



Beerchain

Creating the beer-based cryptocurrency

Whitepaper from 5/3/2018

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Introduction

Goal

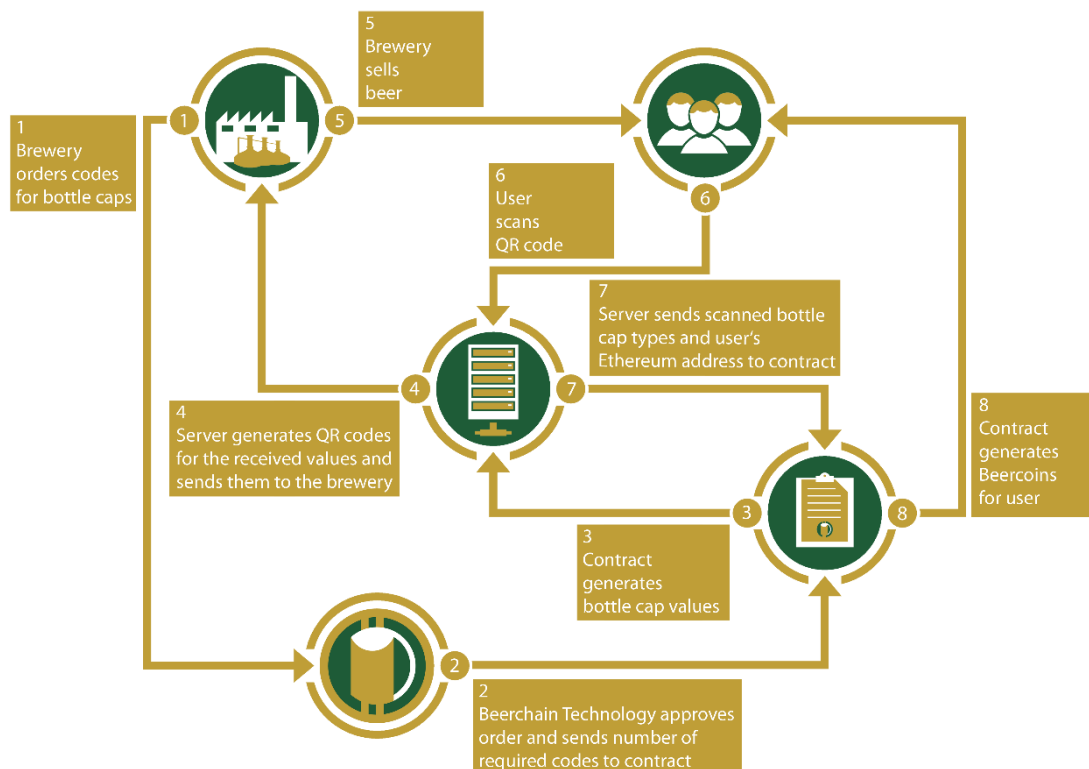
Our goal is quite straight forward: We want to create the beer-based cryptocurrency.

The beer market is a billion-dollar industry which has not seen many innovations in recent years and is currently decreasing in volume in many parts of the world. While the consumer base is shrinking a lot of new competition, in form of craft beer breweries, is trying to find a solid foothold in the market.

With our project we want to offer breweries a way to fight for their market share with the pinnacle of modern technology. Participating breweries can offer their consumers a beer, which not only tastes great, but enables the consumer to mine a cryptocurrency with it.

To help our Beercoin cryptocurrency taking off, we provide an interface to not only donate, but also use Beercoins to buy more beer. Besides breweries, bars and stores can participate in our project as well and consumers can therefore mine and spend Beercoins at their local favorite places.

The following flowchart gives you a rough overview about what we want to achieve, and the details are described in-depth in the following chapters.



