

Chris Rodriguez, SOMOS & Daniel Uribe, Genobank.io: Building a Latino Genome Bank through NFT's

[00:00:00] **Eric:** [00:00:00] So this is Eric with the encrypted economy, and I'm really excited to have Daniel, uh, and Christian Rodriguez, uh, on the, on the, on the show, uh, Daniels with gentlemen. And they work closely with Somos on a very exciting project, uh, that when I heard about I'm like I got to get these guys on the show on the podcast because it's a very real world application of, of, you know, basically, uh, NFTs, uh, on some level and encryption all at the same time, but not for trading crypto.

So a great, great story. So to lead off, I guess I'll start off with Christian. If you give us, uh, you know, your background and, uh, you know, we'll, we'll kick this thing off. Oh, by the way, first of all, thanks for coming on the show. So anyway, so could you, why don't we kick it off, are you

Christian: [00:00:50] sure? Thank you, everybody that ever hears this message Soludos there's in Mexico.

It's a pleasure to be here sharing with you guys. Um, [00:01:00] I'm a medical doctor. My father is a medical doctor. My mother's a nurse. I was burned in that. In, uh, office of that was also a pharmacy and it was a place where children were born full every day. So, um, medicine has always been near, or I have always been near medicine, uh, but another component that it's very essential for me, it's technology.

Um, I've always liked technology since I was a kid. My, my father used to have in his office, uh, in a very area. H, uh, burial computer, but I used to spend a lot of time there. So, uh, that's my core. That's my current Colonel, I'm a medical doctor with a heart of an engineer and I am a translator, uh, or our interface between those worlds.

Eric: [00:01:53] Excellent. And, and maybe tell us a little bit about how you became a teller, tell us what some most is and how you became [00:02:00] associated with it. And, and maybe that's.

Christian: [00:02:03] Sure. Um, among all my, um, medical colleagues from my, my, my generation only, uh, Federico, who is my co-founder, uh, choose a different story to what we were supposed to be doing as medical doctors.

Uh, suddenly I realized that he had changed. He was traveling, he was doing this project. Uh, while I was still, uh, trying to understand what I wanted to do with my life as a medical doctor, he was already building a company. He was, uh, he had already been granted by the national science of cancer, uh, but by the national consult of science and technology, uh, grant.

So, so he started research and development while he started his master's degree. So I got in contact with him. And realized, uh, he had some, he was working in something very special

[00:03:00] in that, uh, in that moment, I was working on an electronic health record that currently serves a state here in Mexico and has more than 100,000 pounds.

So, uh, I started chatting with him and we started discussing how we could start building this ecosystem, how, uh, eventually we would, uh, find each other. Yeah. Create something bigger. So, uh, while I was still in medical school, I started working, uh, with different companies. I got expertise in, in sales, so that's how I reached his first company.

I started working with them. Uh, in sales and doing some integrations in order to automate some processes. And that's how I started. I was not actually involved with, uh, with the company. I was a sales guy with a very interesting [00:04:00] technology core. Yeah. Eventually, uh, both projects got so big that, uh, we were fortunate to participate in an acceleration program in Boston in 2019, with both projects, this electronic health record that already had these smart statistics.

That was what we presented and also Somos. But in that, uh, processing that acceleration process, we realized that it was a bigger picture that the ecosystem, uh, had to do with something bigger than just ourselves. So we decided to create this joint venture in which now, um, so almost has the core technology in order to not only.

Do genomics for Latinos, but also to other layers or other multi omic layers. So that's how I, uh, became a co-founder in, in Somos. Eventually in some in [00:05:00] Boston, we decided to join both projects and independent MC we did this transition, um, from being a Mexican company to do soft landing in the UK.

Eric: [00:05:15] Great.

Excellent. Um, and Daniel, how about a little bit on your background and how, uh, general bank and almost came together?

Dan: [00:05:23] Of course. No, thank you very much, Eric. First of all, for having us in your, in your program is, is, uh, it's an honor to be here with your audience and, um, yes. Uh, some of those there's a Mexico tambien.

Uh, so I'll believe I have some. Notifications coming on. Sorry about that. Um, so the, the, the story from Geno bank is also, uh, this the same or similar to, uh, Chris, but in a different way, because, uh, I was [00:06:00] already like very focused on. On cybersecurity. My background is in electronics and telecommunications back in 2002, I began my career in, uh, in a very dear company for me called sun Microsystems and sun Microsystems was, uh, like the, the, my school.

Right. I really learned, uh, Unix systems there. I specialized in story storage area networks. Back in those days, we were connecting. Uh, hard drives with fiber optics. And that was like the most relevant thing happening right around around the, the data. Uh, obviously no, no cloud yet. And that was my background.

Then fast forward, 2015. I went to singularity university. And I heard from the words like literally from [00:07:00] peer Diamandis about blockchain and Bitcoin, my mind was blown

out. I said, wow, this is the most significant advance in cybersecurity that I ever heard. Right. Like literally using digital scarcity. And I started to try to digest a little bit because it took me a while.

To fully understand. Then I trained myself with, um, with Jimmy song. Jimmy song is one of the Bitcoin core developers. Actually. He only accepted Bitcoin as payment for his, uh, for his training cars, but I literally programmed in his, in his, from the, the part of the Bitcoin core in, in Python. I am a developer.

I am a very slow. Uh, I, I kind of understand, but I am, I am very bad at coding to be honest. Um, nevertheless,

[00:08:00] but again, it's like, Like one of my passions is to, to decentralize everything that is valuable for humans. Uh, try to come back from these, uh, internet 2.0 as we call it, which is the corporate internet as we are living. Uh, everybody knows like, like 87% of the internet has to have. Or apple or Amazon or Google or Microsoft, you know, or, or any of the violence in the, in the Asia, uh, Versions, but I mean, it should always be a citizen owned internet as much as we can.

And I believe that is where web 0.3 comes in. And again, 2017, my son was diagnosed with a rare disease. I knew almost nothing about genomics. Um, just [00:09:00] knew my, my biological, uh, uh, knowledge from. College prep practically, but again, and as a parent, I realized that this was very important for him for, to diagnose my son.

I realized, uh, how important these datasets are being involved in the rare disease for the last, uh, three years. And, um, yeah, just learn as much as we can. Uh, went to Germany to train myself in bioinformatics. I did a, an RNA seek, uh, uh, training. Uh, I met amazing, um, scientists, uh, males and females. I mean all the, uh, amazing people, right?

I mean, literally we are trying to help giants in, in terms of research. And one of those, I believe. Personally in Mexico is [00:10:00] Christian and Federico. They are really genuine in terms of what they're doing and I believe, uh, not, not general bank, but blockchain, uh, which is literally the underlining technology that we are, uh, promoting us the governance mechanism for genomic information in a decent way.

