

# Index Methodology Guide for the FactSet Innovative Technology Index<sup>™</sup>

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# **Table of Contents**

Index Methodology Guide for the FactSet Innovative Technology Index <sup>™</sup>	.1
Table of Contents	. 2
Index Introduction and Objective	.3
Index Construction	.4
Index Maintenance	.8
Index Calculation and Data Correction	.9
Appendix	10



## **Index Introduction and Objective**

## 1.1 Index Overview

The FactSet Innovative Technology Index is designed to provide an equity benchmark for investors to track the performance of a group of specialized and high growth companies belonging to the Technology and Electronic Media sectors. These companies are often involved in cutting edge research, innovative product and service development, disruptive business models, or a combination of these. The companies in this index generally derive a substantial portion of their revenues (50% or more) from specialized areas of Technology and Electronic Media. In addition, selected companies belong to sectors that exhibit higher growth than their peers.

The sector classification used to select Technology and Electronic Media companies is the FactSet Revere Hierarchy (the "Hierarchy"), a U.S. patented and proprietary classification system of FactSet Research Systems Inc ("FactSet")

The FactSet Innovative Technology Index is an equally weighted index calculated and maintained by the New York Stock Exchange Group (NYSE) based on a methodology developed by FactSet. It is calculated on a price and total return basis in USD. The price return values of the index are calculated and disseminated electronically at approximately 15 second intervals. The total return values of the Index are calculated on an end-of-day basis. Both sets of values are distributed via various data channels and market data vendors, including the NYSE Global Index Feed (NYSE GIF). End-of-day price and total return values of the index are also available upon request from FactSet.

Whenever possible, FactSet will announce component changes to the index at least 3 trading days before the changes becoming effective.

## 1.2 Inception Date and Base Value

The index inception date is December 16, 2011 with a base value of 100. The inception date refers to when the first back-tested index value was calculated. The back-test is based on similar methodology used to calculate the index when it was officially launched on September 17, 2015.

### 1.3 Commencement Date

The index commencement date is September 17, 2015. Commencement date refers to when the index is officially launched with real-time and end-of-day calculations.

### **1.4 Reconstitution Schedule**

The index is reconstituted annually after the close of business on the third Friday of December each year ("Reconstitution Day"). If the Reconstitution Day is a holiday, or for whatever reason the U.S. market is closed, reconstitution occurs on the next business day immediately following.



The data used to reconstitute the index is as of the last business day two weeks before the Reconstitution Day ("Review Selection Day"). Subsequent adjustment to the index composition will be made to account for corporate actions that occurred between the Review Selection Day and the Reconstitution Day.

## **Index Construction**

## 2.1 Component Selection and Weighting Schema

The following rules are used for both the initial component selection and ongoing reconstitution.

- 1. Begin with the FactSet Revere Hierarchy (the "Hierarchy") Technology and Media sectors, and identify all sector levels within these two sectors that are at a hierarchical depth of four or greater (a more detailed description of the Hierarchy is included in the Appendix).
- 2. For each identified sector level, compute the number of Focused companies in each (U.S. listed and ADR companies only).
- 3. Remove sector levels with zero Focused companies.
- 4. Compute the average One Year Annual Revenue Growth % and average 3 Year Revenue CAGR % for all remaining sector levels.
- 5. Compute a Revenue Growth Composite Score ("Composite Score") for each sector level by allocating a 0.75 weighting to the average One Year Annual Revenue Growth %, and a 0.25 weighting to the average Three Year Revenue CAGR % (a more detailed description of the Composite Score and its calculation is included in the Appendix).
- 6. Rank sector levels by the Composite Score from highest to lowest, and divide into quartile. Keep the top quartile ranking sector levels, and exclude the bottom three quartile sector levels.
- 7. Compile a list of unique, unduplicated Focused companies from the remaining top quartile sector levels in Step 6.
- 8. Remove any company in the top quartile that does not belong to the Electronic Media sector.
- Remove any company if necessary that is not a common stock primarily listed on the New York Stock Exchange (including Arca and NYSE MKT), the NASDAQ Select Market, or the NASDAQ Capital Market.
- 10. Remove any company if necessary that is a closed-end fund, exchange-traded fund (ETF), Business Development Company ("BDC"), Real Estate Investment Trust (REIT), or royalty trust.
- 11. Remove any IPO company newer than three months relative to Review Selection Day.
- 12. If a company has multiple share classes, only include the most liquid issue based on the highest three-month Average Daily Traded Value (ADTV) relative to the review cutoff date.
- 13. Remove any company that does not have a float-adjusted market capitalization that is at least USD \$500 million and a liquidity ratio above 90%; or a float-adjusted market capitalization of at least USD \$400 million and liquidity ratio above 150%. Liquidity ratio is defined as a company's

