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Oct 23, 2017 · 6 min read

How to Write a Good White Paper for ICO: Tips and Examples

Interest in ICO continues to grow. Hundreds of startup projects worldwide are trying to raise funds using this technology. The market has already established its own ICO guidelines and one of them insists upon the creation of a special document, “a white paper”. Every team needs to provide a project description in the course of ICO using this document. Today we will talk about the correct way to do this.

What is a White Paper?

The white paper is a document determining the technology of a blockchain project. This file usually contains a detailed description of the system architecture and its interaction with users, as well as current

market data and growth anticipations and requirements for the issue and the use of tokens. In addition, it provides a list of project team members, investors and advisors.

Without a proper modelling of a white paper it would be difficult for a project team to perform a successful ICO procedure : few people would be willing to invest in a project lacking proper information on the technology and on the previous business experience of team members. You may find some tips on creating a high-quality white paper, and several real successful examples below.

What Should this Document Look Like?

Andrew Chapin, blockchain expert and the founder of projects Benja.co and Ship Ninja, described the perfect white paper in a HackerNoon column. This article is a good guide to the white paper. So, let's sum it up here.

A good white paper should have the following sections:

• a problem;

• a proposed solution and the product description;

• a description of the token commercialization (product interaction with economy and technical provisions of commercialization);

• team members;

• tokens issue and perspectives.

One of the most important elements of the white paper is usually the information on the project team, despite the fact that it is frequently placed at the end of the document.

According to Chapin, any investor-angel can tell stories about investing in a strong team with a bad idea, because he believed in their abilities of creating a valuable product in the course of their activity. For example,

before its pivot, Android used to be a camera operating system. Nokia dealt with woodworking and paper production before and Pinterest, at the very start of its career, used to be a shopping app and it wasn't a social network (although recently it has returned to its e-Commerce origins).

Therefore, it is crucial that the team should be multi-professional, and should already have had some success. In a perfect world, they should also have at least some experience in the blockchain domain. Quite often, teams try to launch fundraising when they don't have competent engineers dealing with the blockchain. The founders consider money-raising to be the most important task and they are pretty sure they can employ an engineer later on. But you should look before you leap, because until investors become eager to donate money to the project, they need to be convinced that the team is able to create what they had planned.

The second section of the white paper should contain the product description: prototype data, first users and development strategy. Frequently, in the course of ICO the project team only have a perfectly designed pdf and a few mock-ups. Yet, they have no actual product, its potential users and development strategy. If the project already has an ecosystem and users, this increases the chances of token survival on the market. These elements must therefore be present in the documentation.

A detailed plan of the use of funds is also essential. Today, in the world of ICO, there are a lot of organizations which mention "industrial consortias", non-profit units or events related to "industry development". This may raise suspicions that a member of the team intends to spend money not only on product development but also on something else (maybe on his or her personal needs).

The information on tokens is detailed during its offer at the stock exchange. If it is not introduced—or if the plan states that this will follow in 30–60 days—there is reason to believe that something is not going as expected. According to Chapin, in this case, it's highly probable that the project team will manipulate the price of a token at the moment of a free trade opening. In general, the public is interested in the future cooperation of the company with issued tokens. In this situation some

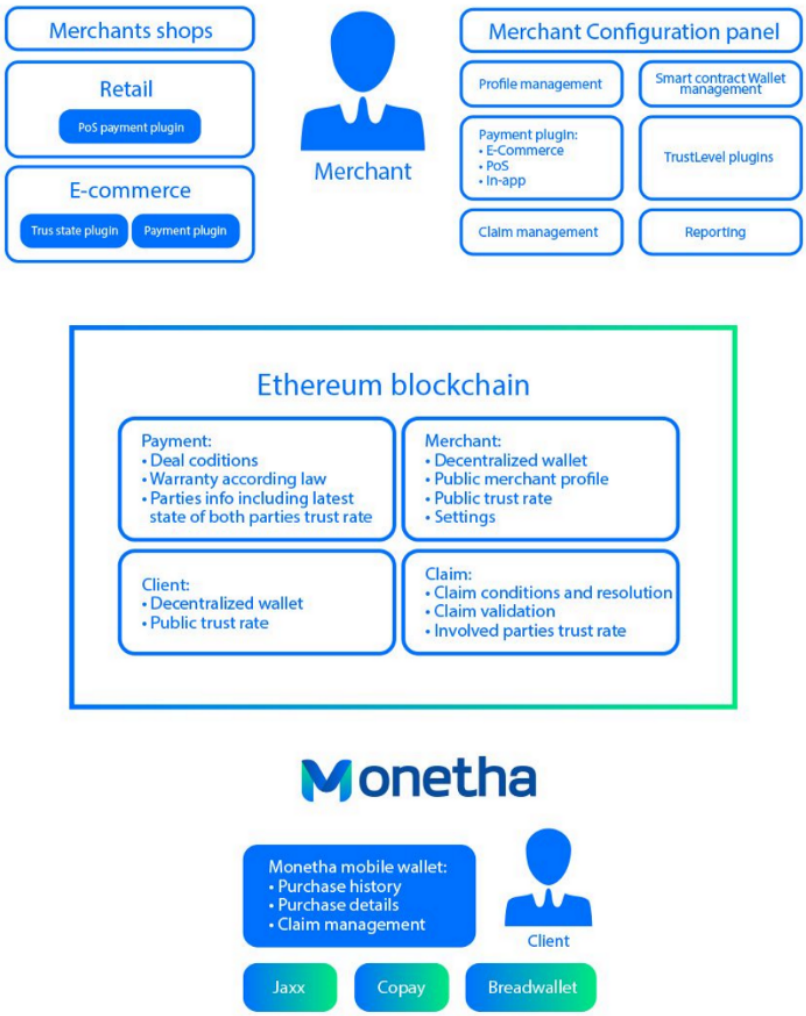
questions will need to be answered: Will the issue be limited before the pre-sale? When will sales start on the market? Will redemption (or buy-backs) be operated?

