EPISODE 540

[INTRODUCTION]

[0:00:00.3] JM: In the finance industry many people have a computer on their desk called a Bloomberg Terminal. A Bloomberg Terminal contains news, stock prices, communication tools and other features that make it worth a high subscription price. People in finance can afford to pay that high subscription, because their decisions can cost a gain or loss of thousands of dollars.

Cryptocurrency investors have a similar set of informational problems as traditional financiers. There's a flood of information, financial quotes are inconsistent across different exchanges, opinions from Twitter and Reddit can be tremendously useful if they are captured and leveraged correctly.

Santiment is a platform that is working to build a Bloomberg Terminal for cryptocurrency investors. Santiment has raised 45,000 ether in their ICO last July, which was originally an amount equal to 11 million dollars. When they raised it, it's since gone up in value. Valentin Mihov is the CTO of Santiment and he joins the show to explain what Santiment's product does and how the token holders will ultimately derive value from Santiment's ecosystem.

If you are interested in attending a Software Engineering Daily meetup, we've got three coming up; we've got one in New York, one in LA and one in Boston. You can find out more about those by going to softwareengineeringdaily.com/meetup. I'd love to see you there.

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episodes and a recommendation engine built into the app. If you're looking for new episodes of Software Engineering Daily, the apps are the place to go.

With that, let's get on with this episode.

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[0:02:28.3] JM: LiveRamp is one of the fastest-growing companies in data connectivity in the Bay area. They're looking for senior level talent to join their team. LiveRamp helps the world's largest brands activate their data to improve customer interactions on any channel or device.

The infrastructure is at a tremendous scale. A 500 billion node identity graph generated from over a 1,000 data sources, running a 85 petabyte Hadoop cluster and application servers that process over 20 billion HTTP requests per day. The LiveRamp team thrives on mind-bending technical challenges. LiveRamp members value entrepreneurship, humility and constant personal growth.

If this sounds like a fit for you, check out softwareengineeringdaily.com/liveramp. That's softwareengineeringdaily.com/liveramp. Thanks to LiveRamp for being a sponsor of Software Engineering Daily.

[INTERVIEW]

[0:03:35.1] JM: Valentin Mihov is the CTO at Santiment. Valentin, welcome to Software Engineering Daily.

[0:03:40.1] VM: Well, thank you for having me.

[0:03:41.5] JM: Santiment is trying to be a cryptocurrency Bloomberg Terminal, let's unpack those terms. I think we all know what a cryptocurrency is. Some of us may not know what a Bloomberg Terminal is. Could you explain what a Bloomberg Terminal does?

[0:03:58.7] VM: Well, a Bloomberg Terminal is basically a data source, which provides you with the wealth of information about, let's say the world of stocks. But not only stocks, also commodities and everything that's traded on the market basically. It gives you a wealth of information and you use this information to decide what to buy and when and when to sell and all that.

[0:04:22.6] JM: Yeah. These pieces of information are coming from data feeds. In a Bloomberg Terminal, there is all these data feeds that get aggregated into information like the prices of stocks and the prices of bonds and then there is of course news information as well and people in traditional finance pay a lot of money to have this essentially an operating system for finance.

How do the needs of people in crypto compare – I should say cryptocurrency. Otherwise, I'll get my head chopped off by people who are in cryptography on Twitter. How do the needs of people in cryptocurrencies compare to the needs of those traditional finance people?

[0:05:08.7] VM: Well, I would say that right now these two groups of people maybe a little different, actually maybe quite a bit different mainly because the cryptocurrency's market let's say is an early age. There is quite a lot of hype happening and there is also quite a lot of fud, which basically false news and price manipulation and all that.

I would say that maybe cryptocurrencies are, well there was a certainly a similar period of stocks and traditional markets many years ago, which cryptocurrencies are experiencing right now. This is the reason why the traditional markets are quite regulated and they have very strong laws and all of that.

I think as the market matures, people will start to need much better data sources to make their decisions. They won't be driven only by reading some random piece of news on some random website. They'll need a central platform, where they can educate themselves about the crypto assets and to figure out what's going on, which news are actually worth it and which are actually a fud.

In that sense, I think right now in cryptocurrencies, it's still maturing, but eventually as these assets and markets mature and get more regulated and all these, I think their needs will be

actually quite equivalent. Basically good data sources that people can rely on to make their investment decisions.

