

The Coming Gold, Silver and BLOCK-CHAIN Mining Share Explosion!

**HOW YOU TOO CAN MAKE 924.9% ON
YOUR IRA, OR GENERAL BROKERAGE
ACCOUNT IN 14 YEARS, AS WE DID.
NOW INCLUDING BLOCKCHAIN STOCKS.**

Miller & Co.
JOHN MILLER
Haiku, Hawaii

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THE COMING GOLD, SILVER and BLOCK-CHAIN MINING SHARE EXPLOSION!

This book, now on Audible, Amazon & Kindle, relates the true story about how the author, a middle class American financial adviser, fed up with Wall Street, and it's useless, greedy, stock brokers, started using a simple, almost *auto-pilot* program, himself.

The "GSA-10" program that he used, and is still using, turned his \$100,000 original investment back in 2001, into \$729,100 in 14 years. These results are, in fact, "audited", and can be verified. This is a must read book for anyone that has an IRA, or general brokerage account, at any brokerage firm. The book,

published in May of 2015, and updated in April, 2018, and is now available on Amazon at \$12.95. Enjoy the presentation....

Introduction

INTRODUCTION

Thank you for buying my Kindle, or softcover book. It's my 5th, and perhaps the most important one. It tells the reader what I do with my own investments. I am revising the book to include Block-Chain stocks. In other words, I am staying with John Doody's GSA-10 (top 10 gold stocks), and his GSA-5 (top 5 silver stocks), and adding Block-Chain stocks to our mix.

Going forward, our investment program at Interactive Brokers will comprise 85% mining stocks, and 15% Block-Chain related stocks.

I don't have to tell you, the reader, how the Block-Chain development has changed the world of investing. If someone would have told me at the start of 2017, that Bitcoin, which started the year at \$1,000, would soar to over \$19,000, I would never have believed it.

As a financial adviser since 1987, I prided myself in my goal of doubling client's money every three to five years. But to have a new investment class (Bitcoin) rise some 1600% in one year, you just have to sit up and take notice.

Like many of you, I placed \$1,000 into Bitcoin, or perhaps a bit more, as a speculation. Out of fear, I didn't put any real money into it. This seems to ring true with my friends and clients. Not many put any substantial amount into Bitcoin, or the "Alt" currencies.

Instead, On March 28, 2018, I opted to put 25% of my IRA account into Block-Chain companies (stocks). By doing this, instead of having a minuscule \$1,000 working for me, I had a substantial amount of IRA dollars in the game.

My clients are following my lead, and are using their IRA's and SEP-IRA's, to invest in this fast growing sector. I am using IRA's as an example, but of course, you can use your individual brokerage accounts.

Many clients wanted to buy Bitcoin with their investment accounts. I had to tell them that it could not be done. When I told them that they could however, they could buy Block-Chain stocks in their investment accounts, they were overjoyed!

And the results of Block Chain stocks, in many cases have far surpassed the performance of Bitcoin. For example: \$1,000 invested into Bitcoin in early 2017 is worth \$8,000 by late March of 2018. Quite incredible, and this is after the early 2018, Crypto market correction! But, a \$100,000 IRA invested in Block-Chain stocks, at that same time, would have been worth perhaps a million.

Will the performance continue after this market correction? I think it will, but no one knows for sure. But one of our favorites, *Victory Square Technologies*, just stated that their 65% yearly growth rate will continue for at least five years. When I started with Lehman Brothers, I was taught that if I could find a stock that would grow at 20% a year, clients would all be millionaires in short time. To find one slated to grow 65% a year for 5 years, is a gift.

From time to time I send out a survey to my clients. The most recent survey asked them if they would like to see their investment mix change. Change from 100% mining stocks, to 85% mining stocks and 15% Block Chain stocks. The response was an overwhelming YES!

Actually it shouldn't have been a surprise when you look at the performance numbers for the top six Block-Chain publicly held companies. Here's their incredible 2017 yearly results.

1. Global Blockchain Technologies, year-to-date gain: 1,566%.

2. **BTL Group**, *year-to-date gain: 931%.*
3. **360 Blockchain**, *ear-to-date gain: 588%.*
4. **Riot Blockchain**, *year-to-date gain: 313%.*
5. **Hive Blockchain**, *year-to-date gain: 237%.*
6. **Victory Square Technologies**, *year-to-date gain: 1,451%.*

To learn more about how we intend to merge the Block-chain companies into our precious metals program, please go to our website, which explains it all: Go to: **GoldShareInvesting.com**.

Now let's continue forward with our revised "The Coming Gold, Silver & Blockchain Share Explosion!" I hope you enjoy the book, and profit from it, and put the program to use at a discount broker.

Or, join my "piggy-back" program at Interactive Brokers, relax, and let me piggy-back" your account with mine. Then, just view your monthly statement (which should be exceptional in 2018-2019). For more information on my "piggy-back" program, please visit our website: **GoldShareInvesting.com**.

The Coming Gold, Silver & BlockChain Share Explosion!

The Gold & Silver Share Explosion!

On January 1, 2001, I subscribed to John Doody's GSA-10 newsletter. That same day, my wife Monica, and I, invested \$100,000 in his program, at Interactive Brokers.

We vowed to promptly make all changes that John Doody recommended. And more importantly, we vowed NEVER to sell any stocks in the program, unless told to do so. Or, and this is important, never add any personal favorites to the mix. If you want to speculate, do so in another account, keep this account strictly GSA-10, or GSA-5.

We never put any more money in our investment account over at Interactive Brokers. How did we do? Before telling you, let me say that before investing in this venture, Monica and I were only so-so investors. We'd make \$40,000, then give Back \$20,000, and so on. We were getting nowhere fast! This was our final attempt at securing our future. As we say in the book, It worked, "Boy did it work". OK, here's the numbers:

Our \$100,000 investment that we invested at Interactive Brokers on January 1, 2001, at the end of 2015, was worth a staggering **\$729,100**. Don't believe it, please do, as these figures were audited by "Alfa Verification". Actually our numbers differed by about \$5,000, from John Doody's, due to the fact that my end of year "rebalancing" was different than his. You will learn what "rebalancing" is, later in the book.

Most of my clients at that time, did not have \$100,000, but many had \$10,000. Using the same time period, same 27.3% average annual gains, any client that invested \$10,000, on January 1, 2001, and did not stray from the program, would have in their Interactive Brokers accounts \$72,910, or close to it, due to year-end rebalancing.

Will these results repeat? It is my opinion that they will, but as we say on Wall Street, "past performance is no guarantee of future results" On to the Introduction.

About the Author & How he Can Help ...

John Miller is an American licensed Investment Adviser living in Auckland, New Zealand, and Maui, Hawaii. Besides Managing investment accounts, He writes books to help Americans get their investments and savings out of harm's way, he writes a weekly newsletter, provides free financial advice, and answers all E-Mails. With regard to this book, John says "you don't need a financial professional, you can actually do it yourself with a discount broker."

He will even help you get started at the discount firm they use (if you

don't wish to do it yourself). John has been licensed financial adviser in the U.S. since 1987, and owns his own Registered Investment Adviser firm (Miller & Associates).

For those readers, or radio listeners needing some assistance in getting your savings and investments out of harm's way, please write him an e-mail at: wallst101@hotmail.com

If you'd like more information on how to open an Interactive Broker's account (U.S. or Hong Kong), please contact him, at: wallst101@hotmail.com.

Testimonials

"Loved your book, and glad you did all the investigative work for us. I have heard of the John Doody system, but didn't pay much attention to it until I saw his record cited in the book. Can you help me open an investment account at Interactive Brokers (international)?" PS – Glad you included BlockChain in your program. *Phil Bayly, Clearwater, Florida*

"Do you really think that John Doody can reproduce those gains going forward? Enjoyed the book, and especially liked the part about you adding Larry Edelson to the mix. The pair should improve overall performance as you discuss in the book. Is the book on Kindle also? If so, I'd like to pass the link on to my friends and family for their IRA's". *Richard Law, Flushing, New York*

"This book is different from the previous four. It explains what we can do to increase our net worth by not listening to our broker. For the last ten years, I have made nothing in the market; this system that you describe, sounds like a winner. Thanks for making it available to us". *Tom Ray, Bayside, New York*

"I like the fact that your book describes your reasoning: the general stock market *is* overvalued, and dangerous, but the mining stocks are

on the bottom ready to rise again. Boy, are they volatile. Using Larry Edelson will decrease some of this volatility, which is good". *Sabrina Simmons, Maui, Hawaii*

"Your book was great. I needed a system that was simple, and you could get in slowly, have your adviser even off positions quarterly, and have your adviser follow the instructions of Larry Edelson to the tee. Also, glad you will help us get our accounts up and running over at Interactive Brokers International". *Bill Scott, Honolulu, Hawaii*

Dedication

This book is dedicated to the thousands of investment club members that have stayed with us, learned with us, and survived financially with us, over the past twenty-five years.

Our thanks especially, to members of our original investment club: “The Tampa Bay Investment Club”. The Tampa club was featured in Money Magazine, and was said to be one of the largest, and most successful investment clubs in the U.S.

Further thanks go to the members of “The Maui Investment Club”, an educational, social investment club, located on the beautiful island of Maui, Hawaii. Without their support, the current “investment club International” would not have been born, and our journey to NZ would never have taken place. It was their financial questions that encouraged us to visit NZ in 2008, in search of answers. We came back to Maui only once to say our good byes. We are now residents of N.Z, but of course, maintain our U.S. citizenship.

This book is further dedicated to our good friend, Phil Bayly. If it weren't for Phil, we'd still be living in Clearwater, Florida, watching our house and stock market investments fall in value, while the “be happy” folks at CNBC were saying “all is well”! Well, all wasn't well. Phil explained to us that the general stock market was rigged, has been, for the last hundred years. He explained that although they can rig precious metals, and mining stocks in the short run, they can't in the long run. Phil suggested that we find an investment system that works, and

stay with it. We did, stayed with it for **sixteen years**, and are now presenting it to our readers.

We'd like to especially thank the following investment professionals for assisting in this endeavor, for without them, this book could not be possible:

Porter Stansberry

David McAlvany

James Puplava

Charles Nenner

Kevin Orrick

And especially, John Doody

Larry Edelson, (who unfortunately died early 2017)

Biography



John is a Graduate of Georgetown University with a Master's Degree In Public Administration. He served as an artillery army *spotter-pilot* during the Viet Nam Era (serving in both Korea & the U.S). After military service, he began his career on Wall Street, working for many of Wall Street's top firms (Dean Witter, Interstate Securities & Lehman Brothers). After twenty years in the securities business, he started his own investment RIA firm, Miller & Associates.

The firm began operations in Florida, and subsequently relocated to Maui, Hawaii, then Auckland, New Zealand. John presently manages Miller & Associates, in Auckland. He is the moderator of the world's largest Educational investment club, The Investment Club International. He has also authored seven books on investing.

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Revised April 3, 2018 To Include BlockChain!



Note: Chapters 1-8 describe the simple, but effective GSA-10 Silver and Gold Program, that I used from 2001 to 2015, and am still using for my clients.

Chapters 9-27 familiarizes the reader with the workings of *BlockChain*, and goes on to mention some top Crypto Stocks.

CHAPTER 1

Background

After the devastating crash of 2000, Monica, my wife, and I began to look to other investment sectors, besides the general market and technology stocks. Heading into 1999, our trading account stood at almost \$2 million, half of that profit. By February of 2000, our account stood at \$1 million, as a result not getting out before the tech bubble burst.

The Fed, in Mid 2000, gave a signal that in order to revitalize the economy, it would have to lower interest rates to levels not seen before. It was hoped that this would entice investors back into the stock and real estate markets. What eventually happened was the formation of a real estate & stock market bubble. Yes, another bubble. But this time we were prepared for it.

It didn't take a crystal ball to foresee that not only would a real estate bubble come to fruition, but eventually, a precious metals bubble too. Aware of this, we started buying physical gold and silver in 2001; gold at \$250, and silver at \$5. In 2003, we started buying real estate, and needless to say, did well (as we sold or rentals at the high in 2006). Why? To buy more physical precious metals, and mining stocks, of course. Our timing could not have been better. As interest rates fell, property and precious metals rose (and the mining stocks followed).

The theme of this book is *making money*, lots of money, with mining stocks. It'll be short and sweet. We will mention the method that we

have used since 2001, the record, and how we tweaked our methodology, by adding a “timer” to the mix.

What we are about to tell you in the next few chapters is all you will need to set your investment account on “auto pilot”. Will the 729.1% results that we got from 2001 to June 30, 2015 repeat? We think so, but as an adviser, I must say the magic legal phrase: “past performance is no guarantee of future results.”

OK, on to the program I used, still use, plus a little about our new #1 timer of the year, Mark Leibovit.

In summary, for the next few years, follow us with our weekly newsletter. Watch us invest at Interactive Brokers (U.S. or Hong Kong). 100% of our funds will be invested in the Gold Stock Analyst program. As John Doody changes his investment mix, so will we. Enroll in our free newsletter to find out when our timer Mark Leibovit recommends that clients go to cash. Go to wallst101@hotmail.com to subscribe. Or, better still, open an account at Interactive Brokers, and “piggy back” our trades. Call us at 727-564 9416, or Email wallst101@hotmail.com, for the link to be placed under my account.

CHAPTER 2

John Doody And His Amazing Record

In 2001, we started our quest to learn as much as we could about the gold and silver stock sector. One name in particular, kept popping up: that being, John Doody. Having to spend a great deal of time with my clients, I needed a simple, successful program that worked. One that was easy to implement. After reviewing all the experts in the field, the short list was narrowed down to only three: Eric Sprott, Rick Rule, and John Doody. All has outstanding track records, but John Doody's program was #1, simple to administer, and worked. Boy, did it work, and is still #1 today.

John Doody brings a unique perspective to gold stock analysis. He has a BA in Economics from Columbia, an MBA in Finance from Boston University, where he also did his PhD-Economics course work. Surprisingly, Doody has no formal "rock" studies beyond "Introductory Geology" at Columbia.

An Economics Professor for almost two decades, Doody became interested in gold, due to an innate distrust of politicians, and concern over their habit of debasing the currency, via inflationary economic policies.

As Doody initially studied gold stocks, he had a hard time deciding which to buy. Their share prices, market capitalizations, production

and reserve levels were all different, yet each made exactly the same product: Gold.

To solve the dilemma and determine which gold stocks represent the best value at a point in time, Doody popularized a metric called Market Cap per ounce. This was a method of taking a company's stock market capitalization (number of shares times stock price) and dividing by the ounces Produced per year. This puts all the miners on the same basis, so when buying, you know how much you are paying for each ounce of Production, and each ounce of Reserves. The Market Cap per ounce values are wide-ranging... sometimes justified, and sometimes not. This simply means that "Mr. Market" is inefficient and does not always price a stock correctly, which creates many of the opportunities identified in the GSA newsletters.

A result of this Market Cap metric, Doody's newsletters cover only producers, or near-producers. Those that have an independent feasibility study, validating its reserves are economic to produce. Success with this method of finding undervalued gold mining stocks led Doody to leave teaching and start Gold Stock Analyst late in 1994 to make his research available to everyone. The results to date have been spectacular. From 2001 to 2016, his GSA top 10 program is up 729.1%, an average gain of 27.3%. When I went to Lehman Brother's training program back in 1967, I was told that if you could find a mutual fund that grew at 20% a year, your clients would be millionaires in short order. John's program grew at 27.3% per year, amazing. By the way, Warren Buffets Berkshire Hathaway during the past 50 years only grew by 23.1%.

How is Doody doing now?

As of December 31, 2017, the GSA top 10 stocks were up 13.9%.

And let's not forget his new silver stock program. As of December 31, 2017, the Fave 5 silver stocks were up 17.4%, year to date. We are throwing a lot of numbers out to you, but the bottom line, both his gold and silver programs are phenomenal performers.

And, the GSA “top 10” results have been audited by the Alpha Performance Verification folks!

John Doody does not recommend timing your account, and for the most part, we agree with him. But every once in awhile, when Mr. Market (as John calls it), get ahead of itself, we find it prudent to follow our market timer, Mark Leibovit move to safety (cash).

These results are so extraordinary, that many did not believe them. So, the Doody organization had every Buy and Sell over that 16 year period examined, and vetted, by an independent auditor, Alpha Performance Verification Services. Alpha Performance Verification also verifies mutual and hedge funds results, so they knew what they were doing.

Doody's Philosophy

The research, analysis and portfolio management methods detailed in GSA's newsletters, were developed and proven by John Doody. He still applies these same rules for his personal investments, even as he shares them with an ever-growing family of private and professional investors.

To make it onto the GSA “Top 10” list, companies must meet specific conditions:

- *They're must be in or near actual production:* The GSA method focuses only on companies that are already producing gold, or have proven reserves, and are about to commence production.
- *They must demonstrate strong technical and business management capabilities:* GSA meticulously studies all relevant aspects of companies under evaluation, including management teams, production plans and methods, balance sheets and independent analyses of drill results.
- *They must be significantly undervalued:* For a stock to make it onto the “Top 10”, GSA must conclude that its price has the potential to

at least double within three years, based on existing projects, and without any increase in gold price.

The above "citing" (encompassing Chapter 2) was taken from John Doody's website:<http://www.goldstockanalyst.com>, <http://www.goldstockanalyst.com/why-gold.lasso>, Sub title: Philosophy, 2018, John Doody, Author.

CHAPTER 3

Why Gold?

"How many millionaires do you know who have become wealthy by investing in savings accounts? I rest my case." – Robert G. Allen

Why gold? It's the most obvious question, but just the first of four questions you should ask, as an investor:

1. **Why gold**
2. **Why gold stocks?...**
3. **Which stocks?...**
4. **Why now?**

GSA supplies the answers:

1. Why Gold?

Blame the politicians for continually debasing the U.S. currency. It's not that gold is "up" so high, it's that the U.S. Dollar is "down" so low.

Always running for re-election, politicians try to get nine slices out of an eight-slice pizza. This means they promise voters more benefits than the economy can deliver. And attempting to make good on pledges, they pass annual government budgets with deficits, keep other spending off-budget, and confirm Federal Reserve Chairmen

that see a little inflation as a beneficial lubricant to the economic gears.

Further, wanting re-election means that politicians become slaves to special interest groups and their campaign donations. This means rewarding donors with narrowly defined tax loopholes that cut government revenues, and earmark spending to benefit other special interests. Both put a balanced budget further out of reach.

Fiscal policy and monetary policy can both debase the currency. The Treasury issuing bills, notes, and bonds to finance deficits is the same as the Federal Reserve printing money. There is no real difference between a 90-day Treasury bill issued for \$1,000, and \$1,000 in currency printed by the Federal Reserve. They both can be used to buy that ninth slice of pizza.

What can be done? Complaining about, or to politicians, is a waste of time. It's their nature to pander to voters and they will never change. The best approach for investors is to recognize the situation, and use it to profit. Over time, most "hard assets" will protect investors from a currency's loss of purchasing power, simply because their supply, is far more limited than the supply of printed T-bills or Dollars.

But while any hard asset will work in the long term, we favor gold because it is much more liquid than real estate, collectibles, rare art or other investment vehicles.

2. Why gold stocks?

Once one has decided on gold, the next question is the actual investment.

Some might choose gold coins. The safest are those that sell based solely on their gold content, and not rarity, or other qualities, that might cause coins to sell well above their intrinsic gold value. The easiest to buy (or sell) at the lowest premium (or discount) to gold content are the one ounce coins: the American Gold Eagle, the Canadian Gold Maple Leaf, and the South African Krugerrand.

Other investors, to avoid dealer markup, shipping, possible sales tax, and coin storage and insurance costs, may choose to buy shares of one of several gold ETFs. Not only are the commissions low, but there are no storage charges and they are SIPC-protected, like all securities in a brokerage account.

But, the gold investment vehicles we favor are gold mining stocks, due to the leverage they offer to gold's price. This leverage comes from two sources:

- Current production becomes more profitable as gold price increases, thus justifying a higher stock price, and
- Reserves still in the ground become more profitable. With miners often having reserves of ten times the annual production rate, it's pretty easy to extrapolate the total profit increase from a rise in gold price.

3. Which gold stocks?

Investors must choose from two major groups: Explorers, of which probably 1,000 are publicly owned and Producers, of which only about 50 trade in North American stock markets.

To this latter group, we can add near-producers, miners that have taken a deposit through the bankable feasibility stage, and an independent engineering firm's analysis. This analysis has shown that:

1) drill holes are spaced close enough to have high confidence about the ore grades in-between the holes, and thus justify the Proven and Probable Reserves (P+P) classification,

2) that the capital investment required to put the site into production will yield a profit, or economic return. Just as an independent auditor's sign-off on a company's financial statement is critical for investors, so too is an independent engineering firm's sign-off on the deposit's economics. It's required by the U.S. SEC, for a miner to be able to call its ounces in the ground. This is called "P+P Reserves".

GSA only follows producers and near-producers, as they are the only miners with data confirmed by third parties, and thus have solid numbers that can be analyzed.

The gold mining industry is unique. All the miners produce exactly the same final output, ounces of gold. Unlike Coke and Pepsi, they spend nothing trying to tell consumers that their gold is the best. The miners simply accept the current gold price when they sell. With all ounces the same, and selling for the same price, one might think the stock prices would reflect similar valuations for Miner A's ounces versus Miner B's ounces. But, in fact, the stock market is not efficient and the valuations can vary widely. This gives an opportunity for investors.

Sometimes the different valuations are justified by lower production costs, or the uncertain politics of the nation in which the ounces are located. But sometimes the disparities are not reasonable and the market is being inefficient, and not properly valuing the ounces. These undervalued situations create the opportunities GSA searches for, and are why **our** portfolio of its "Top 10 Stocks", has gained an average of over 27.3% per year since 2001 through December 31, 2015.

4. Why now?

The short answer: The "Real Interest Rate."

New investors interested in gold always fear buying at the top. The negative comments by the know-nothing "talking heads" don't help (If they're such gold "experts", where were their "buys" at \$300 per ounce?). GSA has proven we can make money in any gold market by focusing on those miners undervalued versus their peers, based on the "Market Capper ounce" metrics, we use.

But the "newbies" often want the comfort of a single indicator to forecast gold's future before they climb on board. Our work says the "Real Interest Rate" is the best forecaster. This is the risk-free return on money, adjusted for inflation. We find it by subtracting the CPI from the three-month Treasury yield. When the result is positive, gold is flat. When the result is negative, gold price soars. This is because

money loses purchasing power in a negative real-rate environment and investors seek the protection of “hard assets”.

At the current +1.1% CPI, and a typical 0.1% money market yield, \$100 at the start of the year will have only \$99 purchasing power at the end.

We see a negative real-rate condition for the next several years as the Fed will be unable to raise interest rates due to the high U.S. unemployment rate. And even when Fed begins raising rates, if it lags the CPI increases as it did in the 1970s, gold will still move higher.

