RATING METHODOLOGY

AND

GOVERNANCE STRUCTURE

Crypto Asset Rating

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MAY 30, 2018

CRYPTO ASSET RATING INC

Crypto Asset Rating Inc (**CAR**) is a crypto asset rating agency, based in the US. We have designed a comprehensive rating framework for the crypto assets to help people understand the long-term viability of a crypto asset and the company issuing it. Our rating portal, **Crypto Asset Rating Platform** (**CARP**), is developed on the blockchain technology so as to maintain the decentralization. Using blockchain for our rating solution also helps in having a dynamic data with an auditable history. Besides the rating platform, we are also developing **Crypto Business World** (**CBW**), a content platform focused on the crypto market.

UNDERSTANDING RATINGS

A rating is one tool to help investors when making decisions about purchasing crypto assets from an ICO. The ratings as assigned by CAR are our opinions about the general business attractiveness of a crypto-asset issuer, and/or a particular crypto-asset issuance, based on relevant risk factors. Our ratings express our considered opinion about the ability and willingness of a crypto asset issuer or company to meet execute its proposed business plan successfully.

Retail investors may use the ratings to help understand the business risk of a crypto-asset issuance and/ or the issuer. Institutional investors may use the ratings for the same as well as for picking winners/losers while deciding crypto portfolio allocation.

CAR assigned ratings are not absolute measure of likelihood of success of the proposed plan for which the crypto asset is being issued. Since there are unforeseen future events and developments, the assignment of credit ratings is not an exact science. These ratings should not be treated as guarantees or as exact measures of the probability of success of the business plan. CAR's ratings are not recommendations to buy or sell or hold a particular crypto-asset or token, nor are they a guarantee that default will not occur. In addition, a rating does not comment on the suitability of an investment for a particular investor in a particular crypto-asset.

RATING SCALE

	Rating Scale	Rating Scale Definition
Investment Grade	AAA	A Crypto Asset rated 'AAA' has the highest rating assigned by CAR. The issuer is extremely well positioned and resourced to deliver on its strategic objectives in a timely fashion. Issuer has the right technical, financial, legal expertise to navigate hurdles most effectively and execute on its product/solution roadmap.
	AA	A Crypto Asset rated 'AA' differs from the highest-rated Crypto Asset only to a small degree. The issuer is well positioned and resourced to deliver on its strategic objectives. Issuer has the right technical, financial, legal expertise to navigate hurdles effectively and execute on its product/solution roadmap.
	A	A Crypto Asset rated 'A' is somewhat more susceptible to the adverse effects of changes in circumstances, economic and regulatory conditions than Crypto Assets in higher-rated categories. However the issuer is well positioned and resourced to deliver on its strategic objectives even in the face of external hurdles.
	BBB	A Crypto Asset rated 'BBB' has the right set of fundamentals but level of expertise in various aspects are lower than higher rated categories and hence external hurdles in the form of financial, regulatory or technical challenges are more likely to lead to a weakened capacity of the issuer to deliver on its strategic objective.

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Speculative Grade	BB	A Crypto Asset rated 'BB' is less vulnerable than other speculative Crypto Assets (B/CCC/C). It currently has the resources to deliver on its strategic objective however, when faced with external hurdles in the form of financial, regulatory or technical challenges, in spite of its willingness, it might not have the right level of expertise to navigate through them.
	B	A Crypto Asset rated 'B' is more vulnerable than Crypto Assets rated 'BB', but the issuer currently has the resources to deliver on its strategic objectives but financial, technical or regulatory challenges will likely impair the issuer's capacity or willingness to meet its commitment.
Vulnerable Grade	CCC	A Crypto Asset rated 'CCC' is currently vulnerable, thin on resources and is dependent upon favorable business, financial, and economic conditions for the issuer to deliver on its strategic objectives. In the event of any financial, regulatory or technical challenges the obligor is unlikely to have the capacity to meet its commitment.
	CC	A Crypto Asset rated 'CC/C' is currently highly vulnerable. The issuer does not have the resources or expertise to deliver on its strategic objectives. In certain cases the strategy itself is faulty and roadmap is not clear. The 'CC'/'C' rating is used when CAR expects default to be a virtual certainty, regardless of the anticipated time to default.
	C	
	D (Default)	Default and extremely unlikely to recover. Non-existent strategy and roadmap.