[0:06:49.5] JM: In traditional finance, there are trading shops with hundreds, sometimes thousands of traders who are working these complex pieces of software that have been built over years and years. They can create very complex trades, partially because the traditional finance system has all of the right technological hooks built in, as well as the right securities built in, so you could do these very complex trades where the right type of downside is capped, the right side of upside is uncapped and you can make that trade because of a collection of options and futures and stocks and perhaps currencies.

You can make basically any thesis that you can have in traditional finance. You can model that thesis through a collection of assets. How mature is crypto in that regard in cryptocurrencies? Can you buy all of the necessary futures and options and things to create very complex trades?

[0:08:06.7] VM: Well, right now I would say that talking about future is only Bitcoin provides these futures that were rolled out I think mid of December, so quite recently. From that perspective, like when you put insurance and all that and create ratings and all these, it's quite complicated in the traditional world.

Right now in the crypto assets it's much less complicated. I think it's mainly futures for Bitcoin and also there are several platform that provide margin trading, so that you don't need to actually own a given asset. You can actually borrow it and short it and all these. In that sense, the amount of deals that you can do is actually not so rich as in traditional markets, but on the other hand when you talk about hooks and let's say programmatic trading and all these, actually I would say that crypto is quite far ahead.

Well, maybe not ahead from traditional markets, but it's very easy to write a bot let's say that does trading and buying and selling. Something that I think we've seen from traditional markets in the last, I don't know, maybe 10 years or something. I mean, for traditional markets given how much time they've been around, like APIs that a regular Joe can take and write a bot is something that appeared, I don't know. I'm not sure, but maybe 10 years ago. With crypto, it's

something that's been there almost from day one. These platforms that allow you to trade, they have APIs and you can write some JavaScript and start trading.

[0:09:55.8] JM: Do you know if – to what degree the traditional financial shops have set up cryptocurrency desks? Are most of them doing it, or are only some of them doing it? How much adoption in traditional finances there been of cryptocurrency trading?

[0:10:15.4] VM: I can't say a precise number here, but from some hallway talk I had with some people, I know that a lot of hedge funds, let's say, a more risk-oriented institutions let's say are trading crypto right now.

[0:10:34.8] JM: In traditional finance, there are certain types of trades that can only be done if you have the lowest latency data feed. Does this phenomenon in cryptocurrency, or does everybody have access to the same data with – like latency between them?

[0:10:56.4] VM: Well, that's an interesting question. I haven't investigated quite about high-frequency trading. There is definitely a lot of arbitrage that's happening on the market between different marketplaces. Also, I guess, but this is just a wild guess, if a certain platform is hosted, let's say, I don't know, in Korea I'm certainly sure that people that are trying to do arbitrage will try to find let's say a code provider that is very close to this marketplace so that they can get lower latency to their APIs. I'm pretty sure that this is happening.

Also, given that all these markets they have APIs, I think there is quite a lot of arbitrage happening, but there are some limitations there, particular around the technology. For example, if you want to do arbitrage with Bitcoin, you actually can't transfer funds between markets very fast, because of the confirmation time of the transaction.

Maybe with Ethereum, it will be a bit easier because the blocks are produced faster there. There are some limitations like this. Also, when we talk about arbitrage, there are some very interesting limitations around regulation. There is this thing called kimchi premium in Korea. If you open a Korean marketplace, you're going to see that the prices there are much higher than on the regular markets, and they have a very strong regulations around money getting in and

out of the country. You can't really do automated rebalancing funds between a Korean and non-Korean exchange. There are stuff like that.

I'm not sure. I haven't heard of people that are trying to do front running and stuff like that. Maybe they are, but I'm just don't have any info about this. I can ask, but yeah. They will research that.

[0:12:49.9] JM: When we're talking about the crypto-Bloomberg that you're building, this is essentially the operating system, the pane of glass that a cryptocurrency trader, a cryptocurrency investor would want to use as their point of access to lots of other data feeds and screens and knowledge resources, like due diligence resources that they can use to power the knowledge for their investments.

In order to create this single pain of glass, this knowledge repository for cryptocurrency information, you need to grapple with all these different data feeds that are coming in and you need to aggregate them and you need to present them. What kinds of data feeds are we talking about? What kinds of data feeds are there in cryptocurrency that you want to present to the financial cryptocurrency investor?