And, um, yeah, that's how we met. We literally wanted to do the same. And so we were overlapping because I was in the, in the very beginning of a, you know, bang. I was, uh, not pitching, but including kind of an ancestry report. And I believe Federico and Christian were like trying to also include, uh, part where the, the governance of the data was somehow involved with blockchain.

So, uh, we, we decided just to, uh, I mean, it makes sense, totally makes sense that we, we collaborate and we just, uh, sat down when they say, [00:11:00] Hey, wait, Uh, overlap our efforts and let's just focus on whatever we are most, uh, most valuable or more, more useful. And then the, the partnership was very natural, right.

Eric: [00:11:14] Oh, you're welcome. I'm looking forward to, to continuing, uh, talking to you gentlemen today. So, um, so Christian, if you could maybe just, um, Talk about the, the

mission of, of some most ancestry, uh, and, and even maybe a personal event that sort of shaped your view of that mission.

Christian: [00:11:38] I believe the, the, this inflection point and also this connection point where we meet Geno bank and Daniel has to do with, with, as Daniel was mentioning with mission, mission, core, or mission being missionary. We both have this personal story that [00:12:00] relates to technology and how we could solve this, this ecosystem or this problems related to this ecosystem with technology.

So we were thinking in 2017 about how we could do things different in genomics, because we had tried in Mexico. With three different approaches, three different companies. Um, but we realized that there were some big barriers, not only the purchase power from our country is very different, but also, uh, people does not know yet about, um, how does it work?

So, um, eventually, um, we, um, We decided to change. And we started, um, it was not driven by the hype of the ICO's. That's what I, that is why I'm trying to [00:13:00] say. I was really driven. It was really driven by real life use case scenarios. And I was trying in my mind to translate these, but I am going to say, literally, we got this obstacle with the centralizing power.

We have this concept of scientific Saudis, which is a very old, archaic scientist that has this per perspective around genomics that is only data hoarding and that they have to control the information the same for the internet that we are living right now. And the social networks is what we are experimenting.

And, uh, we have the. History one time opportunity to change it. And we are experimenting that with genomics, which is very delicate. So in 2017, we were discussing some ideas of how we could avoid these centralizing flowers or take [00:14:00] the powers out from them and give it back to the users or the patients.

But we, we didn't know how, uh, but. Daniel maybe had this ideas in singularity and I'm sure that mission driven, he continued working towards the solution solution until he had, uh, this Eureka moment and the way he approaches it and solves it, I believe is it's a game changer. So, um, actually it was a recommendation from another.

Entrepreneurial from Mexico that it's working towards the centralizing video. Sorry, entities. It's, he's working towards the centralizing. Notarios I don't know how to translate that in him, but it's also, uh, yes. Public notaries. Yep. So, uh, he's a friend of Daniel and he mentioned him in a conversation I had with him [00:15:00] and he, he told me why don't you speak with Daniel?

And Federico had already met with Daniel. It might maybe wasn't the time. But in that moment we realized that we, we have, uh, we had advanced towards, um, yes, uh, purpose driven ecosystem in which we realized that it's not about us. It's not about even our team. It's about something bigger because this figure I'm talking about the scientific or Saudia it's.

Uh, we, we met someone that told us that there's something difficult. Saudi Saudia in Southeast Asia that holds 300 million, uh, bio samples. That sounded like power actually. Shouldn't be that way,

Dan: [00:15:49] Chris. Uh, the same scientific, Saudia, maybe the correct translation of one, one of the alternatives could be or sour use.

Right? So it's a [00:16:00] combination of a dinosaur and a risk. Right. That's the connotation of, of the, the expression that Chris Chris's using. And yeah, we laugh. We laugh and say, Hey, this is a, this is a feudal kind of thinking, right. It's a person that thinks they own the data sets that they own genomics in a very particular context, right?

Like, uh, like ancestry for predisposed. Uh, you know, references and everything. So, uh, that's, that's the way I need still today. I mean, I just had a conversation this morning with another researcher, a very young one, talented and he's facing the same problem is, is your scientists that they are just lying in their bed.

Everybody has to ask for their permission in order to do something in Mexico. And I don't know, but I am, I assume that that's the same problem all over Latin America and maybe the world, [00:17:00] right? There's there's, uh, people who thinks that they they're our authority, which I don't, uh, uh, I mean, I am not anybody to not recognize that authority in genomics in terms of the research or the papers.

In terms of the governance of the data sets. I believe the last saying has to come from the donors, right? The real and Jen genuine, genuine owners of the data. So that is really. Our mission driven kind of glue between some of Sanai CA whatever we do. We both parties promise to always ask the donors respecting also not to overwhelm them.

Right. Because that's the order. Kind of, of Bector, right. You're not going to ask permission every day, you know, like, can I open now your bolt? [00:18:00] Right? Because and so on. And so, but it is obvious that privacy comes with control and control means the interaction with the donor, but you don't want to overwhelm, uh, now because everybody right now is I believe super, uh, federal.

With the cookies kind of thing, right? Where they allow cookies, everything you visit a web browser is like a crazy thing. Uh, but anyhow, we, we, we want to learn from those kinds of approaches and try to build together the best possible experience that, uh, exactly resolves that thing about who, who has the last saying in the, in the data in the genomic data sets.

Eric: [00:18:45] Right. So, so part of the problem you're trying to solve is is that the data is being controlled centrally. Um, That maybe it's, you know, dampening some of the [00:19:00] research that could be done on it and its utility, um, hard enough to get the information to where it's needed probably as it is, particularly as you think, sort of across Latin America, because of the genomic research that you're trying to collect as obviously it's not just Mexican, you know, people's, it's, you know, it's, it's Latino and, and also indigenous.

Uh, people's too, which is something I know you're going to talk about Chris, which, you know, it was sort of like when we were, when we were having our discussion immediate, you know, early, it really kind of blew my mind. Cause it's not something that I really appreciated. The, the, you know, the, the unique genomic traits of the indigenous people and how that could be so valuable because it's, you know, I mean, it's a melting pot, you know, it's just, you know, uh, you know, there's, it could be so helpful.

And then I think one of you quoted to me, I'm going to, I'm going to steal your thunder on this, but one of you quoted, I'm not gonna steal it. So one of you quoted me that [00:20:00] 2% of worldwide genomic data is from Latinos.

Christian: [00:20:07] Actually the, the update is 1% update. A few months ago is 1%.

Eric: [00:20:15] Did they burn the other 1%

Christian: [00:20:19] maybe before we jump into that diluted, like to mention, uh, that it's all a matter of consensus and decision, and it's just this very subtle switch, but very important, because right now, if Eric, you are a Facebook user or a WhatsApp user or an Instagram user, They are leveraging your data in order to do a lot of money and they are not sharing any money with you unless you have a Facebook page or a business, and you monetize it somehow.