Ratings from 'AA' to 'CCC' may be modified by the addition of a plus (+) or minus (-) sign to show relative standing within the major rating categories.

OUR RATING FRAMEWORK

Our ratings opinions are based on analysis by experienced professionals who evaluate and interpret information received from the crypto asset issuers and other available sources to form a considered opinion. Typically, analysts obtain information from published reports, whitepaper, as well as from interviews and discussions with the issuer's management. They use that information and apply their analytical judgement to provide scores for different rating parameters.

CAR's analytical rating framework is divided into several categories to ensure salient qualitative and quantitative issues are considered. For example, the qualitative categories are oriented towards analysis of business fundamentals, such as the firm's or the product's competitiveness within its industry, the experience and complementary expertise of the team, technological disruption, regulatory exposure etc; the quantitative categories relate to financial etc.

Rating Parameters and Rating Categories

We have identified multiple rating parameters to evaluate a crypto asset and its issuer. Each parameter can be scored on a discrete range of "0" to "3", with a further adjustment option of upto ±0.3 point, which provides an analyst the option of fine tuning the score by a few percentage points according to his own subjective understanding. Around 3-5 rating parameters are grouped to form a rating category.

Parameter Weight: Each of the parameters carries a normalized weight of ≤1.0 such that the total weights of all the parameters within a particular rating category comes to "1".

Category Weight: Similar to parameter weight, each rating category also carries a weight.

The weights signify the extent of influence a particular parameter or category should have in determining the final rating of a crypto asset. These weights take into account historical correlation between performance of a crypto-asset and the respective parameter/category. The weights of these rating parameters/ categories may vary depending on the specific nature of the crypto asset

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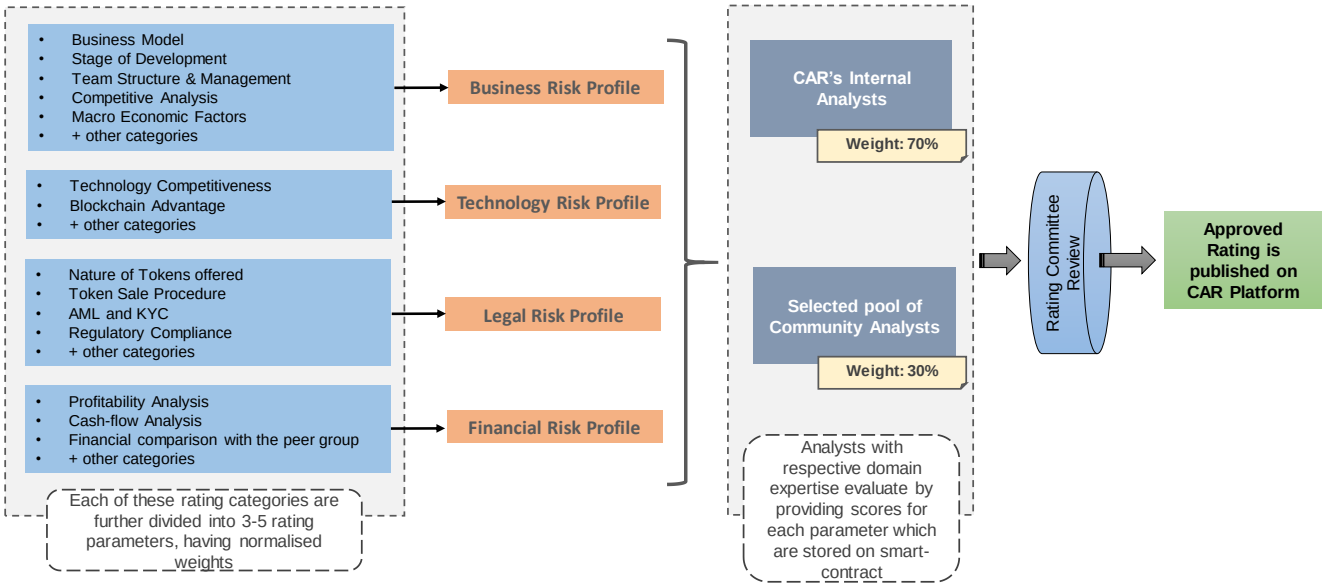
/issuer and the domain they are operating in. Weights are periodically adjusted based on back-testing results.