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dollar value traded over the previous 12 months divided by its float-adjusted market capitalization.

The length of time to evaluate the liquidity ratio is reduced to the available trading period for IPOs or spin-offs that do not have 12 months of trading history.

Existing components must have a float-adjusted market capitalization of at least \$400 million and a liquidity ratio greater than 50% to remain in the index at annual reconstitution.

- 14. Equal weight the remaining companies.
- 15. Remove any component whose weight in dollars in the Index is greater than can be traded in a single day for a hypothetical U.S. \$500 million portfolio; the single day trading volume will be based on the constituent's 30-day Average Trading Volume (ADV) relative to the Review Selection Day.
- 16. Repeat step 14 and 15 until each component's weight in the Index is smaller than can be traded in a single day for a hypothetical U.S. \$500 million portfolio.
- 17. If the number of remaining companies exceeds 100, all existing components will be kept. New eligible components will be ranked from highest to lowest by their individual Composite Score, and each will be added to the index, from highest to lowest rank, until the index reaches 100 components. Then, repeat step 14 and 15.
- 18. If fewer than 50 companies remain after step 16, then a supplementary list of companies from the next highest ranked sector(s) in the second, third, or fourth quartiles by Composite Score will be considered, provided that they meet the market capitalization, liquidity and IPO eligibility criteria above, and until at least 50 companies but no more than 100 companies are included in the index.
- 19. Repeat Steps 1 to 18 annually for the index's Annual Reconstitution.

### 2.2 Index Return Formulas

The price and total returns of the index are calculated using the following formulas.

Price Returns Formula:

$$I_{(t)} = \frac{\sum_{i=1}^{n} P_{i(t)} \times S_{i(t)}}{D_{(t)}}$$

where:

 $\begin{array}{ll} I_{(t)} & = \mbox{Price Returns Index value at time (t)} \\ D_{(t)} & = \mbox{Divisor at time (t)} \\ n & = \mbox{Number of stocks in the index} \\ t & = \mbox{The time the index is calculated} \\ P_{i(t)} & = \mbox{Price of stock (i) at time (t)} \end{array}$ 



 $S_{i(t)}$  = Number of allocated shares of stock (i) at time (t)

and on Inception Date, where (t) = 0, the initial Divisor is calculated as follows:

$$D_{(0)} = \frac{\sum_{i=1}^{n} P_{i(0)} \times S_{i(0)}}{I_{(0)}}$$

where:

 $\begin{array}{ll} I_{(0)} & = \mbox{Price Returns Index value at time (t)} \\ D_{(0)} & = \mbox{Divisor at time (t)} \\ n & = \mbox{Number of stocks in the index} \\ P_{i(0)} & = \mbox{Price of stock (i) at time (t)} \\ S_{i(0)} & = \mbox{Number of allocated shares of stock (i) at time (t)} \end{array}$ 

Allocated shares ("**S**") are the number of shares required for each component such that all components are equally weighted in the index.

