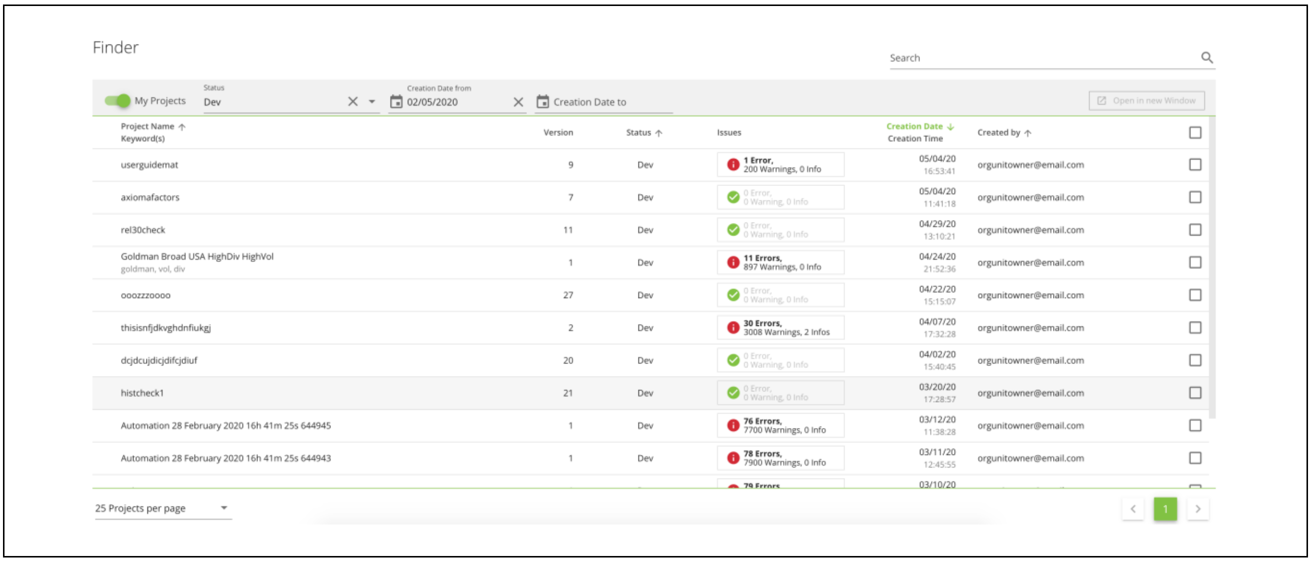

Figure 7-1. Finder page

- The toggle button can be switched between **My Projects** and **All Projects**. **My Projects** option displays only projects that have been created by a user. While **All Project** option will display all projects within a user´s organization.
- **Status** allows to filter index project by their status: **Dev, Launch Ready, Internal Review, Implementation, Implementation Complete**, and **Live** (more details on an index status: Appendix B)
- **Creation Date from** and **Creation Date to** allows to filter index project by their **Creation Date**
- Search bar is used to search for specific index project by its name or **STOXX ID**.
- **Issues** shows all issues related to the index project grouped into three groups: **Errors**, **Warnings**, **Info** as shown on Figure 7-2.
- **Status** of the project can be **Dev**, **Launch ready, Internal review, Implementation, Implementation complete** or **Live** depending on its state. Live projects can´t be edited.

To see all issues related to the index version, click on a link with errors, warnings, and info (Figure 7-2). All issues are grouped by severity in separate tabs: **Errors**, **Warnings**, and **Info**.
The user can fix issues in the index by referring to **Issue Type** column to get details. Each issue type is explained in Appendix C. **Int. Key** refers to the internal key of a component in an index, i.e. a unique security identifier.

All issues are grouped by severity in separate tabs: **Errors**, **Warnings**, and **Info**. The user can fix issues in the index by referring to **Issue Type** column to get details. Each issue type is explained in Appendix C.