COMMON INVESTOR MISTAKES:

Investing in gold and silver stocks is a game of patience and proportion. Here are the most common ways investors get it wrong:

1. Too few or too many stocks.

Too few:

Owning only several gold stocks increases the likelihood that a problem at one will wreck havoc on your portfolio. Don't try to “swing for the fences with just a couple...” With over 1000 gold and silver stocks existing, you're too likely to strike out, or be ignored by Mr. Market.

Too many:

Owning too many gold stocks is a common fault of those that attend gold shows, or subscribe to newsletters with several dozen stocks on their “buy” list. Investors hear or read a good story and buy. Before long they own 20, 30 or more—far too many stocks, which dooms them to simply match Indexes such as the XAU or HIU. Most gold newsletters are guilty of recommending too many stocks, as it increases their chances of a big win, so that they can boast about it. But, it does little good for anyone's portfolio to own all their recommendations, which is why they don't report total portfolio results, as do mutual funds, and the GSA program.

The beauty of “10” is two-fold:

First, the way numbers work: 10 is large enough that a disaster befalling one, even if it falls 50%, won't cause much overall damage. On the other hand, when a Top 10 stock doubles, triples, or more, it can have a big impact on your total portfolio's value. One never knows when Mr. Market will wake up a stock, so having 10, broadens the possibility of a big success. Second, *the discipline of 10*:

If you find a new stock, and want to buy, sticking to 10 forces you to re-examine the entire portfolio. You must decide if the candidate's chances are better than the stocks already held. GSA's track record shows "10 gold stocks" and more recently, those plus the 5 silver stocks, to be about the right number to own. And even if gold will only be a portion of your portfolio, in today's era of \$5 internet commissions, a \$50 total transaction cost, is minor "insurance" to own all of the "Top 10".

While GSA covers over 60 miners, that doesn't mean we like them all at the current price. But at a different price, or after an "event," we might. Already following the stock means that we don't have to "get up to speed" following events or price changes, and we can immediately advise subscribers to act. And, covering virtually all producers, is how we compile our unique industry-wide database that lets us find the Top 10 Stocks.

2. Assuming that all ounces are equal:

An ounce is an ounce is an ounce... right? WRONG!!! Don't be confused by the various "ounce" totals thrown around by the companies.

The U.S. Security and Exchange Commission (SEC) allows miners to report only one type of ounce totals: Proven and Probable Reserves. These are ounces determined by drill holes spaced close enough, as little as 15 feet apart, to have a high probability that their grade results can be projected over the untested distance between the holes. Plus, the deposit's economics have been verified by an independent feasibility study that shows the capital required to build the mine and processing facility will have a positive return. A combination of these two criteria qualifies a deposit's ounces to be "P+P Reserves".

Other ounce designations... Mineralization, Measured, Indicated, Inferred, Resource, Global Resource, etc... have wider drill spacing so the ounces are less certain to exist and/or the deposit has not been shown to be economic. For example, sea water is known to have millions of ounces of gold... but the grade is so low that it's not economic to attempt recover

3. Buying entire position at once:

Just because you agree with GSA, that a stock has the long term potential to double, it doesn't mean that Mr. Market will suddenly see the same upside and start buying right after you've bought. It takes time for value to be recognized.

NEVER buy your entire position at once, whether it's a new stock or establishing a position in the precious metals sector. Scale in—50% of your final investment is the maximum to start. You may well get a chance to buy more, later. If you don't get this chance, you'll have a low-cost initial basis and there's nothing wrong with adding to an already winning position.

The above "citing" (encompassing Chapter 3) was taken from John Doody's website:<http://www.goldstockanalyst.com>, <http://www.goldstockanalyst.com/most-common-investor-mistakes.lasso>. Sub Title: Common Investor Mistakes, 2018, John Doody Author.

CHAPTER 4

Keeping Your Gains

In 2013, we finally made a mistake. We let 55.1% of our gains, get away from us. In late 2013, the miners were sitting on the bottom, our account, and our client's accounts, that did so well from 2001 on wards, were devastated. We just couldn't understand it. All, but one analyst, were predicting that 2013 was a just a normal correction, down perhaps 25%, and our accounts would spring back quickly. So, we stayed fully invested, as the GSA program recommended.

There was one analyst however, that disagreed with the consensus, and that was Larry Edelson. Back in 2012, after being a gold stock bull for almost ten years, he became a "bear". He was right of course, but we didn't listen to him. We experienced the severe 2013 mining stock downdraft, as did just about every other gold stock analyst. The Peter Grandish's of the world missed it, even the grand-daddy of precious metals, Eric Sprott missed it. So we were in good company, but still 55.1% poorer, and had a bunch of unhappy clients.

In December of 2013, we advised all clients that we would be still using the GOLD STOCK ANALYST program of John Doody, but also the timing program of Larry Edelson. OK, we were now all set going forward, we had "the dream-team", John and Larry.

Then came the January 1 to June 20 "GSA" explosion.

During that period, Doody's Gold Stock Analyst program, rose an

astounding 72%, almost wiping out all of 2013 losses. So we were back in the saddle again, and our clients had smiles on their faces again. Never again will we doubt the wisdom of our Doody/ Edelson team.

At the end of the second quarter of 2014, Larry Edelson advised “cash” until further notice. We finished this book, the first go around, on May 20, 2015. *At that time were still in cash, luckily saving the 924.9% gains that we got since 2001. It is now June 30, 2017.*

Once again, I recommend that you sign up for our free newsletter which will tell you when our new timer, Mark Leibovit, turns into a bull again. However, the newsletter cannot provide you with current information. And this is important, as when the miners turn, they turn fast. Missing a few weeks could cost you a gain of 50% or more. It behooves all of your listeners, and readers, to ask for the link to open up your Interactive Broker's accounts, under ours. It takes about two weeks to get your account opened, so please plan ahead.

Therefore, to not miss out, we suggest that you open a “piggy-back” account at Interactive Brokers, fund it, and stay in cash. The “Piggy back program” will get you in the 10 GSA stocks, and the Fab 5 silver stocks, on the same day that Leibovit, our timer, gives us the signal.

To get started in the “Piggy-back” program, just let me know that you are interested. I will then ask Interactive Brokers to send you an invitation to open an “on line” account, under my “master advisory account”. Your account will then follow the stock positions of my account (based on both the GSA gold and silver selections, and the timing calls of Mark Leibovit). When Mark changes his market opinion, you can be assured that the positions in your account, will change with it, that same day. Hopefully, this means no more lost gains for me, and for you.

CHAPTER 5

Meet Mark Leibovit, Our Market Timer

Who Is Mark Leibovit?

Your best source for the
UNBIASED market commentary
that you won't get from
Wall Street

A Timers Digest
TOP MARKET TIMER



[READ MARK'S BIO >>](#)

MARK LEBOVIT, CIMA, AIF – is Chief Market Strategist for VRTrader.Com. His technical expertise is in overall market timing and stock selection based upon his proprietary VOLUME REVERSAL™ methodology and Annual Forecast Model. Here's Mark at Jackson Hole, Wyoming petting his favorite wildlife specimen. Yes, they are really that big! Yes, it is a bronze statue!

Mark's extensive media television profile includes seven years as a consultant 'Elf' on "Louis Rukeyser's Wall Street Week" television program, and over thirty years as a Market Monitor guest for PBS "The Nightly Business Report". He also has appeared on Fox Business News, CNBC, BNN (Canada), and Bloomberg, and has been interviewed in Barrons, Business Week, Forbes and The Wall Street Journal. He hosts WALL STREET RAW, a weekly radio show Saturday mornings 10 am ET on the Genesis Communications Network (www.gcn-live.com). The show is archived on iHeart Radio, iTunes and replayed Sunday mornings 10 am MST on KFNN 1510 AM in Phoenix, AZ.

Mark Leibovit was ranked *Timer Digest's* #2 Gold Market timer for 2011, and has also been named the #1 Gold Market timer for the 5 year period ending in 2010, the #1 U.S. Market Timer for 2006 and the #1 Intermediate U.S. Market Timer for the ten year period December, 1997 to 2007. In addition, he was named the #4 for the eight-year period and #3 for the ten-year period ending 12/31/14, the #2 Bond Timer for the three-year period ending 12/31/14 and the #2 Gold Timer for the ten-year period ending 12/31/14.

He was a 'Market Maker' on the Chicago Board Options Exchange and the Midwest Options Exchange and then went on to serve as Director of Research at Freehling & Co. and later Director of Technical Research at Rodman and Renshaw (both in Chicago). Mr. Leibovit now publishes a series of newsletters at www.LeibovitVRNewsletters.com and hosts his own weekly national radio talk show – Wall Street Raw through the GCNlive.com network along with affiliated radio stations.

He is both a Certified Investment Management Analyst (CIMA) and Accredited Investment Fiduciary (AIF), and is also a member of the Market Technicians Association and CFA Institute.

He served as Portfolio Manager of the I2 Integrity REIT Fund 2005-2007, Scottsdale, AZ and Portfolio Manager for the Growth Index Strategy at Flexible Plan Investments Ltd., Bloomfield Hills, MI, 2002-2006.

Mr. Leibovit's specialty is Volume Analysis and his proprietary Leibovit Volume Reversal Indicator is well known for forecasting accurate signals of trend direction and reversals in the equity, metals and futures markets. He has historical experience recognizing, bull and bear markets and signaling alerts prior to market crashes. His indicator is currently available on the Metastock, eSignal and TradeStation platforms.

His comprehensive study on Volume Analysis, *The Trader's Book of Volume* published by McGraw-Hill is a definitive guide to volume trading. It is now also published in Chinese. Mark has appeared in speaking engagements and seminars in the U.S. and Canada and provides customized Volume Analysis for managers and institutions.

Citing in Chapter 5, (encompassing) The Leibovit VR Newsletter Website: <https://leibovitrnewsletters.com>, <http://leibovitrnewsletters.com/about>, Bio, 2017, Mark Leibovit, Author

CHAPTER 6

Want To Join Us? Use Our “System, It Really Works!”

Monica and I relocated to Auckland, New Zealand in 2009. We did so as we wanted to write books about the world banking system, and perhaps find a better investment platform for our clients. At first it looked good, getting our client's money out of harm's way. What we found in New Zealand, was a beautiful country, wonderful people, but an archaic stock trading system.

We found clients all over the world, but we were disappointed in the outdated price fixed commission system. It reminded me of the days back in 1967 with Lehman, when commissions were fixed. Back then to buy 100 shares of a \$20 stock was \$75. Then along came Charles Schwab who brought commissions down to \$35, then Interactive Brokers as low as \$1 for trade.

I tried to bring Interactive Brokers to the New Zealand brokerage community, but I was met with stiff resistance. How dare an American try to lower commissions for his clients! I ended up staying in New Zealand, but moved all my clients back to the Hong Kong Office of Interactive Brokers. That seemed to work, as we got our cheap commissions using our John Doody GSA program, and we could make transactions fast. In New Zealand, I'd put an order in on Wednesday, and it got executed on Thursday, sometime during the day. When I told Aegis, whom I placed trades through, "I missed the market" for my

client. They knew nothing about missing the market, and cared little for their client's executions.

I found that using Interactive Broker's Hong Kong Office to place my trades worked great. Low, almost free, commissions, fast executions, and I could trade any listed market in the world. So now my clients using the GSA gold and silver programs, can rest assured that they will have fast executions, low commissions, and will be in the largest and safest discount brokerage firm in the world. And I say world, as Interactive Brokers permits me, because I am dual licensed, to place my clients out of harm's way, in Hong Kong. Clients actually have a choice of "IB's" U.S. platform or Hong Kong's. Interactive's Hong Kong office is an excellent medium for those clients wishing International secure exposure. You don't want to have all you money in the U.S.

You have heard in previous chapters, our performance record from 2001, thanks to the John Doody system, now, we ask you to join us, today's date being April 3, 2018. In my opinion, this is the perfect time to get started in the precious metal's mining sector. We've had our surge last year, and are now in the the correction phase. We expect to be off to the races again come the 3rd quarter of this year. So, please join us, and tell your family and friends about John Doody's GSA record. It's audited, and is second to none. If you have an IRA, it's ideal, as your gains going forward will be tax deferred, which is important with a program seeking maximum gains.

CHAPTER 7

Meet John Doody

"It's not how much money you make, but how much money you keep, how hard it works for you, and how many generations you keep it for." – Robert Kiyosaki

JOHN C. DOODY,

Founder and Editor in Chief John Doody brings a unique perspective to gold stock analysis. With a BA in Economics from Columbia, an MBA in Finance from Boston University, where he also did his PhD-Economics course work, Doody has no formal "rock" studies beyond "Introductory Geology" at Columbia, taught by the University's School of Mines. An Economics Professor for almost two decades, Doody became interested in gold due to an innate distrust of politicians and concern over their habit of debasing the currency via inflationary economic policies. As Doody initially studied gold stocks, he had a hard time deciding which to buy. Their share prices, market capitalizations, production and reserve levels were all different, yet each made exactly the same product: Gold.

To solve the dilemma and determine which gold stocks represent the best value at a point in time, Doody popularized a metric called Market Cap per ounce; a company's stock market capitalization (number of shares times stock price) is divided by the ounces Produced per year, or its ounces of Proven and Probable Reserves. This puts all the miners on the same basis, so when buying you know how much you

are paying for each ounce of Production and each ounce of Reserves. The Market Cap/oz values are wide-ranging... sometimes justified and sometimes not. This simply means that “Mr. Market” is inefficient and does not always price a stock correctly, which creates many of the opportunities identified in the GSA newsletters.

A result of this Market Cap metric, Doody’s newsletters cover only producers or near-producers that have an independent feasibility study validating its reserves are economic to produce. Success with this method of finding undervalued gold mining stocks led Doody to leave teaching and start Gold Stock Analyst late in 1994 to make his research available to everyone. The results to date have been spectacular: through 2018, the GSA Top 10 Stocks portfolio has a cumulative gain of 613.6% from 2001 to 2017, and an average annual gain of over 23.5% per year.

“Citing” in Chapter 7 (encompassing), The GSA Website: <http://goldstockanalyst.com>, <http://www.goldstockanalyst.com/about-the-editors.lasso>, John C Doody, 2018, Author: Garrett D. Goggin, Associate Editor.



GARRETT D. GOGGIN, CFA
Associate Editor

Citing in Chapter 7, (encompassing) The Leibovit VR Newsletter Website, <http://leibovitvrnewsletters.com/about>, Bio, 2017, Mark Leibovit, Author

CHAPTER 8

Gold is rallying, and this analyst says there's more upside to come

GOLD IS RALLYING, AND THIS ANALYST SAYS THERE'S MORE UPSIDE TO COME

- **The spot gold price has rallied 7.7% since mid-December.**
- **The Commonwealth Bank is forecasting there'll be more gains to come in the next couple of years.**
- **It says the US dollar, rather than real US bond yields, has recently become the main driver of movements in the gold price. It expects that trend will continue.**

The spot gold price has been on a nice run since mid-December, adding 7.7% to currently sit at \$1,330 an ounce.

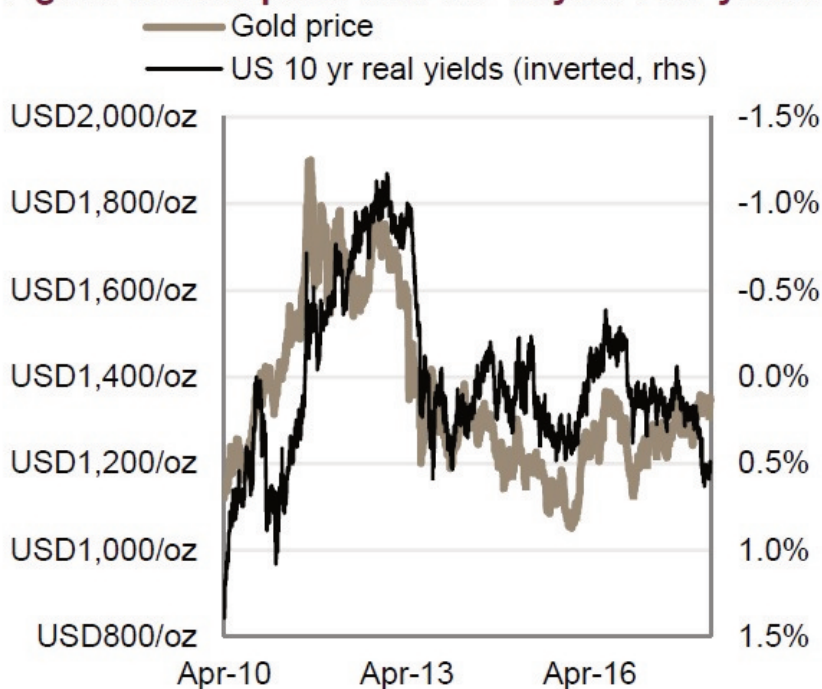
The Commonwealth Bank thinks there more gains to come.

"We upgrade our gold price forecast to reflect our weaker US dollar outlook," says Vivek Dhar, Mining and Energy Commodities Analyst at the Commonwealth Bank.

“The US dollar, which is negatively correlated to gold prices, has only recently become the primary driver of the precious metal.”

As seen in the chart below from Dhar, the relationship between real, inflation-adjusted US 10-year bond yields and the gold price has diverged recently, replaced instead by movements in the greenback.

Figure 1: Gold price and US 10 year real yields



Source: Bloomberg, CBA estimates

Source: CBA

“The once reliable relationship has broken down in recent months,” says Dhar.

“Typically, rolling correlations do move around over time, but the last time the correlation between US 10 year real yields and gold prices diverged this much was 2012.

“Surprisingly, the US dollar has emerged as the more reliable relationship with gold prices over the last six months.”

And Dhar expects that trend to continue in the medium-term.

“We believe gold prices will move more in line with the US dollar until mid-2019,” he says. “After that we expect the US 10-year real yields to become the primary driver of gold prices.”

As such, Dhar has upgraded his gold price forecasts over the next few years, seeing it rise to \$1,361 in 2019 before moderating in the period after.

**Table 2: CBA gold price forecast – old vs new
– calendar year**

	CY18	CY19	CY20	CY21	CY22	CY23	CY24	CY25
Gold - old	1283	1255	1278	1306	1336	1366	1397	1428
Gold - new	1336	1361	1345	1312	1336	1366	1397	1428
<i>change (%)</i>	<i>4.2%</i>	<i>8.5%</i>	<i>5.3%</i>	<i>0.4%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>

Source: CBA

Dhar says geopolitics creates the largest upside risk to his forecast track, especially the potential for a trade war between China and the US.

“The initial impact on gold prices from the US-China trade war has been positive, which we expect will continue,” he says.

As for the main downside risk, he says it would be for the relationship between gold and real 10-year US yields to reassert itself earlier than he currently expects.

“[The] CBA is anticipating a rate hike in June and September and another rate increase in March and June next year. That would leave the terminal Fed funds rate to plateau at 2.5-2.75%,” he says.

“If the [Fed hikes rates three times this year and next], that will imply more downside pressure on gold prices than if our outlook eventuates.

“However, the impact on gold prices is only relevant if the inverse relationship between gold prices and US 10 year real yields is re-established.”

Citing in Chapter 8, (encompassing), Money & Markets, <http://uk.businessinsider.com/gold-rallies-as-one-analyst-says-theres-more-upside-to-come-2018-4>, 2018-4, Article: Gold is rallying, and this analyst says there's more upside to come, Author: David Scutt, April 5, 2018.

CHAPTER 9

How To Invest In BlockChain!

HOW TO INVEST IN BLOCKCHAIN

INTEREST IN CRYPTOCURRENCY HAS BEEN ON THE RISE.
HERE'S HOW TO INVEST IN BLOCKCHAIN.



While it's likely that many are unfamiliar with blockchain it's been around a lot longer than one might think.

In short, blockchain is an underlying method of the digital currency, bitcoin, which allows for permanent records to be had of the blocked

transactions. As [described here](#), “at any time people can see those changes in real time,” giving blockchain a sense of transparency.

As it goes with other areas in the world of technology, interest in cryptocurrencies—such as blockchain—has gained traction over time. [According to Seamus Cushley](#), a PwC expert, over \$1.4 billion was invested in blockchain startups in the first nine months of 2016. With interest in the sector growing, here the Investing News Network (INN) breaks down the basics of how to invest in blockchain so that investors can better understand how to step into this space.

WHAT IS BLOCKCHAIN?

Before asking “how to invest in blockchain,” it’s important to know what the cryptocurrency is first. As mentioned above, blockchain is technology that enabled the digital currency bitcoin to be safe and transferable. The story more or less starts in 2008, when Satoshi Nakamoto published a paper detailing bitcoin and its ability for two people or companies to transfer payments without the need for a financial institution. To guarantee the payment a blockchain ledger was created, connecting the transactions to a digital signature. This was then verified by complex algorithms allowing the new currency to be trusted.

A blockchain begins with a genesis block which births other blocks, or bundles of transactions. The parent block is always the previous block. The ‘tip’ or ‘top’ is the most recently added. Then, the chain becomes fossilized under layers of children and subsequent generations of grandchildren.

More specifically, there are a number of examples of [different uses of blockchain](#). Unsurprisingly, banking is one one of them. As noted, Swiss and UK banks have begun testing blockchain as acceleration methods as tasks in the back-end back and settlements. The publication further examples payment or money transfers, uses in cybersecurity, networking and the internet of things, and online music as areas that have begun implementing blockchain.

HOW TO INVEST IN BLOCKCHAIN

As the technology continues to grow there will be many opportunities for investors. There will be growth from banks and financial institutions that are leveraging the technology successfully. Blockchain is not a physical asset you can purchase but you can buy stock in fast growing public companies who are selling solutions leveraging blockchain technology.

To that end, there are a variety of ways for investors who are looking to the answer on how to invest in blockchain, detailed below.

Stocks

Investing in stocks is the obvious place to start when thinking of “how to invest in blockchain.” While the list of blockchain stocks is relatively short, there are [at least several](#) for investors to choose from, including:

- **360 Blockchain (CSE:CODE)**, a company that looks to provide financial services to both private and public companies, including finance advisory, merchant banking, IPO consulting and business advisory services.
- **BTCS (OTCQB:BTCS)**, which is the first publicly-traded blockchain company in the US.
- **BTL Group (TSXV:BTL)**, whose blockchain services are used in a variety of industries, including banks and fantasy sports.
- **Coinsilium Group (ISDX:COIN)** develops as well as invests in blockchain companies. It was the first blockchain company to file an IPO.
- **DigitalX (ASX:DCC)** uses blockchain to develop fintech products to build secure ledger systems, particularly in mobile bill payments.
- **First Bitcoin Capital (OTCMKTS:BITCF)** focuses on acquiring bitcoin startups and funding companies through developing bitcoin software and hardware.
- **HIVE Blockchain (TSXV:HIVE)**, looks to create a bridge between the blockchain market to traditional capital markets, and is

strategically partnered with Genesis Mining, a cryptocurrency mining hashrate provider.