Once the scores for each rating parameter is finalized, the aggregated category score is automatically calculated based on the scores and parameter-weights. The rating engine takes the category scores and calculates the final weighted average scores based on category-weights. The final weighted score is then mapped to the rating grid automatically, according to a predefined rule. Rating Committee has the liberty to manually override the final rating by one notch up/ down, only with necessary justifications.



Risk Bucket and Rating Analyst

To analyze a crypto asset and/or the issuer from different risk perspective, we have identified four broad risk categories: Business Risk, Legal Risk, Technology Risk, and Financial Risk. Each of the rating categories are classified under one of the four risk categories (refer above diagram). Our rating report provides detailed commentary on each of these risk buckets.

Similar to four different risk categories, we have four different types of rating analyst. Rating parameters under each of the risk buckets are handled by the respective type of analyst; for eg, rating parameters falling under legal risk category are primarily analyzed and scored by a legal risk analyst.

Business Risk

Business risk deals with the product development stage, team structure & management, macro-economic factors, competitive analysis of the product, addressable market size, product development roadmap etc. A Business Risk Analyst (BA) is responsible to assess a crypto asset issuer's business risk. Generally, a BA is an SME from the same industry where a particular crypto asset issuer is operating eg. Fintech or Healthtech etc. A BA primarily provides scores and commentary for the business risk parameters, along with other rating parameters.

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Legal Risk

Legal risk focuses on the legal aspect of the crypto asset as well as the crypto asset issuer. This includes understanding the legitimacy of the business model or product being offered, vetting of company related documents, company capitalisation structure, intellectual property, the nature and legal validity of the crypto asset, regulatory framework under which the crypto asset is being offered etc. A Legal Risk Analyst (LA) is responsible to assess a crypto asset and its issuer's legal risk. Generally, a LA is a lawyer or is an expert in crypto related regulations and thorough with the regulatory dynamics in the crypto market. A LA primarily provides scores and commentary for the legal risk parameters, along with other rating parameters.

Technology Risk

Technology risk generally deals with assessing the technology of the product or solution being offered, usage of blockchain, if blockchain is adding significant advantage, maturity of the technology being used, competitive technology available in the market etc. It may also include the audit of the smart contract. A Technology Risk Analyst (TA) is responsible to assess the technology risk of the product being offered by the crypto asset issuing company. A typical TA is a blockchain developer having understanding of blockchain solution implementation. A TA provides scores and commentary for the technology risk parameters, along with other rating parameters.

Financial Risk

Financial risk assessment includes analysis of the financial strength of the company, historical financial analysis, cash flow analysis, capital structure, ratio analysis, financial projection, usage of funds, value of the token etc. A Financial Risk Analyst (FA) is responsible to assess a crypto asset and its issuer's financial risk. In general, a FA is from BFSI industry having extensive knowledge of financial due diligence and modelling. A FA primarily provides scores and commentary for the financial risk parameters, along with other rating parameters.

The above framework provides for a structured way of analyzing crypto assets. The rating algorithm is set-up in a way that it can be tailored to specific crypto assets and can be iteratively made better with back testing on hindsight data.

PEOPLE INVOLVED IN THE RATING PROCESS

Junior Analysts

Junior Analysts (JA) are selected based on their expertise and experience of dealing with crypto-assets. For any rating project, we choose one junior analyst for each of the four risk categories to rate a particular crypto asset i.e. a rating process is initiated by a group of four junior analysts.

Senior Analysts

Similar to JA, we select one Senior Analyst (SA) from each of the four risk categories who reviews the score and commentary given by the JAs. SAs also prepare the write-up for their respective risk categories, which are consolidated in the final rating report.

Lead Analyst

A Lead Analyst (LA) has enough overall expertise in the crypto-asset field to oversee a rating project. For every rating project CAR assigns one LA to that project. They review output coming from the senior analysts, provide feedback to them and is responsible to prepare the consolidated rating report.

Review Committee

A Review Committee (RC) consists of two experts who review the final rating assigned and the rating report. A rating is considered final only when it is approved by the RC.

