



**2100NEWS**

# 2100NEWS Digital Assets – (Cryptocurrencies and Tokens) Index series (Laspeyres indexes)

## About 2100NEWS

**2100NEWS is the information highway for all stakeholders in the crypto community.** This will increase transparency, build trust and improve the reputation of the crypto economy. 2100NEWS is the professional index and data provider in the digital asset space. Through state of the art technology, 2100NEWS is building the institutional-grade data infrastructure required to enable institutional investments in digital assets.

One of our goals is to establish itself as the global leader of digital asset based indexes and data. To put special focus on ensuring the quality and integrity of all the underlying data, following methodologies and processes widely used in the professional capital markets. Digital Assets (Cryptocurrencies and Tokens) will become an asset class present in the asset allocation mix of most institutional portfolios. We are very excited to contribute to the evolution of the industry and build the series of indexes and data products that comply with the transparency, regulation and quality standards that the world's top institutions require. The company claims not to be afraid about competition from larger firms and is aggressively looking to build an ecosystem around its offering.

We want the industry to stop benchmarking against Bitcoin. Therefore we want to encourage media participants, crypto enthusiasts, analysts, researchers, startups and students to contact us in order to receive our index data. We want to help to the development of ecosystem.

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## 1. INTRODUCTION TO THE 2100NEWS INDEX GUIDES

### 1.1. 2100NEWS Digital Assets - (Cryptocurrencies and Tokens) Index series

The rapidly evolving Market, with its steady changes, also requires responses that match the pace of development. One gradually emerging difficult issue is how to help general investors scientifically and effectively to learn about the overall development trend of asset investment and assist policymakers and industry participants in fast understanding industry developments. The logic behind indexing is simple: representation. Markets or even individual market sectors (such as large-cap digital assets can be enormous, including hundreds and even thousands of cryptocurrencies (tokens and coins). That's where indexes come in.

### 1.2. What does an index do?

A professional index will give market participants a quick and concise impression of the direction of the relevant market segment or asset class. Primarily, an index serves as a benchmark and is a reference point for index investments. 2100NEWS Digital Assets Index series, the line of fully independent indexes and benchmarks tracking both cryptocurrencies and digital tokens.

**Digital Assets - Cryptocurrencies indexes** should model changes in the price of cryptocurrencies, aim to fairly represent the diversity of the cryptocurrency market. The goal of the cryptocurrency index is to provide a broad-based exposure to the crypto market, where no single cryptocurrency or specific group thereof dominates the index. **Digital Assets - Cryptocurrencies indexes are** benchmarks for the crypto market. It is dedicated to the giving insight about the current and past movement of this young market everyone, who is interested,.

A **Laspeyres index** (or **base-weighted index**), in which you calculate the change in prices of yesterday's basket as they have changed from yesterday to today. Should you calculate your index value based on some starting "base" basket and then see how the changes fluctuate from then on? Or should you set your "base" to what the index holds right now, and compare those prices to some earlier point in time?

### 1.3. Who uses indexes?

Finally, the fact that crypto markets are ever-changing and open 24 hours a day, seven days a week. All of this is way too difficult for most traders to keep up with—and as a result, most people just passively "HODL" their Bitcoin."

Market participants can use indexes in a variety of ways:

- To assess a given market's performance
- To gauge how well an active strategy is working
- To serve as the foundation for investment products, such as ETFs or mutual funds
- To evaluate a market's risk profile or its diversification benefits
- To measure passive risk premia



## **1.4. The index offering**

The index offering encompasses the 2100News Overall Index (NWSOI), as well as a 2100News 30 Blue Chip Index (NWS30), 2100News 100 Large Cap Index (NWSL100), 2100News 200 MidCap Index (NWSM200), 2100News 300 SmallCap Index (NWSS300), 2100News 500 Micro Cap Index (NWSMi500), 2100News Bitcoin, Ether Index (NWSBE). Variations, specifically designed to underlie passive investment products and ensure a proper balance between diversification and liquidity.

The indexes are owned and administrated by 2100NEWS.

## **2. CHANGES TO THE GUIDEBOOK**

### **2.1. HISTORY OF CHANGES TO THE 2100NEWS DIGITAL ASSETS – (CRYPTOCURRENCIES AND TOKENS) INDEX SERIES METHODOLOGY GUIDE**

August 2018: Publication of a complete guidebook

## **3. GENERAL PRINCIPLES**

### **3.1. INDEX RATIONALE**

2100NEWS defines the index rationale as the basis for applying a certain methodology in order to achieve the index objective. 2100NEWS performs intensive research and may conduct conversations with market participants and third parties for this purpose. In every case 2100NEWS discloses the index objective.