Crowdfunding

While it may not be an immediate choice on how to invest in blockchain, crowdfunding platforms are an attractive way for investors to jump into blockchain investing. As Ameer Rosic, CEO of Blockgeeks[describes](#), crowdfunding is an easy way for innovative projects to obtain money.

This is where blockchain steps in. Rosic states blockchain crowdfunding allows startup companies to come up with their own digital currencies to sell.

Examples of blockchain crowdfunding platforms include:

- [BnkToTheFuture](#), whose platform allows for investors to invest in fintech companies and funds.
- [QTUM](#) permits the execution of “smart contracts and decentralized applications.” It also provides easy ways for standardizing the workflow of business and smart contract development.
- [Waves](#), which is a crypto-platform for token assurance, transfer and blockchain trading.

Putting it simply, the increase in demand from companies who are putting blockchain at the heart of their operations and consumers demanding the faster and cheaper services blockchain enables continues to drive growth of the sector and, in turn, more opportunities for how to invest in blockchain.

HOW TO INVEST IN BLOCKCHAIN: MARKET OUTLOOK

Looking ahead, blockchain’s future outlook is certainly a bright one. As research conducted by [Market and Markets](#) suggests, the blockchain market is expected to be worth \$2.3 billion by 2021, representing

a compound annual growth rate of 61.5 percent between 2016 and then.

Another research firm, Grand View Research, [suggests the market](#) will grow to \$7.74 billion by 2024, citing the financial sector continuing to adapt new technologies—and healthcare, for that matter—fuelling that growth.

That said, [in 2017](#) it's expected that at least 15 percent of banks will adapt blockchain technologies, with that number increasing to 66 percent by 2020.

In short, it's clear to see that the cryptocurrency market is here for the long-haul, which should ease the minds of those who have been wondering on how to invest in blockchain.

Don't forget to follow us [@INN_Technology](#) for real-time news updates! Did we miss something on how to invest in blockchain? Let us know in the comments!

This is an update to an article previously written in 2016.

Securities Disclosure: I, Jocelyn Aspa, hold no direct investment interest in any company mentioned in this article.

Editorial Disclosure: 360 Blockchain is a client of the Investing News Network. This article is not paid for content.

"Citing" in Chapter 9, (encompassing), Blockchain Investing News, <https://investingnews.com/daily/tech-investing/blockchain-investing/how-to-invest-in-blockchain>, Article: How To Invest In Blockchain, Author: Jocelyn Aspa, January 31, 2018.

Blockchain: Market Outlook

Market outlook

Looking ahead, BlockChain's future outlook is certainly a bright one. As research conducted by Market and Markets suggests, the blockchain market is expected to be worth \$2.3 billion by 2021, representing a compound annual growth rate of 61.5 percent between 2016 and then. Another research firm, Grand View Research, suggests the market will grow to \$7.74 billion by 2024, citing the financial sector continuing to adapt new technologies—and healthcare, for that matter—fueling that growth.

That said, in 2018 it's expected that at least 15 percent of banks will adapt blockchain technologies, with that number increasing to 66 percent by 2020. In short, it's clear to see that the crypto-currency market is here for the long-haul, which should ease the minds of those who have been wondering on how to invest in blockchain.

"Citing" in Chapter 10, (encompassing) Blockchain Investing News, Article: Blockchain Outlook 2018, <https://investingnews.com/daily/tech-investing/blockchain-investing/blockchain-outlook>, author: Jacelyn Aspa, January 7, 2018.

Blockchain Technology Stocks

Banks, financial institutions and many others are adopting blockchain technology faster than anticipated. INN takes a look at public companies taking advantage of this rapidly-growing sector. It's getting harder to ignore the fact that Blockchain is on the rise, particularly as more banks and financial institutions are adopting the technology faster than anticipated. Case in point, IBM (NYSE:IBM) released a report in 2017 suggesting that 15 percent of all banks will be using the technology in 2018. By 2020, the firm states that 66 percent of all banks will have blockchain in commercial production.

On a broader scale, a Market and Markets report states that the blockchain technology market size will be worth 2.3 billion by 2021, increasing at a compound annual growthrate (CAGR) of 61.5 percent. In other words, there's room for plenty of opportunities for investors to benefit from in this exciting-and expanding-market. Global Blockchain Technology Market's research report is a little more conservative, projecting that blockchain technology will grow at a CAGR of 55.59 percent between 2018 and 2021. The banking and finance industries aren't the only ones adopting blockchain technology. For example, it has been used in securing elections, and big companies are also making the leap into blockchain; Capital One has confirmed a blockchain project, partnering with Gem on healthcare claims.

Putting it simply, there's a wealth of opportunity to be had in the blockchain industry, and it's only getting started. As such, here is a look

at publicly-listed block chain technology stocks for your consideration. All numbers below are current as of March 23, 2018 at market close.

1. **360 Blockchain, (CSE:CODE)**

Market cap: \$28.99 million; current share price: \$0.09. The first on our blockchain technology stocks list is 360 Blockchain, formerly 360 Capital Financial, that changed its name to 360 Blockchain and began trading under the symbol CODE on October 10. Since going public, the company has announced a joint venture with NOS Blockchain, a subsidiary of Nerds on Site, that its acquisition SVCryptlab entered into contracts to mine ethereum and Zcash, and the establishment of 360 Blockchain USA, a subsidiary to focus on developing and investing in blockchaintechnologies in the US. 360 Blockchain looks to provide financial services to both private and public companies, including finance advisory, merchant banking, IPO consulting and business advisory services.

2. **BTCS, (OTCQB:BTCS)**

Market cap: \$21.92 million; current share price: \$0.06. Next on our blockchain technology stocks is BTCS. The company is also the first blockchain-focused public company in the US, and was ahead of its time in exploringdigital currency ecosystems. The company self-describes itself as an “early mover” in the digital currency ecosystems sector. The company’s CEO, Charles Allen, was interviewed by Bloomberg explaining the company’s mission to “gather a currency that can be spent on goods and services”, using bitcoin to buy products like televisions. In August, BTCS announced it had signed a non-binding letter of intent to merge with Blockchain Global. On October 11, it was announced that BTCS had secured \$1 million in financing, \$250,000 of that being bitcoin. Near the end of October, BTCS announced it had closed the remaining finance balance in moving forward with its planned merger with Blockchain Global.

3. **BTL Group (TSXV:BTL)**

Market cap: \$194.44 million; current share price: \$5.17. BTL is a Vancouver-based company that offers blockchain solutions across multiple industries—from banks to energy, and even to fantasy sports. BTL has a money transferplatform using distributed-ledger-technol-

ogy and smart contracts, called Interbit. On that note, the company announced in June that it is “taking steps towards a go-to production phase” of the Interbit, having completed its European energy trading pilot. As noted in the press release, the 12-week pilot included building the framework on an energy trading confirmation solution to BTL’s platform, which was tested in 8 different scenarios. “At BTL we truly believe that, by using blockchain technology and our proprietary platform, Interbit, there is a better and more efficient way for enterprises to build applications,” Guy Halford-Thompson, co-founder and CEO of BTL said. “Having Blockchain, demonstrated the reductions in risk and cost savings that are achievable we now have an opportunity to deliver the first successful blockchain based application to the energy market. We are also very excited that the pilot has enabled participating companies to better understand the benefits of Interbit and identify other areas in their organizations where they can apply it.”

At the end of August, BTL Group announced the beta launch of Interbit as it becomes closer to being launched in live commercial environment. In early November, BTL Group announced that it had increased the size of the brokered offering led by GMP Securities to \$10.7 million through the offering of roughly 2.1 million units at \$4.90 per unit. While the company’s headquarters are in Vancouver, BTL Group also operates in Calgary and Canary Wharf in London, England.

4. Coinsilium Group (NEX:COIN)

Market cap: GB\$12.01 million; current share price: GB\$.09. Coinsilium Group is a London-based blockchain technology investor that develops and invests in blockchain technologies, aiding new fintech applications. The company is the world’s first recognized IPO for blockchain technology company and lists on the NEX Exchange, a recognized investment exchange as per the Financial Services and Markets Act 2000. According to its website, Coinsilium is relatively new in the blockchain field: the company has been actively involved in “accelerating seed-stage blockchain techventures” ever since 2014. Since then, the company has accumulated interest from blockchain companies such as Factom, RSK Labs, Minebox and Indorse. At the beginning of August, the company announced that it had completed the

sale of interest in SatoshiPay, a company that processes nanopayment transactions usually in the form of bitcoins. Meanwhile, closer to the end of August Coinsilium Group announced a formation of its wholly-owned subsidiary, Terrastream, which aims to build an enterprise standard block chain-powered platform for token-based alternative funding solutions. In late September Coinsilium announced a purchase of 5 million shares at 2.25 pence per share. By November, the company had signed a memorandum of understanding with United Mobility Technology. At the end of November, Coinsilium had acquired a 30 percent interest in Startup: Token Limited, which has had a positive boost to its market cap and share price.

5. DigitalX (ASX:DCC)

Market cap: AU\$109.25 million; current share price: AU\$0.13.

Next on our blockchain technology stocks list is DigitalX. The company provides ICO advisory services, blockchain consulting services, and blockchain-related software development. More specifically, its mobile product AirPocket provides consumers secure cross-border payments and remittances from over 30,000 payout locations in 14 countries with a heavy presence in North America and South America. DigitalX's Bankera launched an ICO on August 28, which will provide payments, deposits, loans, and investments and will be supported in fiat currencies and cryptocurrencies, including bitcoin, ethereum, DASH, NEM, and ERC20 compliant tokens, among others. In September, it was announced that DigitalX and Stargroup (ASX:STL) have joined forces to develop "two way" bitcoin ATMs to buy and sell bitcoin.

6. eXeBlock Technology (TSXV:XBLK)

Market cap: \$92.11 million; current share price: \$.75

eXeBlock is relatively new, having officially begun trading on the Canadian Securities Exchange on November 16. Headquartered in Nova Scotia, eXeBlock's services include blockchain technology consulting, blockchain application development, and custom blockchain development.

7. Global Blockchain Technologies (TSXV:BLOC)

Market cap: \$43.61 million; current share price: \$.60. Formerly Carrus

Capital, Global Blockchain Technologies is also relatively new in the blockchain sector, having just announced its name change effective October 5. Global Blockchain provides investment services and was founded in Vancouver in early 2010.

8. HIVE Blockchain (TSXV:HIVE)

Market cap: \$814.12 million; current share price: \$1.50. HIVE Blockchain is also relatively new to the scene but is already making a name for itself in the market. HIVE looks to “build a bridge” between the blockchain market to traditional capital markets, and is strategically partnered with Genesis Mining, a cryptocurrency mining hash rate provider. On October 10, the company announced a \$7 million equity investment by Genesis Mining. Then on October 11, HIVE announced it had closed a \$30 million bought deal financing. In mid-November, HIVE announced it had closed a \$34.5 million bought deal financing, proceeds of which will be used for the second phase of construction of the digital currency mining data center in Sweden.

9. Marathon Patent Group (NASDAQ:MARA)

Market cap: \$48.74 million; current share price: \$1.61. While not a pure play block chain company, Marathon Patent Group is an IP licensing and commercialization company that acquires and manages IP rights from a number of sources. Case in point, in early November the company announced it will acquire Global Ventures, a digital asset technology company that mines cryptocurrencies.

10. MGT Capital (OTCMKTS:MGTI)

Market cap: \$129.67 million; current share price \$1.84. MGT Capital is currently acquiring and adding to its diverse portfolio of cyber-security technologies, but is also in the business of bitcoin mining. According to its website, MGT is in a strong position to become the “preeminent” crypto-mining enterprise in the US. As it currently stands, MGT Capital has a number of locations in central Washington state. In mid-October, the company announced an update on its cryptocurrency operations, highlighting that its bitcoin mining operations are projected to generate over \$2 million in monthly revenue. On December 5, MGT Capital provided an update on its cryptocurrency operations, stating it had executed a purchase order with Bitmain-

Technologies for a further 500 “S9 Antminer mining rigs”, which should be expected to ship in Q1 2018.

11. Riot Blockchain (NASDAQ:RIOT)

Market cap: \$124.23 million; current share price: \$7.94. Riot Blockchain is also relatively new to the blockchain scene, having changed its name from Biopix to Riot Blockchain at the beginning of October. Formerly a biotech company, Riot Blockchain is the first mover on the NASDAQ as a pure play blockchain company. Riot hopes to gain exposure to the blockchain ecosystem through investments in the sector, specifically through bitcoin and ethereum. The company has partnered with Coinsquare by way of a strategic investment.

12. HashChain Technology (TSXV:KASH)

Market cap: \$30.87 million; current share price: \$0.27

HashChain officially went public late last year, December 18, 2017. This makes HashChain the first publicly traded cryptocurrency mining company to have filed a final prospectus in Canada. Its primary focus is on cryptocurrency mining with a target of 26,500 mining rigs. [The company announced](#) on January 24 that it had received a shipment of 770 mining rigs from China. Upon the expected deployment, HashChain will operate a total of 1.23 megawatts.

“The receipt of the 770 Rigs is another step to scaling our mining operations,” Patrick Gray, CEO of HashChain said in the release.

In mid-March, [HashChain announced](#) that its Balance cryptocurrency accounting software added support for Gemini, which is a New York state licensed and regulated digital asset exchange. The company will continue to advance that software with the newly added enhancements.

Based in Vancouver, British Columbia, HashChain Mining is a subsidiary of HashChain Technology, located in Albany, New York

13. Atlas Cloud Enterprises (CSE:AKE)

Market cap: \$95.27 million; current share price: \$0.85

Atlas Cloud Enterprises is based in Vancouver, BC whose focus is becoming a top cryptocurrency mining and technology operations company in North America. Atlas owns its facility in Electric City, Washington, which is used for digital currency mining. The company is aiming to execute a proposed 1,700 application specific integrated circuit (ASIC) machine expansion this year, and increasing that number to 2,500 by Q2 in 2019.

On that note, Atlas Cloud closed the acquisition of the Electric City facility on March 15. It is a 6,600-square-foot facility that will be upgraded to industrial-scale cryptocurrency mining standards.

"Citing" in Chapter 11, (encompassing), Blockchain Investing News, <https://investingnews.com/daily/tech-investing/blockchain-investing/blockchain-technology-stocks/>, Article: Blockchain Technology Stocks, Author: Jocelyn Aspa, March 21, 2018.

BlockChain in the Mining Industry

Blockchain doesn't just belong in the cryptocurrency world, it can be applied in cybersecurity and mining too. Many industries often overlap and the story is no different when it comes to cybersecurity, blockchain and mining intersecting—and we're not talking about blockchain mining. According to Softpedia, between 2010 and 2016, 22 mining companies reported major cyber attacks. Arguably cybersecurity and mining are on a collision course, but it's getting harder to ignore that blockchain technology offers a way out.

Accenture Consulting reported that attacks range from hacking private information, hijacking intellectual property, or knocking an M&A off course. Similarly, Symantec's Internet Security Threat Report shows that mining tops the list of industries receiving spam email, though it should be noted that there is not much difference in the numbers regarding other industries being spammed. However when around a third of emails have a virus, it's not a list anyone wants to top—which is one reason why the mining community is turning to blockchain. Blockchain cuts out any middlemen, which affords less time to hackers trying to steal data. With that in mind, here's a look at the uses for blockchain in the mining industry.

Blockchain in the mining industry: applications

A PWC report called, "we need to talk about the future of mining," touches base on what blockchain technologies can provide the mining

industry. In the report, it states one of the biggest challenges miners will face in the future is the shift from-business-to-business mindsets to “one that gives greater consideration to the needs of the consumer and other stakeholders.”

That said, the report highlights that blockchain technology is already used in resources such as diamonds. As stated by PWC, diamonds are imprinted by a QR code linking to a digital token “verifying their quality, ethical extraction and authenticity.”

Much like blockchain applications, this process cuts down on fraud, theft and insurance costs, as well as creating a more transparent viewpoint of “the custody of goods.”

On that note, Accenture indicates that the level of security blockchain has can help improve areas such as:

- **The internet of things (IoT):** More connected devices means more data generated. In order to process this effectively, blockchain could be used, in the form of IBM’s (NYSE:IBM) Autonomous Decentralized Peer-to-Peer Telemetry (ADEPT) system. Basically this allows an IoT to run itself. For example, a digital ledger links a vehicle with a warehouse, so that they can talk and order new stock, with payment processed on delivery.
- **Cost reduction:** As mines operate all over the world, the expense of cross-border payments is a problem for the industry. Remittances are undergoing huge change thanks to blockchain. Not only could blockchain solve a security issue but it could also speed up the process of paying. DigitalX’s (ASX:DCC) mobile product AirPocket provides consumers secure overseas transactions from anywhere, in any currency.
- **Streamline contracts:** “Smart contracts” are a chain of commerce and a way of remotely policing workers. If a gold mine is in Cambodia or another developing country, and the firm is headquartered elsewhere, business standards can still be upheld everywhere. For instance, the world’s biggest mining company, BHPBilliton (NYSE:BHP), are using blockchain for their supply chain. They have a

market cap of \$112.92 billion, and certainly have some market muscle and could influence other, smaller players to follow suit.

The Accenture report continues, stating that blockchain applications make it easy to sign contracts electronically and without having to rely on a third party to verify whether it's valid or not. Why? Because blockchain is a digital ledger, that makes it possible for it to keep track of every transaction and "safely encrypts" said information.

Blockchain in the mining industry: the future

According to a [Globe and Mail article](#) from earlier this year, Halifax start-up Peer Ledger's blockchain-based Mimosi application is able to track precious metals within the supply chain "to ensure every milligram purchased by buyers has come from an ethical source and is not funding armed conflict in war-torn countries like the Democratic Republic of Congo."

As noted on its website, Peer Ledger's Mimosi platform uses blockchain to "instantly" ensure that its users know the origin of the precious and industrial metals.

Another example is the acquisition of Hill Top Security by Big Wind (CSE:BWC), [who jointly announced in September](#) that Hill Top will be creating its first Initial Coin Offering for the mining and metals sector, and had already received funding for development. In November, [the companies announced](#) that the cryptocurrency, called MineCoin, "will enable Hill Top to expand its current protection of company networks and communications to include the protection of company transactions."

To conclude, far from hindering production, blockchain is a security solution that improves results and safety. Spreadsheets could be a thing of the past if uptake of blockchain continues. Mining is a dangerous job so anything that can be done to ensure good practice is a step in the right direction. Investors would be advised to do further research the companies mentioned and capitalize on a future trend.

"Citing" in Chapter 12, (encompassing), Blockchain Investing News, <https://investingnews.com/daily/tech-investing/blockchain-investing/blockchain-in-the-mining-industry>, Article: Blockchain In the mining industry. Author: Jocelyn Aspa, March 7, 2018.

CHAPTER 13

Investing In Blockchain ETF's

Investing in Blockchain ETF's

Investing in the blockchain industry is a relatively new phenomenon. Here, we will look into at how investors can jump in on investing in blockchain-related ETFs.

There has undoubtedly been a swarm of interest in the cryptocurrency sector in 2017—particularly as it relates to bitcoin—but perhaps an even bigger story is the technology behind it: blockchain.

Indeed, it's impossible to have one without the other:

Blockchain is the mechanism in which bitcoins—and other digital currencies—are “mined” into existence and has become a popular investment opportunity among savvy technology investors.

Case in point, there's a range of [blockchain technology stocks](#) for those already interested in the space to choose from if they haven't already—but for those newer to the space, deciding on a company to invest in may seem overwhelming.

This is where ETFs come in handy: in simple terms, ETFs—exchange traded funds—track an index, commodity or bonds that owns the underlying assets (such as shares of a stock, bonds, etc.,) and divides the ownership up into shares, [according to Investopedia](#).

While blockchain investing is considerably new compared to most other industries, more and more investment opportunities are opening up in this space. While there is yet to be official blockchain ETFs, reports suggest we're not far off from having one.

Here we look at how investors can invest in blockchain-related ETFs, and the future outlook for blockchain ETFs as a whole.

Investing in blockchain-related ETFs

Noted above, it's been a transformative year for the blockchain industry, and even more so as 2019 approaches.

Throughout November and early December, [reports have been made](#) that a number of exchange traded funds have issued plans for "ETFs that are plays on blockchain." That said, it's worthwhile looking at ETFs that provide exposure to the blockchain industry as well.

As ETF Trends notes, there are at least two exchange traded funds where this is possible.

VanEck Vectors Semiconductor ETF (NYSEARCA:SMH) The first one is the VanEck Vectors Semiconductor ETF, whose inception date is December 20, 2011 and tracks a market-cap weighted index of 25 of the US's largest semiconductor companies. So, how does this relate to blockchain?

In a [blog post](#) issued by VanEck, it reads:

Blockchain technology involves a massive computer processing power, which requires huge quantities of memory chips, graphics cards, and processors. All these devices use semiconductors. As demand for blockchain processing power grows, so does the semiconductor industry resulting in a distinct investment opportunity.

The post continued, stating that VanEck is of the view that semiconductors—which is the "backbone of blockchain technology" is a solid investment opportunity.

"Investment exposure to semiconductors may provide access to both the growth potential of blockchain technology, as well as the entire blockchain economy," VanEck states.

On that note, as of November 13, 2017 the VanEck Vectors Semiconductor ETF had a 28.7 percent exposure to blockchain miner suppliers, which include Advanced Micro Devices (NASDAQ:[AMD](#)), NVIDIA (NASDAQ:[NVDA](#)), Intel (NASDAQ:[INTC](#)) and Taiwan Semiconductor Manufacturing Company (NYSE:[TSM](#)).

Technology Select Sector SPDR Fund (NYSEARCA:[XLK](#)). This one offers exposure to the blockchain industry in a more indirect way—through semiconductor. Incepted in on December 16, 1998, this particular ETF tracks companies an index of S&P 500 technology stocks, ranging from technology hardware, storage, and peripherals, to software, diversified telecommunication services, communications equipment, semiconductors and semiconductors equipment and so on.

The future of blockchain ETFs. As the blockchain technology sector continues evolving, there is more potential than one might have thought even a year ago about the prospect of a blockchain technology ETF.

MarketWatch reported that in early November two companies have filed for to become the "first exchange-traded fund to track the blockchain ecosystem."

The first one is Amplify ETFs, [which filed with the Securities and Exchange Commission on November 1, 2017](#) its Form N-1A for the approval of the Amplify ETF Trust. According to ETF.com, the fund will focus on companies that "are most likely to benefit from the blockchain phenomenon."

As noted in Amplify's submission, the Amplify Blockchain Leaders ETF would list on the NYSE Arca and seek to outperform an index created by Emerita Capital Indices and EQM Indexes. In order to be considered for the ETF, companies must develop or use blockchain technology, or

at least be in partnership with a firm involved in blockchain development or use.