But for the normal user, he or she does not have the power to choose. Uh, [00:21:00] he, he, he cannot decide over there. So, uh, it's, that's, it's happened, that's happening, uh, the same, uh, for genomics. So we summarize our mission, not to mention that as a democratizing biobanking and precision medicine with collaborative science and, and that collaborative science, it's our marketing way in order to, to not say the central as the centralizing.

Because we tried, we tried with some decision makers, uh, to present these projects or technology at a, at an earlier, earlier stage. But when you mentioned that you're gonna change the game, that you are gonna put this switch in order to give power to the user so that they can decide, uh, very few like this approach.

But that's the inflection and the meeting point where Somos and [00:22:00] Geno bank came together in order to democratize these industry in order to make it accessible to everybody. At least what we see right now for the next four years is yeah. Make it accessible or democratize it for Latinas.

Eric: [00:22:16] And, and do you think that lack of democratization is part of the reason why genomic data is only at one point.

Christian: [00:22:26] Totally.

MiniBytes: Why Isn't There More Latino Genomic Research?

I would say that it's a mix of, of problems purchase power, because when we had the opportunity to do research and development in Mexico, yeah. 20 X, Mexico from USA, um,

it's a very complex thing for an average, Mexican to buy a genetic test. Um, and even if they could, they are not aware of the benefits it could bring to them.

So [00:23:00] lack of information and lack of democratization, I would say. And also the other component, of course, the, how the game works when someone is aware of how big companies are using their data, nobody would like to participate.

Eric: [00:23:19] Right.

Dan: [00:23:20] If I may add, um, to Chris, there, there is also the component of, of, uh, genomic medicine or, or new drug development.

Right. It's based on, on, on genomic information is true. And we, we better say, I mean, that, that the funding from, for the last 10 years, In the genomic world in general comes from European investors, right? It's, it's funded by European institutions, investors whatsoever. So it is obvious about at least not five years, but it, it makes sense that they, they [00:24:00] just centered in those European populations.

Right. And they are tackling or trying to tackle, uh, Diseases that are related to the, these European traits. Right? The now the main idea is to empower people that is starting this genomic traits that, but now that affects, uh, specifically Latino and Latina population. Right. And that is, that is also what my point is.

There's lack of funding. There's, you're simply people not putting enough money into, into their Latin. Genomics, uh, World. And that, that is something that we would love to, to also collaborate in just to create awareness and these kinds of projects like Somos, they already having a lot of, of good investors, uh, involved in, and this is core court or [00:25:00] researchers now putting attention into the Latino-Latina and obviously samosa is a great ambassador to that.

I mean, again, Chris, I'm just interrupting. Please don't don't stop mentioning about the indigenous because I believe that is, I also would like to love to hear it hearing with Eric.

Christian: [00:25:21] Yes, it's a negative feedback loop. Um, there's not enough information and enough money, not enough purchase power and not enough data.

So if there's not enough data, uh, there are no services. So, uh, part, part of how we change the game is creating the first Pan-American the centralized biobank, and it's this collaborative economy in which we are building the largest Pan-American biobank. And we do not own any by sample that's. That's the magical thing about Geno bank and the state of the art [00:26:00] technology that.

It gives the switch or, or it changes the game in this way. So, um, uh, part of, of how we give these new services to Latinos, um, is creating these biobank and how we do it is by creating, um, through communication and through relationships with the communities. We literally go there and, uh, to the mountains or whatever.

And meet with the local authorities, um, in order to first hear them and know what, what they think about it and maybe what they are expecting from us. And it's a process of, of

creating real communication and real breaches in order to create trust. That's. The biggest entry barrier for any foreign company that would like to come.

And also this sobering, uh, [00:27:00] genomic law that exists that a foreign company cannot come and take samples from these communities. So it's this mix of communication and creating trust and hearing their needs. And with that in mind and with their approval of, of the community and their leaders. Start taking samples.

And in that way we can represent them in genomic databases. Um, there are 70 communities at least that those are the statistics of the communities that are recognized because there are some communities that are not even recognized, not in history or in maps. So it's a very important thing that we are doing a startup.

With this approach from science and genomics. Um, but, but this biobank, the centralized biobank first in its way, it's, [00:28:00] it's our kernel. It's the way how we start building this unique dataset that we do not own. And we create through relationships with those communities in order to when we find solutions.

For precision medicine, we can give back to those communities, not only in a new drugs or treatments, but also we are trying to create this DAO and we can discuss more about it, uh, where communities can participate in collaborative science and also. Short medium and long-term benefits before even we can even find solutions in precision medicine.

Eric: [00:28:49] Right. So, and, and by data, you mean, so the communities are able to vote and influence the project?

Christian: [00:28:56] Yes, that's right. Consensus and decision [00:29:00] and transfer.

Eric: [00:29:01] Excellent. And, and so the revenue model for this is, I guess it's two-fold one is if you want to have, um, if you want to participate and you want to have your, uh, genomic information, I guess, um, captured, right.

And if there is a, there is a revenue model at the individual user level as well. Right. Or am I incorrect?

Dan: [00:29:28] It, it could be it's up to, I mean, NFT in essence, she's programmable privacy, right? And that programmable privacy can be us, as Chris was saying, well, the short term benefit is control, right? So you're gaining control and you're gaining the, the, the super feature.

I would say that no company will be able to. Establish, uh, ownership on your dataset, right? Because the minute you act in this web [00:30:00] 2.0 kind of companies, um, they make you sign an agreement with no royalties worldwide. Uh, almost perpetual license that, uh, they will have, right. Um, in this

Eric: [00:30:13] case. So if I'm, if I'm having my genomic information, uh, incorporate into the NFT, right?

So at the end of T actually, no, it's not incorporating the, at the NFC is, is the, is the, the traceability. But if I have my, if I'm, um, if my genomic information is being captured in through this method, um, As a user am I, is there, am I paying in order to have this record of mine, genomic information and compare, or is the revenue model at the, you know, ultimately at the research side where companies are going to do research, get the permissions from the users.

Um, I'm sure that the research has a component of the revenue model. I'm just trying to understand if I thought that there's also a, there's a, [00:31:00] um, a user revenue model as well, right?

Dan: [00:31:04] Yes again, we are, every, every use case is different. So there's companies like Somos that, uh, they, they eventually are planning to give a return of investment to the companies through the wallets.

Right? Cause this, this capture, uh, term that you use, we use the term tokenizing, right. The tokenization. Right. But it's, it's the same way we understand that

Encrypted Bytes: Empowering Personal Health Data through NFTs

tokenization is kind of a serialization. It's a relationship between two parties and a dataset. In this case, a genomic dataset. What we really do with the NFT is we give an idea identity of these bio sample in the blockchain context, right?