### **3.2. METHODOLOGY REVIEW POLICIES**

2100NEWS constantly monitors the execution of the index calculation rules in order to ensure the validity of the index methodology. 2100NEWS also conducts general methodology reviews in a periodic and ad-hoc basis, to reflect economic and political changes and developments in the investment industry. As a result of these activities, 2100NEWS introduces changes to the methodology books. Material changes are notified to subscribers and the media through the usual communication channels. All changes are tracked in the section 2.1 HISTORY OF CHANGES TO THE 2100NEWS DIGITAL ASSETS – (CRYPTOCURRENCIES AND TOKENS) METHODOLOGY GUIDE.

### **3.3. INDEX TERMINATION POLICY**

For the termination of an index or index family for which, to the knowledge of 2100NEWS, no listed financial products are issued in the market, a press release notification or e-mail notification to subscribers will be communicated at least three months before coming into force. Clients or third parties with interest in the index or index family are urged to communicate as soon as possible their concerns to 2100NEWS. Based on the feedback collected, 2100NEWS may alter the index termination decision. For the termination of an index without financial product issued on there will be no market consultation. Changes to the original notification will be communicated in the same manner.



## 4. COVERAGE

### 4.1. 2100NEWS GLOBAL DIGITAL ASSETS - (CRYPTOCURRENCIES AND TOKENS) UNIVERSE

All coins and tokens with similar characteristics from markets that provide real-time and historical component and currency pricing form the 2100NEWS global digital assets universe.

### 4.2. CLASSIFICATIONS

The 2100NEWS classification model relies on a rules-based methodology. The two criteria for the classification of a coin or a token include market capitalization, market liquidity. The average data are used in order to avoid short-term fluctuations.

### 4.3. SELECTION CRITERIA

Firstly, digital assets are assessed for possible inclusion into the index based on their time of launch into the market, market size, liquidity, and other factors. Then, candidate samples are determined based on the following factors:

- (1) Market size of a digital asset;
- (2) Trading volume of a digital asset.

After excluding cryptos which do not fulfill the Liquidity rule will the cryptos be ranked by their market capitalization from highest to lowest. The number of cryptos, obtained from the rule for the Number of Constituents, with the highest market capitalization will be taken. Volume minimums are put in place to ensure that any asset in an index has the appropriate liquidity to be an investable asset.

#### 4.3.1. MARKET CAPITALIZATION SCREENING

This average market capitalization at the review date which 2100NEWS denotes as  $EMA(MCap)_T$  is calculated as:

$$EMA(MCap)_T = \alpha * MCap_T + (1-\alpha) * EMA(MCap)_{T-1}$$

$\alpha$  is the decay factor The decay factor is computed according to the span parameter based on the following formula:

$$\alpha = \frac{2}{1+N}$$

N is the number of Time Periods. The index has chosen a span parameter of 24, which corresponds to a relative decay rate of 0.92. This smoothing improves robustness over simply using a value at a fixed time, which is desirable for a very volatile market. Only the top 60% of constituents in this ranking are eligible.



### 4.3.2. LIQUIDITY SCREENING

Liquidity rule: It can happen, that a crypto has a high market capitalization and therefore shall be part of the Index. But if it is not traded frequently, it can't be easily converted to traditional fiat money or other cryptocurrencies. On top of this drawback, a low relative trading volume to the rest of the asset universe shows that the users care more for other cryptos. In a representative benchmark shall be just included the cryptos which are used often. Eligible constituents must pass a liquidity threshold, which is defined as follows: The daily trading volume for each asset is calculated in units of USD to take into account combined volumes from all trusted exchanges and in all bases of trading. Volumes traded must be converted to units in USD. On each review date, the exponential moving average of the daily volumes is calculated prior to the review date.  $EMA(\text{Volume})_T$  is calculated as:

$$EMA(\text{Volume})_T = \alpha * \text{MCap}_T + (1-\alpha) * EMA(\text{Volume})_{T-1}$$

$\alpha$  is the decay factor The decay factor is computed according to the span parameter based on the following formula:

$$\alpha = \frac{2}{1+N}$$

N is the number of Time Periods. The index has chosen a span parameter of 24, which corresponds to a relative decay rate of 0.92. This smoothing improves robustness over simply using a value at a fixed time, which is desirable for a very volatile market. The exponential moving average of the daily market capitalization is calculated before the review. From the first is taken the approach to look at the first quartile  $EMA(\text{Volume})_T$  of all cryptos. The approach ensures that only those cryptos which are liquid in relation to the other cryptos are eligible to be considered for inclusion in the indexes. The first quartile is chosen as a rule of thumb border for the tails of the empirical distribution because this value serves as an important lower bound in statistical analysis, e.g. the Box-plot. It ensures that the relatively less traded cryptos are excluded from the eligible ones. Volume share of trading in an eligible asset summed across all traded currency pairs. An asset meeting all of these criteria will be added to our selection list.

