When we started on the project, Karens and I started to read in on how the bitcoin peer-to-peer payment system actually works. After understanding the most of the digital value, I started on collecting data. The website www.blockchain.info was a perfect source for our data. The website provides lots of data via an API. I started looking at the hard to understand web socket, which provides real time transactions that are being made all over the world. Every transaction is relayed through the network and is first picked up by one IPv4 address. These address we wanted to visualize on the world map. To do this Karens made four different visualisations for this real time data, these visualisations were mostly focused on the geographic spread over the world. I started to look at the amount of money that was transferred by all the transactions.

Transaction values

For each transaction there is an amount of bitcoins involved and it is relayed by an ip-address. For each ip-address we look up the location values through the API of www.ip-api.com. By grouping all the transactions on location it can be made clear how many transactions are done, but for this visualisation is more interesting to see the values of each transaction.
By using the diameter of a circle, the location and the amount of money that was transferred is made clear. A problem I encountered was the size of the circles. There are transactions that only transfers 3 euro, but also transactions that transfer over 1000k euro. To make the first one not too small and the second one not too big, I used a 10 logarithmic function to give a good impression about the transaction. Also clicking on the marker shows the amount of money on that location.

Propagation transactions

A transaction is relayed through the network by several IP addresses. To visualise the data Karens gathered from the three examples, I use the arrows the Google API provides. Through the arrows it made clear from which location to which location the transaction is propagated. I provided only the last three locations with arrows, because with more than 10 arrows it became very unclear on the map.

Day-Night

I was wondering if day or night would make a difference on the activity of bitcoin transactions. Therefor I installed a button that shows clearly on the map where it is day and where it is night.

Blocks retrieval

I also coded a small piece of JAVA code to gather information about the blocks. Unluckily this information was after all not feasible to use in Google maps.

Conclusion

I really enjoyed working together with Karens on this very interesting project. I think we were equally motivated about the project and we both put a lot of effort into it.