Total Returns Formula:

$$TI_{(t)} = TI_{(t-1)} \times (1 + IR_{(t)})$$

where:

$TI_{(t)}$	= Total Returns Index value at time (t)
$TI_{(t-1)}$	= Total Returns Index value at time (t-1)
$IR_{(t)}$	= Index Daily Total Return at time (t)

 $IR_{(t)}$  is calculated by incorporating the dividend (income) effect into the index's price returns as follows:

$$IR_{(t)} = \frac{I_{(t)} + \left(\underbrace{\sum_{i=1}^{n} V_{i(t)} \times S_{i(t)}}{D_{(t)}}\right)}{I_{(t-1)}} - 1$$

where:

 $\begin{array}{ll} I_{(t)} &= \mbox{Price Returns Index value at time (t)} \\ I_{(t-1)} &= \mbox{Price Returns Index value at time (t-1)} \\ D_{(t)} &= \mbox{Price Returns Index Divisor at time (t)} \\ V_{i(t)} &= \mbox{Dividends paid by stock (i) at time (t)} \end{array}$ 

 $S_{i(t)}$  = Number of allocated shares of stock (i) at time (t)



## 2.3 Index Divisor Adjustments

From time to time, the index divisor is adjusted to account for corporate actions that could distort index value and continuity using the following formula:

$$\boldsymbol{D}_{(t+1)} = \boldsymbol{D}_{(t)} \times \frac{\sum_{i=1}^{n} \boldsymbol{P}_{i(t+1)} \times \boldsymbol{S}_{i(t+1)}}{\sum_{i=1}^{n} \boldsymbol{P}_{i(t)} \times \boldsymbol{S}_{i(t)}}$$

where:

$D_{(t+1)}$	= Divisor at time (t+1) after corporate action changes
$\boldsymbol{D}_{(t)}$	= Divisor at time (t) before corporate action changes
$P_{i(t+1)}$	= Price of stock (i) at time (t+1) after corporation changes
$P_{i(t)}$	= Price of stock (i) at time (t) before corporate action changes
$S_{i(t+1)}$	= Number of allocated shares of stock (i) at time (t+1 ) after corporation changes

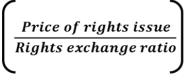
Divisor adjustments are generally implemented on the date the corporate action becomes effective, such that for example, the ex-dividend date rather than the payment date is used to time the divisor adjustment.

### Spin-off Adjustment

Subtract the adjusted ratio based on the following formula from the price of the parent company and adjust the allocated shares so that the component's weight is not changed due the spin-off:

#### **Rights Issue Adjustment**

Subtract the adjusted ratio based on the following formula from the price of the parent company and adjust the allocated shares so that the component's weight is not changed due the rights issue:



### Special Cash Dividend Adjustment

Subtract the special cash dividend from the component share price.



#### **Stock Splits Adjustment**

Both stock splits and reverse splits do not change the market value of the component, and therefore no adjustment is required on the Divisor.

## **Index Maintenance**

Component changes may occur between review periods due to corporate events that disqualify their eligibility for index inclusion. Adjustments to be made for each category of corporate events are described below:

## 3.1 Corporate Actions – Delisting

A component is removed immediately after being delisted from its primary market, namely the New York Stock Exchange (including Arca and NYSE MKT), the NASDAQ Select Market, or the NASDAQ Capital Market.

## 3.2 Corporate Actions – Merger or acquisition

If a merger or acquisition results in one component acquiring another, the acquiring company remains a component, and the acquired company is removed. If a non-component acquires a component, the acquired component is removed. If a component acquires a non-component, the acquiring component remains a component.

## 3.3 Corporate Actions – Spin-off

If a component spins or splits off a portion of its business, the spun-off companies will be removed from the index. The parent component (with the highest market value relative to the spun-off companies) will remain a component as long as it is classified as a Technology or Electronic Media company by FactSet. If the post spun-off parent component is no longer classified as a Technology or Electronic Media company by FactSet, it will be removed from the index.

## 3.4 Corporate Actions – Bankruptcy

A component will generally be removed immediately after bankruptcy filing. Exceptions could be made to keep the component when the bankruptcy involves reorganization, and not an asset liquidation or cease of operation. Index divisor will be adjusted accordingly to prevent distortion that could affect the share capital of the index components.



## **Index Calculation and Data Correction**

## 4.1 Index Calculation

Price and total return values for the FactSet Innovative Technology Index (FSTI) are calculated by NYSE. The price and total return values are calculated on a real-time basis by using the last traded price for each component in the index from relevant exchanges and markets. Index values are rounded to 15 decimal places and divisors are rounded to 15 decimal places.