Roadmap

November 2017	Formation of the company Beerchain Technology UG (haftungsbeschränkt)
December 2017	Contract development
January 2018	Airdrop
February 2018	App design and development
March 2018	Concept video shooting and publishing
April 2018	Legal preparations for ICO according to German law
May 2018	Initial coin offering with preceding Airdrop
June 2018	Investment planning and staff acquisition
July 2018	Infrastructure development
August 2018	Testing
September 2018	Entry coin offering and market entry
October 2018	Expansion planning

The Beercoin

The coin is an Ethereum token implementing the ERC20 standard. It can only be mined (i.e. generated) through beer with our app by scanning codes (e.g. QR, NFC, Text) and can be sent to friends, be donated to charity, be used to buy beer or merchandise, be used in special Beercoin games, and of course be traded at a cryptocurrency exchange.

Mining

The coin can only be mined through beer, meaning that a unique code will be delivered with beer that can be scanned with the Beercoin app to generate Beercoins. There are various possibilities to deliver such a code, as it just consists of eight simple characters.

- QR code inside a bottle cap. When this code is scanned with our app the user's phone will connect to our server which checks the authenticity of the code. If valid, a certain amount of Beercoins is granted to the user.
- NFC tag on a beer coaster. When the user places the phone close to the beer coaster equipped with an NFC tag the app receives a code wirelessly.
- Plain text on a check. The code can also be simply printed on paper, like a bar's check.

The amount of Beercoins which can be mined with a single scan is not fixed but rather depends on what kind of code is scanned. There are four different types of codes which can be found: bronze, silver, gold and diamond.

- Bronze: worth 1 Beercoin; chance of finding one 90%
- Silver: worth 10 Beercoins; chance of finding one 9.9%
- Gold: worth 100 Beercoins; chance of finding one 0.09%
- Diamond: worth 10000 Beercoins; chance of finding one 0.01%

This means the user will be rewarded 2.98 Beercoins on average. A code's Beercoin value is not visible before the server has been asked. We have chosen this method to encourage the user to use a code instead of immediately discarding it and to make the whole process a little more exciting. Diamond QR codes are an exception from this rule and will look different than the other codes to decrease the chance of a high value being thrown away.

Even if a QR code isn't scanned for a long time, it will never be printed again in a bottle cap. The coin will never be part of the available supply of Beercoins. It will simply be like they never existed in the first place. On the other hand, if a user happens to find a cap that has never been scanned, it will always be possible to claim Beercoins as long as our servers are running.

The code attached to an NFC tag can only be used once to claim Beercoins. When ordering a beer from a bar participating in the Beerchain the NFC tag will have a unique code stored on it, which the user can receive to claim Beercoins. After the user is done with his beer the NFC tag attached to the beer coaster will return to the bar and a new unique code will be written on the NFC tag. If the code on the NFC tag was not used to claim Beercoins and the bar overwrites the old code with a new one, it will never be possible to claim the Beercoins attached to the old code and these coins will never be part of the available supply of Beercoins.

Usage

Being an ERC20 standard token, the Beercoin can be sent around via various third-party websites and apps, including trading exchanges. However, there are also various usage possibilities that will be provided by us as a company:

- Donating to charity
- Buying beer and merchandise, including coupons to be used at local bars
- Playing skill-based games with friends to get both of two unscanned codes (long-term idea)

It will not be necessary to hold any ether to send or receive Beercoins as the transactions will be handled by us as long they are made with our app. Technically, this means that we strive to be a verifier as soon as proof of stake has been implemented in the Ethereum system. We then will append all app-related transactions to the blockchain ourselves. If Proof of Stake is delayed, we still use our revenue to pay mining, donating and purchasing, but not sending as we cannot foresee the number of transactions for this.

Value

A defined standard beer will always have a value of 100 Beercoins, while other products are priced relatively. To match this with the fiat price, we want to ensure that a Beercoin always has a minimum fiat value. If it falls below that value, we will use our revenue to buy Beercoins from the market and burn them irreversibly from the system so the price of a single Beercoin rises.