[0:13:50.7] VM: You start with the simplest ones, which is price in volume. This is something that you definitely need. Then you continue with new sources that will be Twitter, Reddit, different news websites, even some chats, where crypto is discussed. You also have all the blockchain information that's out there.

You can actually get quite interesting information out of this. You have exchange data, so what's happening on exchanges. Number of margin calls. You have spreads between bits and asks. Maybe I can think of some others, but these are I think the basic ones that we're talking about. Also, you have insights from people; people writing about different assets. You can probably classify this as news, but I would say it's more like analysis from experts, let's say. This is also an important part.

[0:14:48.9] JM: Right. You've got obviously the feeds of prices, which are bid and ask prices across the different exchanges for example; that's pretty straight forward type of information. I

think that the namesake of Santiment is the sentiment analysis, the ability to pull in information from a variety of people and aggregate that into sentiment analysis. Could you explain what sentiment analysis is?

[0:15:20.1] VM: Sentiment analysis is basically analyzing what is the sentiment of a given text document. It could be a tweet, it could be a news article, it could be a Reddit post, or just some sentence in a chat. In the best scenario, you want to figure out what this text is talking about, like which crypto asset is talking about, and also whether its sentiment is bullish, bearish, or just neutral.

When you have a system that aggregates data from different sources and if you have let's say an artificial intelligence that's able to recognize each of these posts or news articles, what is their sentiment, you can aggregate this across all the data sources, and then get a picture, an overall picture of what is the sentiment of the market right now. You can also break this down according to different crypto assets. This is basically the analysis that we are doing.

[0:16:27.9] JM: We're talking about analysis of Twitter people?

[0:16:31.8] VM: Yup. This is part of it.

[0:16:33.7] JM: What are the other sources of sentiment?

[0:16:36.1] VM: That will be Reddit. Reddit is very active in the crypto world. Also, there are different so called throw boxes, like chats on exchanges where people are talking about the assets and what's happening with the price right now. You can follow some other chats like telegram, where people are discussing stuff. Such sources basically. Also newsfeeds too.

[0:17:03.1] JM: Now, the sentiment about a typical currency on Twitter or Reddit can easily be faked by an avalanche of bot activity. The bot activity may not reflect the sentiment that will be reflected in the price movements of that cryptocurrency. How do you avoid getting confused by bots?

[0:17:30.7] VM: Well, you basically need to classify accounts, whether they're bots or not. You need to be careful what you're following. Yeah. I mean, it's a game of cat and mouse. People are figuring out ways to disguise their bots and stuff like that. Usually, it's not actually so hard to find them. I mean, usually when people try to trick – to create fake accounts and use them to trick people, they don't try trick machines at the moment. I haven't seen – usually they are not so sophisticated. You can do analysis of the accounts and figure out whether they're bots or not.
[0:18:14.1] JM: Are you sure about that? Because I'm pretty sure Twitter and Reddit themselves and Facebook have tremendous problems identifying bots versus humans.

[0:18:24.6] VM: Yeah. Well, to be honest, this is one of the challenges that's in front of us to tackle. Right now, we rely mostly on compiling lists of interesting accounts that we want to follow. We are collecting the data and we are looking into it and trying to clean it up as much as possible. It's definitely a problem that I can't say that we tackled and we resolve, but we're in the process of looking into it and figuring it out.

[0:18:58.1] JM: Your approach right now is just to whitelist people who are clearly saying interesting things.

[0:19:04.6] VM: Yes.

[0:19:06.4] JM: Okay. I see. Do you have access to any proprietary data feeds?

[0:19:10.8] VM: I think right now we don't use any proprietary data feeds. We're in talks with some people that might be willing to give us some data feeds. The thing is like we need to be sure that these people when they provide us a data feed, they're going to keep it up and running. We want to be sure that it won't just disappear at some point and it will leave us just out there.

In that sense, using providers like Reddit, Twitter and all exchanges and stuff, we know that these people will be around for a long time. If it's someone that just compiled some interesting data feed, we need to be sure that he will be keeping this around. Also, to be honest, the data feeds out there, there are very few that are actually quite sophisticated.

I can give you an interesting example. Right now, there are several websites that are tracking Github activity and projects. If you dig into their data, you're going to find out that actually for many of the projects, this data is really not accurate. It's not very accurate for a very simple reason. They count the number of commits for each project. If you fork let's say Bitcoin, you're going to start with thousands of commits and hundreds of contributors in your project. You would be very far forward.