The other blockchain ETF filing with the SEC came a few weeks later, on November 22 by the Horizons ETF Management, which indicates that the Horizons Blockchain Index intends to invest roughly 80 percent of its assets in the common stocks of companies within the fund. More specifically, the fund will “invest in US and foreign equity securities and companies that participate in the adoption and integration of blockchain technology.”

In December, it was reported that Reality Shares also put forth an application for the Reality Shares NASDAQ Blockchain Economy ETF, which will be designed to “committing material resources to developing, researching, supporting, innovating or using blockchain technology for their proprietary use or for use by others.”

All told, the race for the first blockchain ETF is certainly indicative that the technology is a highly-sought after market—and one investors will certainly be eager to cash in on; it's only a matter of when.

“Citing” in Chapter 13, (encompassing), Blockchain Investing News, <https://thecominggoldandsilverminingshareexplosion.pressbooks.com/wp/wp-admin/post.php?post=285&action=edit>, Article: Investing in Blockchain ETF's, Author: Jocelyn Aspa, December 7, 2017.

What Is Bitcoin Mining?

Bitcoin mining has been compared to gold mining—here’s what you need to know about the bitcoin mining process.

If you’re relatively new—or somewhat familiar with bitcoin and cryptocurrencies in general—you’ve probably wondered at least once where the digital tokens come from.

In simple terms, the process is called mining—which is how the bitcoins are brought into circulation—and [has even been compared to](#) mining for precious metals such as [gold](#). While the ways in which bitcoin and gold are mined is clearly different, the more that is mined the more difficult it is to resupply both.

On top of that, there’s also a limit as to how many bitcoin tokens will ever be mined. Of course, the methodology of bitcoin mining is more complex than that; as such, here we break down the basics on what you need to know to help better answer the question, “what is bitcoin mining?”

What is bitcoin mining?

As mentioned, bitcoin mining is how the tokens are essentially brought into existence.

Like bitcoinmining.com, describes:

Mining is the process of spending computer power to process transactions, secure the network, and keeps everyone in the system synchronized together.

Similarly, [Bitcoin.com states](#) that the mining process is a peer-to-peer process that's used to secure and verify bitcoin transactions, "payments from one user to another on a decentralized network."

Essentially, without bitcoin miners, the network would lose value. In other words, bitcoin miners ensure the network is secure to process the transactions.

Because bitcoin isn't held physically like gold—or money—the mining is done over a computer through a designated bitcoin mining software program—and it's available to anyone who wants to become a bitcoin miner. Through the software, bitcoin miners solve math problems and then are given a specific number of bitcoins in exchange.

As [described by Investopedia](#), the mining process is done by putting recent transactions into "blocks" and solving the puzzle. The first to solve the puzzle then gets to place the next block on the blockchain and claim the bitcoin reward.

"The rewards, which incentivize mining, are both the transaction fees associated with the transactions compiled in the block as well as newly released bitcoin," Investopedia states.

That being said, however, there's a limit as to how many bitcoin tokens can be mined, which is 21 million. Essentially, once miners have "unlocked" that many coins, the world's supply will "essentially be tapped out."

How are hash functions used in bitcoin mining?

By definition, a cryptographic hash function is a function that maps data of an undetermined size to a string of fixed size, and is meant to be a one-way function, which means it can't be reversed. [Like Block-geek notes](#), if something from the original output is changed, a different hash value will be returned.

As to how it relates to bitcoin mining, the functions are used for proof of work and validation. “Bitcoin miners will compete to find an input that gives a specific hash value.”

The purpose of mining is to use the computer to guess until the miner gets a hash value that’s less than the target. If the miner is the first to do it, the block is then mined and whomever “wins” the block receives the award.

Each block contains the hash from the prior block, which proves that it came after, Blockgeek describes. “The block with the largest total proof of work embedded within it is chosen for the blockchain.”

What are bitcoin mining rewards?

As mentioned, miners who solve puzzles on the blockchain receive a bitcoin mining reward. Bitcoinmining.com states that bitcoin’s creator, Satoshi Makamoto, first set the block schedule when bitcoin was first created. According to the publication, the rule can’t be changed without an agreement “between the entire bitcoin network.”

At the time, 50 bitcoins were rewarded, but every time 210,000 blocks are added to the blockchain, the reward is halved, or every four years. [As of November 1](#), the reward is 12.5 bitcoins; by the time the next 210,000 blocks are mined, the reward will decrease to 6.25 coins. Essentially, as the block reward continues to decrease, it will create a “total release of bitcoin” as it nears the 21 million threshold.

On that note, according to Bitcoin Clock, the next bitcoin reward drop date is estimated to take place on June 12, 2020, shown below:

What happens when all 21 million bitcoins are mined?

While it may be some time before all 21 million coins are effectively mined, it’s still a question worth asking.

Should all bitcoins be mined, [Investopedia notes](#) that miners may need to resort to transaction fees to sustain operations, and that

transaction fees and mining fees may eventually even out in the future.

“Looking ahead ahead by several decades, it is not difficult to imagine that mining chips will become small and highly efficient,” the publication notes. “This would reduce the burden placed on miners and would allow mining to become an activity with a lower threshold of initial cost. Further, transaction fees may increase, and this could help to keep miners afloat as well.”

All told, while the future of bitcoin mining remains uncertain once all coins are mined, bitcoin investors can take comfort in knowing that won’t happen for quite some time. As it currently stands, [some estimates project all coins](#) will be mined by 2140, so there’s no need to panic—yet.

“Citing” in Chapter 14, (encompassing), Blockchain Investing News, https://investingnews.com/daily/tech-investing/bitcoin-investing/what-is-bitcoin-mining/?as=1&nameplate_category=Blockchain+Investing Investing News, Article: What is Bitcoin Mining, Author: Jocelyn Aspa, March 14, 2018.

Source: Bitcoinclock.com

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Is Bitcoin Better Than gold?

Is Bitcoin Better than Gold?

Traditionally, gold has been the favourite child when it comes to safe haven assets, but the rising popularity of bitcoin is hard to ignore—is it a better investment than gold?

Looking at the year bitcoin has had, it's safe to say the cryptocurrency has been a dominant force in 2017-2018, but early 2018, a severe correction has set in. Since January 1, 2017, the digital currency has increased substantially from \$997.69, and has reached \$20,000 during the 12 month period. As of this writing, March 24, 2018, the price of Bitcoin stands at \$8,950.. Looking at how the [gold](#) price has performed in 2017, the story is a little more lackluster as it's had some difficulty staying above the \$1,300 mark for any length of time. As I write this, gold is standing at \$1,340.

Of course, while the prices of both bitcoin and gold fluctuate—just like any commodity—there is certainly a strong case for investing in bitcoin over the more traditional safe haven asset—and we've got details to help better answer the question, “is bitcoin better than gold?”

How are bitcoin and gold comparable?

Before digging into whether or not is bitcoin better than gold, it's worthwhile looking at their similarities.

On the surface, it's not hard to figure out that bitcoin and gold are physically different: in simple terms, because bitcoin is a digital currency, it technically doesn't physically exist. Gold, on the other hand, can be stored in a variety of ways, including stocks, bonds, coins and bars, to name a few.

In terms of their comparisons, bitcoin and gold have the advantage of not being tied to one country or a central bank, meaning if there's any type of government uncertainty, bitcoin and gold remain unaffected.

Similarly, the two can also benefit from economic uncertainty; the price of gold surged past the \$1,300 threshold post Brexit vote in June 2016, while bitcoin and gold rose 4 percent and 3 percent correspondingly following the US election in November 2016. As of this revision, the price of gold is sitting at \$1340.

"Citing" in Chapter 15, (encompassing), Blockchain Investing News, <https://investingnews.com/daily/tech-investing/bitcoin-investing/bitcoin-better-gold>, Article: Is Bitcoin Better than gold?, Author: Jocelyn Aspa, November 15, 2017.

CHAPTER 16

Bitcoin And Litecoin - What's The Difference?

BITCOIN AND LITECOIN – WHAT'S THE DIFFERENCE?



Bernard Marr , Contributor Opinions expressed by Forbes Contributors are their own.

Most people have heard of Bitcoin by now – the digital currency which has made headlines in recent years thanks to its phenomenal rise (and occasional crash) in value.



Adobe Stock

But [Bitcoin](#) is just the first of many digital currencies – known as cryptocurrencies due to their use of sophisticated computer encryption which prevents them being spent more than once, hence giving them their intrinsic value.

In fact, there are now well over 1,000 cryptocurrencies, with more emerging all the time. One of the most popular and enduring is Litecoin. But how is it different from Bitcoin and other cryptocurrencies? Here's my overview of the currency that is often considered the silver to Bitcoin's gold.

Before we dive in, as always, remember that investing in cryptocoins or tokens is highly speculative and the market is largely unregulated. Anyone considering it should be prepared to lose their entire investment.

What is Litecoin?

The code used to create Bitcoin was released into the public domain – or made open source – by the mysterious creator, Satoshi Nakamoto.

This means that anyone can take it, modify it and use it to launch their own cryptocurrencies. Which many people have done – and Litecoin was one of the first to gain traction.

Although it was originally based on the same code, Bitcoin and Litecoin transfers are recorded on entirely separate [blockchains](#), effectively meaning they are different currencies.

Litecoin was created in 2011 by former Google engineer Charlie Lee. The aim was to create a blockchain-based currency which would solve some of the problems inherent to Bitcoin – in particular the slow transfer speeds. When it was launched in 2009, Bitcoin transactions would take around 10 minutes to complete. Due to the growth in size of the network and the Bitcoin blockchain, today transactions can take anywhere between 30 minutes and, in extreme cases, over 24 hours.

Another problem that Litecoin was designed to solve was the mining 'arms race'. Mining – the process by which new Bitcoins and Litecoins are created – involves using computer processing power to run complex algorithms, creating new blocks on the blockchain. Once Bitcoins started to be traded for 'real' currencies like US dollars, Bitcoin mining quickly evolved into an arms race as miners threw increasing amounts of processing power into creating coins more quickly.

Litecoin mining, however, being based on an algorithm known as scrypt, rather than The SHA256 algorithm of Bitcoin, couldn't be accelerated so easily simply by upping the amount of processing power being thrown at the problem. This was designed to lead to the supply of Litecoins increasing at a steadier rate.

Gold and silver

Proponents of Litecoin often refer to it as acting as silver to Bitcoin's gold. It's an interesting metaphor which stands up to scrutiny – while one unit of Litecoin is certainly less valuable than one unit of Bitcoin, both are commodities which are used as a store of value.

Like gold and silver, Bitcoin and Litecoin are distinguished from each other by their available supply. The Bitcoin network has been built so

that there will never be more than 21 million coins in existence. The eventual supply of Litecoin will top out at 84 million, and this discrepancy in size of supply is another factor which has brought about the gold and silver analogy.

While the analogy stands up today, it's worth remembering that neither Bitcoin or Litecoin actually are precious metals. They are computer applications which use different methods to achieve the same results – enabling transactions in digital currencies. Litecoin's faster response times may eventually lead to it becoming more useful than Bitcoin, and their relative value could change dramatically, perhaps meaning one unit of Litecoin becomes more valuable than one unit of Bitcoin. While this seems unlikely today, it's worth remembering that cryptocurrencies are a very new thing, compared to gold and silver which have been with us for millennia. The mechanisms around their supply and demand are far less well understood.

Where can I buy Litecoin?

As one of the more established cryptocurrencies, there are a fairly good number of options available to anyone who wants to buy Litecoin – whether it's to spend them, or just as a speculative investment.

[Coinbase](#) lets you use credit cards and debit cards to buy them with 'fiat' (government controlled centralized currencies like USD or GBP) currency. [Litecoinlocal](#) matches buyers with sellers for peer-to-peer trading. Many other cryptocurrency exchanges including [Binance](#) and [Bittrex](#) allow trading in different pairs of cryptocurrencies, if you already have Bitcoins and want to diversify your crypto portfolio.

Where can I spend Litecoins?

Although Litecoins are still not quite as widely accepted as Bitcoins, there are a few options if you don't want to hold onto them in case they rise in value.

[Overstock](#) is the closest thing to an Amazon of cryptocurrency, with a wide range of home goods, electronics and fashion available to US buyers.

A wide range of jewellery can be bought with Litecoin (as well as a number of other cryptos) at [Cryptojeweller](#).

Clothing (mostly cryptocurrency themed t-shirts) can be bought at [Cryptoverge](#).

If you want to maintain anonymity when buying VPN or anonymous email services, then many providers including [Torguard](#) and [NordVPN](#) will accept payment in cryptocurrencies including Bitcoin and Litecoin.

And if you fancy converting your digital gold and silver to real gold and silver, then [COAex](#) allows you to trade Bitcoin or Litecoin for bars of precious metal.

Of course, this is really only scratching the surface, to show the wide range of goods and services which are gradually becoming available in exchange for Litecoin or cryptocurrencies. A more comprehensive and frequently updated list is available on [Reddit](#).

[Bernard Marr](#) is a best-selling author & keynote speaker on business, technology and big data. His new book is [Data Strategy](#). To read his future posts [simply join his network here](#).

"Citing" in Chapter 16, (encompassing), Forbes.com, <https://www.forbes.com/sites/bernardmarr/2018/03/21/bitcoin-and-litecoin-whats-the-difference/#66c062fc5664>, Article: Bitcoin & Litecoin, what's the difference, from: The Little Black Book of Billionaire Secrets, Author: Bernard Marr, March 21, 2018.

The 5 Top Digital Currencies

With the rising popularity of cryptocurrencies, here the Investing News Network provides a breakdown of the 5 top digital currencies.

If you've heard the word 'cryptocurrency' at least once, but aren't exactly sure what-exactly-it is, you're certainly not alone.

In simple terms, a cryptocurrency is essentially digital money—a medium of exchange like a currency such as the USD or CAD—and is secure while also being largely anonymous. In other words, cryptocurrencies provide the same service as a fiat exchange but aren't linked together. “They are wholly separate and as distinct as the crypto and fiat money they support,” [Ethnews](#) writes.

Similarly, [Cryptocoins News](#) states that the exchange of digital currencies is made possible through cryptography, which secures the transactions and relegates the production of new coins.

To provide a little bit of perspective, there are currently roughly 1,200 different cryptocurrencies, [according to data from Coin Market Cap](#), with a combined market cap totaling roughly \$150 billion. Not bad for an industry that—overall—has barely been around for a decade.

In terms of the overall outlook for cryptocurrencies, [a Market and Markets report suggests the market](#) will reach \$2.9 billion by 2023, growing at a compound annual growth rate of 32.31 percent between 2017

and 2023. In 2017, the same report states the cryptocurrency sector was worth roughly \$541 million as of October 17.

With that in mind, here the Investing News Network (INN) provides an overview of the 5 top cryptocurrencies in the space for investors to familiarize themselves with. While it goes without saying that bitcoin is the favourite child of digital currencies, the other four are certainly worth consideration as well.

Here's a very brief overview of those top cryptocurrencies.

Bitcoin

Market cap: \$182 billion; current price \$6,875.

As mentioned, bitcoin is the grandfather of digital currencies, meaning it is the first ever peer-to-peer decentralized cryptocurrency; on top of that, it is also the global leader of digital currencies. Bitcoin first broke onto the scene in 2009 when Satoshi Nakamoto “mined” the first set of bitcoin blocks. According to a [2011 article from the New Yorker](#),

Nakamoto spent roughly a year coding the software following the 2008 financial crisis.

Nakamoto had in mind to create an electronic payment system separate from central authorities, [Coin Desk writes](#), and to be able to transfer it instantaneously around the world in seconds at a low cost.

In other words, bitcoin is not printed and held the same way physical money is, but rather held and traded electronically. [As Bitcoin.com explains it](#), bitcoin isn't necessarily owned by any one in particular—like a company—but anyone can use it. Rather, bitcoin has the agility to be sent and received around the world anonymously. As it currently stands, there are roughly 16.6 million bitcoins in circulation and has a maximum supply of 21 million.

Since bitcoin first came onto the scene in 2009, its popularity has no doubt skyrocketed, but the last couple of years have truly been the test of its rising popularity. Case in point, the Securities Exchange

Commission moved to regulate bitcoin and initial coin offerings (ICOs) in July 2017, while eight US states are working on bills to accept bitcoin and blockchain as methods of payment. As [Business Insider highlights](#), a couple of states have already passed those into law.

That said, countries like Japan [already officially recognize](#) bitcoin as a currency in the same regard as fiat currencies, whereas China is still working on its regulation policies. Meanwhile, Russian president Vladimir Putin [has announced the country](#) will implement regulations surrounding cryptocurrencies, which includes requirements and security laws as it pertains to initial coin offerings.

On that note, however, Jimmy Song, a bitcoin developer/entrepreneur, and former vice president of engineering at Armory summarized the advantages of bitcoin as follows: it's accessible, more liquid, has the largest developer ecosystem, more entrepreneurs building companies around it, and is secure

Bitcoin's popularity has garnered so much interest that it's even been compared to safe-haven assets like gold, and posing allusive questions such as "is bitcoin better than gold?" (Hint: there are cases made for both [bitcoin over gold](#), and [gold over bitcoin](#).)

In the last nine months, bitcoin has increased 940 percent from \$997.69 to \$9,000 as of March 23, 2018.

Ethereum

Market cap: \$550 billion; current price: \$536.

The second top cryptocurrency is ethereum although it is significantly behind digital currency giant, bitcoin. According to [Ethdocs.org](#), ethereum was first detailed in 2013 by Vitalik Buterin following research conducted in bitcoin.

Ethdocs further notes that Burwein published something called the Ethereum white paper. Development of ethereum was then funded by

an online crowdsale during the summer of 2014 before going live a year later, on July 30, 2015. Currently there are over 95 million ether tokens in circulation.

While ethereum poses similarities to bitcoin, such as being an open-source software built on blockchain [that allows developers to](#) “build and deploy decentralized applications,” one of the biggest differences between the two is that ethereum’s main focus is controlling the program code of a decentralized application.

Furthermore, the miners earn what’s called Ether—which is the digital token in the ethereum network—and is similar to bitcoin in that regard. Like bitcoin, ether can be bought and sold, and doesn’t need a third party to approve a transaction.

As [Coindesk.com describes](#), “ether seeks to provide the fuel for the decentralized apps on the network,” and has been chronicled as the “digital oil”. In other words, Coindesk states the transaction fees are based on how much ether is required.

On that note, while bitcoin’s price increase has stolen headlines almost all year, ethereum’s price increase is the bigger star of the show. At the start of the 2017, an ether coin was valued at \$8.37, and has increased 5,040 percent to \$536 as of March 23, 2018.

Ripple

Market cap: \$7.78 billion; current price: \$0.20

Middle of the pack on our top cryptocurrency list is the slightly lesser known currency, Ripple.

Ripple is a payments protocol as well as a cryptocurrency, and is built on a distributed open source internet protocol. Interestingly, it was released in 2012—well before ethereum—and has also created a real-time gross settlement system, currency exchange and payment network, [which is called RippleNet](#).

According to its website, “Ripple provides one frictionless experience to send money globally using the power of blockchain,” by connecting banks, payment providers and digital asset exchanges through RippleNet. Its cryptocurrency coin is labeled XRP.

[Investorpedia](#) states that the XRP token “acts as a bridge to other currencies,” thereby making it easy for currencies to be exchanged.

Ripple’s XRP token has increased from \$0.006 since January 1 to its current price of \$0.21 as of 6:37 p.m. EST on October 25, representing an increase of 34,900 percent.

Bitcoin Cash

Market cap: \$5.49 billion; current price: \$328.96

Not to be confused with bitcoin—although bitcoin cash wouldn’t exist without the former—bitcoin cash was created as a bitcoin clone. [Launched in August of 2017](#), bitcoin cash was created in order to help facilitate the transaction processes.

On that note, however, those that owned bitcoin before the split were then given an equal amount of bitcoin cash—meaning the same amount of bitcoin cash units in circulation was the same as bitcoin at the time of the split. To differentiate from bitcoin—whose symbol is BTC—bitcoin cash was given the symbol BCH.

By definition, “bitcoin cash brings sound money to the world,” verifies and processes digital transactions by removing third parties that settle disputes between buyers and merchants. [Bitcoin.com](#) further states the purpose of bitcoin cash is to eliminate fraud through proof-of-work digital signatures that are verified via blockchain.

Since the bitcoin/bitcoin cash fork, bitcoin cash has decreased from \$767.76 on August 2 to \$333.25 on October 25 as of 6:56 p.m. EST.

Litecoin

Market cap: \$3.95 billion; current price: \$55.29

Closing out the top cryptocurrencies list is litecoin, a peer-to-peer cryptocurrency that is similar to bitcoin. Litecoin has been around since 2011, which was originally developed by Charlie Lee to improve bitcoin. Much like bitcoin, litecoin uses a similar encryption software to maneuver and facilitates transactions. That said, a major difference between the two is litecoin has more coins than bitcoin and quicker transaction speeds.

If you've heard the word 'cryptocurrency' at least once, but aren't exactly sure what-exactly-it is, you're certainly not alone.

In simple terms, a cryptocurrency is essentially digital money—a medium of exchange like a currency such as the USD or CAD—and is secure while also being largely anonymous. In other words, cryptocurrencies provide the same service as a fiat exchange but aren't linked together. “They are wholly separate and as distinct as the crypto and fiat money they support,” [Ethnews writes](#).

Similarly, [Cryptocoins News](#) states that the exchange of digital currencies is made possible through cryptography, which secures the transactions and relegates the production of new coins.

To provide a little bit of perspective, there are currently roughly 1,200 different cryptocurrencies, [according to data from Coin Market Cap](#), with a combined market cap totaling roughly \$150 billion. Not bad for an industry that—overall—has barely been around for a decade.

In terms of the overall outlook for cryptocurrencies, [a Market and Markets report suggests the market](#) will reach \$2.9 billion by 2023, growing at a compound annual growth rate of 32.31 percent between 2017 and 2023. In 2017, the same report states the cryptocurrency sector was worth roughly \$541 million as of October 17.

With that in mind, here the Investing News Network (INN) provides an overview of the 5 top cryptocurrencies in the space for investors to

familiarize themselves with. While it goes without saying that bitcoin is the favourite child of digital currencies, the other four are certainly worth consideration as well.

As others have said, Litecoin is the silver to Bitcoin's gold, and both are scarce in supply. While there are currently 53.5 million Litecoins in totation, a maxium of only 84 will exist.

"Citing" in Chapter 15, (encompassing), Blockchain Investing News, <https://investingnews.com/daily/tech-investing/blockchain-investing/top-cryptocurrencies/>, Article: 5 Top Crypto Currencies, Author: Jocelyn Aspa, October 25, 2017.

CHAPTER 18

Blockchain Outlook 2018: More Industries to Adapt, Regulations Begin

Blockchain Outlook 2018: More Industries to Adapt, Regulations Begin

2017 WAS THE YEAR OF INITIAL COIN OFFERINGS FOR THE BLOCKCHAIN TECHNOLOGY SPACE—WHAT'S IN STORE FOR 2018 FOR THE BLOCKCHAIN SPACE? INN HAD THE OPPORTUNITY TO SPEAK WITH AND RECEIVE INSIGHT FOR INDUSTRY EXPERTS AND ANALYSTS.