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External Analysts and Consensus Score

We expose a subset of the rating parameters to the registered and approved External Analysts (EA). Similar to JAs and SAs, we select multiple EAs from each of the four risk categories. CAR makes effort to ensure that the relevant EAs are selected to provide scores and commentaries on rating parameters of a particular crypto asset (to the extent possible). This is ensured by a mapping algorithm, which maps the profiles/ competencies of the external analysts with the domain of a particular crypto asset. For example, an external Business Analyst having experience in financial service domain will be mapped to provide scores for a crypto asset issuer providing solution in the fintech space.

Quality Score: Every external analyst is assigned a quality score to measure the quality of scores and commentaries given by her for a particular crypto asset. This is calculated based on certain parameters (eg. time taken to provide scores and ration for a particular crypto asset, pattern responses, length and quality of the commentaries given etc). For a particular analyst, if the quality score doesn't meet the minimum threshold value, the rating scores given by that analyst are not considered for consensus and final rating calculation. Consequently, the analyst does not receive any payment for providing scores to rate that particular crypto asset. This will also penalize the analyst's profile ranking (*discussed later*) so that she provides the scores with all seriousness.

Profile Rank: Every external analyst is assigned a profile rank, which indicates her contribution towards CARP and CBW platforms. This is a dynamic rank and is influenced by the analyst's quality score for different crypto asset ratings, contribution on CBW platforms in terms of content writing, providing review comments on CARP and CBW platforms etc. This profile rank is used to break tie for the consensus algorithm, in favor of the analyst having a superior profile rank.

How Consensus is Reached

We limit the number of external analysts who can provide scores for a particular crypto asset. Let's assume that the maximum number of external analysts wh0 can provide score for a crypto asset is N, which is a pre-decided number by CAR Rating Committee and remain the same for all the crypto assets being rated on CARP. A particular crypto asset will end up receiving scores from "n" external analysts on the rating parameters, where **n ≤ N**. Providing scores and comment is mandatory for all the rating parameters. Therefore, each of the rating parameter will receive "n" number of scores from "n" external analysts. CAR Rating engine calculates the MOD value of these "n" number of scores and treat that as the "Consensus Score" for a particular rating parameter, depending on consensus confidence (discussed next).

Consensus Confidence: For every rating parameter, the rating engine also calculates an average distance from the "Consensus Score". If the average distance is within a pre-specified limit for a particular rating parameter, decided and updated from time-to-time by CAR Rating Committee, the rating engine considers that a consensus has been reached for that parameter and the Consensus Score is forwarded to the next layer of the rating engine for the final rating calculation; otherwise, if the average distance is higher than the pre-specified limit, the rating engine discards the consensus score, assuming that a consensus was not reached for that particular parameter. In this case, the reviewed score from SA is considered as the final score for that particular rating parameter (*i.e. discarding the 30% weight for the consensus score from EAs*).

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Reward Structure of External Analysts

CAR has a fixed budget for the payment of external analysts who are providing scores for a particular crypto asset. The reward for EAs is structured such that they are incentivized to maintain and improve quality as well as contribute in the growth of the CAR ecosystem. The budget is divided into three buckets as follows:

Fixed Reward	Variable Reward (Quality)	Variable Reward (Consensus)
30%	30%	40%

Fixed Reward: Fixed component of the budget is distributed equally among all the analysts who have provided scores for a crypto asset. Whenever an analyst submits her scoring, she is entitled to receive this fixed component - unless her scores don't meet the minimum quality benchmark (i.e. quality score falling below the acceptable threshold).

Variable Reward (Quality): Based on the quality score, this variable component is distributed among the top 25% of the external analysts who have provided scores for a particular crypto asset. Also the distribution is skewed towards the top performers as shown in the following table.

Variable Reward (Consensus): For each external analyst, CAR rating engine calculates an "Aggregated Distance" of the scores given from the Consensus Score of different rating parameters. Analysts are ranked based on this aggregated distance – lower the distance, better the rank. In case of any tie, the profile rank are used to break the tie in favor of the analyst having superior profile ranking. This variable reward component is distributed among the top 25% of the external analysts having the lowest aggregated distance from the Consensus Score. This distribution is also skewed towards the top performers as shown in the following table.