For example, if you look at these websites, you see that cryptocurrencies like Bitcoin gold, which probably molds people who haven't heard about, is like in the top 10 of death activity, which is just not true. They don't have hundreds of contributors and thousands of commits. You need to be really careful when you collect such data.

We actually developed our own development activity tracking, which is it's not immune to forgering, let's say, but at least it doesn't have this problem with forking; when you fork, I don't know, the Linux kernel, we would be on the top of the list.

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[INTERVIEW CONTINUED]

[0:23:10.9] JM: Well, what you're describing is that in cryptocurrency, there may or may not be proprietary data feeds that will be useful. What there definitely is is an avalanche of information that is available to the public, and that information may not be easy to parse. Even the example of whitelisting people who are clearly interesting within the cryptocurrency discussion community, I think that's a useful tool. I think if we talk about building a system that can accurately measure Github activity, or the activity of the commitment community, or even the activity in Github discussions, which may or may not –

You have this Ethereum to some Ethereum debate raging right now around some governance issues I know. That's important developments that may or may not be measured in traditional metrics around how much activity is going on in a Github repository. You've got all these information that needs to be marshalled and centralized hopefully into some single pane of glass that you can interact with as a cryptocurrency trader. Rather than always having to have 50 tabs open and have your browser be your Bloomberg Terminal.

I think the other aspect of a product that you have a chance to build is a really nice UI that is purpose-built for this effort. Maybe you could talk from a top-down perspective when somebody logs in to Santiment, what kinds of information do they want to be met with when they open up the Santiment UI?

[0:25:04.5] VM: We just rolled out an updated version of our main page for tracking some Ethereum projects. We are in the process of extending this list to many, many other projects. Currently we try – we collect a lot of data, but we don't present it all, because as you said it's very important to show the data in a nice format that people understand it.

We figured out that if a data source is not very well refined, people will not be able to easily get the handle of it. Also as I said, because the crypto-markets are currently maturing in a process of maturing, actually you need to start with some very simple, very basic metrics that people can understand easily and figure out what they're actually showing who can't show them some really complicated feeds.

Or if it's complicated, you need to dumb it down to be able to show it in a nice way. I think this is awesome for Santiment, because we did the ICO and we have the fundings, so we can afford to hire very good frontend people that will work on making a good UI. Right now, what we show in our project speech is a list of all the projects for which we now – their team wallet. This is the wallets where they connected the money from the ICO and we track – we track their price, their market capitalization, their trading volume, and also we track their depth activity and we track their wallets and when they spend money out of them.

When you open the table, you can see the current price, the change of the price in the last 24 hours, the volume, the change of the volume, the current market capitalization, the current balance of the project, so how much money they have in their crypto bank, let's say the crypto balance. Also you can see their price [inaudible 0:27:13.0], which is something that is borrowed from the traditional stock world, which basically means the market capitalization divided by their crypto asset, so how much money they have in the bank, let's say.

Also we can see how much money they spent in the last 30 days and what is their development activity. What the stable for example allows you to do, a very simple example is that you can for example sort all the projects by depth activity, and then look at their balance of Ethereum that they have and compare their market capitalization. You're going to see that there are some quite active projects that has relatively low capitalization compared to the money they have in the bank.

There will be projects that are really, really active in development and they have their price on the market is basically the same as the money they have in the bank. This can give you the information that, well potentially this is a project that is managed to get the wealth of developers, they're working on some product. They also have quite a lot of money in the bank and there is

to – compare it to the money they have in the bank, they seem to be under [inaudible 0:28:34.9], let's say.

Now this could be, or this could be true or might not be true. You can decide for yourself, but the data is in front of you. It's on a single page. You can see another project, which has a very, very well depth activity. Simply nothing is happening on their Github account, but their market capitalization is huge, like compared to the money they have collected.

This kind of analysis we are trying to show on such a page, so that people can make such insights about the project. Trying to combine some fundamental data with the current market data, which is quite important. I think right now people are so much concentrated on just the market data. What's the price? What's the volume?

Maybe you've heard about this is the same thing people basically invest in anything that's below $1. This is just insane. There is no any reasoning behind this. As the market matures, you need to get more fundamental data into the picture, so that you can assess which is over [inaudible 0:29:45.9] and which is under [inaudible 0:29:47.5].