Earlier this week the Investing News Network (INN) reported on [blockchain trends of 2017](#)—which highlighted the surging increase of initial coin offerings and commercialization of the technology coming to the forefront, particularly in the financial services industry.

With the start of 2018 fresh out of the gates, it's time to turn our attention to the year ahead and what's in store for this new wave of technology.

Among some trends to keep an eye on throughout the year, Kevin Hobbs—CEO of Vanbex Group—told INN he expects there will continue to be caution in the market until there's proper regulation, and that ICOs will still be “very popular,” but that there will be different strategies and structures “so that people can try to prepare for regulation.”

BLOCKCHAIN OUTLOOK 2018: HEALTHCARE IMPLEMENTING BLOCKCHAIN

While 2017 was without a doubt a big year for the blockchain industry, last year was only just the beginning for the sector. With more than 60 percent of banks already backing blockchain, moving into 2018 it's expected that more industries will make the shift towards using blockchain technologies, with the healthcare industry at the top of that list.

"The focus has begun to shift to an array of non-financial use cases spanning across healthcare, identity and authentication, telecom, media, and supply chain management, among others," BIS Research told INN in an email.

BIS Research also stated that healthcare organizations are also expected to begin the process from pilot tests towards implementation of blockchain towards the end of the year, highlighting that some of the biggest use cases behind adapting the technology includes: maintaining records of credentials and licenses, data exchange to enhance patient care, population health management, supply chain management, and medical monitoring.

"By 2020, 10-15 percent of the healthcare entities are expected to have integrated the technology in their operations," BIS Research told INN.

Frost and Sullivan Research [also estimates that](#) blockchain technology "holds the potential to eliminate the burden and cost of health data and reconciliation and facilitate interoperability."

More specifically, the research outlet states that blockchain has the potential to provide a platform that helps decentralize health data, which will ensure access control, authenticity, and "integrity of protected healthcare information."

That said, Frost and Sullivan acknowledge that blockchain is still widely misunderstood by many industries, but holds the possibility of helping

industries save money by improving workflows and the disintermediation of “some high-cost gatekeepers.”

BLOCKCHAIN OUTLOOK 2018: REGULATIONS COMING INTO PLAY?

As Hobbs told INN, caution will still be prevalent in the market until there’s proper regulation.

“ICOs or token distributions still going to be very popular and a lot of people doing them, but there’s going to be different strategies and structures for them so that people can try to prepare for regulation that’s coming down, except we don’t know really what that’s going to be,” he said.

CBS Insights echoed similar sentiments in a report, stating that blockchain is still in its “nascent stages.”

“Teams holding ICOs have yet to collaborate with regulators to develop strong legal frameworks, and state bodies continue to grapple with the question of how to regulate inherently decentralized protocols,” the research outlet stated. “Given that major cryptocurrencies (like bitcoin) have often been used for illicit black-market transactions, regulatory clarity could be an uphill battle.”

AS BIS Research told INN, the Dubai government has partnered with a blockchain start-up in the UK, called ObjectTech, to create digital passports for entry at the Dubai International Airport “with the aim of eliminating manual passport verification, and creating the world’s first-gateless border.”

BIS Research also said that countries like Russia, Japan and China, among others, are looking to issue their own digital currencies pegged with their own fiat currencies on the blockchain, which could compete against cryptocurrencies.

In South Korea, for example, the government [has allegedly banned](#) anonymous cryptocurrency trading, with those regulations set to

begin on January 20, and will even restrict cryptocurrency advertising. Rumors are swirling of new legislations coming into play in Europe and the UK as it relates to criminal activity surrounding bitcoin and instead increasing transparency by “bringing digital currencies in line with existing legislation on tax evasion, anti-money laundering and counter terrorist financing,” [Investing.com reported](#).

“The Canadian, and Brazilian governments are exploring a number of identity management using blockchain,” BIS Research told INN. “While the complete integration of blockchain into supply chain may take another decade, several companies such as Everledger, and Bit-bond have already commercialized applications for tracking goods, and financing transactions.”

BLOCKCHAIN OUTLOOK 2018: COMPANIES AT LARGE

Looking into 2018, companies left and right are making the leap into the blockchain industry—and those who already have a head start in the industry are excited about what the year holds.

Jeff Koyen, strategic advisor for [360 Blockchain](#) (CSE:CODE; FWB:C5B; OTCPINK:BKLLF) told INN that the company is confident the underlying blockchain technology is a “long-term winner,” despite what the future holds for bitcoin and other cryptocurrencies.

[HashChain Technology Inc](#) (TSXV:KASH), which only went public in December 2017, is already making noise in the blockchain sector. Patrick Gray, the company’s CEO, told INN via email now that HashChain has gone public, its next focus is scaling its mining operations.

“We are always thinking of new ways to stay ahead of the curve and make sure we are on the forefront of a changing market,” he said. “We are looking at economically friendly ways to mine, analyzing the future changes so that we can pivot and aggressively acquiring exciting new companies.”

By the end of the year, Gray said the company hopes to have one of

the biggest cryptocurrency mining operations in North America and to be recognized as a “leader in the blockchain revolution.”

The number of blockchain companies making the switch to blockchain in 2018 is also poised to explode: according to analysis from [Autonomous Research](#), at least 100 companies will change their titles in 2018 to reflect blockchain technology, up from 31 in 2017.

BLOCKCHAIN OUTLOOK 2018: INVESTOR TAKEAWAY

While 2017 paved the road for blockchain technology, 2018 will without a doubt be the year the industry truly shines. More and more companies are making the switch to blockchain, but as Gray pointed out, investors should still do proper research and get involved—now.

“People think we are in a bubble and that may be accurate, but I believe we are only in the beginning stages,” he added.

Don't forget to follow us [@INN_Technology](#) for real-time news updates!

Securities Disclosure: I, Jocelyn Aspa, hold no direct investment interest in any company mentioned in this article.

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“Citing” in Chapter 18, (encompassing), Blockchain Investing News, <https://investingnews.com/daily/tech-investing/blockchain-investing/blockchain-outlook>, Article: Blockchain Outlook 2018: More Industries to Adapt, Regulations Begin, Author: Jocelyn Aspa, January 7, 2018.

CHAPTER 19

My First Favorite Crypto Stock

My No.1 diversified blockchain play, **DMG Blockchain Solutions** (TSX-V: **DMGI**), is continuing to create fireworks.

DMG is a diversified cryptocurrency and blockchain platform company that is focused on the two primary opportunities in the sector – mining public blockchains and applying permissioned blockchain technology to address the fraud and friction that plagues the movement of value through supply chains. *DMG*'s strategy is to become the domain experts in verticals across many industries – agriculture, pharmaceuticals, energy, precious metals, transportation, financial services and manufacturing.

DMG's management team includes seasoned bitcoin mining experts, forensic & financial professionals, blockchain developers, with deep relationships throughout North America and Japan, with previous experience working at Bitfury, PwC, EY, Cisco and UBS.

After acquiring BlockSeer and becoming a top-dog in the blockchain applications business, they just released an update on their ever-growing Mining as a Service (MaaS) profit center – they landed a big fish client – an \$8B publicly-traded company is their newest client.

With Cisco announcing today that they are repatriating \$67B under the new tax laws, we see more companies bringing valuable cash to the U.S., and we see America booming (through its massive debt-

fueled programs), which translates to more consumer spending and much more capital expenditure plans coming from large-scale businesses. This means blockchain technology will be heavily invested in, and DMG sits at the heart of it, as a leader in solutions.

PRODUCTS & SERVICES

- **Mining as a Service**

Mining as a Service – MaaS – Management of Bitcoin mining on behalf of third parties globally. MaaS enables anyone, anywhere the ability to mine crypto.

- **Blockchain Based Supply Chain Platform**

DMG is working with an existing Licensed Producer to develop a platform ensuring complete provenance of controlled products through the entire supply chain.

- **Forensics & Blockchain Analytics**

Our Certified Fraud Examiners (CFEs) use proprietary software tools, to perform investigations, and KYC and AML requirements, relating to both bitcoin and ethereum transactions.

- **Corporate Mining**

DMG's blended model of MaaS, and DMG owned mining, allows DMG to benefit from the appreciation of BTC, while also ensuring known monthly hosting revenues.

- **Predictive Analytics**

DMG is working with the auto leasing industry, and using a combi-

nation of Blockchain and AI technology enables predictive analytics, increasing the life cycle of vehicles.

• Consulting

DMG draws on its extensive knowledge and experience to help clients better understand how best to implement blockchain technologies into their businesses.

DMG CEO Report Q1

GlobeNewswire • March 21, 2018

DMG Blockchain Solutions Announces Q1 Progress:

Cryptocoin Mining Service Capacity Sells Out, Up to a 85 Megawatt Mine Construction Underway, Closes First M&A Deal, Strategic Partnerships Inked

Key Achievements & Operational Highlights

1. **2,650 Mining Rigs Sold:** MaaS allocated 4 megawatts of power sold out.
2. **Power Update:** DMG expects an additional 40 megawatts ready for mid-2018.
3. **Bitcoin Mining:** Launching what could be the largest industrial bitcoin mining complex in North America with power capacity of up to 85 megawatts.
4. **Blockseer and AI:** Carefully managed M&A plan underway with the acquisition of leading Silicon Valley-based artificial intelligence (AI) and Blockchain company, Blockseer.
5. **Key partnerships** that can be catalysts for growth and margin expansion (Bitmasters, Foreside Financial, Mogo, Emerald Health Therapeutics, Element Fleet Management, D-Link, Primary Engineering and CannaChain).
6. More than **\$35 million** raised in 2017 with institutional ownership of more than 20%.

VANCOUVER, British Columbia, March 21, 2018 (GLOBE NEWSWIRE) —

DMG Blockchain Solutions Inc. (DMGI.V) ("**DMG**" or the "**Company**"), a diversified blockchain and cryptocurrency company, announced today that it has sold out its current capacity of 2,650 mining rigs for its cryptocurrency Mining-as-a-Service (MaaS) business. Under DMG's unique MaaS business model, customers purchase the mining rigs and receive their mined the bitcoin directly, while DMG provides hosting and management services – a stable and predictable revenue stream. Additionally, the Company's operational achievements in 2018 to date include the commencement of construction of a new mining facility with up to 85 megawatts of power, the acquisition of A.I. leader Block-seer, and initiatives with key partners including D-Link, Primary Engineering, Emerald Health Therapeutics, Mogo, Foreside Financial, and Bitmasters.

DMG's CEO, Dan Reitzik commented, "This is our first report for our shareholders and the first of many to come. We continue to provide our shareholders with opportunities other crypto players do not see or are unable to execute upon due to our experience and relationships built over several years in the industry. DMG is not only establishing itself as the leader in crypto mining but also in blockchain and AI platform development with our recent acquisition of Block-seer. Our pipeline is strong and exciting, and few have it. In fact, market weakness has created more opportunities for DMG as power providers are becoming more educated as to whom they want to deal with. We thank our investors and customers for all of their support to date."

MaaS Currently Sold Out

To date, DMG has received strong demand for its MaaS offering, as DMG is currently completely sold out of available capacity (4 megawatts) allocated to this service. Major orders have come from leading Japanese clients including Foreside Financial and Bitmasters. An additional 40 megawatts of capacity is expected to be in place mid-2018, and we are now in discussions for additional orders, primarily from Asian clients.

DMG Focus

DMG recognized from inception that an experienced management team with deep knowledge of cryptocurrency and blockchain technology is requisite to be successful. Our team includes three former Bitfury personnel (considered to be the world's second largest bitcoin mining company). Our technology team includes Danny Yang, a Stanford Ph.D. in Computer Science and Artificial Intelligence, and Tim Eller, Ph.D. (Mathematics), a graduate of UCLA, Cambridge and Harvard. The team includes developers having worked at Uber, Lyft, Google, and Facebook. With Blockseer's deep understanding of Blockchain transactions, DMG is poised to be a leader in cryptocurrency forensics. DMG's Forensics business is led by Certified Fraud Examiner (CFE) Simon Padgett, an English chartered accountant (ACCA) with a Canadian CPA and MBA from University of Oxford.

DMG Business Strategy

DMG's primary objective is to monetize the Blockchain ecosystem. DMG does this in three ways: 1) mining cryptocurrency on an industrial scale (processing global bitcoin transactions), 2) extracting rich data analytics from public blockchains, and 3) providing enterprises with permissioned blockchain solutions that create efficiencies and new sources of revenue by combining DMG's proprietary blockchain technology with the customer's deep domain knowledge. To achieve this, DMG brings unique expertise for: 1) mining at scale – tens of megawatts of mining, which may expand to hundreds, and 2) merging artificial intelligence (AI) with blockchain technology, which together can enable new business models for monetization of data.

DMG Operations

DMG is building an organization focused on operational excellence. DMG aims to achieve this in several ways: 1) further expand the team with the experience to meet and exceed set goals, 2) implement a tightly integrated supply chain whereby suppliers and subcontractors are partners integral to the operations planning process, and 3) diligently manage complexity by continuously simplifying both the business model and operational procedures.

Market price as of March 29, 2018, 61 cents (CAD).

Summary: What you should be looking for when selecting a Crypto stock is diversification. DMG meets this parameter. What I like about the company is the fact that they lease out their ""Super-Mining Computers", rather than buying them, thus saves their precious working capital. They are deal makers with excellent management. But remember, we are only allocating 15% of our investment capital to *Crypto*, the other 85% towards *gold & silver mining stocks*.

"Citing" in Chapter 19, (encompassing), DMG blockchain Technology Website, <https://www.dmgblockchain.com/>, Author: Don Reitzik, CEO, 2018.

CHAPTER 20

My Second Favorite Crypto Stock

HashChain Technology (CSE:KASH) is a block chain technology company primarily focused on: CRYPTOCURRENCY MINING

OPERATION

- HashChain operates cryptocurrency mining in two low energy cost data centres in North America with an expectation to achieve 20MW of mining by the end of 2018 and 70 MW of mining by the end of 2020.

CRYPTOCURRENCY ACCOUNTING AND TAX REPORTING

- NODE40 Balance is a cryptocurrency accounting and tax program that integrates with certain exchanges to track cryptocurrency trading in an industry that is becoming more regulated for tax purposes.

MASTERNODE HOSTING SERVICES

- NODE40 is a leading Dash Masternode hosting service provider for a significant number of Masternodes on the Dash network

PROVEN TEAM

- Cryptocurrency and Blockchain Experts
- Early adopters and advocates, deep technical experience
- Business and Financial Success
- CEO's first start-up that he was involved with was sold to Xerox for

\$220 million

- Team has raised significant capital with enterprise valuations exceeding \$1 billion.

DASH ALIGNMENT

- HashChain
- Perry Woodin, CSO, is Advisor to Dash
- HashChain owns one Dash Masternode (1,000 DashCoins = Masternode)
- Dash – “Cryptocurrency of the Future”
- Moving quickly towards mass adoption
- Will soon be “as simple to use as Paypal”

DIVERSIFIED

- HashChain has diversified its business strategy for blockchain-based solutions

STRATEGIC ALLIANCE

- Relationship with the largest rig manufacturer in the world
- Allows for scalable rig acquisitions

OPTIMAL MINING CONDITIONS

1. Low cost of power (\$0.03 – \$0.04 / kWh)
2. High speed internet
3. Cool climate

CAPITAL STRUCTURE (January 2018)

- 55.3 million shares issued and outstanding
- 3.14 million shares Node 40 acquisition
- 18.3 million options and warrants
- 2:1 forward split effective Feb 5, 2018

NODE 40 Acquisition

THREE MAJOR REVENUE STREAMS

- Digital Currency Accounting: NODE40 Balance Accounting Software expected April 2018 launch & 1,200 trial users while in beta testing.
- Blockchain Hosting: NODE40 is the go-to provider of Dash Masternode hosting services. 2017 Revenue: \$700k CAD.

EXPERIENCED TEAM

- A team of 7 experienced developers and digital currency experts, including founder Perry Woodin – advisor to Dash Core and Sean Ryan, CTO.

EXPANSIONS

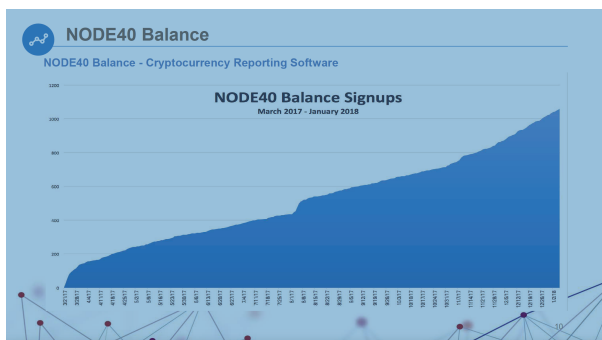
- Expansion plans to facilitate HashChain's vision of becoming a leading blockchain technology company.
- Projected development of core services offerings and expansion of technical team in Albany. HashChain has diversified its business strategy with blockchain based solutions through the acquisition of NODE40.
- US based blockchain accounting and Masternode hosting service company
- Pioneers of professional Masternode hosting and cryptocurrency accounting software development
- Over 3,000 subscribers signed up for NODE40 of which 1,200 using Node40 Balance
- Featured in over 100 media appearances including Forbes, Nasdaq, Bitcoin Magazine, TheStreet, Fox Business, Morningstar and others
- www.node40.com

NODE40 Balance – Cryptocurrency Reporting Software

- A robust cryptocurrency reporting software modelled off IRS property law rules
- Integrates directly with certain major cryptocurrency exchanges to efficiently and seamlessly track cost basis and taxable transactions
- There is a software need in the blockchain community facilitating

accurate recording and disclosure to the government

- NODE40 Balance uses a coin-holders' transaction history and analyzes the blockchain to determine accurate valuations for every input and output comprising a transaction and reports the current total asset value, income, and any realized gains or losses



NODE40 Balance Regulatory Opportunity

- Increased regulation is expected creating demand for cryptocurrency accounting software.
- A greater number of countries will join those that have already imposed a higher degree of regulation like Australia, Israel, South Africa and others.
- 2017: Internal Revenue Service (IRS) vs. Coinbase.
- Coinbase ordered to disclose account information for 15,000 users.
- According to the tax agency, "only 800 to 900 taxpayers reported gains related to bitcoin in each of the relevant years".
- Coinbase has approximately 6,000,000 users.
- Cryptocurrency Market Opportunity – as of January 28, 2018.
- Market Cap: USD \$558B / 24h Volume: USD \$25B.

NODE40 Hosting

NODE40 Masternode Hosting Service

- NODE40 provides a suite of services for hosting, running, managing and evaluating performance of a Masternode in a simple and intuitive manner.
- Provides an easy and cost effective method to run and monitor Mas-

ternodes.

- Masternode wizard launches a node in real-time.
- Monitor tracks the node's health and value.
- Provides all of the maintenance and updates.
- Unparalleled hosting service uptime (99.9%).

Market price as of March 29, 2018, 23 cents (CAD)

Summary: I like the company primarily due to its management. Patrick Gray, the CEO, and chief stockholder, has an incredible record, of building companies, and then moving on. His last start up was sold to Xerox for \$211,000,000. I also like their NODE 40 division which is growing rapidly. Even after their 2 for 1 stock split, they only have about 100 million shares outstanding, and raised \$35 million. Compare this with Hive Blockchain Technology that has over 300 million shares outstanding, and raised \$100 million. Lastly due to Bitcoin's recent contraction, it has brought all crypto stocks down into buying range. At .23, it is my opinion, that the downside risk is .05 and the upside gain 1000 percent. An excellent risk/reward ratio.

"Citing" in Chapter 20, (encompassing), Hashchain Technology, Website: <https://www.hashchain.ca/for-investors>, Corporate presentation, Author: Patrick Gray, CEO, 2018.

CHAPTER 21

My Third Favorite Crypto Stock

Hive Blockchain Technology

Summary

Latest earnings report confirms low-cost strategy of HIVE an effective one.

Plenty of cash available to fund next growth phase.

Why the top line results were lower than expected in the quarter.

Major concerns over long-term business model, plans and performance.



source: prnewswire

The latest earnings report by HIVE Blockchain (OTCPK:HVBTF) confirms the company made the right decisions on the locations of its cryptocurrency mining farms, as it was able to generate a small profit at this early stage of its development.

It was a little disappointing on the top line, primarily because it took longer to bring the second data center on line in the quarter than was anticipated. That should change in the months ahead.

HIVE has more than enough cash available to finance its next expansion phase, which includes bringing its Sweden GPU Data Centre on line by April 2018, and its "Sweden Bitcoin Data Centre by September 2018."

Concerns going forward are in regard to its business model itself, which is focused on mining cryptocurrencies, and the volatility of those cryptocurrencies and their impact on the company's performance over time.

In this article we'll look at these variables to give a current snapshot of what the present and future potentially hold for HIVE Blockchain and its shareholders.

Earnings results

In the third quarter HIVE generated revenue of \$3.27 million, with earnings of \$149,724. Gross mining margin came in at \$2,382,587.

The results included “a full quarter of operations from the initial 2.05 MW of mining capacity plus operations from the 1.75 MW expansion from October 13, 2017.”

Its investment of \$16.3 million in data center equipment generated an ROI of 36 percent, with the company producing \$5.8 million in digital currencies. That included Ethereum, Ethereum Classic and ZCash.

About Hive Blockchain Technology

First Mover Advantage

- First publicly listed blockchain infrastructure company that bridges blockchain and cryptocurrencies to traditional capital markets.
- Ability to accelerate development of the blockchain sector through traditional capital markets while creating long-term shareholder value.
- Experienced team and advisors who have been integral to the success of several billion dollar companies

Cash Flow Positive

- Owner of a state-of-the-art GPU-based cryptocurrency mining facility located in Iceland, a stable jurisdiction with low energy costs.
- Low working capital requirements does not require immediate sale of mined coins and allows HIVE to strategically sell coins to maximize profit.

- Healthy balance sheet provides flexibility to pursue further blockchain opportunities.

Strategic Shareholder & Partner

- Exclusive partnership with Genesis Mining, the world's leading cryptocurrency mining hashpower provider.
- Ability to leverage Genesis Mining's expertise, IP and procurement power to develop new facilities and other businesses.
- HIVE retains the option to acquire at least three additional data centres in Iceland and/or Sweden from Genesis.

Why Mining?

Miners validate transactions on blockchain networks for rewards paid in cryptocurrency. Partnered with Genesis Mining, HIVE provides this at industrial scales focusing computing resources on existing and new cryptocurrencies as they become more profitable to mine.

Genesis' forward-thinking and expertise enabled them to become the leading miners and owners of Ether, the crypto-fuel for the distributed application platform Ethereum, now the world's second largest cryptocurrency market after Bitcoin.

Why Iceland?