The identity is paired to a wallet, right? And the wallet is owned and controlled by the. Right. And this is the general use case. The researcher gets a tokenized [00:32:00] permission to use, right? This is the second NFT. It's a bio sample permission token, and the researcher, uh, becomes a collector of these NFTs that is literally, or hopefully seen as a licensed to use.

Right? So the researcher has a wallet and they collect the. Permissions to use the data and it could be in exchange of simply a recognition token or a membership token serial value in the market. It could be for cryptocurrencies, right? People will, or researchers can give Bitcoin why not in return. They could give, uh, a native token, like for instance, Somos is thinking about having their own token.

Right. And we potentially trade it after. So again, the possibilities are infinite or are not, maybe not infinite, but the possibilities now are in the, in the [00:33:00] ground of the cryptocurrencies, right. In the crypto space. And now that is the universe or as we call it now, the metaverse right. That is being created.

And it's literally a blue ocean wherever you look at in the crypto art healthcare. Uh, cryptocurrencies, new economy models and so on and so forth. The one thing that I believe is the most exciting part is now you have a donor connected with a wallet, and that creates a very new and fascinating relationship between the researcher and the donor.

Um, and again, this is, while it can be used to collect signatures, cryptographic signatures for association, it could be used to communicate. To use, uh, encrypted text messages, very private anonymous, maybe with a time bomb, it could be used to have tokenized consents.

It could be used to exchange currencies or crypto crypto [00:34:00] tokens that has economical value and so on and software.

Right. So literally is, is, uh, it's a blue ocean, I would say.

Eric: [00:34:09] Okay. Um, so are there, and I guess, you know, we talked about reaching out to the specific communities and actually going to the mountains and meeting with community leaders, um, actually even before getting into countries, uh, do you want to talk a little bit about the, you know, the, the importance of community leaders in gathering this information?

Christian: [00:34:37] Yes. Uh, I was trying to put an example in my mind. And the first that obviously comes is because it's very different to what we are used to, to experiment in our, in our societies is, um, they, they have different ways of [00:35:00] representing themselves. Specifically for varieties, they have 16 governors. And I put this example because they were already using tokens before tokens were invented, because how do they sign their consensus is with, with, how do you say, say yes, signatures, right?

Or physical signatures that each of those governors has. And in order to approve a transaction, They're they have to have full approvals. So

Eric: [00:35:32] I'm gonna, I'm gonna, I'm going to actually stop you there because this is, this is a great story that you're about to tell. Before we even get into the, the Raramuris.

Um, maybe just give us a little bit, cause I think a lot of users won't necessarily know who the Raramuris are. If you could maybe just sort of introduce them as a people. Cause there's, there's a lot to the story here and I want to make sure we're setting it up. Right. So do you want to kind of introduce who the Raramuris are?

Christian: [00:35:58] Sure. There's a lot, a lot [00:36:00] to learn about them. Uh, wise people wise nation, uh, in the north of Mexico. Um, in the mountains, up in the mountains, uh, and they are famous because they are very physically fit. They are runners, they run, uh, but they are amazing doing that. They can run days. Uh, we, we, we went there last year and we did some hiking in order to, to, to reach some points where.

They have, uh, some problems that need to be addressed and it was complex reaching those points and they were just working there. It was another day for them. Um, and yes, they are known because they participate in long distance, uh, careers, run, run marathons, [00:37:00] and, and they have amazing, uh, Stamina and abilities.

Yeah. And performance, they have compete internationally and they always win. And what is amazing about them is well that where they live it's it's that territory it's bigger than the grand canyon, but they run, they move in that territory, uh, just with their traditional. Uh, sandals, you know, so they do not wear a special equipment or, um, uh, 3d printed shoes.

They wear just sandals and they always win in this marathons. So of course they have, besides being wise and having a lot to teach us, they have some unique. Abilities or some unique, unique, [00:38:00] uh, physical features that might be important for us in science.

And this is a complex statement and I don't want to be misunderstood, but the issue here is that we have, uh, very few information.

So, um,

Mini Bytes: The Importance of a Diverse Genomic Pool

What makes important indigenous nations and Mexico is that we are one of the most admixed groups, but at the same time, those 70 indigenous nations have preserved their culture and genetic traits for centuries. So it's this very dynamic genetic pool that might be, um, the. The right key for the solutions that we are expecting for precision medicine.

Eric: [00:38:54] Excellent. And so, so I sort of interrupted you and you talking about the Raramuris and there [00:39:00] that they already have a consensus mechanism, um, and the importance of the community.

Christian: [00:39:06] Yeah. So they invent the tokens in their way before blockchain, uh, translated into the technology we are using now. The way they create consensus is everyone in the community has to be heard.

And, um, they do not take any decision without the 16 signatures. So yeah, it's a physical token. It's a multifactor authentication decision, consensus, consensus based mechanism. So, uh, actually, it's, it's more advanced than our democracy, at least in Mexico, you know, Um, the systems we are using are very, could be easily, um, dampened in order to, and I believe that they have in the past been, um, I was thinking in order to create Faber for somebody, [00:40:00] but this multifactor authentication that they have.

Um, yeah, it's, it's, it's, it might be, uh, this initial point for the DAO that we want to create. This mechanism of consensus study. It's another layer that a blockchain creates, you know, because if we can create an analogy with the internet, there are a lot of layers and a lot of protocols. And of course, in the beginning, in this, um, expected, uh, inflated expectations, part of the cycle, nobody believed in, in the internet, in the nineties.

And suddenly it became what we know right now. I believe we are right now in the same historic moment. We are about to see this change from expected from yeah. Um, Jose in this hype cycle, we are [00:41:00] about to reach this inflection point where we are about to see real solutions. We are already seeing them. We already have more than 3000.

Uh, samples that are in another different, um, solution. They are not in this centralizing model. Those biosamples are now in the power of the users, which is amazing. And is, um, how do you see premium?

Dan: [00:41:29] Yeah. It's like, uh, yeah, you are, you are a pioneer. I mean, you're, you're. Well, we are. Yeah, well, we are. Um, and thank you.

Uh, yeah, it's, it's like being the world's first, you know, something like that. I mean, it's, it's the prima prima.

Eric: [00:41:49] And so, and so when you go to these communities, maybe the Raramuri or other communities, and you explain to them what you're doing and how you envision collaborating with them, [00:42:00] um, what, how are they.

What kind of questions are they asking? What are they

Christian: [00:42:06] trying to continue? I will continue with the example because they are amazing and you will be also amazed. Um, they already know about it, everything because it's something that has been happening through centuries. In other industries, this colonialism that they are expecting from traditional company.

It just changed the name of the industry because a couple of hundred years ago, uh, some mining company for any mining company will, would come to their territories and just steal their resources without giving back anything to them. So now that we are entering this digital era, we are about, we are, we are, uh, experimenting, uh, digital [00:43:00] colonial.