[0:29:48.5] JM: Agreed. Someone investing in crypto assets should be performing diligence, due diligence. Due diligence requires looking into the fundamentals of a project. What is this project going to be delivering in five years, in 10 years? What kind of value does it actually provide? Are the people who are working on this project capable of delivering value?

You look into 90% of the projects, probably more and you take a look. You take a good hard look and you assess it honestly. There is probably not going to be much there in five to 10 years for your average project that the token that you're purchasing is probably going to be worthless. I mean, there obviously are projects where it's going to work out. I mean, hopefully at least either Ethereum or Bitcoin works out. What should be the diligence process?

If somebody is evaluating, buying into the one of these ICOs, they're looking into buying a token. Actually, first of all we should just assess the people buying stuff that's less than a dollar. There are a lot of these people and they are not performing fundamental analysis. They're just

buying in the hopes that it's going to go up, so that they can sell it after it goes up. They have no concern for what the fundamentals are.

If we're talking about diligence and we're talking about Santiment, Santiment wants to provide tools and resources that people can use to perform diligence, because this is what you would do as a responsible investor, whether we have responsible investors today in cryptocurrency, or we will have them tomorrow, eventually they're going to want some platform that allows them to do diligence.

If I'm a cryptocurrency investor, what should my diligence process be? What are the different things that I should be looking for if I am assessing an ICO, for example?

[0:32:02.2] VM: Yeah. Well, it definitely depends on which stage of the project you want to invest. You might be a very risky type of investor that says, "Okay, I want to invest only in three ICO projects." Then I guess, the due diligence that you need to do is look at the project website, figure out what exactly they're trying to achieve, try to buy their idea, basically see whether what they're trying to do actually something that you believe is going to be successful.

You need to check their team. You need to see where these people are coming from, what other projects they worked on. It will be best if you can get in contact with the team, maybe join their telegram channel, or some other medium that they're – usually these projects have a place where they talk with the community. You need to join that, see what discussions are happening there.

Maybe you're going to have some questions, so start to ask questions, figure out whether these people actually have an idea of what they're doing. This will be the due diligence that you do on a pre-ICO stage, I will say.

If you do a due diligence in a post-ICO stage, then you can use other fundamentals. You can, for example the depth activity is something that you can look at. Whether this depth activity is actually something available, or it's just consume this integration bought that just posts every hour, like a hello world message in a pool request. You need to verify that, so you need to check the numbers.

Also, this is something that actually we are in progress of developing right now. You can analyze the token economy behind the project. If it has issued some kind of a token, the blockchain allows you to look at this token and see how much it is used, how many addresses are out there that are transferring this token around.

If you look into this especially in some data of this token economy, you can figure out whether the project is picking up speed, or maybe it was just used at the beginning, can then – it's only traded on some exchanges. You can do research on Reddit, see what people are talking about the projects and all that. Basically, there are many things that you can decide to look at and you need to actually believe that these metrics are telling you something important about the project.

I think these data sources that gives you – I'm a strong believer that these data sources that are not coming from humans, let's say, not somebody saying on some media article, go and buy this. Something that you just extract from the blockchain or you aggregate from social media in some good way, or extract from Github or something like this. Such metrics can be actually quite available in your due diligence. Basically, we need to do a lot of reading. It's not as simple as just looking at a price and say, "It's your dollar. Let's fight."

[0:35:25.2] JM: I would agree with you if we were talking about traditional equity in a company, because all of the metrics you're describing are earmarks of something that is growing in usage, or in – A number that I think you mentioned were more – that could've been growing because of speculative value, and I think if we're talking about metrics that are growing because of speculation, we can ignore those in an overheated market, because if we're talking about due diligence, I think we're mostly talking about – I mean, unless we're totally speculative investors, we're talking about fundamentals, long-term value of a token.

The thing is you can have an ICO. Your token is not equity. That is not the same as saying somebody is buying a percentage of this company. You're saying here is a token that will place some role in our network and you have – you actually have to device a token that will increase in value as the company or the network increases in value.

Those two things can be disambiguated. For example, Chuck E. Cheese's a video game arcade sells – has an ICO for a token, and then they open up a bunch of Chuck E. Cheese virtual reality arcades, yeah sure the value of the company has appreciated and all of these tokens that they've given out probably will appreciate. What if they decide to close all the arcades and just convert all their buildings into restaurants and then the token holders don't get to do anything with their token, then your token is worthless, but the business is still doing well. That value of the token is not necessarily tied to the value of the business, would you agree?