Disclaimer:

It is not possible to determine the exact price of a single Beercoin. We also cannot guarantee to immediately buy and burn all required Beercoins, as we also need our revenue to run the business – especially staff and infrastructure must be paid.

Amount

We will create 77,480,000,000 Beerchain Beercoins (BCBC). The coin supply is set at this number to let the system operate for 10 years with 10,000,000 users (under the assumption of the average German beer consume) and includes the coins used for the ICO and company. We calculated the needed amount of bottle caps/NFC tag as followed:

$208 \text{ (beer per year)} \times 10 \text{ (years)} \times 10,000,000 \text{ (users)} = 20,800,000,000 \text{ caps/tag}$

The average scan/transmission will generate 2.98 Beercoins.

$20,800,000,000 \text{ (caps)} \times 2.98 \text{ (Beercoins)} = 61,984,000,000,000 \text{ coins}$

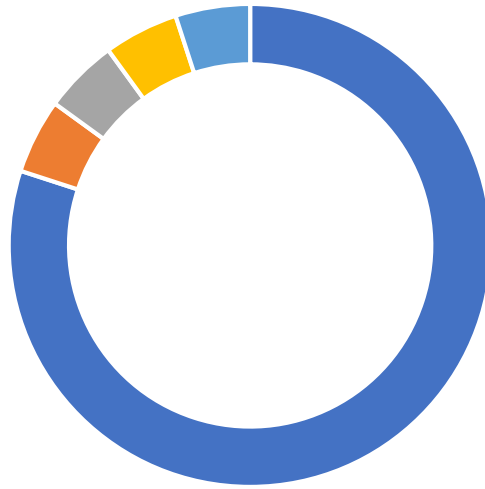
The coins used for the ICO and company will amount to 20% of the total supply and are set at 15,469,000,000 coins.

Distribution

The Beercoin will be mostly generated through beer. 20% of the total supply of coins will be generated when the contract is deployed and be sold to investors and used in the company. The coins are distributed as followed:

- Minalable coins (80% of total supply) = 61,984,000,000,000 coins
- Initial coin offering (ICO) to fund Development (5% of total supply) = 3,874,000,000 coins
- Entry coin offering to fund Expansion (5% of total supply) = 3,874,000,000 coins
- Company (5% of total supply) = 3,874,000,000 coins
- Founders (5% of total supply) = 3,874,000,000 coins

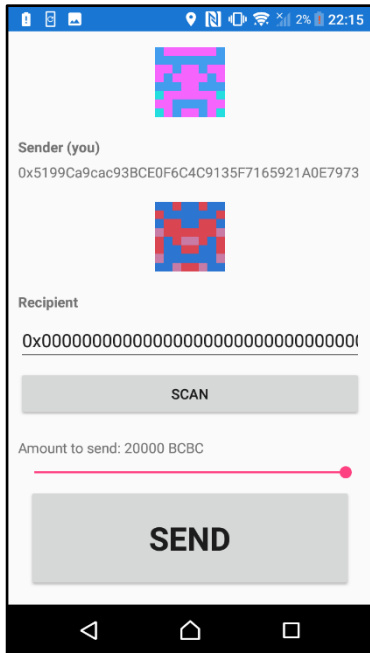
Beercoin distribution



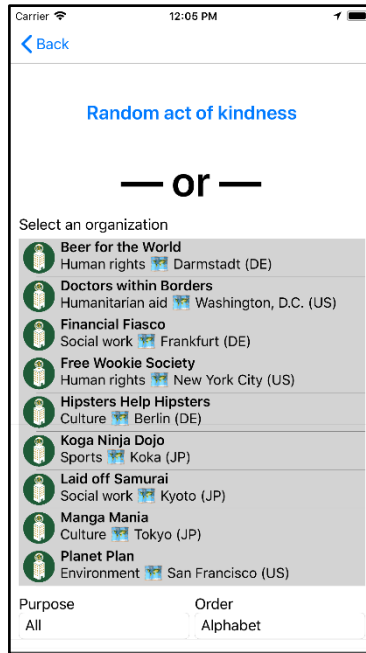
■ Minable coins ■ ICO ■ Sale ■ Company ■ Founders