And you, you might think that they are not aware of these digital world or ecosystem, but do you have satellite internet in your, in your house, Eric? Because the governor has, and it's powered by solar cells, you know, and actually she had connection where, where I had not, not, not connection, so, and they use WhatsApp and they, some of them actually have a Facebook profile.

Yeah, they are in the digital ecosystems. They are aware of it. Actually, last time we met them, the governor asked us about the database. She literally used the word database. She asked who was going to be in control of that data and where it was going to be storage. Well, she was using herself smart fun.

So yeah. They are aware of it and they are expecting [00:44:00] someone to create a different ecosystem. They, they are experts in collaboration. ~~Um, yeah. Did that that's that's it.~~

Eric: [00:44:06] ~~Um, so. So at this point in the, in the video, I'm going to have to cut this little section out. I'm not going to stop the taping, but Daniel, you say you have to go at three.~~

~~Yes.~~

Dan: [00:44:06] ~~Uh I'm. I'm truly sorry. I should have, um, put more time for the, for the podcast, by my bad. Uh, but yes, I have another call in about two minutes, um, that unfortunately I can not like, uh, Like switch. Um, but what, what, what do you suggest, uh, Derek? I'm so sorry for being so,~~

Eric: [00:44:06] ~~so where, where, um, We certainly haven't, you know, , there's a bunch more to talk about.~~

~~Right? Right. I, you know, I think when we first spoke, I said, you know, this is a, a podcast because then I can see going over an hour just again. Cause like when we, when we were talking about the Raramuri, I don't want to stop any of that. That's phenomenal. That's like, that's real. That's that's, you know, to your point, this is where.~~

Where it hits a, it hits the ground. But all that aside, what I'd like to do is, um, to, to maybe just schedule another time to finish up.

Dan: [00:44:06] Yes. Actually, if, if you still have the time today and you feel like you still have, I just have these one hour conference and then, um, I am free again. So we just have to skip like one hour, if you're also like your agendas are.

Or have the availability, because I believe that the video and everything, maybe the clothes and everything might, might, uh, have to, to match

Eric: [00:44:06] you're on, you're on, you're on mute.

Christian: [00:44:06] Yeah. It's going to be something good because there's someone outside doing some noise and yeah. So I

Eric: [00:44:06] can do Excel. I can do more like five o'clock.

Does that work? It worked for me as well. Yeah. Christian, does that work for you?

Christian: [00:44:06] Yes, it's. Okay. For me. And it's just going to be better because now I'm not going to be so nervous because I already,

Eric: [00:44:06] I already

Christian: [00:44:06] need these beta

Eric: [00:44:06] tests. Right. So we'll, we'll stop here. Um, I think I have to S I don't know if we can pick up on this link, but usually we'll do, we'll try to get in on the same link this way, the videos are together.

It makes it easier. But if for some reason we can't, we'll just shoot a note back and forth. I'll do another link and I'll send it animal. We'll figure it out. Okay,

Dan: [00:44:06] perfect. And again, Sergeant, and then to, to be there. No,

Eric: [00:44:06] it's okay. I finally looked at the chat. I'm like, okay, he's got to go. So it's three.

O'clock you jump on your call. Um, I'll just, I'll shoot something out for five o'clock. We'll try to get on the same link if we can't, we'll just communicate. I'll send it over. Thank you very much. So you gonna be all right? Two hours? Yep. Yep. Excellent. Thank you. Thanks.

So, this is where this is Eric Hess. Um, we're, we're, we're picking up where we left off. We took a little break, uh, and now we're all back. We're all wearing the same clothes. So everybody knows it's the same day, just a couple of hours later, we had to take a break. So, um, so anyway, to continue with what we were discussing, we were talking about community and-

For Somos. And, um, we were talking about how, you know, certain tribes like the remora were, were, you know, a very good use case because there were Mori. They, you know,

~~they, they may have genetic resistance to certain diseases. They may have genetic resistance to COVID or, or other things. And that information in a biobank could be very helpful for, for research.~~

~~Um, And so that was the remorse. It sounds like a very good solid use case as you, Chris, as you go and reach out to other, uh, communities. Um, do, do you find, do you find that there is a similar receptivity? Do you find that, that in some cases the challenges are, are, are greater, is, is it really just about educating and using even maybe there are more areas.~~

Christian: [00:44:29] Every case I would say is different. And it all depends on each nation. Um, some of them might be more accessible towards this collaboration projects and some of them historically have been, uh, a little bit more aromatic or a little bit more, um, not into this kind of collaboration project. But I would say it's all a matter of creating communication, bridges [00:45:00] and trust, and, and just, just being very clear, just being very transparent about, um, we are not the experts, but we try to be very good listeners in order to really find out what are the needs of the, of the communities and match those needs.

To, to the possible, uh, research projects. So, um, yeah, I would say it all depends on each community. Every community or nation is different, but as a common thing that, uh, breaches this ecosystem is trust and communication and transport.

Eric: [00:45:47] So, so when you're reaching out to say a community that maybe they don't, they're not like the Raramuris they don't have the satellite dish, you know, or maybe they aren't as technically savvy.

[00:46:00] You know, when you, when you get to things like the, the NFT or the Dow, um, I'm assuming you're not, you know, you're, you're certainly not mentioning that it's on the Ethereum, because if they don't get the NFT, they're not going to get the Dell. How do you, how do you frame it for somebody who, you know, just may or may not have any real technical savvy?

How do you frame the, the value prop in what. That technology brings to them that they may not otherwise have.

Christian: [00:46:34] Um, uh, this is, uh, a work in progress, but as we are, uh, relying on exponential technologies, um, it's just a matter of time that the work in progress that we are doing matches the exponential point where it really becomes, uh, everywhere.

Uh, for example, community. It's basics already has this application [00:47:00] for Mexico, in which for, I believe less than a hundred dollars, you can have your own satellite, uh, north and they are deploying this year. So it's just a matter of, um, getting to the critical mass that it's needed to change. Yeah. It's just a matter of maybe a hashtag in Twitter and reaching Elon Musk so that he deploys earlier, but smartphones are already ubiquitous or re everywhere.

So I ambition, uh, at least from, from the Somos part, imagine you were born, born, uh, Rarmuri and you are up there in the, in the mountains, in this place that I told you that. Several times bigger than the grand canyon. Um, eventually let's say in two years, you're

going to have, uh, Starlink connectivity in your smartphone and all [00:48:00] these problems that blockchains are experimenting right now might be overcome.

Or we might have some solutions for interoperability for, for all these technical issues that these earliest days. Of the web 3.0 has. Um, but I, I see that it's just a matter of maybe two years that this is already available everywhere so that any indigenous nation in any place in Mexico could actually use our, our platform.

