

A dark blue vertical bar on the left side of the page. A blue arrow points to the right from the bar, containing the date.

01/09/2017

# Project Proposal

An Online Web-Streaming  
Service for Bitcoin-Exchanges

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## Executive Summary

### Overview

Cryptocurrency is the most popular digital currency in the market. Bitcoin, Ethereum and Litecoin, mainly discussed here, and all other digital currencies have no central authority, means they are decentralised systems. They use cryptography to control transactions and therefore are called cryptocurrency.

There are more than hundred cryptocurrencies available in the market. We see that some of the currencies loses value and never recovered, on the other hand, some are able to keep their value for longer time period. Bitcoin is one of them where it holds the position from the beginning of time and maintain the reputation and improve the value against all the cryptocurrencies as well as against the USD.

### Bitcoin Charts

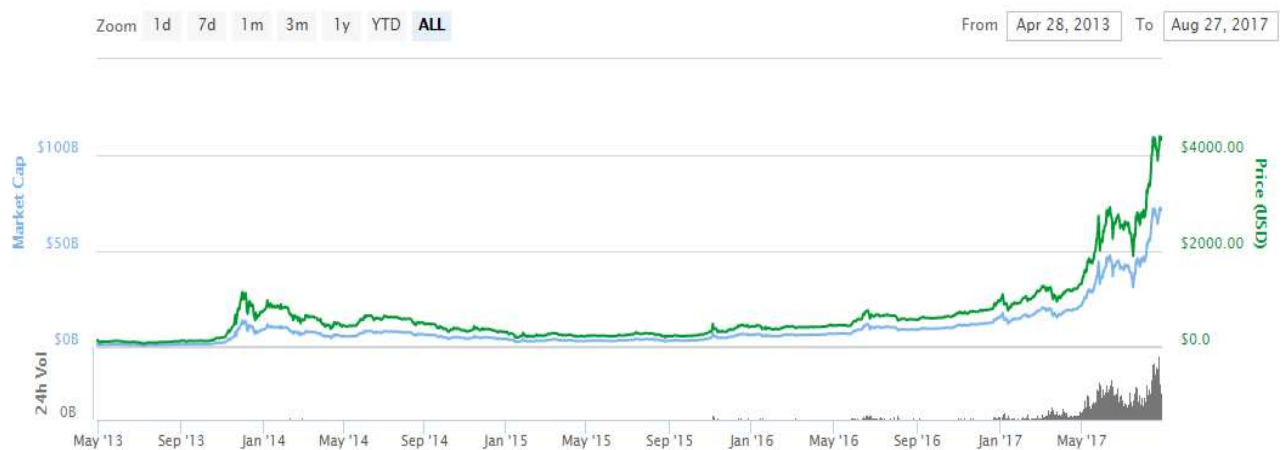


Figure 1 The Market capital and Price fluctuation in the four years of period  
(<https://coinmarketcap.com/currencies/bitcoin/#charts>)

### Ethereum Charts



Figure 2 Ethereum chart compared to Bitcoin over 2 year of period  
(<https://coinmarketcap.com/currencies/ethereum/#charts>)

## Litecoin Charts



Figure 3 Litecoin chart compared to Bitcoin over four year period  
(<https://coinmarketcap.com/currencies/litecoin/#charts>)

The figure 1, 2 and 3 shows the market capital with the price in USD from beginning of time of BTC, ETH and LTC consecutively. Compared with the other cryptocurrencies, these three are the most favourable one for the customers. This figure shows how these three products is famous among the users and how they able to maintain their reputation among the hundreds of other similar products.

## Challenges

Exchanges, all the time, plays a big role when it comes to the real-time currencies. There are many exchange which is used to buy and sell the cryptocurrencies. The market of exchange is very different. When new exchange appeared in the market is pushing the other one out of the market. The Mt. Gox, for instance, was the large exchange till 2014 when it crashes and exit the market in 2016. The market is getting vast and very ups and downs to the currencies. It is not possible for any exchange to play with all of the cryptocurrencies in the market. The GDAX, for instance, are dealing with three currencies namely Bitcoin, Ethereum and Litecoin. The security of currencies and increasing Cyber Crime would plays big role in the downfall of exchanges.