## 5. INDEX CHARACTERISTICS

### 5.1. MARKET CAPITALIZATION-WEIGHTED INDICES

The Market Capitalization determines the weights of each constituent in Market Capitalization-weighted indexes. For details on the calculation formula please consult the 2100NEWS calculation guide and the weighting factor definition in chapter 6 of this document.

### 5.2. SELECTION LISTS

The selection lists are produced for indexes with a fixed number of constituents in order to determine replacements for any coin or token deleted from the indexes. Selection lists can also indicate possible changes in the composition of the index at the next review.



## 5.3. INDEX REVIEW

To keep up with the latest development of the digital asset markets, all indexes are reviewed on a regular basis to ensure a transparent and up-to-date index basket. The implementation (“the rebalancing”) is usually conducted weekly every Friday and effective immediately. Component changes are announced:

The most recent free-float data as known to 2100NEWS are used for the component selection. The detailed cut off dates are available in the 2100NEWS Guide. The underlying data (i.e. coins and tokens, weighting factors and cap factors) are announced after the review implementation.

## 5.4. BUFFERS

Buffers are used in periodic reviews to reduce turnover. Based on an index-specific characteristic, an upper and a lower limit is set around the index target coverage. Coins and tokens ranked at and above the upper limit are selected for the index. The remaining coins and tokens necessary to achieve the target coverage (fixed number of coins and tokens or market capitalization threshold) are selected from the highest-ranked remaining current coins and tokens between the upper and lower limit. If the target coverage is still not achieved, the highest remaining coins and tokens are selected until the target coverage is achieved.

To reduce index turnover and enhance index stability buffer rules are applied at review periods to 96% of the fixed number of assets. Crypto assets are ranked based on Criterion function  $[EMA(MCap)_T, EMA(Volume)_T]$ ; A new members are automatically chosen for index inclusion if they are ranked within the top 96%. The remaining digital assets necessary to achieve the target coverage (fixed number of digital assets) are selected from the highest ranked remaining assets between constituents of the last revision.

## 5.5. LIQUIDITY

During the period review processes liquidity screenings are applied as defined in chapter 4 (e.g. companies must have a minimum  $EMA(Volume)_T$  over a given time period). In case the determined level does not allow a selection of the defined number of constituents in a fixed component index, the liquidity threshold is adjusted downwards accordingly. In the case of market events that negatively influence the aggregated liquidity and market capitalization of entire markets, the liquidity requirements can be lowered.

## 5.6. WEIGHTING FACTOR

Weighting factors are applied in price-weighted indexes instead of the factor “shares times free-float”. Weighting factors are calculated on the basis of other criteria. Weighting factors are adjusted for corporate actions. Please consult the 2100NEWS Index calculation for further details.



## 5.7. CAPPING FACTORS

### 5.7.1. WEIGHTING CAP FACTORS

The factor limits the maximum weighting for a digital asset at the time of the review. Weighting cap factors are updated during the regular weekly index reviews and not adjusted for corporate actions. The weighting cap factors are used to achieve a diversification and avoid outfitting Prices of Digital Assets.

### 5.7.2. LIQUIDITY SCALING FACTORS

In the 2100NEWS indexes Liquidity scaling factor is used. The factor is based on the  $EMA(\text{Volume})_T$  is kept constant between reviews and The  $LSF_i$  for the i-th constituent is calculated as follows:

$$LSF_i = \begin{cases} 1, & EMA(\text{Volume})_{T_i} > \text{first quartile } [EMA(\text{Volume})_T \text{ of all cryptos}] \\ 0, & EMA(\text{Volume})_{T_i} \leq \text{first quartile } [EMA(\text{Volume})_T \text{ of all cryptos}] \end{cases}$$

## 6. INDEX CALCULATION

The Index is a market index and follows for the derivation the Laspeyres Index. The index of Laspeyres is defined as

$$INDEX_t^{Laspeyres} = \frac{\sum_{i=1}^M q_i(0) * P_i(t)}{\sum_{i=1}^M q_i(0) * P_i(0)}$$

with  $P_i(t)$  the price of the crypto i at time point t and  $q_i(0)$  the amount of crypto i at time point 0.  $P_i(0)$  is the price at time point 0. The final index formula is a modification of the Laspeyres index.