So it would be just like, Um, did you want to participate in this research project or would you like to share your information so that we can advance in precision medicine? And that's the part where the state-of-the-art technology by Geno bank, uh, makes it's magical move it, that, that little switch, that thing of [00:49:00] consensus of asking you of Bates, it's everything, you know, it's the, the, um, Of a whole process that makes, uh, or preserves privacy, that boost consensus that gives the user or the participant the power.

~~So that's for the most part, but in terms of, of technical deployment in two years where we already have the centralized storage and connectivity, I would like Daniel to, to explain how he envisioned these. In a couple of years.~~

Dan: [00:49:20] ~~No, thank you very much. Um, can you hear me okay? Yes. Okay. Sorry. Okay. So we've been, uh, partnering with another company they are based in, in Switzerland and they, they, their name is about.~~

~~So the amount of boxes is, um, is rhino is many things, but for us is, is a partnership that will hopefully create these kind of decentralized storage that Chris was, uh, was saying, um, these are literally small servers and they are small in finger in footprint, but they are not small in capabilities. I mean, this is, these are.~~

~~Little monsters, right? With even CPU, I mean, big capacities of CPU in a small, uh, footprint, and then eventually will, they will get, uh, GPU's capacities as well. Today Abbado is specialized in running your own Bitcoin node or your own Ethereum node or staking Ethereum, 2.0 kind of, of tokens. But we've been working with them to create a special instance for genome bank, where nations as, as, uh, Chris west.~~

~~Uh, explaining, uh, could have their own server, right? With the physical datasets there. These boxes will be able to somehow has have a mechanism to replicate themselves, but not necessarily, that means that the information will be available for the other or the rest of the, of the participants. Right. So they.~~

~~Replicating nodes. So it's like mining nodes, but instead of proof of work, this would be proof of space, right? Or proof of storage. And this is, this is not, this is not something new. I mean, this is, uh, already existed. Actually. There's a very famous protocol called IPFS. This international inter interplanetary file system.~~

~~So it's the same technology, but this, this is a private network, right? So eventually we believe that this is how, uh, some of your most sensitive data will reside, meaning we think there is a possibility that, uh, families will have, uh, Personal or family data server in your home that maybe is replicated in your parents' home.~~

Right. And this is literally the, the most, you know, birth certificates, genomic information, healthcare, maybe, uh, uh, trust right of Bitcoin for the family. I don't know. But just because in my, when, when I was younger, when I was in my twenties or thirties, it was super expensive. I mean, I installed in the past, uh, in like 20 years ago, servers that cost that cost, sorry, uh, \$3 million each right for banks.

But if you compare now, the computing power of a knife on today is very similar to that server. So now you have 20 years later, or maybe, maybe I'm excited. I mean, maybe 15 years later, you have the computing power of a Sunfire 15,000, a supercomputer in the Palm of your hand, uh, of your, of your, uh, in your hand.

Right. And, and again, I mean, this, this is going to. Uh, be more and more we could use us as, uh, Chris was saying, and this is the way that, that we believe that the future looks a little bit. And again, the,

the governance mechanism is we'll, we'll make irrelevant where the data is stored. But where the token is.

I mean, who has the permission to use the data and then as long as the data is available and linked to that token, you'll be able to reach it. Of course, it'll be a matter of, of, of, uh, broadband to see how, how quickly or how fast you will be able to access that data. But. In 10 years, speed will not be a problem.

Um, [00:50:00] reliability of the network probably will not be a problem as well. Access to CPU and GPU power. We think it will not be a problem as well. Everything will be about data governance. That, that would be the specific topic who these data is. Do you have the digital signature that approves you to use it even to train an AI?

People I believe will will ask, was this AI trained with permission data or no? And everything has to be auditable. There's gotta be, uh, yeah, a chain of custody and so on and so forth. So that's the way we picture the future. We don't know if that eventually will be like that. But today we're, we're, we're looking to trends, right?

I mean, the, the European zone just, uh, you know, caught like the legal connection with United States, just because the privacy laws are not equivalent. Right. And so therefore the, the European CT senses are saying to the government, Hey, come, American companies are getting our information. But they are not offering the same protection as the GDPR.

And then you saw this, this case of, uh, of germs. Exactly. Exactly. Thank you. Thank you very much. So right now is governance. Governance is a net cost. I don't know how much billions of dollars is costing that in aggregate, but I'm sure it's in the it's in the billions of dollars. And. There's gotta be a standard.

And at these, in terms of genomic information, we believe that NFTs makes sense.

Eric: [00:50:47] Excellent. So we'll, we'll also, um, so, and, and I guess maybe sticking with the NFTs for a moment and we'll circle back to again, the kind of community dynamic. Um, so, so why, why NFT? Hmm.

Dan: [00:50:51] Very interesting. So I met with William Entekin Williamchicken is the lead author of the most famous, famous, uh, standard is the ERC 7 21 center.

So I was, uh, Just, uh, you know, listening in terms of just connected to the GitHub repository of the year 7 21. And he appeared many times. I didn't know he was the lead author. I just contacted him. He will, will. I want to tokenize DNA data, human DNA data with an ERC 7 21. And then, well, we, we, we got into a very nice friendship.

He, uh, a gentleman became, uh, uh, a customer for him. Now he's one of our best advisors, a great friend. This is one year later, but in a, in a nutshell, I, first of all, I wanted to tokenize, uh, snips, right? I wanted to tokenize, uh, literally your variants, which we are still looking the way to do it. The problem is that.

The the, the quality or the pers the, yeah, the quality assurance of the, of the data is not there yet. Which means if I sequence or genotype my information with one company or where one manufacturing, it might come with different results, even if it's the same person, even if the same sample. So it's, it's not consistent, right?

The results are not consistent. And in order for you to tokenize and be consistent, you need this information to be accurate, right. To be the same every, every single time. And we are not there yet, but we will. Is that like the cameras? Right? The digital cameras. I mean, every, every year the sequencers gets better and better, uh, resolution.

So. But he said, Hey, it makes sense to tokenize the permissions. So, uh, William and I, uh, designed the first, uh, what we call the bio NFT, which is a bio sample permission token. And one of the particularities is that the owner of the biosimilar permission token will never. Uh, transmit ownership, right?

There's there's a specific, I mean, this is a very, very good topic about, I mean, like with lawyers, because there are many lawyers have said, Hey, you, there is, it makes no sense to say that you own data. And I understand where this comes from because nobody gives you a proof of sale, right? Like a ticket or something where your purchase data and then say, Hey, you, you own this data.

So what, this is maybe another topic, uh, uh, about ownership of data, right? But I'm talking about literally the insight of the year, see 7 21. There is one. Uh, function or one, one variable that says ownership and it contains the address, the theorem address of the owner or the originator of the token in the year C 7 21 for art ownership is transmitted during the transaction.

Not in our token, in our token, this is a delegation token. So you, uh, allow.

Christian: [00:50:51]

Yeah, let me read books.