Coinbase (GDAX) mainly allow customer to trade in USD, for the user from outside United State, are worried about the current conversion rate and would find it difficult to trade. Our product will give the advantage for customer to trade in any currencies they want like, USD, AUD, SGD and many more. The user also worried about the product they are buying. None of the exchange shows the comparison between cryptocurrencies so that user can decide at one place and can buy the product easily. Our product will allow the customer to compare the three most important currencies, as discussed above, and can decide at one go.

## Key Technology in a Specific Industry

### Global Industry Overview

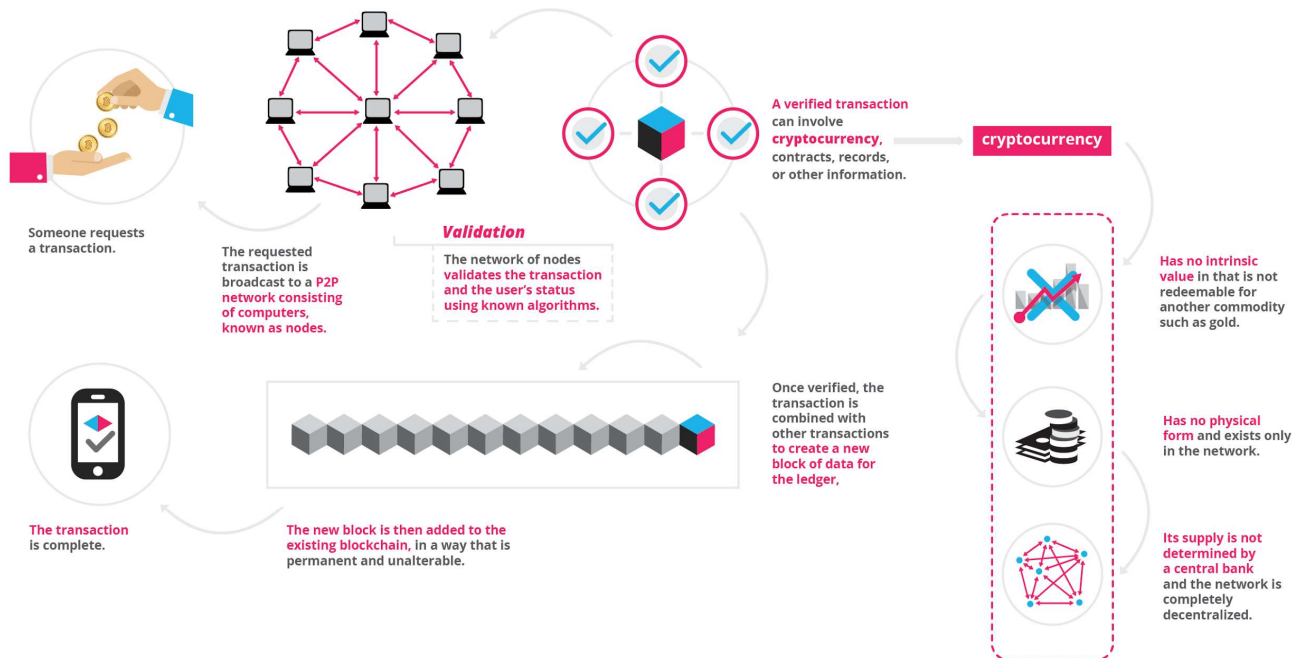


Figure 4 What is Block Chain Technology - ([1] <https://blockgeeks.com/guides/what-is-blockchain-technology/>)

Bitcoin is the very first created decentralized cryptocurrency, using cryptography to secure the transactions when trading different digital currencies for other assets. The key technology behind cryptocurrency exchange is called **blockchain**, a continuously growing list of blocks storing timestamps and transaction data, which is inherently resistant to modification of data. Once a new transaction is verified, the new block with these information is generated, and is added to the existing blockchain.

### Benefits of using this technology

- **Lower transaction costs**

The transaction fees for cryptocurrencies are small because it does not need a middleman to process the transaction. Unlike non-cryptocurrencies, people need banks and if money is transferred internationally, the transaction fee might be extremely high. Since the nature of the cryptocurrencies are digital and decentralized, people can transact the coins as they wish with or without a third party.