All the payments to the external analysts are done in crypto currencies or tokens such as Bitcoin or Ether etc

Variable Reward (Quality)		Variable Reward (Consensus)	
Analyst Rank (based on Quality Score)	% of Budget	Analyst Rank (based on Aggregated Distance from Consensus Score)	% of Budget
1	35.0%	1	35.0%
2	25.0%	2	25.0%
3	20.0%	3	20.0%
4	12.5%	4	12.5%
5	7.5%	5	7.5%
Total	**100.0%**	**Total**	**100.0%**

Note: This table is representative for a scenario where 20 EAs have provided the scores (i.e. n = 20)

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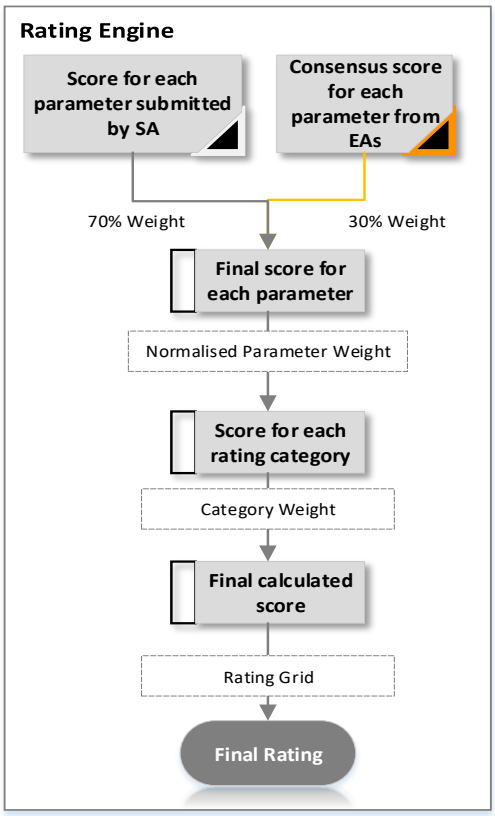
RATING GOVERNANCE STRUCTURE

Most of the cases a crypto-asset issuer approaches CAR to request a rating for its crypto asset. CAR assembles a team of four **Junior Analysts** (**JA**) with appropriate expertise and relevant industry experience to initiate the rating process. One JA is selected for each risk category. Each JA's rating screen displays the rating parameters relevant for her risk category i.e. a financial analyst can see/provide scores only on the financial risk parameters. Each analyst also prepares a list of questions, if he/she feels that more information is required to form an opinion on a few rating parameters. The system automatically collates these queries and sends across to the crypto-asset issuer to elicit responses. This gives an opportunity to the crypto-asset issuer to share additional information (in addition to the whitepaper, website and other publicly available information) to facilitate the rating process. Once received, each JA incorporates these pieces of information in the rating process and submits their parameter scores along with supporting commentaries.

After submission of the scores by JAs, one **Senior Analyst** (**SA**) of each risk categories reviews the same. SAs get back to the respective JAs in case of any clarification. Once the review is complete, SAs submit the final scores to the **Rating Engine** (**RE**). SAs also prepare a write-up for their respective risk categories and submit to the Lead Analyst (LA) for review.



In parallel, multiple **External Analysts** (**EA**) are selected for each of the four risk categories, who submit their rating scores and commentaries. The **Consensus Algorithm** calculates the consensus scores for the rating parameters which are automatically submitted directly to the RE, without any change or modification by CAR's internal team.

The **Rating Engine** (**RE**) calculates the final parameter scores based on the scores submitted by SAs (70% weight) and consensus scores from EAs (30% weight). Based on parameter weights and category weights, the final score is calculated which is mapped to the rating grid to generate final rating (refer to the adjacent diagram "Rating Engine").

The **Lead Analyst** (**LA**) receives the rating generated by the Rating Engine, along with four write-up for each risk categories. LA reviews the scores, commentaries, write-up and gets back to respective SAs in case of any clarification. Once the review is complete, LA prepares the rating report by consolidating the rating output from RE and the write-ups for each risk category.