It's vital that the white paper also includes a detailed technical description of the project and its future development plans (development roadmap). In theory, the team should present a detailed working plan for the next 12–18 months, which should include the beta-launch. If some tasks of the roadmap have already been performed, that may be considered as an advantage for the project team.

A Perfect White Paper: 3 Examples of Successful Projects

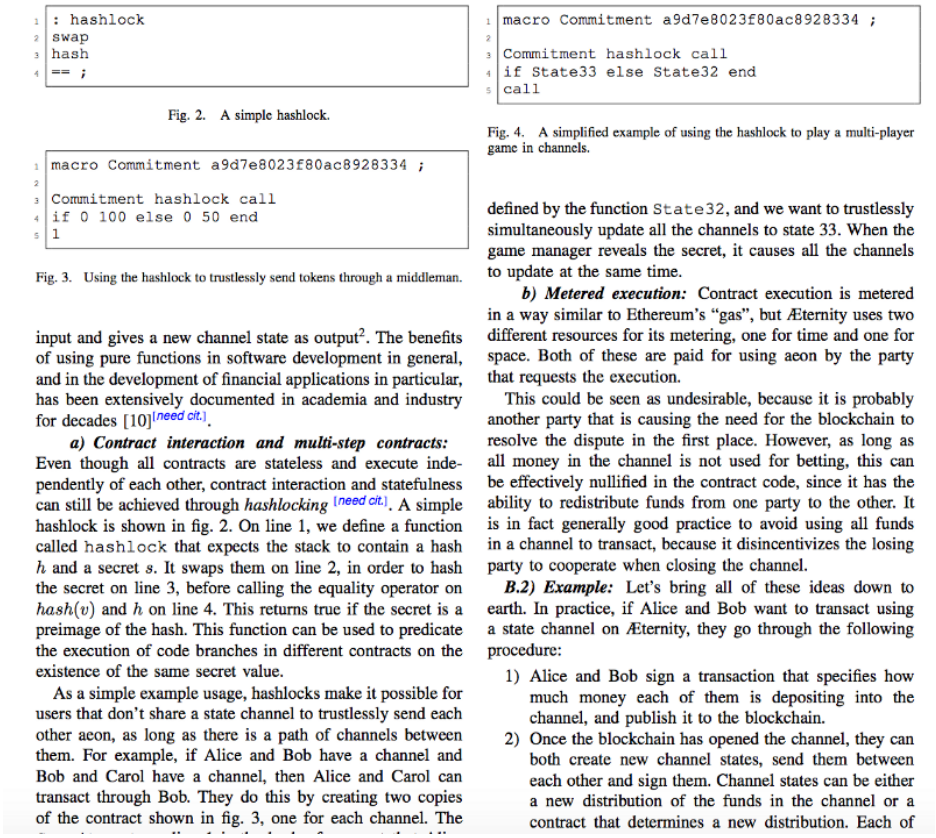
Looking at best practice: the easiest way to understand the requirement for an ideal ICO document is to see real examples of successful projects. We have selected three very successful projects and analyzed their white papers (find more examples at this link).

Monetha is a project of a payment system for the blockchain. It collected $37 million (95 000 ETH) in just 18 minutes. Its white paper of their system contains all the abovementioned sections. It has a detailed description of the project's working plan, token economy, fund-using plans, and also team members' service record (even the previous business experience that raised investments). These details are crucial for all white papers.



Besides the technical description of the product architecture, there are also some easy-to-read diagrams.