Eric: [00:50:51] All right. So, so, so we're, we're working our way through this podcast. This is part three of the podcast where we, where we regrouping. Um, um, so, so I, we were talking to Dan about. The decision to create the, you know, to, to create the genetic information

associated with an NFT and, and why, you know, why they chose eith and, and the creation of delegation tokens.

So, but we'll start from the beginning since. No one, no one listening heard that previous section.

Dan: [00:50:51] No, thank you very much, Eric. So, um, the, the story begins because, um, I knew that we were like, um,

Encrypted Bytes: The Inspiration for the Bio NFT

Since inception in 2018, uh, for me it made sense to use the NFTs that there, they went back in 2017, the [00:51:00] only case was CryptoKitties.

Keep CryptoKitties have something magical for me because it came along with the idea of Genobank and the CryptoKitties. Each of the, of the, you know, these crypto art had a thing called the cat tributes, right? And the cat tributes is, is literally the meta data of each of the, of the cats and his store in, um, in a smart contract called the ERC seven 20.

So for me, it was like storing the DNA naturally. That's how they advertise themselves is storing the DNA of each of the cats in a smart contract. So literally the, the person who buys a crypto kitty is buying the smart contract that contains the instructions to build a cat and not the cat itself. Right.

So that's why one of the main explanations. Okay. [00:52:00] Hey, if you copy, uh, the photograph of the cat, you're literally not, not the owner because you don't, you don't own the instructions. So the blueprints and that inspires me, it inspired me a lot to say, Hey, that's the way it should work with humans. For me, it makes sense.

Right. So I went and, and start like, Following the Git hub or the GitHub of the year, C7 21 code. And that's how I contacted William William Entekin. He's the lead author of the ERC 7 21. Now we said, dear friend and advisor for Geno bank. Back in those days, I contacted him and said, Hey, I want to tokenize human DNA data.

He didn't say her you're crazy or whatever he says, okay, let's analyze the usage. And do you know, and willing became a consultant, right? For us and an architect, a consultant [00:53:00] for, for Geno bank. And we spent literally, maybe 40 hours just studying all the cases, right? Permissions, ownership, data, metadata, and so on and suffered and even not blocking right there saying, okay, we have to be open to say maybe.

Blockchain will not aggregate, uh, value. So at the end of the day, the, the conclusion or for us was that, um, it makes sense. It made sense to design a bio sample permission, token, or a DNA permission token. The important part here is that we modify the solidity smart contract. This is about a variant of the year C 7 21.

That does not transmit ownership. Right. Um, so this is very important for us. We believe that DNA should always, uh, belong to the person. [00:54:00] Well, actually in nature, that's the way it is, but in its, in its digital form as well, nobody should claim ownership on other ones. Data, right. This is, uh, this is, uh, I mean, it's, it's inalienable, right?

Or in, uh, yes. Thank you. Thank you to the person and the only dignify or dignifying, uh, you know, thing to happen is somebody to ask permission to use your data for a specific purpose. Uh, and people will decide if you are reputable enough, if it makes sense for them to share your data. So this is in essence, our delegation token, as you were mentioning earlier.

So that's why that's how the, the first, uh, bio NFT as we call it, uh, And, uh, uh, William and I are the authors [00:55:00] and hopefully we contribute, uh, to, uh, to a potential standard. Right. Um, we don't know if this will become a thing. We, we, we think. Yes. And, uh, the, the main idea or the main purpose of this NFT is first not to be fungible.

I mean, to dignify the DNA information because the, the, the other tokens are fungible, which means you don't care. What, what data set you are going to receive in the terms of the Bitcoin or certificate, but this one, obviously, because if it's DNA and we are an instance of humanity and we are very different from each other.

Thank God. Um, in, so again, is, it makes no sense for us to use, uh, orient to treat DNA as a merchandise, right? Or as a commodity.

Eric: [00:55:54] And I think, yeah, I think we talked a little bit about, you know, your stance against genetic [00:56:00] exploitation, you know, basically saying that, that in no instance, not even just in this project, but basically almost as your, you know, core value, right.

You know, even taking it apart from privacy laws regarding personal information, which obviously genetic information is. But even apart from that, your view is that this should not be, you know, this shouldn't be exploited for commercial purposes. You know, it's not going to prevent maybe, you know, somebody from trying to sell an EFT of their genetic information, but for what you're trying to accomplish, you know, you know, you want it to be very clear to the entire community, which you're trying to build trust with, which, you know, Christian talked about that, that in every case you're going to be requested.

Permission right. That it, that it resides with the, with the owners that it, that the right decisions are being made. Um, and that it's not going to get away from them because I think we talked about it at the beginning, like how, how, you know, these big companies were like centralizing, right. Sort of centralizing this information and, you know, [00:57:00] once they had it, they would do what they needed to do on it.

And it could be for the good of humanity, but from some level. You know, you're saying it is over at that point. And so this is sort of getting back to, you know, if I'm not sure about somebody having access to all this information about me and it makes me uncomfortable, all that, that's really all that matters.

Whether or not it's for the benefit of humanity or otherwise, it's sort of besides the point. I mean, at the end of the day, it's, it's a decision. That you've elected to allow your genetic information to be shared. And it's not like you've, if you haven't surrendered control, which could be a trust thing, you know, having the ability or knowing that you have the ability to say, I want to be forgotten.

I don't want these people to, to, you know, I don't want my genetic information to continue to perpetuate in, in, in places that I have no, no understanding of where it is and it scares me. So, um, You know, I commend you for, for taking that, that sort of, [00:58:00] um, that approach. So

Dan: [00:58:02] thank you. Thank you very much. And, and yeah, and one of these huge advantages of using the blockchain is that these permissions are public, right?

You can use the public, let's say power because you will be sending in a pseudo anonymous way, but still. Uh, you can, you can prove their identity with your wallet, like saying, Hey, I am sending a signal to Somos biobank to remove my data. And Somos will be, I mean, we already have a mechanism where we can trace if some, if a token has been revoked or not, and then they will act on consequence and then just publicly say, we just erase it.

Okay. Uh, of these particular, uh, right. So again, is, is, uh, is super transparent, right? Not [00:59:00] all the research are gutting obligated in any way. What Hawaii? Why, why should I, you know, this, I mean, this, this, uh, exposed, because again, the main, the main objective is to increase the quiddity and availability of genomic data for research.

Um, and we already know that siloing it like centralizing. It is not working anymore. Companies are shrinking, literally the two major companies, 23 and me and as history, the DNA are shrinking. They are not selling anymore because people now after eight, nine years of that use case, Have been educated now.

And most of the people, when, when I'm talking to them say, oh my God, you're going to laugh about me because I did 23 and me or ancestry DNA. And then my details is a way if I would know. So there's [01:00:00] a lot of people, you know, like, Uh, you know, like not saying, Hey, I precipitated it, but I say, no, no worries.