- **Secured & encrypted data**

Unlike the traditional currencies such as cash and cards, cryptocurrencies are transacted in a digital and encrypted way. A wallet can be stolen and the cash

notes or coins may be damaged. However, the virtual cryptocurrencies cannot be stolen since it is encrypted based on modern cryptography, which cannot be cracked theoretically.

- ***Fast transaction***

Since the transaction of cryptocurrencies are made through the internet, without a middleman. The transaction can be made 24 hours a day and 365 days a year in just a few minutes.

### ***Proposed solution***

Shik Bitcoin is a simple, full featured and web-based cryptocurrency visualization tool that anyone can use to visualize a real-time data based on true trade and exchange data from various of sources. The website includes at least three pages to visualize the data in different ways.

The main page contains a graph which is built with D3.js technology. The graph is composed of a bar chart, a pie chart and a table. The bar chart shows the comparison of three different currencies - Bitcoin(BTC), Ethereum(ETH), Litecoin(LTC) based on their number of transactions today and the market price. The pie chart will show the data data behind the Blockchain.info's pool information. It will list the name of the most popular bitcoin mining pools and the percentage of total known blocks. The table will show some overall information of these three currencies about today's currency exchange such as exchange rate and total exchange amount.

The second web page mainly visualizes a candlestick chart which shows the price movement of the currency from historical exchange data. The chart can be switched based on the three different currencies - Bitcoin(BTC), Ethereum(ETH), Litecoin(LTC). In addition, an order book and a historical trade data table will be displayed on this page. The order book includes buying and selling details of three cryptocurrencies. Each part includes the data of currency's pool size and its bid/ask price. These data will be displayed in a real time. In addition, the historical trade data table will include trade time, price and the volume of the trade.

The third page includes a world map that the trade information will pop up dynamically in real time based on the trade ip's physical location. This map only shows the data for Bitcoin but not other two currencies because of the lack of data source. If data can be found with other two cryptocurrencies, the information will be visualized as well.

Other web pages may mainly describe the usage and the benefits of our product. Adjustments and improvements will be made during the progress of this project.

## *Benefits Delivered*

We aim to deliver the benefits of this product to as many customers as possible all over the world. The benefits that may be obtained from our product are:

- ***Enhance the comprehension of the data***  
By using our web-based cryptocurrency visualization tool, people who are interested in Bitcoin exchange can get first hand information from our website and view it in a user-friendly web user interface. In this way, the data will no longer be boring and unattractive, thus the comprehension of the data will be increased by these creative graphs.
- ***Experience all features in one tool (All-in-One)***  
In this project, our web-based tool for cryptocurrency visualization is full-featured and easy to use because we focus on almost every aspect of the analytic method. Various creative graphs will be used in order to achieve this goal.
- ***Help choose which cryptocurrency to start***  
The most important benefit of using our visualization tool is that customers can compare three different cryptocurrencies in one graph to get a general understanding of each currency compared with other two. Thus, it is easy for customers to choose which currency is the most interesting one to start the trade.

## *Business Environment*

### ***Target Market - The cryptocurrencies exchange market***

Since we serve for those people who want to make exchange and trades with cryptocurrencies, the cryptocurrencies exchange market itself is our target market. Many exchange website, such as Coinbase (GDX), bitmap etc would be affected after launch of our website. In the later section we will figure out the reason for this claim.

### ***Demand in the Target Market.***

The demand in the market is increasing rapidly and is ready very large. In 2016, the number of users of one of our analyzed cryptocurrency, Bitcoin, has reached 100 million. Although the number of users of Ethereum(ETH) and Litecoin(LTC) still remains little with a steady growth, these two cryptocurrencies have large potential in the future. The total market size of the product would be at least 150 million users with at least 115 billion US dollars as total market capital of the cryptocurrencies. With its unique advantages and features, the market of visualization of the Bitcoin will further grow.

## Implementation Strategy

### Methodology & Technical strategy

- **Agile Methodology** is the most suitable model for web development, as designing a website can be changing all the time. Differ from traditional *Waterfall* model, *Agile Methodology* uses adaptive planning, that is, our group members will work on a series of “*Sprints*” during the development phase. Also, our client can have regular inputs and we will be able to adapt and incorporate new ideas, and constantly test the new designs.