Mining cryptocurrencies profitably relies heavily on efficient energy infrastructure. Iceland is ideally suited to crypto mining due to having a naturally occurring cold climate and abundant, cheap electricity from renewable sources like geothermal and hydro. Iceland also has fast and reliable internet connectivity and is a gateway between Europe and North America.

Genesis Mining

Founded in Hong Kong by early Bitcoin investors and mining pioneers,

Genesis Mining Ltd. is the largest cryptocurrency miner and the largest cloud miner with over a million customers.

Their first large-scale Bitcoin mining facility was built in 2014 using custom hardware. This was followed up in 2016 with the construction of the world's largest Ether mining facility — specifically built to support the Ethereum Project at an early stage of its development.

HIVE is a partnership between Genesis Mining and Fiore Group to accelerate the development of the blockchain sector through traditional capital markets and develop the leading listed blockchain infrastructure company.

"Citing" in Chapter 21, (encompassing), Hive Blockchain Technology, Website: <https://seekingalpha.com/article/4153694-future-holds-hive-blockchain>, What the future holds for Hive Blockchain, Author: Gary Bourgeault, March 6, 2018. Also, "Citing" in Chapter 21, (encompassing), Hive Blockchain Technology, Website: <https://www.hiveblockchain.com>, Author: Frank Holmes, Chairman, 2018.

My Favorite Crypto Currency

Introduction

There is a very strong case to be made for a fully decentralised banking system. In the next four pages, we will make this case.

We will highlight the weaknesses of the current banking system and outline our solution. We will demonstrate how this solution can improve individual well being, support businesses and improve the financial resilience of communities, countries and the global economy as a whole.

We will also make the business case for BABB, summarising the business model and the market opportunity. Finally, we will include the key details of our token sale.

Problem

There are seven billion people in the world, and more than two billion of them are 'unbanked'. This means they don't have access to basic financial services. Being 'unbanked' leaves people reliant on cash, making it hard to save money, take out a loan safely, or send money across any kind of distance. In an increasingly connected world, 30% of the population is disconnected from the economy.

The current banking system isn't working for these two billion people. Anyone who doesn't have access to a bank account or financial ser-

vices is being held back. An initiative in Mexico to ‘bank the unbanked’ found that opening bank accounts for low-income customers led to a 7.6% increase in the number of business owners, a 1.4% increase in employment and a 7% increase in average income. On a broader level, financial exclusion is responsible for the perpetuation of poverty, poor living standards, exclusion from education and poor health.

The current banking system isn’t working for the ‘banked’ either; the other five billion people in the world. Accenture has recently reported that ‘banking the unbanked’ represents a \$380 billion market opportunity. And yet, the gatekeepers to the system (the banks) have done very little to tap into this opportunity.

Why?

Because they can’t. It’s expensive to get new users onboard. The majority of the ‘unbanked’ are small players – individuals, solopreneurs and small businesses. The revenue they would generate is lower than the cost to serve them. Therefore it simply isn’t profitable, or even viable, for traditional banks to serve these two billion people.

In other words, even though the unbanked people of this world represent a \$380 billion market opportunity, the centralised banking system can’t do much to unlock it.

Solution

BABB is an acronym for Bank Account Based on Blockchain. We want to use blockchain technology to offer a bank account to anyone in the world, with built-in access to crowdsourced financial services. It is possible to significantly cut the cost of banking and financial services to offer game-changing service and bring two billion people into the global economy. We think this will be good for everyone.

The benefits of a decentralised model of banking don’t stop at financial inclusion. We can end high prices due to stagnant competition and data leaks due to poor security. We can also make the global economy less susceptible to shocks such as the 2008 financial crisis by decentralising the decision making. Banks are weak and vulnerable,

compared to the distributed strength and security of a decentralised banking platform, in which each user is essentially their own bank

Product

A beautiful smartphone app

In the last few decades, emerging markets have gone straight to mobile data networks, leapfrogging landlines. Now, we'll take the unbanked straight to a streamlined mobile banking experience.

A real UK-based bank account

A BABB account will take seconds to set up via the BABB smartphone app, using a selfie and passphrase. In addition to the usual cryptographic address, BABB accounts are issued an IBAN for international payments, as well as an account number and sort code for UK transactions.

BABB is already an Authorised Payment Institution regulated by the FCA, and applying for a UK banking licence. We can still operate even without the banking licence; as an authorised payment institution we are able to do everything except for treasury operations.

True peer-to-peer financial services

A BABB bank account will be a portal to a connected world of crowd-sourced financial services. BABB account holders are nodes in a peer-to-peer network managed by smart contracts, connecting people with money to people with ideas.

A secure payment card

The Black Card will be a payment card linked to the BABB app using an NFC tag or QR code with no data stored on the card itself. Account holders will be able to pick up a blank card for free online or in any shop, and spend it with any retailer who also has a BABB account.

With the Black Card, we will create a new universal payment system, independent of Visa and MasterCard. Retailers with a BABB account

will be able to accept Black Card payments without needing to buy a card machine or pay high processing fees. They can also access the funds immediately, cutting out the current week-long lag time and increasing the speed of doing business.

Technology

Blockchain

Blockchain makes it possible to run a decentralised peer-to-peer platform, enabling users to transact without an intermediary and benefit from faster and cheaper transactions. Smart contracts create tamper-resistant transactions for greater security.

Biometric

Biometrics, including voice print, face scan and geolocation, make it possible to create secure digital identities for all account holders. This enables everyone – even those without an address or ID documents – to open a bank account, and retain ownership of their digital identity data.

Artificial intelligence

AI will be used for ‘dynamic KYC’, enabling us to build up an ever-evolving profile of BABB users and spot fraudulent or uncreditworthy behaviour. Trust is a crucial element of a peer-to-peer network, and AI is pivotal in ensuring everyone on the network is trustworthy.

Growing the network

The BABB platform utilises the network effect: the value of the service increases according to the number of others using it. A BABB account must provide access to a high level offering of crowdsourced financial services almost immediately, which requires rapid initial growth of the network.

Our key growth mechanism is the ‘Social KYC’ proposition. Social KYC enables a BABB advocate – a fully verified member of the network –

to recommend other people for an account. We intend to work closely with ambassadors on the ground in order to create fully banked communities. We will also work with employers, who can use BABB for payroll. People can receive their salary directly into their BABB account, removing the need to cash into the platform.

Data privacy

BABB will employ privacy by design, implementing GDPR regulations into our operations. On the BABB

platform the account holders have full ownership of and control over their own data.

There will be different tiers of data protection, implemented through various means of storage and encryption. These will be optimised to ensure privacy by default and presented in clear and obvious UI.

Central Bank Digital Currencies

BABB will work directly with central banks to issue their own digital currencies, working around existing local and international fiscal and monetary policy. We believe that central bank-issued digital currencies (CBDCs) will play a key role over the next decade, with many central banks having already announced plans to this effect. CBDCs can help to stimulate local economies by retaining wealth within a defined boundary and supporting local payment networks.

BABB will work with central banks to manage existing and issue new CBDCs. They can leverage our technology to host and operate a portion of the federated network. This sub-network remains an integrated part of the global platform, allowing citizens to transact locally and globally. Central banks can also collect data from the platform to provide the insight needed to manage the system efficiently.

BAX token

BAX will be implemented on the public Ethereum blockchain as an

ERC20 token. BAX is a utility token which will be used under the hood in the BABB platform, powering the network across all jurisdictions.

All service fees and licensing on the platform will be collected in BAX, meaning any individual or business must hold BAX in order to use a BABB account. As a universal currency, BAX will also have many use cases on the platform, including: ensuring liquidity of P2P currency exchange, facilitating cross-border fundraising, and international payments.

“Citing” in Chapter 22, (encompassing), BABB, Website: <https://getbabb.com/whitepaper>, Article: BABB Short White Paper, Author: Rushd Averroes, CEO, 2018.

The Time To Buy Crypto Stocks Is Now!



HIVE AND OTHERS, BLOODBATH ROCKS TSX VENTURE

While the Dow's 14.9% drop recently shook confidence at largest insti-

tutions, it pales in comparison to the ongoing carnage of **crypto stocks** on the **TSX Venture**. **Crypto stocks** have broken support, falling in unianice after Bitcoin and its counterparts collapsed in value. The Venture is now heavily weighted to the marijuana and crypto sectors and moves up and down with them.

Bitcoin fell to a low of **\$6,610.81** per coin recently, then quickly rising to \$11,500, only to see it's price as of April 1st, fall to \$6,700. Its seven day chart from the high shows a scary ride lower.



Bitcoin's three month chart paints the story of late. The coin's value went parabolic prior to Christmas, nearly touching \$20,000 per coin. Consequently, it has blown off to the lows of early November, prior to its runup.

Bitcoin erases gains made in November and December



Bitcoin is not the only cryptocurrency in the midst of a collapse. Almost every digital currency has lost half its value in the past handful of weeks, including Ripple, Litecoin and Ethereum.

As a result, these declines are wreaking psychological mayhem on individuals and investors who've poured millions into crypto currencies and **crypto stocks**.

CANADIAN CRYPTO STOCKS UNDER PRESSURE

Hive Blockchain Technologies (HIVE:TSXV), the **TSX Venture's largest crypto stock** by market cap dropped more than 80% to close at \$1.21. Its shares hit a low of \$1.19 earlier, but managed to bounce off its lows towards the close. Still, the leading crypto blockchain deal remains under heavy pressure, having lost more than \$1 billion in market cap since its highs above \$6 late last year. HIVE owns state-of-the-art GPU-based digital currency mining facilities in Iceland and Sweden, which produce newly minted digital currencies like Ethereum continuously. As the price of Ethereum and others cryptos collapse, so do HIVE's future potential revenues. As the leader in the space, at least on the TSX Venture, expect it to be the first to rebound when Bitcoin and other cryptos catch a bounce.

360 Blockchain Down Over 80% From Highs

360 Blockchain (CODE: CSE) is a much smaller crypto stock focused on the blockchain as well. The company is representative of the many junior, small-cap stocks which have entered the space in recent sessions. The company is focused upon identifying and empowering blockchain technologies applying to crypto-currencies, smart contracts, eSports, data management, the internet of things, equity trading, privacy applications and beyond.

On January 29th, 360 Blockchain announced plans raise \$2 million by the issuance of units at \$0.15 per unit in a private placement. While the stock had been grinding low for many weeks, it closed at \$0.09 Monday. There has been no update as to the financing terms.

Global Blockchain Sheds Nearly 85% From High

Global Blockchain Technologies (BLOC: CNX) fell 85% from its high to close at \$0.46. BLOC's description of its business is more vague than most blockchain or crypto-related stocks. According to the company, it *"provides investors access to a basket of direct and indirect holdings within the blockchain space, managed by a team of industry pioneers and early adopters of all major cryptocurrencies."*

BLOC has now lost 84% from its high of \$3.55 – hit in early October.

Global Blockchain Technologies – 3 Month Chart



Another blockchain-related deal is BTL Group Ltd (BTL: TSXV). Its shares declined 70% from the high to close at \$5.17. BTL is an enterprise technology platform provider that is developing Interbit, a proprietary next-generation blockchain platform. Via Interbit, BTL can help companies greatly reduce risks and costs by securely streamlining existing IT infrastructures.

Interbit is a fast, private, and scalable inter-connected blockchain platform. As company's move their operations onto blockchain, companies such as BTL Group stand to benefit.

eXeBlock Technology | Greed, Valuation Confusion

Finally, the last example of a crypto or blockchain related collapse is eXeBlock.

eXeBlock is a designer of custom, state-of-the-art blockchain based software applications. According to the company, these applications provide profitable, secure and efficient operating solutions to businesses.

Above all, back in November of 2017, eXeBlock raised gross proceeds of \$6.2 million through an offering of 17.7 million shares at \$0.35 per share. The company's shares began trading publicly in mid-November. After quickly hitting a high of \$1.79 on millions of shares traded, it began its long steady decline. eXeBlock closed 80% off its high Monday just off its high at .222 per share.

Why am I inserting this negative sounding chapter into the book? So that readers, if they believe in the future of BlockChain, will begin to accumulate a 15% stake in this new sector. It behooves us to concentrate our buying efforts into the three crypto stocks highlighted: Hive BlockChain, Hash BlockChain Technology, and DMG BlockChain Solutions. Therefore, if you were a client starting with a \$100,000 portfolio, I would slowly purchase 85% gold and silver shares, and quickly purchase \$5,000 in each of these three companies.

When, in time, the price of Bitcoin recovers, it is my prediction that these three companies will see gains of 500% or more. In other words, the risk/ reward ratio is far in our favor. We have a downside risk of perhaps 15% from here, and an upside reward of 500% or more. Never in my 30 years on Wall Street seen such an opportunity, but keep your purchases to only 15% of your investment portfolio.

Crypto Stock Chaos Not Over

Ask anyone who's invested in crypto deals over the past six months on the Venture and they will say the same thing: *valuations got ahead of themselves*. Like loud music drawing people into a backyard party, thousands of new investors had to see what was going on.

Two things have changed since late last year and even early January when many **crypto stocks** were hitting all-time highs. The price of Bitcoin and most cryptocurrencies have been cut in half; and, in some cases reduced to one third the value or less from their respective highs of a few weeks ago. Consequently, these types of losses force owners to question the downside risk and viability of cryptos in our current economic environment. Imagine if the U.S. Dollar lost 50%

of its value in a few weeks? There would be riots in the streets. Can governments allow their citizens to invest, in some cases, vast sums, into such volatile currencies? Regulatory oversight has increased to the detriment of Bitcoin and other cryptos in recent months. Governments do not and cannot support many of these cryptos, leading to scrutinization and a crisis of confidence for many.

While the bloodbath may not be over for the crypto stocks, the odds are in our favor that it's close.

Courtesy, Alexander Smith

"Citing" in Chapter 23, (encompassing), Pinnacle digest, <https://www.pinnacledigest.com/tsx-venture-investing/crypto-stocks-fall-tsx-venture/>, Article: HIVE Bloodbath Rocks TSX Venture, Author: Alexander Smith, February 5, 2018.

CHAPTER 24

The Product Manager's guide to the Blockchain — Part 1

THE PRODUCT MANAGER'S GUIDE TO THE BLOCKCHAIN — PART 1

MY EXPERIMENTS WITH BLOCKCHAIN, ETHEREUM & SMART CONTRACTS



If you are reading this post, you perhaps already know what a blockchain is. If not, here is an interesting video by the World Economic Forum on what the blockchain is today and could be in the [very very near future](#).

Over this past year I took a keen interest in understanding cryptocurrencies such as bitcoins and quickly realized that while digital currencies were powerful, the technology that powers them — blockchains, could change the face of how business is done. This post is the first in a 3-part series ([read part 2 here](#)) where I will present an overview of cryptocurrencies & blockchains, how blockchains are born and the broad concepts that make them possible. I will also share my notes on the business use cases for blockchains and implications for our “Internet of Things” future.

In subsequent posts I will share my experiments with the ethereum blockchain (an implementation of blockchain that enables micro-transactions), create a private blockchain network, implement a smart contract — and finally build a distributed app powered by blockchain & IoT.

Since the tech is still evolving, blockchain documentation on the web can be really confusing. This post also aims to minimize the noise and serve as a “Getting Started” guide for folks that want to play around with blockchains and start building on it. This is not meant to be a programming guide for engineers — there are tons of those on the internet, instead this is the Product Manager’s guide to the blockchain tech — so the posts will go broad & deep, but not “too” deep. Ok Enough said, here we go.

WHAT IS THE BLOCKCHAIN?

Every discussion of blockchain starts with cryptocurrencies, because the best way to understand blockchains is to understand how cryp-

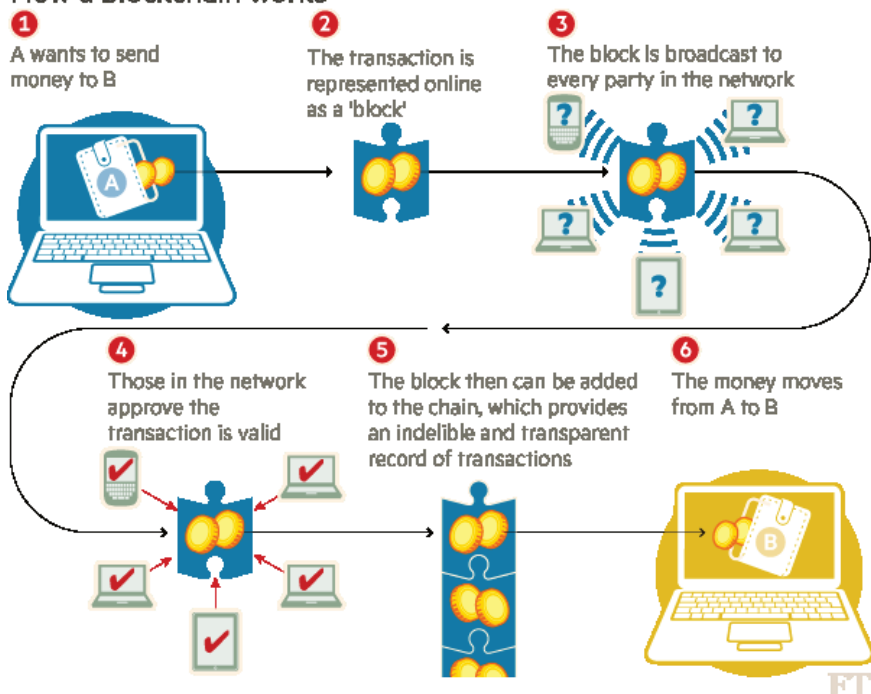
tocurrencies such as bitcoin work. If you noticed, the video starts with an overview of the current state of financial transactions — parties A and B have to *trust* a third party (a bank) to ensure transactions are valid, non-fraudulent and successful. The video then predicts the future powered by blockchains, a world where we will have to trust no-one for valid, non-fraudulent and successful financial transactions. Digital currencies backed by cryptography (a.k.a cryptocurrencies) make such trust-less systems possible.

How Bitcoin transactions work

Let's say Alice wants to transfer 1 bitcoin to Bob. (Pay special attention to the parts in *bold*. We will define these terms later)

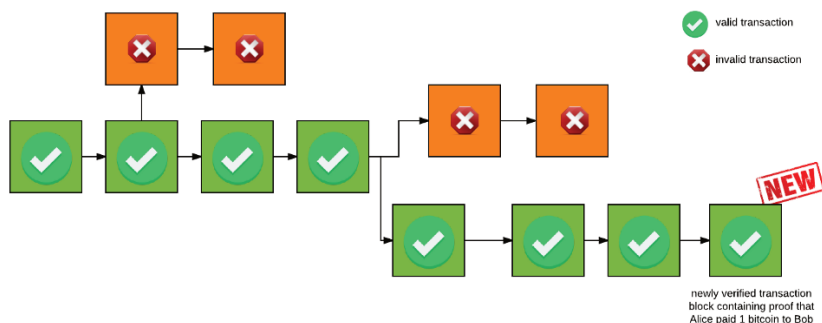
Here's what a bitcoin transaction happy path looks like.

How a blockchain works



1. Alice initiates a bitcoin transfer to Bob via a peer-to-peer network —

- called the bitcoin network. They must provide cryptographic proof of identity to the network that they are indeed who they say they are.*
- 2. The transaction details are recorded in a “block” and the block is announced to the peer-to-peer network for transaction verification & validation.*
 - 3. The nodes on the network move to validate the transaction block — which basically involves solving a computationally intensive random math problem. The incentive for nodes to validate transactions are new bitcoins and associated transaction fees as reward for ‘finding’ the new block . The process of validating transactions in a block is called bitcoin mining.*
 - 4. Each peer/node in the network keeps a copy of all such blocks of transactions that were previously verified — sort of a chain of blocks , a running ledger. This chain is called theBLOCKCHAIN.*
 - 5. Once a node successfully solves the math problem, the transfer is verified and the newly verified transaction block is added to this chain by the winning node.The winning node then broadcasts to the network that a block has been found.*
 - 6. Next, all other nodes in the network check the winning node’s claims and arrive at a distributed consensus that the transaction has indeed been validated , and the transfer is successful. Once consensus is achieved, each node updates their respective copy of the blockchain ledger. (More about this in a minute)*
 - 7. The manner in which this chain is built as transactions flow in , bestows interesting and important properties to the blockchain. It becomes an immutable, indelible and transparent record of reality to everyone on the bitcoin network . Any attempt to submit bogus transaction blocks, such as double spend bitcoins, is recorded in the blockchain and is broadcast to everyone.*
 - 8. When all of the above steps are complete, Alice’s account balance is reduced by 1 bitcoin . Bob’s balance increases by 1 bitcoin.*



Lets dive a little deeper into the key concepts that helps create this distributed ledger chain.

1. Cryptographic Proof of identity

Cryptographic proof of identity in simply means *proving* one's identity without *revealing* it. Here's a scenario that will help explain this concept.

Say you publish a book under the pseudonym John. The book becomes wildly popular and now this new guy Mike — the impostor, comes along and claims to be John, to reap all the success. How do you prove that you are the real author of the book and not Mike, *without revealing who you are*?

Here's what you can do. You generate something called a public key-private key pair and include the public key in the book. Anyone can now use that public key to encrypt a chapter in the book. You then encrypt a chapter in your book and challenge Mike to decrypt it and read it. Because ONLY you have the corresponding private key to the public key used for encryption, Mike will fail to decrypt the chapter. This way, you just proved that you are the author of the book without ever revealing your personal identity.

At a high level this is how nodes/peers in the bitcoin network prove their transactional identity to other nodes in the network. Nodes don't have long term identity, meaning each node can generate as many

that “solves” the most recent unverified block. Currently a new block of unverified transactions is generated every 10 minutes or so.

Mining & Distributed Consensus

At a high level, each participating node or “miner” on a bitcoin network is running special software and hardware to solve for the nonce to verify that a block of transactions is valid. This takes a lot of computing resources, and so whoever cracks the problem is rewarded with new bitcoins from the network as well as any transaction fees that Alice included with the 1 bitcoin transfer. The successful miner announces the new blockchain (=old blockchain + the new block) to the rest of the network, the network checks the validity of this claim, arrives at a consensus and accepts the proposed blockchain as the new source of truth. The distributed consensus is largely a behavioral outcome based on game theory principles, such that it is in the best interest of the rest of the bitcoin network to validate a correct blockchain proposed by a winning node if the node shows that they indeed invested substantial resources to solve the math problem and got it correct. Such smart incentives are at the heart of bitcoin’s distributed consensus which is the bedrock of what makes the blockchain so promising.

All transactions on the blockchain are traceable, back to the very first ‘genesis’ block. The transactions are tamper proof — any attempt to tamper with them is immediately broadcast to the entire network and detected. That also means that once transactions are committed to the blockchain, there is no going back to edit or delete it.

That’s pretty much all you need to know to get started with Blockchains. But if you are really nerding out right now and want to dig deeper, here is Satoshi’s paper on [bitcoin mechanics](#) and how all of this works in greater detail.