Smartphone app

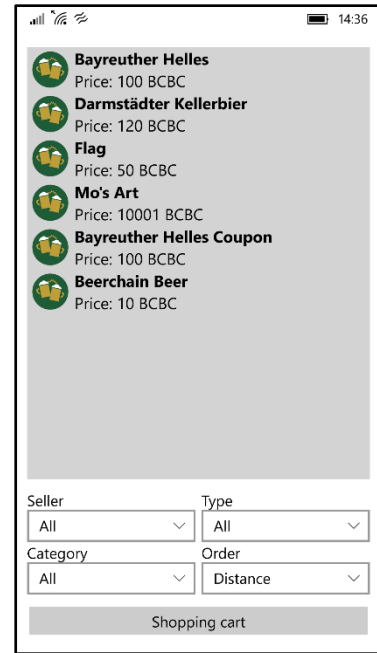
The app will be made available for Android, iOS, and Windows. A demonstration version exists so users can freely play around and understand our concept.



Android app



iOS app



Windows app

We expect that most of our users initially don't know much about the blockchain concept and especially are not willing to learn on it while drinking beer. For the sake of simplicity, we eliminate the advantages of the blockchain for the average user: After downloading the app, a log-in via social media is prosed. After successful registration in our system, we assign an Ethereum address to the new user and manage the private key and password securely on our server. Both can be downloaded and deleted from our server at any time or kept there forever. That means the user can decide to learn about the technology and properly use it one day, or just participate in the Beerchain for fun.

Scanner

The app can extract codes with Beercoin values from QR codes and NFC tags or accept them as direct text input. Those codes which are ultimately text consisting of eight simple characters are combined with the user's unique identification and sent to our server, which then verifies both code and user. If successful, Beercoins are sent to the user's Ethereum address via the Beercoin smart contract.

Wallet

The app's wallet section offers an overview over scanned codes and provides standard functionality for sending and receiving Beercoins as well as checking past transactions.

Charity

Our secondary objective in developing the Beercoin is to bring some joy into the world. Currently, simply reading the news can ruin your mood. Either Trump makes a questionable comment, a natural disaster strikes somewhere, or a terrorist attack happens. The day usually gets a little better if you drink your after-work beer. With our Beerchain, users will be able to donate to a good cause directly

through a Beerchain app and bring a little joy to the unfortunate people who are unable to enjoy that after-work delight.

We present a couple of different charities from which the user can choose. The coins donated this way will either be sent directly to the charity organization or we will handle the transaction to turn the coins into fiat money and send them. Not everyone has a specific cause close to their heart, so we will have a button called “Random act of kindness” to send the coins to a charity organization at random. After pressing the button, the user will be informed on which organization will receive their Beercoins and the amount to send can be adjusted.

Since small and local charity organizations often have trouble getting the recognition they deserve and the funding they need we want to give them a fighting chance to compete with the big charity groups, by default the organizations are sorted by closeness to the user’s current GPS location. This way the user can help improve his community and take a look at what kind of charity work is done around him.

Store

The breweries participating in the Beerchain will have the opportunity to sell their merchandise or beer through the app. Purchases can only be made with Beercoins. This way the user will get the opportunity to either collect a beer glass set of their favorite brewery or simply try a different beer from a brewery participating in the Beerchain.

We won’t do shipping ourselves, but only collect and burn Beercoins on behalf of the breweries. Breweries decide the amounts of products to sell for Beercoins themselves. You cannot claim the right to exchange Beercoins for products – this is completely up to the breweries, although we require a minimum contribution in store items related to the amount of codes provided for the brewery.