The final rating report is forwarded to the **Rating Committee** (**RC**) for vetting. The crypto-asset issuer is subsequently notified with an indicative rating range and the major considerations supporting it. A rating can be appealed prior to its publication on CARP website, if meaningful

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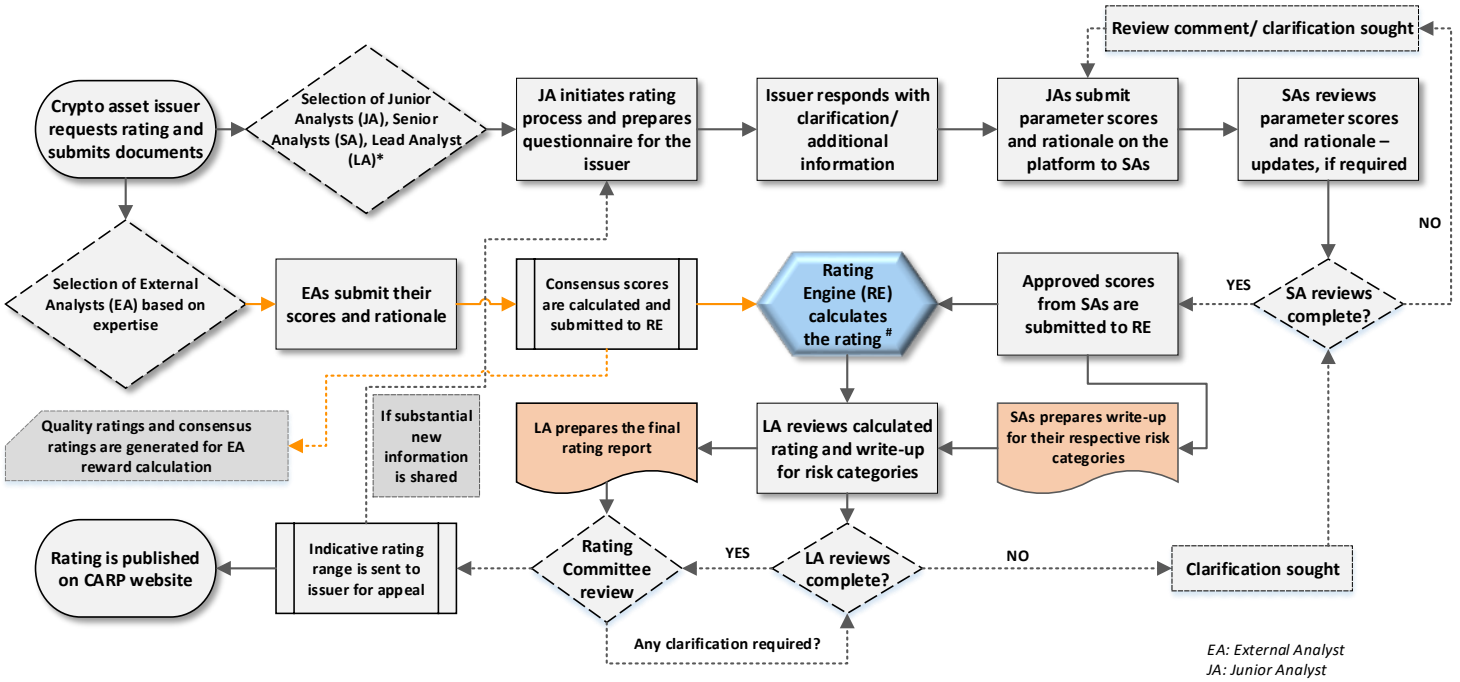
new or additional information is to be presented by the issuer. Obviously, there is no guarantee that any new information will alter the rating committee's decision.



All published ratings are monitored on an ongoing basis, including review of key milestones. Surveillance also enables analysts to stay abreast of current developments, discuss potential problem areas, and be apprised of any changes in the issuer's plans. As a result of the surveillance process, it is sometimes necessary to update a rating or provide a notification to the investors. If warranted, a comprehensive analysis may also be undertaken.

With this rating governance structure, we aim to achieve the followings:

- *Viewpoints of internal experts and external analysts are captured in the rating;*
- *Crowd-score from the external analysts are NOT changed/ updated/ influenced by CAR's internal team;*
- *Analysts from four different risk categories provide scores independently, without being influenced by the scores provided by analysts of other risk categories;*
- *Except for the LA, no analyst gets to know who are the other analysts working on a particular crypto asset;*
- *Rating is generated at the last stage and only LA, RC get to know the rating before it is published on our platform. Therefore, the JAs, SAs, and EAs don't get to know the final rating before it is published on our platform;*
- *All scores and review trail are stored in blockchain for auditability;*
- *All the analysts are bound by the company policy that they (and their immediate family members) will not trade on the crypto asset that they are providing scores for till 45 days from publishing of the rating on our platform;*

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