[0:37:20.1] VM: Well, on the other hand if the business doesn't have any value, like if it's not doing anything I can see how the token would be of any value at all, to be honest. The thing is right now the crypto market is so overhyped that there are these tons of tokens out there and I think for many of them, I'm not sure that there is much development happening behind them.

I'm pretty sure there are tokens that are just doing marketing, like just marketing and spreading – trying to market themselves as much as possible and then there has been several exit scams already, where somebody does an ICO. They have a beautiful website with some pretty pictures on it. They collect some money and then in several months, everything is gone. You try to open the website and it doesn't exist anymore, so the money are gone.

In that sense, I think you need to have a successful business in order for your tokens to be available. Now, the situation where your business is successful and your token is not available, I don't know. I mean, I'm pretty sure that if your business is successful, you can figure out a nice utilization for your token so that you can give back to your investors let's say. Because the holders of your token will be your investors. I think you have the responsibility against these people to increase the value of the token as your business grows.

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[INTERVIEW CONTINUED]

[0:40:23.2] JM: I would agree that there is a responsibility, but I'm not sure if there's a necessity. I mean, you take a look at XRP/Ripple. XRP is not really used for anything. Ripple as a company seems destined for success. They have a whole lot of intelligence about how to interact between banks and the cryptocurrency system, so I would place a bet on Ripple if I could buy equity in the company, but I'm not going to buy XRP, because that is not buying Ripple.

[0:40:57.1] VM: Yeah. There is this train of thought there. Actually I don't have a position on that thing. Personally, I haven't done a lot of due diligence on Ripple. It might be the case. It might be not. I'm not sure what is their plan in all that.

[0:41:11.9] JM: Yeah. I'm with you. I'm with you. I mean, it could be that XRP does turn out to be. They could invent some mechanism for it that actually sees usage. Santiment does have a token. You did have an ICO. It sounds like the goal with token is you do want it to be something that is tied to the success of the company, but you're not exactly sure what role it's going to play in the company. Is that correct? You ICO'd and just your goal is in the future to have this token play some role in the economy, such that it can rise and fall with the success of the company, right?

[0:41:51.4] VM: Actually right now they do have the token. I think this basically has been the idea from the very beginning is to be a scarce resource that gives you access to the data. The more sophisticated, the more interesting a data source that we developed is, the more some tokens you need to own in order to have access to this data.

Right now, we provide all the data sources that we compiled so far for free. This is going to change. It won't be forever. For some of the more advanced data feeds, I guess there will be several layers of let's say payments that you need to do, because information is very available in the investment world.

There could be different mechanisms to each device a token. One mechanism could you login with your address, where we can see how many tokens you have. Then we can say, okay you need to have at least this amount of tokens in order to see this data feed. The moment when you transfer these tokens away, you lose access to the data feed. We won't be able to see it updated anymore.
There could be another model where you also need to pay a given amount of tokens, let's say every month, or every week, or whatever the interval, so that you can keep access to a given data source. The idea behind all this is that you can – this way you can value different data sources in with different price and also provide the scarcity so that not everyone has access to something that you believe is very available.

[0:43:41.8] JM: Why do you need a specific token to provide that? Why wouldn't you just have people pay in Ethereum or Bitcoin?

[0:43:50.4] VM: Well, you want to have a fixed supply in order to have this scarcity. When you have the token, it allows you to – first is the fixed supply and the second is the smart contract that you have behind it. For example, with the smart contract, you can – right now, in our smart contract, it's possible to have subscription.

You can through the blockchain subscribe to a service and you're going to behaving like monthly payments with your some tokens. It's all down for the blockchain. We're thinking in like especially maxing to see all the company. He's really thinking hard in how to put all these

decentralization thing into the whole picture. Because a traditional Bloomberg Terminal is a very centralized entity.

It will be interesting to see how we can put more decentralization into the whole picture. Now for me as a technical guy, I see quite a lot of problems with this decentralization, quite a lot of challenges in order to be achieved, especially when you talk about the data collection platform. It's not only about, I don't know, trading cryptokittens or something like this. It's much more complicated than this. It will be an interesting challenge how to achieve it, but in order to have all these and also in order to have the ICO and all that, you basically need a token.