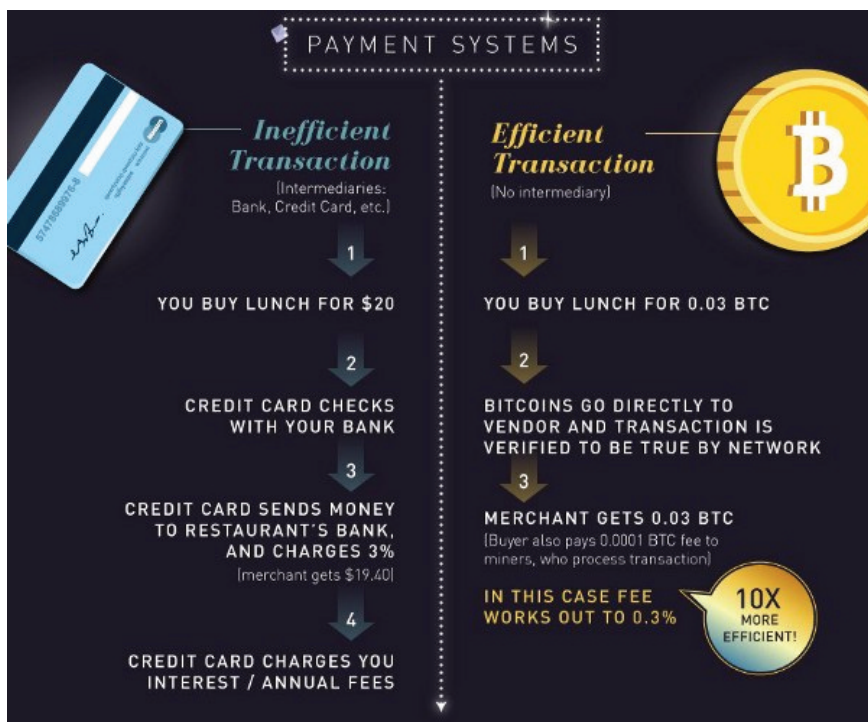
Again, this post is about blockchains and not cryptocurrencies but I talk about the latter to make two specific points —first, that cryptocurrencies such as bitcoin are just value exchange applications built on top of blockchain technology — and that cryptocurrencies were instru-

mental in demonstrating the power of blockchains and the many applications that blockchains will one day support and power.

What's Possible with Blockchains?

As Product Managers, what we really need to know is what's possible with Blockchains, and how is it going to shape the future of various products industries and markets.

From a Business perspective, Blockchains can be used as an *exchange network* to move value, assets, transactions amongst peers on the network without the need for any 3rd party intermediary to validate or maintain these movements. At first this might seem trivial, but let me tell you that moving assets, value and transactions without 3rd party intermediaries is huge. One of the direct benefits is drastically reduced transaction costs.



<http://tabletsandtech.com/116/bitcoin-vs-visa-transaction-fees/>

Add to that the upsides of a fully secure, distributed, never-down network. After ignoring it for a while, the banking industry has now started to take note of how disruptive blockchain powered exchange networks can be to their core business. Most big banks have some sort of blockchain experiment going on as they see blockchain tech as a key part of their competitive advantage going forward.

Internet of Things (IoT) & Blockchain

Another big implication of this technology (and one that I am personally excited about) is that it could really give the much needed boost to the “Internet of Things” future. The future where machines are connected to each other and are communicating seamlessly to get jobs done, with minimum or no human intervention. But how can blockchain help us realize this future ?



dilbert explains it well

The prerequisites for true IoT functionality is not only that machines be connected to the internet as well as to other devices, but also communicate with each other *securely* and on an *as needed basis* (due to hardware / battery life constraints). These machines should also be autonomous and smart, in making decisions based on a set of rules that cannot be tampered with. Current manifestations of IoT architectures suffer from poor cybersecurity implementation in applications, networks, data and equipment have made IoT projects very challenging. Blockchains can change all that as they enable connected devices to be smart independent agents, that can not only identify themselves to other machines securely, but also carry out micro-transactions based on a set of rules or smart contracts that cannot be tampered with.

Here is a classic example that can be realized with IoT + blockchains: Imagine a vending machine that can monitor and report its own stock, and accept bids from distributors AND make payments automatically via micro transactions for delivery of new items. Other scenarios such as smart home appliances that can bid with one another for priority so your the laundry machine, dishwasher, thermostat and Roomba all run at an appropriate time while minimizing the cost of electricity against current grid prices.

Several blockchain startups such as Ethereum have realized this opportunity and are already extending blockchain functionality beyond cryptocurrency. Ethereum's blockchain has its own cryptocurrency called "ether", but it also provides the capability to write secure and tamper proof *smart contracts* into the blockchain enabling micro-

transactions when specific conditions are met. This has the potential to unlock entirely new business and economic models for various industries in the future. I will explore the Ethereum Blockchain in Part -2 of this series.

Paying for Coffee with Cryptocurrency?

At the time of writing this post, there are over 700 cryptocurrencies being traded on various online exchanges globally, Bitcoin being the most popular amongst these. But, most people don't use cryptocurrencies to move value around. That is because the infrastructure necessary for such *trustless* transactions don't scale well in their current form. Bitcoin transaction processing is restricted (for reasons outside of the scope of this post) to 7 transactions per second (tps), compare this with Visa processing speeds which has a peak capacity of around 56,000 transactions per second. Bitcoin loses by a lot.

From a cryptocurrency user standpoint here is the UX you can expect today. Say you wanted to pay for your Starbucks using bitcoins. Once you made the payment you will have to wait until your transaction is validated by bitcoin's blockchain network @ ~7 tps. Your wait times are positively correlated with how many others are paying with bitcoins at that very moment as well as the number of active public nodes validating the transactions, but you could be waiting anywhere from 20 minutes to 2 hours. Your coffee will go cold before your payment is confirmed.

At this time, this is clearly a big limitation for blockchain transaction processing, but a lot of smart people are working to fix these issues, from increasing the transaction block size, to incentivizing nodes to validate blocks quickly. In short, when it comes to cryptocurrency transactions, its fair to say that the future is here — but it doesn't scale very well at this time.

Public & Private Blockchains

Bitcoin is a cryptocurrency **powered by its Public Blockchain**, which

ensures anonymity in identity but transparency in transactions. However, maintaining both anonymity and transactional transparency comes at a cost — it lowers the bandwidth between nodes and the entire blockchain must be duplicated by all nodes locally to be aware of the current state of the chain. Its replicates into the slow transaction processing that you faced paying for that coffee with bitcoins.

On the other hand an organization or a **group of organizations can create Private blockchains** if they don't need or want anonymity of nodes. Private blockchains can be secured by the familiar model of user rights and secrets that we've are so comfortable with while still maintaining many kinds of partial guarantees of authenticity and decentralization that blockchains provide. This can work great if the org doesn't plan on sharing transactions or blockchain writes outside of a closed group, but there is always the chance of that hacker lurking in the wild looking for the weakest link in the chain. One can certainly create private blockchains for testing and experiment purposes as well, we will create one in one of my subsequent posts.

Examples of private blockchains may be "Consortium blockchains" setup by an industry consortium or group where the consensus process of a transaction is controlled by a pre-selected set of nodes. E.g. , one might imagine a consortium of 15 companies in an industry, each of which operates a node in the consortium blockchain and of which 12 must sign every block in order for the transactions in that block to be valid. The consortium or company running a private blockchain can easily, if desired, change the rules of a blockchain, revert transactions etc. Transactions are cheaper and faster as well, since they only need to be verified by a few nodes that can be trusted to have very high processing power, and do not need to be verified by the entire network. So in sum, while private blockchains may not be the right way to create a global cryptocurrency that is anonymous & trust less, they can be used for a lot of other practical applications, including industry specific IoT applications.

Vitalik Buterin, ethereum's founder puts it in perspective.

■ The solution that is optimal for a particular industry depends very

heavily on what your exact industry is. In some cases, public is clearly better; in others, some degree of private control is simply necessary. As is often the case in the real world, it depends.

This has been a long first post, but understanding this technology is key to demystifying the use cases of blockchains and think about product possibilities. In the next post I will discuss my experiments with the ethereum blockchain, and how I created a simple private blockchain with two nodes to test things out.

“Citing” in Chapter 24, (encompassing), Pinnacle digest, <https://www.pinnacledigest.com/tsx-venture-investing/crypto-stocks-fall-tsx-venture/>, Article: HIVE Blood-bath Rocks TSX Venture, Author: Abhishek Chakravarty, February 5, 2018.

CHAPTER 25

Why Ethereum, when we already have Bitcoin's Blockchain - Part 2

WHY ETHEREUM, WHEN WE ALREADY HAVE BITCOIN'S BLOCKCHAIN?

PART 2 OF THE PRODUCT MANAGER'S GUIDE TO THE BLOCKCHAIN SERIES AS I CONTINUE TO EXPLORE BLOCKCHAINS, ETHEREUM AND THE POSSIBILITIES THESE TECHNOLOGIES OFFER.



<https://unsplash.com/search/high-rise?photo=Q3e5ucjJV5I>

When evaluating or learning about a new shiny technology, one of the first things one should seek to understand are the *problems* that necessitated its development. So when I first learnt about a new blockchain called Ethereum, my immediate question was

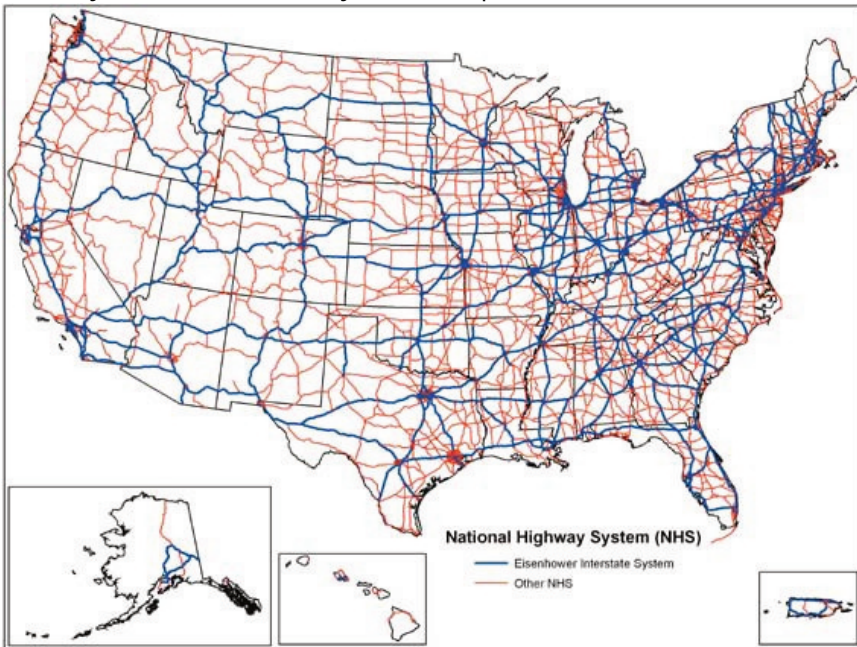
Why do we even need Ethereum—another blockchain—when we already have a blockchain that powers Bitcoin?

Looking for answers, the thing I quickly realized was that this was not a very accurate question.

Ethereum wasn't just *another blockchain*, its in fact much much more than that.

Ethereum is a Platform

Ethereum is a **Platform**. Underneath the platform is a custom-built blockchain that enables new applications to be built on top of it. Ethereum's blockchain promises that these applications will run securely forever without any censorship or downtime.



[https://en.wikipedia.org/wiki/
National_Highway_System_\(United_States\)](https://en.wikipedia.org/wiki/National_Highway_System_(United_States))

My favorite analogy to thinking about platforms is the American Interstate Highway system (or the highway system of any country, really).



These highways are governed by a *set of defined rules* that everyone has to follow when using them. For example, getting in and out only through exits, no stopping anywhere, lane discipline and speed limits, no drunk driving etc. As long as you are following these rules, you can use the highway network to go wherever you want to go, stop at any exit you want to stop.

The highways connect cities and towns and people living in them. They enable transportation and transaction of goods and services, power several businesses and over time unleash economic activity and commerce. Also, the more people use these highways, the more valuable they become. Nice!



Ethereum Platform

The Ethereum platform is a lot like a highway network, except the network in this case is made up of computers (nodes) connected securely

via the internet. Ethereum, just like our highway system also has a set of rules that one can use to build and power new businesses, applications, exchanges etc.

No one 'controls' Ethereum, just like Bitcoin

The American Interstate Network is managed and maintained by the government, which means the responsible authorities (if they wanted to) can control, limit or totally restrict access to any highway, or even multiple highways.

Worse still, authorities can restrict *all* highways leading to a particular city, completely cutting access to it. That, in short, is the problem with centralization of authority. It leaves the *majority* vulnerable to the will of the *minority*. In this case, it requires that to enjoy the advantages of a highway system, the majority *trust* the minority.

Ethereum is *unlike* the highway system in this regard. It is powered by a network of distributed computers that no one entity controls. Here, nobody can restrict access to a particular asset that belongs to you, and so there is no trusting any authority, but yourself. This system ensures that one can create apps, online businesses, contracts etc. in a completely *trustless* manner.

If you create an asset on Ethereum, you can rest assured that you will have access to that asset securely, without any censorship or downtime. This promise of real world *trustless* applications is what makes the Ethereum platform so valuable.

BUT wait a sec, secure and trustless apps can also be built on Bitcoin's blockchain, after all, the nice things that I just mentioned about Ethereum and what makes it really valuable are really functions of distributed, trustless blockchains? If so, we already have Bitcoin's blockchain, why Ethereum?

Well, it all comes down to *who* will build these distributed, trustless applications of the future, and the tools they will use to build this aspirational future.

The right tools to build the future

You see, building a software application (distributed or not, trustless or otherwise) needs one to write code. But you perhaps knew that. But what is not always obvious is that before writing software, serious developers choose their tools, carefully. One of the most important choices they make is what programming language to use, which is in turn driven by how *developer friendly* the language is. Developer friendliness of a language allows coders to focus on the end product, instead of spending time learning how to use it. It is a function of features in a programming language that help developers write better & optimized code.

One such feature is *loops*. Loops are what makes a the computer 'run' a piece of code over and over again. It is a time saving maneuver, because if there were no loops and say you wanted write a software to print out all natural numbers from 1 to 100, you'd have to write the same code 100 times. Not very efficient, is it?

LOOPS REPEAT ACTIONS

SO YOU DON'T HAVE TO ...

Execute once and then
repeats things until loop
condition is true

Do While

While

Repeat things until the
loop condition is true

Repeat things till the
given number of times

For



<https://www.edureka.co>

Bottomline — Loops are super important and most developers when they write software, use loops and conditions to implement complex algorithms easily.

Ok, but so what?

Good question. Bitcoin's underlying blockchain *scripting language* (fancy word for programming language) *does not support loops*.

This seemingly simple downside means building even trivial and simple applications on bitcoin's blockchain can often become a research project for most developers. Its hard to focus on the end product, when something that can otherwise be done by writing 3 lines of code, takes 3 weeks. This is by far the most important reason why we haven't seen a proliferation of distributed applications on top of Bitcoin's blockchain.

Ethereum's programming language on the other hand support loops and other "*Turing-Complete*" features alleviating a lot of these frictions. Consequently, Ethereum has the potential to, and actually does, attract more developers to build applications on top of the Ethereum blockchain.

Now, the lack of Turing Completeness is a problem, but the Bitcoin's scripting language has some other structural oddities that make it hard to build certain types of systems. (again, *Not impossible, but hard*)

UTXOs

When I first learnt about the concept of UTXOs in bitcoin transactions, it took me a while to understand them and why they were designed the way they've been designed. We'll get to the details in a bit but to keep things from getting too complicated, **here is the key takeaway from this section :**

The way bitcoins transactions actually work under the hood makes creating new applications on the Bitcoin's blockchain very complicated. And this complexity was one of key drivers that led to Ethereum's development.

OK, back to UTXOs

Imagine you are in Bitcoin land and say you want to send bitcoins to

a friend — the following layout the basic ground rules of every such bitcoin transaction.

1. Any bitcoin amount that you send is always sent to an address, which is a public key.
2. Any bitcoin amount you receive is locked to your receiving address — which is (usually) associated with *a wallet*.
3. Any time you spend bitcoin, the amount you spend will always come from *funds you previously received and have not spent*.
4. Addresses receive bitcoin, but they do not send bitcoin — bitcoin is sent from a wallet.

But here's the thing about bitcoins: they **don't exist** in reality, e.g on a hard drive or on the cloud. When you look inside somebody's address, you cannot see bitcoins, or point to something and say "*see, there is a bitcoin*".

So what's in you wallet, if its not bitcoins?

In your wallet are *transaction* records of every bitcoin that you've ever received from anybody, *and not spent yet*. When somebody sends you bitcoins, these amounts are termed as *outputs* in Bitcoin speak. These *Unspent Transaction Outputs* **are abbreviated as UTXOs**.

When somebody sends you outputs, the UTXOs in their wallet are reduced by the amount they transferred, and UTXOs in your wallet go up by the same amount.

These transaction records don't mix up or add up as they come in, but are stored exactly the way they were received. In other words, if you received a transaction#1 of 2 bitcoins, another transaction#2 worth 4 bitcoin, and yet another transaction#3 worth 5 bitcoins, your wallet will show 3 *separate* transactions with values 2, 4 & 5 bitcoins respectively.

Sure, Your wallet balance will be the sum total of all these transaction records = 11 bitcoins , but the thing to remember is → each transaction record is stored individually.

Okay...so what has that to do with the original question of bitcoin vs ethereum?

The complexity involved

Lets say you want to send exactly 3 bitcoins to a friend's address. No problem! you have 11 bitcoins enough to cover the transfer, right?

Right. But like I mentioned, your wallet has 3 different transaction records that *add up* to 11 bitcoins. And the problem with bitcoin's scripting language is *that it is value-blind*.

In other words, the scripting language has no fine grained control over the bitcoin amounts that you can withdraw to transfer to your friend. All that complexity is left to you.

Here's what I mean.

To send 3 bitcoins to your friend, you will first have to create a transaction and to do the following

1. You will need to choose an *input*, from amongst transactions that you have previously received AND have *not already spent*.
2. You will have to prove that these input transactions belong to you
3. You will have to create an output to your friend's public key or wallet address as the destination for the 3 bitcoins you'd like to transfer

Note that you have 3 transaction records that you can reference as inputs in step 1 above (txn#1 or #2 or #3). BUT you do not have any transaction records that is EXACTLY 3 bitcoins. Instead, you have 3 transactions with values 2, 4 & 5 bitcoins.

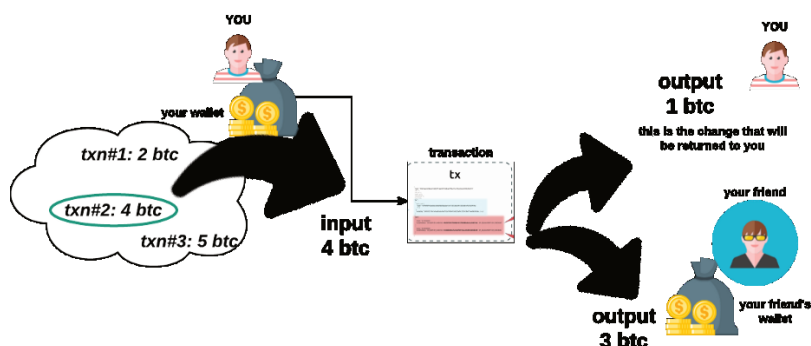
Ok, so here's the problem. The way bitcoin's scripting works, you CAN-NOT simply say :

" Take transaction#2 (with 4 bitcoins) and send 3 out of the 4 bitcoins to my friend's address"

Instead, you will have to spend all 4 bitcoins that you received in transaction#2.

Now because you HAVE to spend all 4 bitcoins but you only want to transfer 3 out of those to your friend, you will need to create another output transaction sending the remaining 1 bitcoin to *yourself*. Weird.

Before we move ahead, a lot happened above, so here is a picture to bring it all together.



That is how UTXOs work under the hood, and by the way they are way more complicated to implement than this explanation above.

If you want to write a bitcoin wallet application — the “*send bitcoin*” function that you’ll write will be super complicated. Such a function will take all the UTXOs a user has available in their wallet → then choose a *subset* of these UTXOs as inputs to the transaction, such that the sum of these UTXOs are greater than or equal to the desired outputs of the transaction.

If there are two or more subsets of UTXOs that meet this criteria then one needs to write additional logic that will somehow decide which subset to use. Clearly, too much complexity for a simple transaction, for most developers anyway.

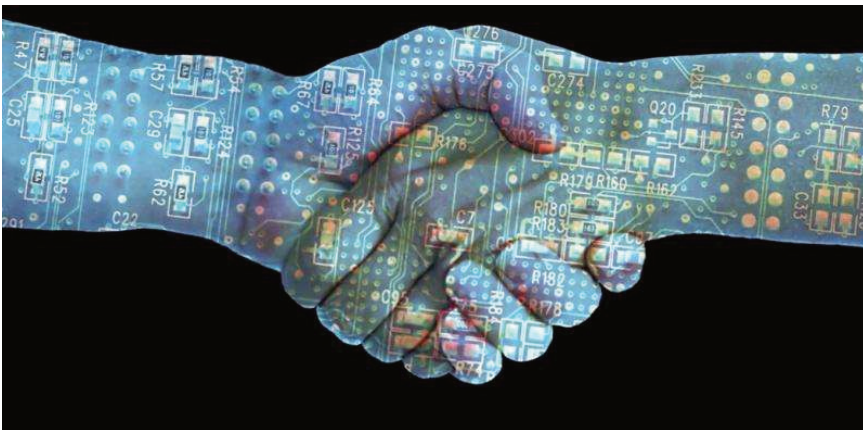
To be sure though, these limitations of the bitcoin’s scripting language are due to some important reasons that bitcoin’s founder Satoshi

probably foresaw and some that (he/she/they) did not foresee, but those reasons are beyond the scope of this post.

What is important to this discussion however is that this *value blindness* introduces complexity in building applications on top of the Bitcoin's blockchain — hence the need for a language/platform that better manages this complexity and therefore facilitates development of new apps. Ethereum fills that gap and therefore has seen rapid adoption.

By the way, and maybe you already noticed, UTXOs have another property that makes them hard to configure. The fact that UTXOs can fundamentally assume only two states → Spent or Unspent.

This *binary* state along with value-blindness makes it even more difficult to create multi-stage smart contracts over Bitcoin's blockchain, such as an application where multiple users contribute UTXOs to an agreed upon contract, then perform some additional operations and finally based on pre defined contract rules funds are disbursed out to appropriate parties. Again, coding this seemingly simple rule based algorithm is worthy of a research challenge for most developers if they were using bitcoin's scripting language. Ethereum on the other hand scores much much better in terms of ease of implementation for such a smart contract.