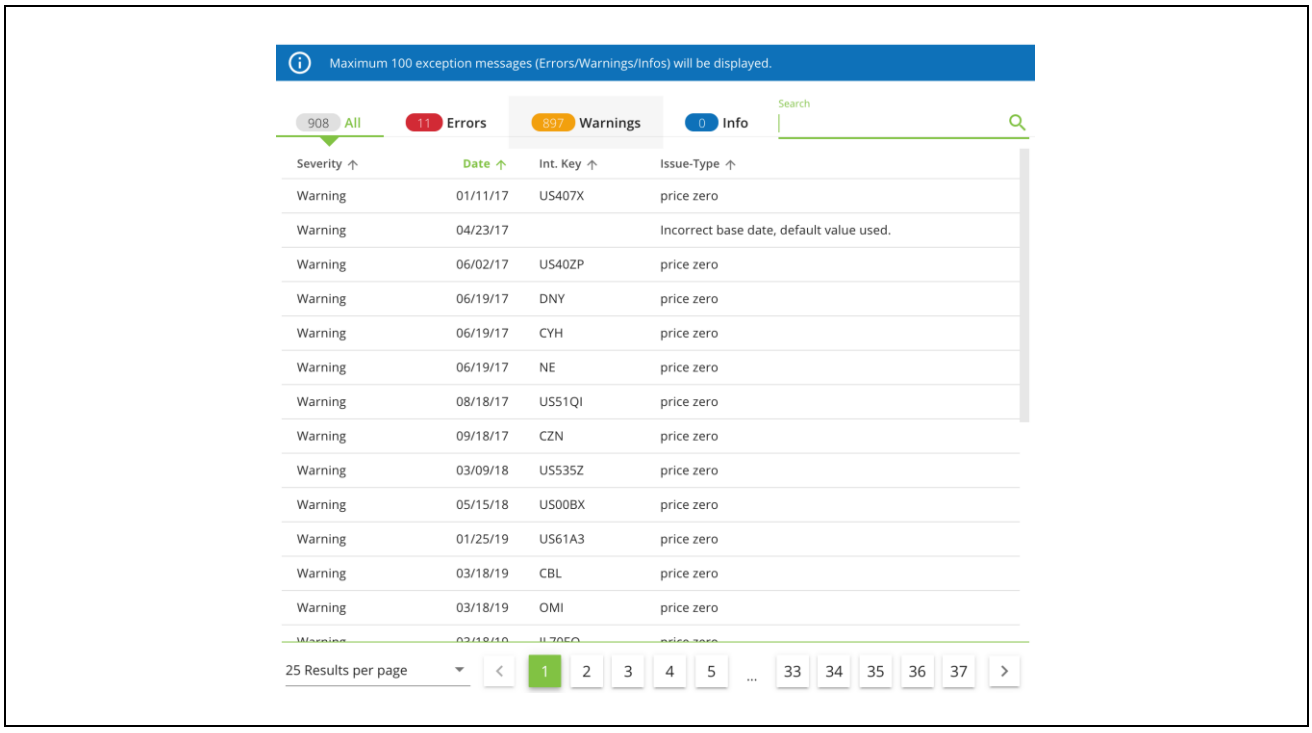

Figure 7-2. Issues pop-up window

8. My iSTUDIO

Users can change current session settings in My iStudio – language, time zone, number/date formats and calendar. Any change made will be applied immediately and saved permanently for the next session.

Figure 8-1. My iStudio page

- Timezone – all date and time data will be adjusted to the selected time zone dynamically.
- Calendar – a user can choose the first day of the week: Sunday or Monday.
- Date and Number formats – a user is given several format options on date, time and number formats with a preview feature (when an option is selected, a user can see an example to it).
- Theme – a user picks one out of Light, Dark, and High Contrast color schemes for a better user experience

9. Help

Help page contains a glossary, an alphabetical list of terms with the definitions.

- Go to allows to select a letter and only those terms that start with the letter will be displayed.
- Search bar is used to find specific term from the glossary.
- User Guide button opens this document on the new tab.
- Download as CSV button lets a user download the whole glossary in one file (CSV).

10. Appendix A: Reference materials

- STOXX Index Methodology Guide - https://www.stoxx.com/document/Indices/Common/Indexguide/stoxx_index_guide.pdf
- STOXX Calculation Guide - https://www.stoxx.com/document/Indices/Common/Indexguide/stoxx_calculation_guide.pdf
- STOXX Statistical Calculations Guide - https://www.stoxx.com/document/Indices/Common/Indexguide/stoxx_statistical_calculations_guide.pdf
- STOXX Reference Calculations Guide - https://www.stoxx.com/document/Indices/Common/Indexguide/stoxx_statistical_calculations_guide.pdf

11. Appendix B: Index status

Status	Description
Dev	Initial status of any index with any error associated to it.
Launch ready	An index that runs backtest without any error.
Internal review	A state at which the client-driven backtest and index activation parameters are reviewed internally by STOXX stakeholders for approval.
Implementation	A state at which the client-driven backtest and index activation parameters are reviewed internally by STOXX stakeholders for approval.
Implementation complete	A state where index setup implementation is complete and is ready for external launch
Live	State at which the index is now externally launched and disseminated.

12. Appendix C: Issue types

Issue name	Description
price missing	When price data for security is missing in a database for a given backtest period. It is fixed internally on the database level.
freefloat missing	When free-float data for security is missing in a database for a given backtest period. It is fixed internally on the database level.
batch cancelled	When historical data calculation stops for an index version during a backtest.
Market capitalization and Divisor zero	When some parameters (e.g. close price) for security is missing in a database for a given backtest period, so it causes calculation failure of the market capitalization values then divisor being calculated as 0. It is fixed internally on the database level.
No components in portfolio	When there is no component in an index due to user-defined selection criteria/filters.
Portfolio does not contain this date	When data is not available for a given backtest period. It is fixed internally on the database level.
Divisor is zero (0) Calculation cannot proceed	When some parameters (e.g. security open price) are invalid or missing that lead to the divisor being 0. It is fixed internally on a database/API level.
Date in input file is not a trading day	For a file-based backtest, when a composition file contains date that is non-trading day according to a selected calculation calendar. Fixed on a composition file level.
weightfactor missing	For a file-based backtest, when a composition file does not contain weigtfactor column values for a price weighted index. Fixed on a composition file level.
price zero	When a security price is 0. It is fixed internally on the database level.
less than 10% of components found	When more that 90% of securities are no found for a given backtest period. Make sure all securities are available and not deleted between start and end date of a backtest.