The same principle is applied for bars and stores participating in the Beerchain. Beside the pledged amount of beer (requirement for bars and stores), it is completely up to every business to decide how many Beercoins they accept as a form of payment.

Requirements for partners

This section describes what is expected from interested breweries, bars and stores to participate.

Breweries

Breweries need an interface to feed the production plants with the codes they receive from us in image and/or text format. They need to be able to print information on bottles individually to some extent.

There are multiple possibilities to print codes on bottles. The following list of is sorted by expected costs in descending order. As the customer experience suffers when using the cheaper options, if feasible, the top-ranked ones should be preferred.

1. Printing unique codes into the bottle cap
 - a. Print QR codes (our preferred customer experience)
 - b. Print numbers and letters
2. Printing the codes for diamond, gold, and silver values as mentioned before. However, the bronze values, which form 90% of all codes, are printed as two codes A and B that must be combined by the app via a mathematical operation to form the final code that is sent to the server. Code A is unique and publicly visible on the bottle label, while code B is one code out of a pre-defined selection. This saves printing costs if breweries can only provide a limited amount of printing plates. A unique code A is always printed on the label for appearance reasons but has no meaning for diamond, gold, and silver value codes.
 - a. Print code A and code B as QR codes
 - b. Print code B as a QR code, code A as numbers and letters
 - c. Print code A and code B as numbers and letters
3. Printing code A and code B as mentioned before, but only print diamond and gold caps (i.e. 1% of the bottle caps to print) as described in the first possibility.
 - a. Print code A and code B as QR codes
 - b. Print code B as a QR code, code A as numbers and letters
 - c. Print code A and code B as numbers and letters
4. Printing code A and code B as mentioned before, but only print diamond caps (i.e. 0.01% of the bottle caps to print) as described in the first possibility.
 - a. Print code A and code B as QR codes
 - b. Print code B as a QR code, code A as numbers and letters
 - c. Print code A and code B as numbers and letters
5. Printing all values as code A and code B as mentioned before
 - a. Print code A and code B as QR codes
 - b. Print code B as a QR code, code A as numbers and letters
 - c. Print code A and code B as numbers and letters
6. Printing one publicly visible code on the bottle label.
 - a. Print QR codes
 - b. Print numbers and letters

Bars

Bars will be given the needed amount of beer coasters equipped with an NFC tag to ensure a smooth workflow. They will need to have an NFC-capable device, on which a special app for bars can be installed on, in order to write the codes they received from us.

The participating bars will have to supply a certain amount of beer, which can be bought with Beercoins, as form of payment for the system. Every month they will have to supply a contingent of a couple of beers which can be bought through our Beerchain app. Beer bought through this mechanism will help increase the fiat price, since every Beercoin spend this way will be burnt. We expect that this way, we are not only giving the user a convenient way to turn their Beercoins into beer, but to also to drastically decrease the amount of Beercoins we need to buy from the market.

The beer coaster given to the participating bars will be made out of a reusable material and will be, like the NFC tag, waterproof. The reusability ensures that the cost of the system is kept to a minimum. The beer coaster will simply have to be given a new code every time a beer is ordered and it can be cleaned, given a new code and used again. We will include a short introduction of the Beerchain on the beer coaster to inform new potential users about how to mine their precious Beerchain Beercoins and what they can use them on.

Stores

Stores participate the same way as stores do, except that they print the codes on paper. They therefore need a Windows system connected to their receipt printer, so they can run our special app for stores.

Revenue streams

To make it possible that the fiat price for a single coin doesn't drop beneath a certain threshold and to keep our servers running, our staff paid and our business internationally growing, we will generate direct or indirect revenue through our app. Besides, we earn Ether that can be sold to get fiat money.

We expect to generate a minimum value of 7 USD cents with a single scan/transmission. This will be sufficient to keep the lights on and to ensure a minimum fiat price of a single coin.