The index value is defined as the quotient of the sum of the adjusted market capitalization of each member by the divisor of the index. All of these calculations are done in the US Dollar denominated values. Continuity of the index value is maintained by changing the divisor to keep the index value the same at the moment preceding any change, and then immediately following any change. The divisor is only regularly edited at the weekly rebalances.

For each Digital Asset, the synthetic mark which combines Market Capitalization and Volume, denoted by  $SMMcV_i$  for the i-th constituent is calculated.  $EMA(SMMcV_i)_T$  is calculated as:

$$EMA(SMMcV_i)_T = \alpha * SMMcV_{i,T} + (1-\alpha) * EMA(SMMcV_i)_{T-1}$$

$\alpha$  is the decay factor The decay factor is computed according to the span parameter based on the following formula:

$$\alpha = \frac{2}{1+N}$$

For each Digital Asset, the Criterion Function, denoted by  $CF_i$  for the i-th constituent is:



$$CF_{iT} = f(\text{EMA}(\text{SMMcV}_i)_T, LSF_i, \text{EMA}(\text{MCap})_{iT}, \text{Buffers})$$

Adjusted market capitalization EMA of each member, denoted by  $\text{EMA}(\text{AdjMCap})_{iT}$  is:

$$\text{EMA}(\text{AdjMCap})_{iT} = f(\text{EMA}(\text{MCap})_{iT}, CF_{iT})$$

The target weighting  $w_i$  for each asset at review is calculated as follows:

$$w_{iT} = \frac{\text{EMA}(\text{AdjMCap})_{Ti}}{\sum_{i=1}^M \text{EMA}(\text{AdjMCap})_{Ti}}$$

$P_i(T)$  is the aggregated and adjusted (outfitters) price calculated of the  $i$ -th constituent at time of index review  $T$

$$q_{iT} = \frac{w_{iT}}{P_i(T)}$$

$\text{Index}_T$  is the market close value of the index on the review date  $P_{Ti}$  is the market close price of the  $i$ -th constituent on the review date

The new index value at any time  $t$  after the review is calculated as:

$$\text{Index}(t) = \sum_{i=1}^M q_i(t) * P_i(t)$$

Where:  $P_i(t)$  is the aggregated price calculated of the  $i$ -th constituent at time  $t$

The starting value of the Index is therefore chosen to be 1000. Whenever the number of coins of a crypto changes, the Divisor has to be adjusted. This shall ensure that only the price changes cause the changes in the value of the Index. Therefore, it is ensured that the Index starts again with the same value as just before the change in the amount of coins.

## 7. INDEX REBALANCING

All of the 2100NEWS indexes will be rebalanced at 11:00 UTC time on the Friday of each week. The weekly rebalance will update both, the amount of each asset publicly available and any additions and deletions from the indexes. There will be no changes made to the weights and asset counts outside of the weekly rebalances. The new index composition is effective from 16:00 UTC. A new crypto asset satisfying all the criteria above is considered for inclusion in the index as of the next index review. The reallocation period of the Indexes is 1 week to ensure that the index is always up to date. This period is taken as rather short so that index can react faster to changes in the crypto market. At this time-point the liquidity of the cryptos will be checked again by taking into account the last month. Furthermore the Ranking will be built again and afterward the weights of the cryptos are computed by taking into account the rule described in Chapter 6. On top of that the Divisor will be adjusted.

A buffer rule is used when determining constituent selection at each rebalances to reduce turnover of the index. Nonmembers are automatically chosen for index inclusion if they are ranked within the top 96%. Then, for the last 4%, the highest ranked remaining old index members will be selected until the index reaches its membership mandate.





The Overall Market, NWSOI has no unique banding or rebalancing rules.

In the event of a hard fork in the blockchain of any constituent asset, the fork will be treated as an asset split with both unique forks remaining in the index with the original asset counts up until the next rebalancing. At the first rebalance after the fork, all normal eligibility and ranking rules will be enforced on the two unique assets. This treatment will give the potential for an index to have more than its set number of constituents following any contentious hard forks in a member.

Any other unique situations, extreme circumstances surrounding the already described events, or unobtainable asset counts or prices will be handled at the discretion of 2100NEWS Indexes.

## **7.1. Publication**

The publication period is 24 hours a day, 7 days a week. Published values are in USD. Published values are rounded to four decimal places. A base value of 1000 is used for the inception day of the index, i.e., at the market close of August 2, 2018

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