forex missing	When forex rates are missing for selected currencies during a backtest. It is fixed internally on the database level.
shares missing	When shares data for security is missing in a database for a given backtest period. It is fixed internally on the database level.
component not found	For a file-based backtest, when security in a composition file cannot be matched with any security in a database by STOXX ID (ISIN, SEDOL). It is fixed by either checking the correctness of details in a composition file or removing it.
Components are not ranked. Forgot a ranking rule?	When no ranking rule applied for a project with a fixed number of components. Add a ranking rule and define Tie breaking criteria. See Chapter 3, Selection.
Components have no weight.	When components have no weight on particular date/review date.
Base Date is before the oldest history date.	When a based date is set earlier than a start date of historical data. The base date will be defaulted to the date one day prior to the effective date.
No replacement could be found.	When there is no any security available to replace for an index according to defined rule in the Replacement. It happens sometimes when a selection list is not wide enough.
previous day close not available for capping.	When the previous day price is missing for a component then no market cap and no weight can be assigned which leads to an error. The component is excluded from the weight's calculations for the rest components.
No capping applied.	When a user does not define a capping.
open price missing.	When open price data for security is missing in a database for a given backtest period. It is fixed internally on the database level.
open price zero.	When an open price of a security on particular day is zero.
capping percentage not reasonable.	When a user defines capping percentage out of 0-100 range. Define within the percentage range of 0-100.

index value is negative.	When by some reason an index value is a negative value. It could be due to an incorrect value in a database.
capfactor missing	For a file-based backtest, when a composition file does not contain cap factor column values. Fixed on a composition file level.
No composition available for parent index	When there are no index data for a given backtest period. It is fixed internally on the database level.
Components after filtering less than target count.	For an index with a fixed number of components, a number of selected components sometimes could be less than a Target count. In this case, such error will be thrown. It could be fixed by making selection criteria less strict.
Upper buffer is larger than target count.	When a user sets the Upper buffer value higher than the Target count. It is fixed by reducing the Upper buffer, so it is less than the Target count.
Tie breaking and ranking criteria cannot be same.	In a rank rule, ranking criteria and Tie breaking criteria cannot be based on the same parameter. iStudio does not allow choosing the same parameters on its user interface.
Tie break is mandatory for fixed no of components	For an index with a fixed number of components, Tie breaking criteria is a mandatory field. It is fixed by adding a ranking rule and filling the field by selecting parameter from dropdown list.
Input date invalid	When a user-defined date is not valid. It is fixed by entering a valid date.
RBICS rule not provided with attribute weighting.	When a selected parent index is not provided with RBICS data. It is fixed by selecting a parent index with RBICS data. Refer to Table 3-1.
Upper buffer is larger than the lower buffer.	When a user sets the Upper buffer value higher than the Lower buffer. It is fixed by reducing the Upper buffer, so it is less than the Lower buffer.
lower buffer is less than target count and so lower buffer is not considered to create the portfolio	When a user sets the Lower buffer, value is less than the Target count. It is fixed by enlarging the Lower buffer, so it is less than the Target count.

Ranking rule not applied as index has non fixed number of components.	When a user tries to apply a ranking rule for an index with a non-fixed number of components. It is fixed by removing a ranking rule.
Invalid base value, default value used.	When a user tries to define non-numeric or negative value. In such case, Base value will be defaulted as described in Chapter 3.1
Invalid base date, default value used.	When a user tries to define invalid date or a date that is out of a backtest period. In such case, Base date will be defaulted as described in Chapter 3.1
Not able to assign securities capped weights as there are too few constituents in the portfolio.	When individual security weight exceeds the capped weight due to insufficient number of components in the portfolio. It is fixed by changing Review Weighting > Capping to None

13. Appendix D: Version history

Version	Changes/Improvements
2.1	• Sustainalytics Data Screen • Sustainalytics Product Involvement Percentage Filter • ADTV filter: percentile inclusion filter is added • Free float market capitalization filter: percentile inclusion filter is added • Backtesting Analytics tabs: Time To Trade, Capacity Analysis • Tracking error annual statistics in Risk Return Overview
3.0	• iStudio color scheme selector: Dark mode added • Multi-level capping rule • New replacement rule “Replace by highest ranked non-component” • Parent index and benchmark updates • My iStudio parameters saving • Axioma Factor Filter and Multi Factor Filter • ADTV value inclusion filter with a currency selector • STOXX Global Total Market Index (TW1P) usable in combination with RBICS L6 Filter rule • Finder enhancements: filtering and sorting functions • More benchmarks available for historical charts comparison and Risk Return Overview