App

We sell data collected via the app and serve ads of other companies to generate revenue.

Data mining

Data mining will generate the highest amount of income per scan. Looking at preexisting data mining companies we can determine an average value per consumer purchase. On average, the value generated for the consumer through contributing his data is somewhere between 0.5% and 5% of the purchase price. For certain promotion campaigns and with coupons the amount can increase up to 25%¹. We will estimate that the general price of a bottle is \$0.75 which corresponds to a generated value ranging from \$0.00375 to \$0.0375 per scan, with a high-end option of \$0.1875 per scan.

During the transaction between the user's phone and our server, we will collect different types of user data. This will include data on what kind of beer was scanned, approximate age, gender and what kind of advertising that user has been shown. There will be an option to send the time and place of consumption as well. The data will then be encrypted and sent to our server. This data will be anonymized, bundled and sold to different breweries to generate the funds needed to keep our business running and buy Beercoins back (if needed).

As our data mining will be able to gather further data points than current systems we expect to generate around \$0.04 per scan.

Advertisement

To calculate the average advertising cost per bottle we will work backwards from estimating the current average for the German beer market since the data is accessible. In 2016, the overall spending for beer related advertising for the German market was approximately \$410 million². As an exact number of the alcohol consumers is not available we based our calculations on an estimate assuming that 50% of the people who are of legal drinking age are consuming alcohol occasionally or regularly. The number of potential beer consumers can therefore be estimated by the following calculation:

$82,175,684$ (citizens)³ / 70% (consumers above the age of 16)⁴ / 50% alcohol consumers = 28,761,489 potential consumers.

¹ https://de.wikipedia.org/wiki/Payback_%28Bonusprogramm%29

² <https://de.statista.com/statistik/daten/studie/151374/umfrage/werbeausgaben-fuer-bier-in-deutschlandseit2000/>

³ <https://de.wikipedia.org/wiki/Deutschland>

⁴ <https://de.statista.com/statistik/daten/studie/1365/umfrage/bevoelkerung-deutschlands-nachaltersgruppen/>

The average amount of money spent by beer-related companies on advertising for a single consumer in Germany in 2016⁵ can therefore be estimated by dividing the total amount of money spent by the estimated number of potential consumers.

$$\$410,000,000 / 28,761,489 = \$14.25$$

Since we are interested in the amount spent on a single bottle, further calculations are required. The average German consumed 104l of beer in 2016. To simplify we will assume that the beer was mostly consumed in a standard 0.5l bottle. This would leave us with 208 bottles per person in 2016 with an average of \$0.0685 spent for advertising per bottle. We expect to generate a similar number through specific Ad space and will estimate \$0.03 per scan.

In the beginning we will include some classic app advertising. Depending on the type of advertisement we expect to generate between \$2.5 and 8 eCPM, which would boil down to an average of \$0.005 per scan.

Ethereum network

Within the Ethereum network we earn Ether through one-time coin sales. If necessary, we sell Ether for fiat money.

To have no variable costs for our Beercoin-related transactions, we want to act as a verifier as soon as the Proof of Stake protocol for Ethereum launches. As we most likely don't need all our resources for our own transactions, we want to verify those of others and collect transactions fees. However, we cannot give numbers at this point as the protocol change hasn't been done yet and we cannot state for sure that we are able to collect sufficient funds to become a verifier.

⁵ <https://de.statista.com/statistik/daten/studie/4628/umfrage/entwicklung-des-bierverbrauchs-pro-kopfindeutschland-seit-2000/>

Costs

As all businesses we have recurring costs. Additionally, we also defined optional higher-cost investments that would be highly beneficial to our cause in case we could fund them.

Daily business costs

We estimate our daily cost distribution as follows. Since the distribution is only an estimate it can and will be subject to change.