Another example is the project “Aeternity”, which collected nearly $34 million. Its white paper may give the impression that documentation does not need to be as comprehensive as we suggest. The file (see below) is not beautifully designed and is created in a research article pattern (a simple two-column document).



```
: hashlock
swap
hash
== ;
```

Fig. 2. A simple hashlock.

```
macro Commitment a9d7e8023f80ac8928334 ;

Commitment hashlock call
if 0 100 else 0 50 end
1
```

Fig. 3. Using the hashlock to trustlessly send tokens through a middleman.

input and gives a new channel state as output[2]. The benefits of using pure functions in software development in general, and in the development of financial applications in particular, has been extensively documented in academia and industry for decades [10][need cit.].

a) Contract interaction and multi-step contracts: Even though all contracts are stateless and execute independently of each other, contract interaction and statefulness can still be achieved through *hashlocking* [need cit.]. A simple hashlock is shown in fig. 2. On line 1, we define a function called `hashlock` that expects the stack to contain a hash h and a secret s. It swaps them on line 2, in order to hash the secret on line 3, before calling the equality operator on $hash(v)$ and h on line 4. This returns true if the secret is a preimage of the hash. This function can be used to predicate the execution of code branches in different contracts on the existence of the same secret value.

As a simple example usage, hashlocks make it possible for users that don't share a state channel to trustlessly send each other aeon, as long as there is a path of channels between them. For example, if Alice and Bob have a channel and Bob and Carol have a channel, then Alice and Carol can transact through Bob. They do this by creating two copies of the contract shown in fig. 3, one for each channel. The

```
macro Commitment a9d7e8023f80ac8928334 ;

Commitment hashlock call
if State33 else State32 end
call
```

Fig. 4. A simplified example of using the hashlock to play a multi-player game in channels.

defined by the function `State32`, and we want to trustlessly simultaneously update all the channels to state 33. When the game manager reveals the secret, it causes all the channels to update at the same time.

b) Metered execution: Contract execution is metered in a way similar to Ethereum's "gas", but Æternity uses two different resources for its metering, one for time and one for space. Both of these are paid for using aeon by the party that requests the execution.

This could be seen as undesirable, because it is probably another party that is causing the need for the blockchain to resolve the dispute in the first place. However, as long as all money in the channel is not used for betting, this can be effectively nullified in the contract code, since it has the ability to redistribute funds from one party to the other. It is in fact generally good practice to avoid using all funds in a channel to transact, because it disincentivizes the losing party to cooperate when closing the channel.

B.2) Example: Let's bring all of these ideas down to earth. In practice, if Alice and Bob want to transact using a state channel on Æternity, they go through the following procedure:

1) Alice and Bob sign a transaction that specifies how much money each of them is depositing into the channel, and publish it to the blockchain.
2) Once the blockchain has opened the channel, they can both create new channel states, send them between each other and sign them. Channel states can be either a new distribution of the funds in the channel or a contract that determines a new distribution. Each of

A research article pattern is really trustworthy. Besides, the document doesn't have to be long (around 10 pages).

Finally, the winner, which collected $257 million during its ICO, is Filecoin. Its founders also decided to use a research article pattern without any design refinements of their white paper.

Electing Miners. At every epoch, each miner checks if they are elected leader, this is done similarly to previous protocols: CoA [15], Snow White [16], and Algorand [17].

Definition 6.1. (EC Election in Filecoin) A miner $\mathcal{M}_i$ is a leader at time t if the following condition is met:

$$\mathcal{H}\Big(\langle t||\mathsf{rand}(t)\rangle_{\mathcal{M}_i}\Big)/2^L \leq \frac{p_i^t}{\Sigma_j p_j^t}$$

Where $\mathsf{rand}(t)$ is a public randomness available that can be extracted from the blockchain at epoch t, p_i^t is the power of $\mathcal{M}_i$. Consider the size of $\mathcal{H}(m)$ to be L for any m, $\mathcal{H}$ to be a secure cryptographic hash function and $\langle m\rangle_{\mathcal{M}_i}$ to be a message m signed by $\mathcal{M}_i$, such that:

$$\langle m\rangle_{\mathcal{M}_i} \coloneqq \Big((m), \mathsf{SIG}_{\mathcal{M}_i}\big(\mathcal{H}(m)\big)\Big)$$

The presentation style corresponds to the pattern : a lot of formulae and different schemas.

Final thoughts

We've been actively studying the ICO market recently. In particular, we are interested in the content design, which blockchain startups should choose. In conclusion we will give you some tips based on our surveys :

- **A perfect white paper won't help a bad project:** if the project team proposes a solution to a non-existent problem or to a non-essential problem or if its members lack development experience and are not familiar with the blockchain, it's highly probable that the project won't be successful—even if its documentation is brilliant. Startup founders need to be aware of that.
- **The pattern should suit the team:** Filecoin and Aeternity, for instance, chose a research article pattern for their project description in contrast to a more "popular" pattern selected by Monetha. It is interesting to note that the "research article" doesn't contain information on the project team. This information may be found on their website in a special section. To create a high-quality "research article", its author must have some experience in writing such documents. If experience is lacking, it is better to go Monetha's way and make a project presentation.
- **It is essential to take the public into account :** the style and the pattern of the white paper depends on its readers. If your goal is to attract technically literate public and scientists, it is quite logical to present the information using a research article pattern. But if your goal is to interest a wider audience, you shouldn't overcharge your document with scientific terms. But you can also create two versions of the document: the one for a wider audience and the other for those who want some more technical details.