The index closing level is calculated by using the official close prices from the primary listing market or exchange for each component. If trading in a stock is suspended prior to the market opening, the stock's adjusted closing price from the previous day will be used in the Index calculation until trading commences. If trading in a stock is suspended while the relevant market is open, the official closing price published by NYSE for that stock will be used for all subsequent Index calculations until trading resumes.

In case of exceptional market conditions disrupting normal closing auction, or causing official closing prices not being available, NYSE and FactSet reserve the right to utilize other prices in the calculation of the official closing level.

### 4.2 Data Correction

Incorrect index component data, corporate action data, or Index Divisors will be corrected upon detection. If such errors are discovered within five days of occurrence, they will be corrected retroactively on the day of discovery. If discovered after five days, corrective actions will be decided based on the errors' significance and feasibility of a correction.

Incorrect intraday index tick data will not be corrected. However, incorrect opening and closing values will be corrected as soon as feasible after detection.

#### **Decision Making in Undocumented Events**

A FactSet Index Committee consisting of select employees of FactSet Research Systems Inc. is responsible for amending rules as documented in the Index Methodology Guide due to undocumented or extraordinary events.



## Appendix

## 5.1 FactSet Revere Hierarchy

The FactSet Revere Classification ("Hierarchy") is a proprietary, U.S. patented sector and industry classification system built from the bottom-up, where the lowest hierarchical levels capture companies' products and services. The Hierarchy has a variable-depth structure (**Figure 1**) that ranges from four to twelve levels of increasingly detailed sectors. Companies are mapped as "Focused" to the sectors from which they generally derived 50% or more of their revenues. **Figure 2** is the "Focused" Hierarchy mapping of Intel Corporation.

#### Figure 1

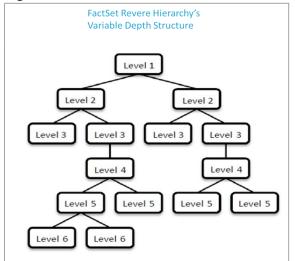


Figure 2



Intel's "Focused"	
Hierarchy Mapping	
Technology	Level 1
Electronic Components	Level 2
Interconnect	
Module/Subassembly	
Optoelectronics	
Passive	
Semiconductors	Level 3
Analog/Mixed Signal	
Discrete	
-Processor	Level 4
Digital Signal Processor (DSP)	
Microcontroller (MCU)	
Microprocessor (MPU)	Level 5
Embedded	
-Non-Embedded	Level 6
🕀 32-Bit	
64-Bit	

## 5.2 Revenue Growth Composite Score

A Revenue Growth Composite Score ("Composite Score") is computed for all eligible Technology and Electronic Media sectors as documented in Section 2.1. The sector Composite Score is based on a weighted average of its companies' one year annual growth rate and three year Compounded Annual Growth Rate (CAGR), where the one year annual growth rate will be allocated a 0.75 weight, and the three year CAGR a 0.25 weight.

Below is a hypothetical eligible sector consisting of three companies, and how its Composite Score would be calculated.

Eligible Sector	Annual Revenue (T-3)	Annual Revenue (T-2)	Annual Revenues (T-1)	Annual Revenues (T)*	1 Year Growth (%)	3 Year CAGR (%)
Company 1	134.178	176.688	205.853	222.295	7.99%	18.33%
Company 2	431.424	748.821	1214.100	2165.096	78.33%	71.21%
Company 3	2761.983	3122.433	3932.936	5263.699	33.84%	239.98%

\*Where T = most recent completed fiscal year.

### Eligible Sector's Average 1 Year Revenue Growth % = 40.05%

### Eligible Sector's Average 3 Year CAGR % = 37.84%

#### **Eligible Sector's Composite Score**

= **0.3950** (from 0.75\*40.05% + 0.25\*37.84%)



## **5.3 Contact Information**

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### **5.4 Version History**

Version	Release Date	Notes
Version 1.1	September 17, 2015	First release.
Version 1.2	December 13, 2015	Second release.

12