- Core Development - 35%
Development of the Beerchain system. Programming of the app, data tools and setting up our servers.
- Operational - 20%
Covering running expenses. This will include hosting and infrastructure costs, staffing, management and other related costs to keep the Beerchain network running.
- Marketing and expansion - 35%
The expenses will be used for partnership development and direct consumer marketing.
- Legal and accounting - 10%
This covers the legal costs associated with running a business and the necessary accounting costs that come with it.

In the beginning of our activities, we need to invest into:

- Recruiting a team of developers and administrators for the server infrastructure
- Extensive testing of infrastructure and app
- Launching the Beerchain and paying the fees

To expand our business, we planned the following activities:

- Recruiting a team of community managers and translators to enable the Beerchain to be used internationally
- Launching a Global Beerchain Campaign for acquiring breweries as well as bars and stores around the globe

Infrastructure investments (optional)

To build up a long-term business, we investigate:

- Buying instead of renting offices
- Setting up own bottle cap production
- Having a stake to be verifier in the proof of stake Ethereum network

Coin sales

The following sections provide information investors need to participate in both coin sales.

Initial coin offering

The initial coin offering will have the following conditions:

- Timeframe: May 18, 2018 until June 30, 2018
- Hard-capped volume: 3,874,000,000 Beercoins (5% of total supply)
- Soft cap: 8,000,000 Beercoins / 48 Ether
- 1 Beercoin is sold for 0.000006 Ether, 1 Ether brings 175,000 Beercoins
- 1 Beercoin is sold for 0.004 USD, 1 USD brings 250 Beercoins (if 1 Ether = 700 USD)
- Unsold Beercoins from the contingent will be burnt

Entry coin offering

We currently plan the Entry coin offering with the following conditions:

- Hard-capped volume: 3,874,000,000 Beercoins (5% of total supply)
- 1 Beercoin is sold for 0.000012 Ether, 1 Ether brings 87,500 Beercoins
- 1 Beercoin is sold for 0.008 USD, 1 USD brings 125 Beercoins (if 1 Ether = 700 USD)
- Unsold Beercoins from the contingent will be burnt

Team

The people making the Beerchain project possible are presented here.



Tobias Meyer / Founder and Executive

Bavarian beer enthusiast who wanted a cryptocurrency based on beer. Is about to finish his state examination in law. Responsible for everything – negotiations, contracts, content, and more.



Moritz Markgraf / Co-Founder and Designer

Prefers a classic Pils. Has a bachelor's degree in architecture. Responsible for our website, creation of visuals and constructing prototypes.



Christoph Niese / Co-Founder and Developer

Prefers Japanese sake over beer but found deep meaning in beer-related project. Is about to finish his master's in computer science and is programming since childhood. Responsible for programming smart contract, smartphone app, microelectronics, and website plugin.



Felix Görlach / Communications

Enjoys a nice and cold "Bayreuther Hell". Is studying Intercultural Studies. Responsible for managing our social media accounts and posting content.



Jasmin Armbrüster / Visual Design

Likes to try beer from all over the world but prefers traditional Hessian "Apfelwein". Has a diploma (equivalent to master's degree) in Graphic Design. Responsible for film production and branding.



Benedikt Tröster / Security Development

Likes "Flensburger" from northern Germany. Studies for his master's degree in IT security and has hands-on experience in infrastructure design, pentesting and assessment. Responsible for designing and securing the server infrastructure.



Detlev Artelt / Senior Consultant and BeerAmbassador

The Belgium “Leffe Blond” is his beer but he enjoys all other great Belgian beers as well. He is a known key note speaker, author of 10+ books who comes with 25+ years of knowledge in technical communications like unified communication and collaboration and an enormous network of professionals and top managers in DACH.



Patrick von Steht / Technical Advisor

Is very busy with his job as an IT consultant, but always has a sympathetic ear for the Beerchain project in his free time. Among his many skills, he has profound knowledge of the blockchain technology. Destroyed some of our ideas and lead others to perfection. Without him, the Beercoin would not be what it is now.