<https://phys.org/news/2016-07-blockchainsfocusing-bitcoin-real-revolution-digital.html>

Building the Future

If blockchain technology ever reaches its potential, it will be because a lot of factors facilitated it, and amongst the most important factors will be the ability to harness the power of blockchains easily, to build new things on top of them — not just by rocket-scientist level programmers but by regular programmers armed with great ideas.

Today, most developers that want to develop blockchains apps struggle because there are no easy platforms that lets them build things easily, and a platform like Ethereum aims to solve just that, so everyone including non-expert programmers like myself can also build things that are powered by blockchain. That is how you build the future, and distribute it evenly.

As I read [Vitaliks Buterin's White-Paper](#) introducing Ethereum, and understood the mechanics of the platform, I am convinced that the Ethereum platform is a tectonic shift in how blockchains can be tamed, and its already showing. There are several development groups already working on decentralized apps ranging from value exchange, asset registry, device discovery and things you and I cannot fathom right now.

Bottomline ? If you are in the business of building products, or even if you are not — you should not miss this tectonic shift in tech. It will define how things are built in the future. If this is the first time you are hearing about blockchains and Ethereum, then do yourself a favor [and listen to this amazing podcast](#) by Tim Ferris and [Naval Ravikant](#) talking to the crypto great Nick Szabo. You will thank me later. You can also [read part-1 of my blockchain series](#) too.

In part 3 of this series, I hope to share how Ethereum really works under the hood, and also share how I built a basic 2 node test Ethereum blockchain and a simple smart contract!

*why-ethereum-when-we-already-have-bitcoins-blockchain-3359eb7e087e, Article: Why
Ethereum..., Author: Abhishek Chakravarty, February 5, 2018.*

CHAPTER 26

Product Manager's guide to Blockchain- Part 3

PRODUCT MANAGER'S GUIDE TO BLOCKCHAIN- PART 3

MECHANICS OF ETHEREUM, GAS, CONTRACTS & SMART CONTRACTS



In [Part 2 of this blockchain series](#), we looked at a blockchain platform called Ethereum, and the reasons that led to its development. The most important being Ethereum provides the ability for regular developers to build trustless applications of arbitrary complexity without being bogged down by the details of how everything under the hood is working.

In essence, the platform abstracts the underlying blockchain's complexity and lets people manipulate the blockchain via a high level programming language.

As I often do, In my quest to understand the platform better, I decided to actually build something on top of the Ethereum blockchain, and in the process learn the mechanics of it. Turned out it wasn't such a good

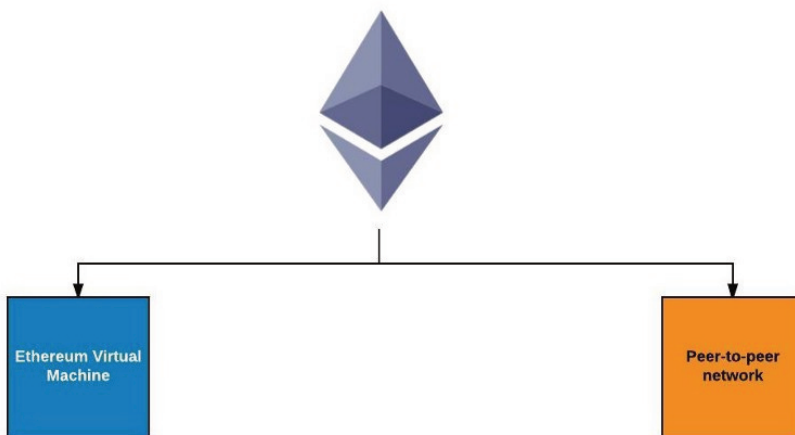
idea this time — I had trouble setting up the environment and understanding why certain things were happening the way they were.

I went back and forth on the documentation and [Stack Overflow](#) searches, and was finally able to get it to work and now believe it is a good idea to have an understanding of key aspects of the platform, learn some important concepts and then dive into the code. That is what this post is about.

Before we begin, almost whatever I am going to write is inspired from the [Ethereum Documentation](#). All credits to them.

Alright, lets begin.

Ethereum Platform has 2 building blocks



1. Ethereum Virtual Machine

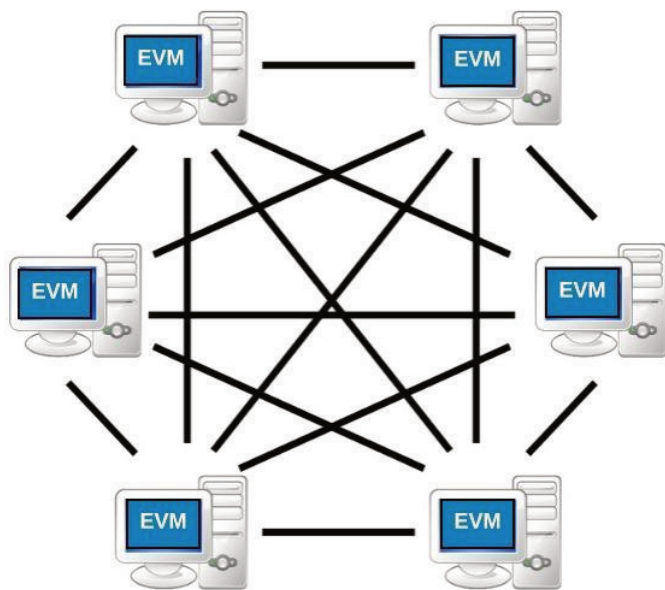
To build cool, trustless applications, Ethereum provides user friendly languages that can run on a “Virtual Machine” — called an **Ethereum Virtual Machine (EVM)**. Simply put, a virtual machine is a software that can understand a set of instructions and execute them in some

logical order, just like a real computer does. Its not important to get into the weeds here, but here is the 30,000 feet explanation:

When you use Ethereum's programming language to build a smart contract or any other application, the EVM compiler takes that code, resolves it into lower level machine instructions for the Ethereum Virtual Machine to understand , process and execute.

2. Peer-to-Peer Network Protocol

The underlying network consists of nodes or computers connected in a decentralized , peer to peer network. Each node runs an EVM, and processes the same instructions to ensure that consensus is achieved on any particular transaction.

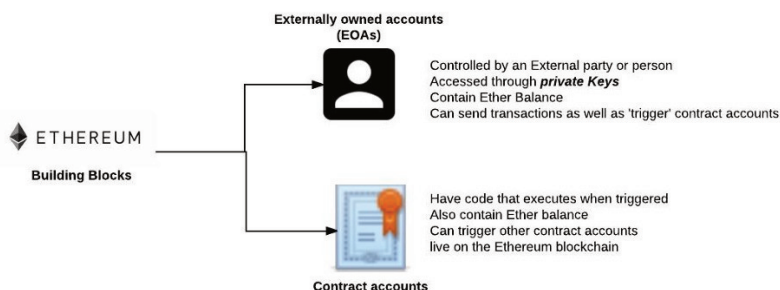


How the thing works

As I briefly discussed in [my last post](#), bitcoin is transaction centric and largely stateless and that makes it difficult to build real world applications where you'd like to track a state of a particular transaction across multiple stages of a contract.

Ethereum on the other hand is built on the concept of *accounts*, it tracks all input and output transactions to and from accounts and this ability to track the flow of information in and out of accounts makes it *stateful* and valuable.

There are two types of accounts in Ethereum:



The graphic above is self explanatory, but to reiterate — if you wanted to participate in the Ethereum ecosystem, you'd have a user account and the keys to operate that account. These accounts are called Externally Owned Accounts (EOAs) in Ethereum. Once you have an EOA, you can make transactions with others accounts as well as to another type of account — known as **Contract Accounts**.

Accounts contain Ether

Ether is the crypto-fuel of the Ethereum network. Ether is also the incentive for miners to validate and mine Ethereum blocks on the

blockchain. Ether is to the Ethereum network, what bitcoin is to the Bitcoin Blockchain network.

Developers who intend to build apps that will use the ethereum blockchain need Ether, as it is used to pay for computation within the EVM (explained below). Users who want to access and interact with smart contracts on the ethereum blockchain also need ether for the same reason.

Ether denominations

Ether has certain denominations that are helpful to know. The smallest denomination aka *base unit* of ether is called Wei.

1 ether = 1×10^{18} Wei.

Finally, in order to obtain Ether, you need to either become an Ethereum miner, or trade other currencies for ether using centralized or trustless services.

But, what if you don't have ether, but want to build and test distributed apps?

Ethereum platform enables a user to set up a "private" or "**testnet**" Ethereum chain that is separate from the main Ethereum blockchain. This is useful for testing distributed apps built on Ethereum without having to expose your apps or trials to the real Ethereum network using real Ether.

(I will show how to set up a private ethereum blockchain and two nodes in my next post!)

Contract Accounts

A Contract Account contains code to execute a particular function that it was designed for, and this code 'lives' on the Ethereum blockchain. Once a contract account is triggered — either by an Externally Owned Account or by *another contract account* — the code inside is executed

by the Ethereum Virtual Machine(EVM) on each participating node. These accounts also enable “Smart Contracts”.

What is a Smart Contract?

Smart contracts are contract accounts that facilitate exchange of value in a transparent and trustless way without the need for middlemen. Here are the high level steps to create a Smart Contract:

1. A contract account with rules (and specified actions based on those rules) is created. e.g. *“If this is true, then do that”*
2. This contract is then coded in a Ethereum high level language such as [Solidity](#) (syntax is similar to Javascript) and then “deployed” on the Ethereum Blockchain.
3. Once deployed, the contract gets a public key address, that can be used to reach the contract and trigger its code execution.
4. Also, once a smart contract is deployed to the Ethereum blockchain, it cannot be changed even by the EOA that created it.

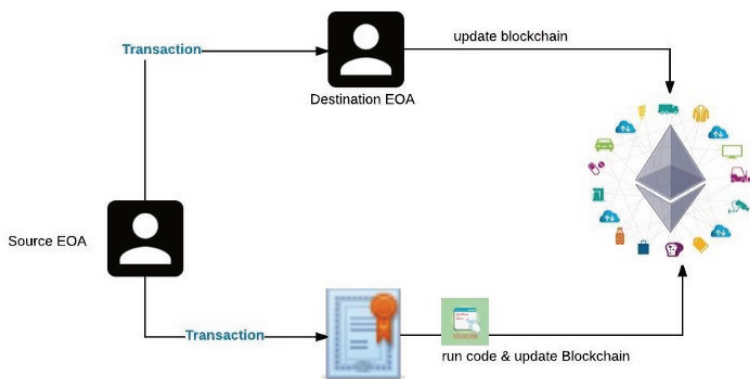
A simple example of a smart contract would be sort of an escrow account without any third party involved. Two parties can agree on a set of rules for fund disbursement, create and code a contract and deploy it on the Ethereum Blockchain. As soon as the criteria/rules for disbursing funds are met, the contract can disburse out the funds to the appropriate parties.

[Here](#) is a more detailed explanation on smart contracts, but the bottom line is that Smart Contracts are code that is deployed on the Ethereum blockchain, and this code runs on every single node connected to the Ethereum network.

How do accounts transact on the Ethereum Blockchain?

The Ethereum environment, by default is pretty un-happening. Until a user triggers an action by *sending a transaction* from an EOA, nothing really happens. However, once the user triggers a transaction on the Ethereum, the network springs into action.

The destination of such a transaction can be another EOA, or a Contract Account. The transaction to an EOA might simply be an ether transfer, in which case ether balances will be adjusted for both accounts. If on the other hand, destination of the transaction is a Contract Account, the contract's code will be executed automatically.



Externally Owned Accounts go about their business on Ethereum via **Transactions**

A Transaction is a validated packet that a user account (or EOA) sends to another user account. Such a packet will typically contain

- The address of the recipient of the message
- A signature of sender that proves that they own the account
- **VALUE** field – The amount of ether to transfer from the sender to the recipient. Ether is the fuel that drives the
- an *optional* data field, which could be an arbitrary message or function call to a contract or even code to create a contract. *As an example, imagine a crop insurance smart contract that releases compensation depending upon rainfall statistics in a particular area, this optional data field can then be used to feed rainfall stats to the contract.*

In addition to the attributes mentioned above, transactions must mention the maximum number of computational steps, storage and band-

width consumption expected with the its execution, and pay for it in ether.

Here's how.

Ethereum, Gas & Fees



So far, we haven't really talked about the concept of Gas in Ethereum, but it is central to how transactions work, and how miners are incentivized to validate blocks in the Ethereum blockchain.

Gas is Ethereum's metering scheme and it accounts for bandwidth used, cost of storage and cost of computation on the Ethereum blockchain.

Every computational operation in the EVM consumes gas, and different computations e.g. addition or multiplication consumes different amount of gas. [Here is a list of gas consumption for different operations and computations.](#)

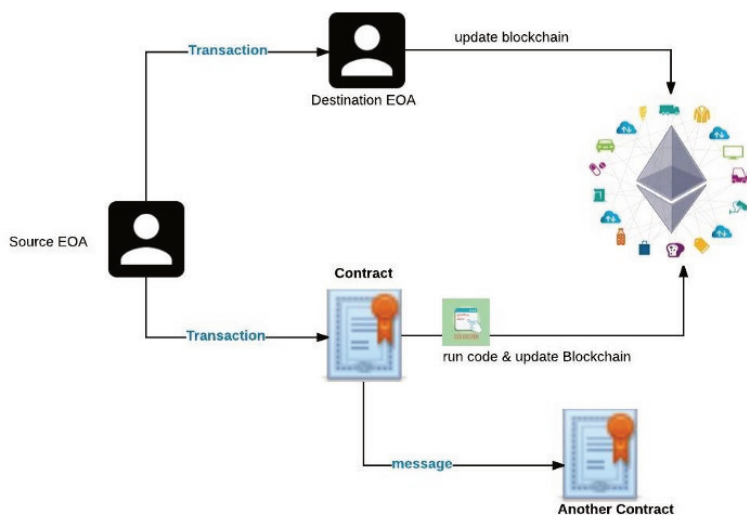
All operations during transaction execution, including database reads and writes, messages, and every computational step taken by the vir-

tual machine consumes a certain quantity of gas. Therefore, for every transaction that is originated, the following must happen to ensure that 'denial-of-service' attacks on the network can be prevented and that miners receive the reward for adding a transaction to the block. ([source](#))

1. Every transaction must specify a quantity of "gas" that it is willing to consume (called `startgas`) to cover its use of the EVM's computation and any storage or bandwidth used. *(Unfortunately its pretty difficult to know how much compute a transaction might need, and therefore specify a `startgas` value —[here is a spreadsheet that will help](#). Additionally, there are certain APIs to see how much gas should be specified for a transaction, before creating the transaction such as `web3.eth.estimateGas` and JSON-RPC `estimateGas` . This works by pretending the transaction was actually being included in the blockchain, and then returning the exact gas amount that would have been charged if that pretend operation was real — but there are caveats to using this API.)*
2. Transaction sender must also mention the fee that it is willing to pay per unit gas (`gasprice`). At the start of execution, `startgas` * `gasprice` ether are removed from the transaction sender's account. This is done to ensure the miner receives the fee *even if* the user account is bankrupted midway during execution.
3. If a transaction execution processes fully, consuming less gas than its specified limit, say with gas remaining (`gas_rem`), then the transaction executes normally, and at the end of the execution the transaction sender receives a refund of `gas_rem` * `gasprice` and the miner of the block receives a reward of $(\text{startgas} - \text{gas_rem}) * \text{gasprice}$. As mentioned earlier, this '*miner fee*' is set aside right at the beginning of the transaction.
4. If a transaction "runs out of gas" mid-execution, then all execution reverts, but the transaction is nevertheless valid, and the only effect of the transaction is to transfer the entire sum `startgas` * `gasprice` to the miner.

All of this gas business is to make sure that a malicious node or hacker cannot simply load the Ethereum network with malicious transactions (such that an infinite loop) without incurring a cost that is too expensive.

How do Contracts transact on the Ethereum Blockchain?



Contracts talk to other contracts via **messages**

Contracts talk to other contracts through messages. A message is similar to a transaction, except it is produced only by a contract account, not by an EOA (Externally Owned Account). A message contains the following attributes

- the address of the contract sending the message
- the address of recipient contract
- the amount of ether to transfer alongside the message
- an optional data field; and
- a `STARTGAS` value.

Since a message is sent from one contract to another, a message results in the recipient contract running its code. In sum, contracts can have relationships with other contracts in the same way EOAs can.

Alright, that was a lot of information, but we covered most of the basics of the Ethereum platform! Next post, I will share how I built my own private blockchain, coded my first smart contract and deployed the contract on the private blockchain!

*"Citing" in Chapter 26, (encompassing), Pinnacle Digest,
[https://hackernoon.com/
product-managers-guide-to-blockchain-part-3-fb0cffb7f8](https://hackernoon.com/product-managers-guide-to-blockchain-part-3-fb0cffb7f8), Article:
Product Manager's guide to Blockchain- Part 3, Author: Abhishek
Chakravarty, February 5, 201*

Conclusion and Recommendations

“Triggered by an historic explosion of global violence...Fueled by fears of run-away inflation after six long years of historically unprecedented money printing... This historic new bull market in gold and silver has the power to multiply your money up to 30 times over; use this once-in-a-lifetime opportunity to lock in your family’s financial security and freedom” — no matter what! Larry Edelson

This book is short compared to my previous four investigative ventures, but it perhaps is *the* most important. What good is it for us to know what is about to happen, without taking advantage of it, and protecting our own investment nest eggs accordingly?

What I have done is to permit you to look over my shoulder, and view what I am doing with my finances. I have introduced to you the program that I have used, and still use, over the past 17 years (The Gold Stock Analyst, and now Block-chain stocks) I intend to maintain as my core portfolio, along with our new world-class timer, Mark Leibovit.

I introduced you to our discount firm, *Interactive Brokers*. It’s a financially strong firm, which is important, and the commissions are perhaps the lowest in the world. This is important as when we place trades in the GSA program, we place equal dollar amounts in the ten gold, and 5 silver stock recommendations, in 85% of our portfolio. The other 15% of the portfolio will be comprised of the top 6 Block-Chain

stocks. Therefore, your portfolio will be made up of about 21 stocks, therefore, low commissions, and fast executions are important.

As I have said in the book, you don't need a financial adviser or broker, you can do the program yourself with a low-cost competent discount broker. Or, I'd be glad to send you a "piggy-back" Interactive Brokers application *link*, where you can "piggy back" my trades (or as close as possible).

At about \$2 per trade, it makes the program quite inexpensive. As an added performance benefit, John Doody recommends an "end of the year offset". The same *off-setting process* will be used for our BlockChain stocks. Some shares of winners are sold, and the proceeds used to buy shares in the program that are depressed. This year-end *off-set* program, has greatly added to the program's past performance.

For purchasing physical gold & silver coins in the U.S., I recommend my good trusted friend, Chuck Coppes. Chuck has his office in Pine top, Arizona. Visit his website at: idpconsultinggroup.com, Or, call him at: (928) 3585471. For purchasing gold overseas, we recommend *Global Gold* (Switzerland). If you'd like a brochure on either of these two companies, let me know.

As promised, I will answer all E-mail questions. We invite you to "piggy-back" our positions over at Interactive Brokers, using the gold, silver and BlockChain programs. If you would like Interactive Brokers to E-mail you a *piggy-back* account application, please go to my website: GoldShareInvesting.com, or E-mail me at: wallst101@hotmail.com.

As I say in my books, the finest minds in the investment world have made our books possible. I have taken a few of the experts that I listen to each day, and have presented them to you in both print and audio. When you can, bookmark our favorite sites, such as "Coast to coast am, Jay Taylor Media, or Greg Hunter's USA Watch Dog, and try to listen to them on your computer before you go to bed, as I do. If you are like me, you'll get the first half hour heard before dosing off, and catch the rest, the next day.

I will be promoting this book on many of the top radio talk shows, but if you have a local area talk show, and would like us to guest, please ask them to contact me. My telephone number in the U.S. is: **(727) 564 9416**, my website is: **GoldShareInvesting.com**, and my personal Email: **wallst101@hotmail.com**

Thanks for purchasing our book, and I look forward helping, you, your family members, and friends prosper during the many prosperous investment years that lie ahead. I will be there with you sharing in the experience.

Here's the late Larry Edelson's parting words of wisdom:

"No doubt about it: It's a scary world out there. Suddenly, decades of resentment and anger are boiling over worldwide. Suddenly, national, ethnic and revolutionary struggles have reached the boiling point.

In hot spots from China to the Ukraine and from the Middle East and Africa to South America, thousands are already losing their lives in these conflagrations.

Entire economies are being engulfed and destroyed. Investors and consumers world-wide are watching in horror as family fortunes and individuals' savings are wiped away; gone with the wind.

Meanwhile, as if this wholesale destruction of wealth isn't enough, six long years of out-of-control central bank money printing has raised inflation fears to a fever pitch around the globe.

With food and fuel prices skyrocketing, millions of investors and everyday consumers alike are desperately searching for ways to protect their buying power from their government's economic corruption and incompetence.

And now, even in America, millions are beginning to fear widespread civil strife as the economy continues to slow, and as anger over NSA spying and Washington's failure to defend the U.S. Constitution explode into the headlines.

Mark my words ...This is THE PERFECT STORM for gold and silver investors —lies ahead.

Why I'm so sure that precious metals prices have almost bottomed ...

Why I'm convinced that gold is now starting a rocket ride higher to over \$5,000 per ounce and silver to over \$125.

The best ways for you to harness the awesome power of this new bull market to multiply your money...

How to use bullion, mining shares and precious metals ETFs to protect your family and your wealth in 2015 and beyond...

This is critical:

In the last phase of this precious metals bull market, select mining stocks generated gains of up to 2,900%.

That's enough to multiply your money nearly 30 times over ... turn every \$10,000 you invest into \$300,000...

And every \$35,000 you invest into more than \$1 million...

And I firmly believe they'll generate even GREATER profits this time around!"

Well, Larry sure makes it sound good! And, he has been spot on for the past sixteen years, while most other analysts have not. We now have Mark Leibovit, as our timer, who will carry on where Larry left off. If our readers will faithfully use the GSA system, and our timer, I feel we'll have a lot of very wealthy happy readers, in the near future.

We have our GSA 10, and GSA silver 5, now Block-Chain programs in place. Hopefully you will join us. We urge all readers and listeners to sign up for my free newsletter (wallst101@hotmail.com), to get some insight on what John Doody and Mark Leibovit, are saying.

Some parting advice, in our experience, it takes about two weeks to open and fund an Interactive Brokers account. Two weeks could mean a 30% move in the mining stocks, and a 100% move in Block-Chain stocks, so I recommend that you, at least, open your “IB” accounts now, and slowly enter John Doody’s 10 gold and 5 silver stocks, and also the top 6 Block-Chain stocks. Or, join my “piggy-back” program, and I will do it all for you.

Thanks again for buying my book, and we hope the GSA, and our new Block-Chain program, will help *you* as much as it has helped me!

John

The End