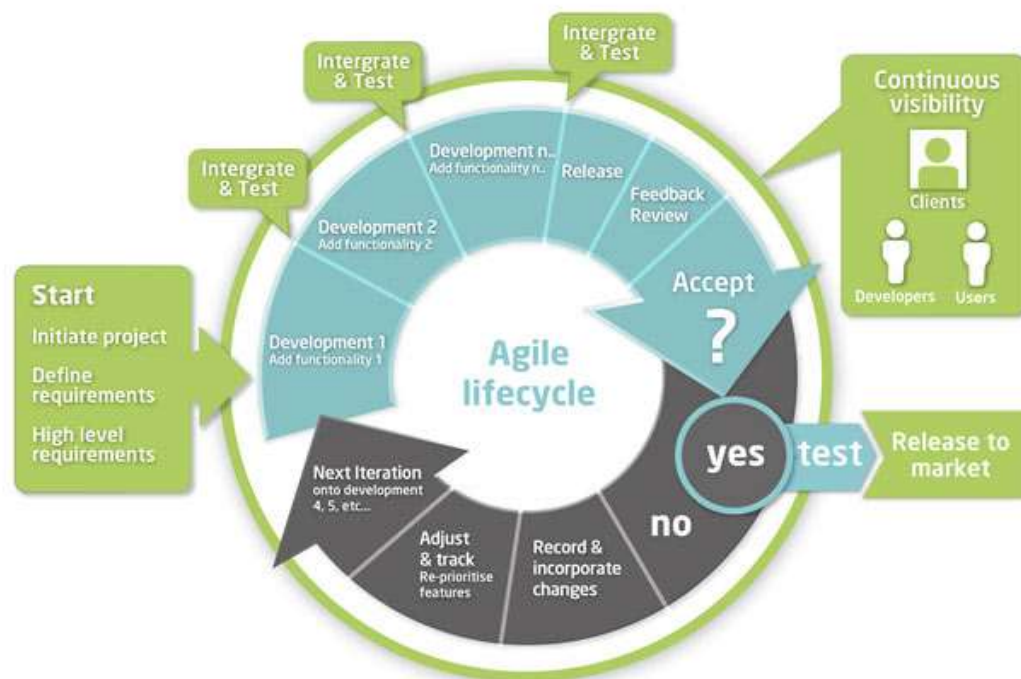


Figure 5 Agile Methodology ([2] <https://artdriver.com/blog/what-is-agile-project-management>)

- **Database service**  
From starting, we will be using open-source database, **MongoDB** to store data locally, ease of use when offline. Later on, we will be using cloud service, such as **Microsoft Azure** to manage data for website.
- **API (GDAX & Blockchain.info)**  
From GDAX, we get the historical trade data, currency rate data and the order book data of three different cryptocurrencies for visualization use.  
From Blockchain.info, we obtain the exchange relay IP address and the exchange details for our dynamic world map graph. Since some of the data should be visualized in real time, we also use the websocket interface to get real time data. [3] [4]



## *Timeline of Project*

Time	Task
Week 1	<ul style="list-style-type: none"><li>• Team Formation</li><li>• Kick-Off Meeting</li></ul>
Week 2	<ul style="list-style-type: none"><li>• Initial meeting with client</li><li>• Identify deliverables</li></ul>
Week 3	<ul style="list-style-type: none"><li>• Background research</li><li>• Define project strategy</li></ul>
Week 4	<ul style="list-style-type: none"><li>• Define tasks</li><li>• Start proposal</li></ul>
Week 5	<ul style="list-style-type: none"><li>• Proposal Submit</li></ul>
Week 6	<ul style="list-style-type: none"><li>• Design Home page</li><li>• Design all 3 pages</li><li>• Create databases</li></ul>
Week 7	<ul style="list-style-type: none"><li>• Fetch data from API and Store value in the databases</li><li>• Integrate and Test</li></ul>
Week 8	<ul style="list-style-type: none"><li>• Progress report start</li></ul>
Break	<ul style="list-style-type: none"><li>• Finalize the Visualization</li><li>• Coding to fetch data from database</li></ul>
Week 9	<ul style="list-style-type: none"><li>• Progress report submit</li></ul>
Week 10	<ul style="list-style-type: none"><li>• Project Report start</li></ul>
Week 11	<ul style="list-style-type: none"><li>• Start preparing slide for presentation</li></ul>
Week 12	<ul style="list-style-type: none"><li>• Presentation</li></ul>
Week 13	<ul style="list-style-type: none"><li>• Final project report</li></ul>