[0:45:24.4] JM: I'm just still confused why you need a token though, because you could just setup a smart contract that says, okay this person has committed some amount of Ethereum, like you could just use Ethereum. You could just commit some number of Ethereum to the Santiment smart contract and have that contract pay out over time. You could have a transfer.

I can commit 5,000 ether to the Santiment contract as my subscription to Santiment, and that means that I get access to proprietary data feeds as long as I leave my ether committed to that smart contract and it's gradually being depleted over time. The amount maybe if there are more and more data feeds that I am subscribing to, then my entry in that smart contract will change over time and I will be charged more and more. Ethereum itself has scarcity. Why not just use Ethereum instead of creating a token?

[0:46:29.1] VM: I think this question will be much more – it will better target it to Maxim that created, drove the ICO behind all of it. I think we better talk with Maxim. He will give you better examples why you might need to have a separate token economy from the Ethereum token economy. Because we are talking about the different token economies here and Ethereum has – although Santiment is tied to the Ethereum token economy and the Ethereum governance, let's say, in some sense, because it's built on the Ethereum platform.

When you have your own token, then you have much more freedom in order to figure out what's your own governance model of the token. In that sense, you are not tied to the governance token with Ethereum. Also, keep in mind that with Ethereum as a miner, you will be getting Ethereum tokens. With some base, you don't have any mining in place.

There are no new tokens created nor – well, there could be tokens destroyed, but definitely there are no tokens created. You can always argue that the price of the token also is tied to the Ethereum price, but it's not actually the case. It's not always the case. Usually, these assets are moving together, but if you have a separate token, its price is definitely influenced by how the product is doing and how the depth team is doing.

In that sense, having a separate token gives you much more independence from Ethereum. Also, I guess more fair value of your product than being tied to Ethereum, let's say. Because if people don't believe in your product at all and they think that you're going to do anything, they're just not going to buy the token and its price is going to go to zero. Price of Ethereum will – it might go to zero, but then everything will crash and collapse and all that. In that sense, I think it's much better definitely to have your own token when you develop such product for this particular case.

[0:48:52.2] JM: Yeah. I guess, I'm still confused. What does a token do for people today?

[0:48:59.0] VM: Right now, as I said all our data feeds are free. If you login to the website, you can login on the website using Metamask. We're going to see that you have a certain amount of tokens in your wallet. Right now, it doesn't really matter how many tokens you have, because as I said, everything is free.

At some point, we still haven't decided on the particular date and we'll through be this particular data feed. At some point we're going to say, "Okay, in order to access this particular data feed, you need to login with your wallet and you need to have a certain amount of send tokens in order to see the data feed."

[0:49:39.9] JM: Okay. Right, right, right. What is an example of a data feed that you would want to charge for?

[0:49:46.6] VM: One of the ideas has been one – we are developing this technical indicator that tries to predict when a price of a given asset increases but the volume of the asset is

decreasing. This has been one idea to have it as a paid, not so much of a data source but a notification that you receive if you staked tokens on the website.

Maybe this is going to happen to telegram, let's say, a telegram bot, which use your account. Then you have enough tokens staked, you're going to receive a notification. Well, right now the price is increasing and the volume is decreasing, so it's possible that the price has approach atop, let's say. This is something that we have as an insight from crypto traders, that's a indicator that the price of a given asset may have reached the thought.

Another thing that we've been thinking to make as a paid source is also some alerts on increased social activity for some projects. Here we are talking mostly about more high-frequency social activity. These are like telegram channels, throw boxes and all that, because usually these are the channels that react the fastest to the price. Twitter and Reddit are a bit lagging there. They just to be able to get some real-time notifications when something is happening and get it on your mobile phone basically.

[0:51:25.2] JM: Are you sure that the social interactions are good indicators? Because again, it just seems like one of these things where it's very easy to dupe at scale with lots of bots. I guess, I don't know. Maybe that's something that you – is not quite solved yet. You're still in the nascent stages of building this side of the product.

[0:51:50.8] VM: Well, we look at the data. What we do is that we collect some data and then we look into it and see whether it makes sense. If we see that it's distorted by, I don't know, bots or some strange activity, then we're going to try to clean it up. So far, what we've seen is that these high-frequency social channels are reacting to price quite fast. They can be a indicator that something is happening over there.

