



Image: TheDigitalArtist

The Intergalactic Guide to Blockchain

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Is Blockchain eating the world? And what does it do, anyway? Don't panic! A few minutes is all it takes to understand the basics - or else you get your bitcoin back. For geeks, we'll also have a hands-on exercise to get started!

"In 2031, seven years after being acquired by Tencent, Apple releases the 2nd generation of its iView product - a smart contact lens ultimately responsible for the demise of the smartphone. Wearable technology, along with lens ultimately responsible for the demise of the smartphone. Wearable technology, along with virtual reality has also become the primary revenue driver for Google after the internet giants lost their monopolies on people's data and identities. With Uber, eBay and finally Facebook shutting down operations it is obvious that times have changed. People now truly own their data, are able to find rides, buy products and carry out day-to-day transactions without the need for a middleman. Banks have turned into technology powerhouses with a human-centric consulting approach and new revenue models around B2B, insurances, and lifestyle."

- blockchain will
- blockchain will
- blockchain will **change the world**
- blockchain will **change the world**
- blockchain will **fail**
- blockchain will **disrupt every industry**



The technology responsible for this future scenario (however likely or unlikely) is, of course, blockchain. It allows building **globally distributed databases** consisting of chained blocks that everybody can get access to. **Systems that nobody owns**, are impossible to tamper with, and **cannot be shut down**. In 2018, these **planet-sized supercomputers** already exist, with cryptocurrencies such as Bitcoin being prominent applications, and more **use cases** in healthcare, manufacturing, and logistics evolving.

So it's not just about Bitcoin?



Blockchain is a technology concept around distributed, open ledgers. Bitcoin is a cryptocurrency platform built using this technology, but there are many other possible ways to leverage the benefits that blockchain brings. Imagine a *cold supply chain*, where a pharmaceutical company in Switzerland can ensure its medicine is shipped to Nigeria at a constant temperature even with 5 different shipping companies in various countries involved. In this scenario, all systems and sensors would write data to a distributed database based on blockchain technology.

Bitcoin itself keeps making headlines and it will be interesting to watch what will happen next.

Tell me more about that globally distributed database. Why can't it be shut down?

First of all - there are several blockchain networks. Public ones include [Bitcoin](#) and [Ethereum](#). Consortium blockchains are only available for a selected audience, such as the one from [JPMorgan Chase](#) for example. Blockchains use decentralized P2P technology - think BitTorrent - so unless you create a chain that is entirely private, there will be no single, central point and data is replicated to all clients who have access. In other words: *every client of a blockchain is, in fact, a node in the 'cluster' that usually contains a full replica of the entire data. That's some massively redundant database.*

I keep hearing about Mining. What is that about?

Right. This is the point where cryptocurrencies come into the picture. If everybody stored data inside a distributed chain liberally - and we have just found out that everybody will get a full copy of it onto their hard drives - the size of the database would grow out of proportion pretty quickly. That's why blockchain comes with a built-in currency as an economic mechanism to regulate this. In order to write data onto the blockchain, you'll have to pay *gas* to *miners* - they carry out the necessary computations to ensure the overall integrity of the system. You make money by, well, doing the mining or alternatively, receiving currency from someone else. Some cryptocurrencies like Bitcoin and Ether can be exchanged for *money in the real world*. That's where mining is becoming interesting.



Will Blockchain really disrupt everything?

There's a wide range of opinion on this and [no shortage of news coverage](#). I encourage you to keep reading about the topic and find out if your industry could benefit from it & how. Personally, I'm skeptical about currencies but excited about the use cases that provide identity & distributed data storage.

I'm a geek and will probably only understand if I can try this hands-on

Great! Let's play with the [Ethereum](#) test network Rinkeby. Why? It's fast, and you can request 'toy money' in an automated fashion. The command line tool [Geth](#) will be all we need to install.

```
expected=1136
INFO [01-21|13:38:00] Imported new state entries
lapsed=136.323ms processed=1929025 pending=retry=0 count=1934 e
expected=1136
INFO [01-21|13:38:00] Imported new block receipts
lapsed=914ms bytes=181303 numbers=852739 hash=3161f3?#40acf ignored=0
INFO [01-21|13:38:00] Imported new state entries
lapsed=136.323ms processed=1929025 pending=retry=0 count=1934 e
```

We want a solid & fast internet connection (as of today you'll need to download ~3 GB of data) and

```
INFO [01-21T13:38:01] Imported new state entries          count=2200
lapsed=52.724ms processed=1931191 pending=0      retry=0    duplicate=329 un
expected=1136
INFO [01-21T13:38:01] Imported new state entries          count=2194 e
lapsed=19.435ms processed=1933385 pending=19351 retry=0    duplicate=329 un
expected=1136
> 0 sync
> eth.syncing
{
  currentBlock: 775834,
  highestBlock: 1631389,
  knownStates: 1553217,
  pulledStates: 1534263,
  startingBlock: 405146
}
> 1 blockchain console
```

not everybody is comfortable running a P2P client in their own network, so take a Linux machine on the cloud. I have used a [5 dollar Ubuntu machine](#) from [Linode](#). We'll need more than one SSH terminal window, [GNU](#)

[Screen](#) is perfect for this and also helps you to keep your processes running in case your ssh connection dies. Ready to go? Here is the [Getting Started Guide](#) that has all the commands with explanations. If you run Windows or MacOs, just download geth - the rest of the exercise should work the same.

What's next? Learn how to start building blockchain applications in [this edX course](#) from the Linux Foundation.

If you enjoyed reading this why don't you have a look at [my other articles on LinkedIn?](#)

#blockchain #bitcoin #ethereum