## **Work Breakdown Structure**

- Forming group & get to know each other (week 1)
- Project initiation (week 2)
  - Initial meeting with client
  - Identify assessments & gain feedback from client
- Background research (week 3)
  - Define project strategy
- Project overview (week 4)
  - Project overview
  - Define project sprints
  - Proposal
- Sprint #1 (week 5 & 6) - Site structure
  - Discover
  - Design concepts
  - Develop
  - Integrate & Test
  - Feedback review
- Sprint #2 (week 7, 8 & 9) - Webpage artwork, UI, data visualization
  - Discover
  - Design concepts
  - Develop
  - Integrate & Test
  - Feedback review
- Sprint #3 (week 10, 11) - Test, validation & optimization
  - Discover
  - Design concepts
  - Develop
  - Integrate & Test
  - Feedback review
- Final review & Launch (week 12)

## **Milestones**

Milestone	Deadline	Status
1. Project Proposal	1/09/2017	Finished
2. Project Progress Report	6/10/2017	In Progress

3. Design Web Page	18/9/2017	In Progress
4. Database Connectivity	05/10/2017	Not Started
5. Implement Web Services (API's)	20/10/2017	Not Started
6. Testing	30/10/2017	Not Started
7. Presentation	25/10/2017	Not Started
8. Project Report	03/11/2017	Not Started

### *Why this Product Solution*

There are many currency exchange site are available and many of them has attractive visualization which is capable of attracting customers. The user friendly site would be the key to success where user can find everything they need from that site. Almost every site such as GDAX has unique feature which is very useful but, users are unable to find everything there, for instance, the currency converter (from USD to AUD) or the cryptocurrency rate compare and have to search for other site to compare the rate or to find the best cryptocurrency. Our proposed idea mainly based on the customer satisfaction so that they can find everything they need from the site.

### ***You can compare the rates of three cryptocurrency***

The client need to compare the three or more cryptocurrency to find the best for their need or to do a financial analysis and decision making. Most of the trading website such as GDAX shows one cryptocurrency rates at a time which is not intuitive, whereas, our website can display the historical trend of three kinds of cryptocurrency on one graph. They can use our website to see those three rates of cryptocurrency together. They can differentiate the on going trend in the market.

### ***You can see the availability of each cryptocurrency***

For customers, the real-time information is very important and this functionality plays very important role in the success of any website. The real-time display of the three cryptocurrency means that you don't have to switch between several pages. We are able to show this function so that user can use our website more convenience and novelty.

### ***You can see the exchange rate to any currency***

If the client want to know the exchange rate of different currency. Most of the bitcoin trading websites, such as GDAX, are only traded with USD. And our website can display the exchange rate information of the mainstream currencies in real time. They can use our website to see the currency exchange rate around the world. It can save user's time to query currency rates between currencies. At the same time, users can also know what currency transactions are best for themselves when they doing cryptocurrency exchange.

### ***You can see the realtime worldwide exchange in a single map***

If the client want to know the location where the trade happened, they can use our website to know real time global trading information. It will help customers to acknowledge from where the majority of the transactions came from and can predict by itself the cost of cryptocurrency in the future. It will help customers to conduct investment and financial analysis as well.

### ***The usability and design of our website is excellent***

If the client want to use a comfortable and user friendly website then they will be happy to use our website. Because we spent a lot of effort on designing the usability of the website to make it more attractive mainly focus on the user demand. Customer can use our website very intuitively and simply which makes our website better than the available website in the market. There are also many animations on our website, which make customer feel more interesting and professional to our website.

## **Reference**

1. <https://blockgeeks.com/guides/what-is-blockchain-technology/>
2. <https://artdriver.com/blog/what-is-agile-project-management>
3. <https://api.gdax.com>
4. <https://blockchain.info/api>
5. <https://www.coindesk.com/2016-bitcoin-challenge-100-million-users/>