One other parts that I forgot to mention that could be very interesting to people is this blockchain data that could be extracted. We're actually developing right now this pipeline for crunching – right now the Ethereum blockchain, but after that we're going to extend it to other platforms too. You can extract quite a lot of available information there.

This is something that there has been some work done on this topic, but I believe that if you set up a good platform that allows it to iterate very quickly on different ideas and be able to compile in all different insights out of the blockchain data, you can actually extract some very interesting data feeds that you can sell to people.

[0:53:13.6] JM: Where are you in the product roadmap? What are the near-term goals and then maybe the six-month goals and the 12-month goals?

[0:53:25.1] VM: When I joined the company in mid of October, so that's been four months ago, I guess, something like that. One of the first things that we had to do is to establish our development platform. A technical spec that we can step on and be able to build stuff on top of it.

We chose to use Kubernetes and containers on Amazon so that we can scale very fast and be able to plugin services written in all kinds of languages, to be able to have an easy access to storage like elastic search, S3, their managed database services are very available, so that you don't need to manage it yourself.

We are past this. Also, setting up continues delivery pipeline, be able to rollout fixes very fast, be able to do production deploy several times a day and all that. We're past this stage where everything is setup there. We also had to rewrite some of the frontend stuff, because when I joined the website was basically at the stage of the proof of concept that was written for the ICO, so it had to be modernized, to be rewritten in ReactJS. We had to rewrite the backend. We currently utilize GraphQL with Elixir backends as a first aid, like a GraphQL first aid behind which hides all the other services behind it and we are all these in circus.

It actually allows it to the pretty cool stuff, and behind this Elixir frontier of the application have many smaller services that are collecting data, putting them in different data sources, also this big data pipeline, which is something that took us a little bit more time that I anticipated. I think right now we are on the right track to finally finish it and have a big data pipeline that allows us to basically write MapReduce jobs that can scale on many machines and be able to run.

Basically the idea is you have an idea about a given data source, you sit down and within a week you're able to write the source, upload it to some quester, run it, iterate a little bit on it and then get your data feed in front of you on some staging environment, where you can look at the graph and decide whether it's worth doing or not.

I would say that on the backend side, we're basically there where you can develop a service, put it in a container, write your deployment script, because I believe that each developer should be deploying his code.

I don't believe in the spreading in where you write something and then you throw it over in the wall, some demo speedboat to run your thing. Basically, the developers can fax this to the Kubernetes quester, they'll write their recipe, they upload there and they see how it's working, fix any problems that they might have.

Of course, they get help from dev ops people, especially if they need some special storage to be setup and all these. The thing is, we try to gather a team and also it's like a remote team from different places with different backgrounds trying to cooperate and they need a place where they can deploy their stuff, whether it's Python, whether it's some NodeJS app, or some other funky language, they should be able to deploy it there, see their data and then continue from there.

I think on that front, we're actually doing pretty well. I really want to see this big data pipeline up and running. I think this is going to happen in the following weeks. From there, as we accelerate and be able to iterate more and more quickly, I think we'll be shipping more and more stuff much faster. I would say that this is on the – at least on the technical side of things, this is where we are right now.

[0:57:57.6] JM: Yeah. I probably should spend more time going into that stuff, because I know you use Flink on the data engineering side of things. We certainly could talk a little bit more about AWS and Kubernetes and whatnot, but I guess I got a little wrapped up in the ICO madness.

Anyway, Valentin thanks for taking the time to come on the show. It's been great talking to you about Santiment.

[0:58:19.1] VM: Yeah. Well, thank you for having me. I hope that I've been able to give you some insights on these topics. It's a crazy world right now with these cryptocurrencies, but I think it's good that it cooled down a little bit, but I hope that people will get more intelligent about managing their own money and doing their own research, their own due diligence, identifying goods sources from bad sources.

I hope that with our platform, we'll be able to ultimately make the market more efficient. Because the more data you present to people, the more good data you present to them – this data gets incorporated in the price and this way, I hope that good projects will get on the top and the bad projects will be identified quickly and will disappear very quickly before it manage to do a lot of harm. Yeah, thank you for having me.

[END OF INTERVIEW]

[0:59:19.1] JM: If you are building a product for software engineers, or you are hiring software engineers, Software Engineering Daily is accepting sponsorships for 2018. Send me an e-mail jeff@softwareengineeringdaily.com if you're interested.

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