Because these NFTs that we're creating hopefully will be, will empower us also to help you to trace back or to, uh, recover. Your, um, the map, right? At least the map, where's your data, because at least in GDPR, you'll be able to ask any company, if they have a copy of your information, today's only your name or your social security number, driver's license, or some, something like that.

But hopefully, and this is a service where we're trying to build a product. Hopefully we'll be able to. Um, about your snips, right? Uh,

Eric: [01:00:51] and for the listeners, what's a snip.

Dan: [01:00:53] Oh, thank you. Yeah. So there's the zip is a single nucleotide. Polymorphism is, is literally a letter [01:01:00] depending on the, on the X or Y, but I didn't, they say it's a base, right?

It's a letter in your DNA. And we are working in tokenizing 96 of them, 96 in terms of privacy. I mean, in terms of gen not being genomic data is it's a small, I mean, it's, it's really, really, uh, can tell very few things about a person because usually like, um, a company like 23andme will, will, uh, process 700,000, right.

There's names. So from those 700 thousands, you only need 50 matches to. Uh, have the accuracy to say that that is, that is your sample only for

Eric: [01:01:45] you. So the, yeah, so the snitch doesn't go to what you're collecting. It goes to how you're validating all the different points of authentication. Exactly. It's like, it's like multifactor authentication at 50.

Dan: [01:01:59] Correct. [01:02:00] So we use 96 years because there's, there's a standard. That comes from quality assurance is not it's. It's called a sample identification process from a company called Fluidigm. Um, they already have a tip and it makes sense because when, when you invest in a, in a sequencing, sequencing is still, you know, expensive.

So only for \$6 you, you run or you genotype 96 snips, then you run the, let's say the, the, you invest as a, as a laboratory in the sequencing. And then you go back and you compare with these notices just to avoid it, like mixing samples and everything. And then they have some snips off quality assurance and everything.

But what I'm trying to tell you, I mean, this has already been done. By big laboratories, just to make sure that they, they just have a, uh, uh, a quality assurance point. Right.

Eric: [01:02:55] Um, and you're building it into the NFT, correct?

Dan: [01:02:58] Correct. That's

[01:03:00] **Christian:** [01:03:00] sorry. I need to wait to think about it or how I, I like to think about it.

It's, uh, it's a check sum function, right? You correlate, uh, hash in a table or in a yeah. In a rainbow to bring more table or in a Pictionary. And do you validate or authenticate that? Um, but traceability is a game changer also right now, you don't have any way to know, uh, where your data is in this Facebook conglomerate and you were mentioning ancestry and 23.

They are going to be acquired or they are already acquired one by, by a stack BG acquisition group from Richard Branson group. And, um, ancestry has a story of being, um, listed then delisted then acquired by private capital and now they were sold to one of the most, uh, or one of the biggest private equity conglomerates in the world.

[01:04:00] Blackstone. So, yeah, you never know where's your data. You have no way to trace it. You don't know where it is. Who has it, or what are they doing with that? It's like if we have the last time in history to avoid being a real life, black mirror chapter.

Dan: [01:04:20] And by seeing this, I mean, we, we're not like attacking or saying those are evil companies.

No, I mean, that, that was the way, I mean, it was a step right in the direction. I believe those companies, we all, uh, th the, the, the, this type of style, I mean, they, they literally teach people how to send a sample, a saliva sample. Through mail. That was a big achievement. I

would say the problem is that, I mean, and then obviously they will hopefully become now a drug discovery company.

That that's what makes sense for them just to find one or two molecules and [01:05:00] then everything will be justified. Right. Because that's, that's what you do with 10 million samples. You, you go on and discover a new medicine based on those, uh, on those datasets. And that makes sense. But again, now people is aware of the decentralization.

We have decentralization, it works.

Eric: [01:05:24] And it hasn't worked very well for the Latino population, which is both critical. So Blackstone and Branson, you know, good luck, you know, it's, it's great. I mean, it's obviously a service, but by the same token, uh, no pun intended, it hasn't really included the Latino community in a way that's going to be, you know, I mean, 1%, I mean, you know, who knows what the figure really is, but it's.

That it is infinitesimally small compared to, to, you know, the actual community. And when you, again, you think about all these indigenous groups, [01:06:00] like all the uniqueness amongst them, like how, you know, these drug discoveries. May not be as effective, you know, or there may be things within those groups that teach us things to help us elsewhere.

So it's a, it's a rich population and it's being, you know, unfortunately neglected. So it's, you know, it's a different way of getting at the data. Um, you know, the other thing you, you almost have to wonder is the old way of collecting this information just may not fly anymore. Right. We're now much more sensitive to privacy.

This is personal information. We're past the day, the age of saying yes. Oh, yeah, just take my data. Um, I'll I'm sure you'll do. I'm sure it'll do good things with it. So, you know, let me know if actually, you know, just, just take it it's okay. You know, that's, we're kind of past that and, and it really, you guys are like attacking this, this new model of inclusion and trust and trying to build a case and, and, and make people aware, Brett build [01:07:00] awareness as to the value of it.

Um, so it's, it's, you know, again, you, you, you look. You think of that? Just poultry representation. It's so clear that something is really desperately needed to make sure that there's proper representation, you know, in, in Latino community. So, um, so yeah, before we got where we got cut off, we did this whole unpacking of the Somos box.

So, so, so Christian showed us the box. It was fully wrapped up. But it's okay. The plastic wrapper was gone. It wasn't that exciting. It was, you know, but so Christian is now showing us. What's in the box, what's in the kit. So it's, it's easy to use. Um, and I guess there's, there's a Spanish version too, obviously, is that the, that's just the English version.

I hope in

Christian: [01:07:51] the, in the activation page, you can change

Dan: [01:07:54] between. Okay.

[01:08:00] So the, the main idea of the Keith. Yeah. So that's, that's a very important part. So that's where the innovation we think is that that, uh, card is

Eric: [01:08:09] the showing up an ID card,

Dan: [01:08:11] correct? It has 12 spaces. Or spaces each for one of the words that they would, that the wallet, it has also a pen

Eric: [01:08:22] showing the pen, because if you don't get the pen, they may not know how to may not know that they need to write something.

But thank you. Correct.

Dan: [01:08:30] So during the activation process, The first thing is that it's like a pre NFT, right? So the QR code, those QR codes are specifically customized for Somos. So those are some obscure codes or pre Anaptys. And so the, the donor or the S or the subject, or the customer scans, the QR code using their smartphones or the phones and.

When you, um, so it is, [01:09:00] it's, it's a magic link, right? As we call it. So it takes you to this almost, uh, onboarding process. The first thing you do, or you, you, you see is a picture of the bile or the, or the saliva sample. And the first thing that the customer needs to do is to verify that the, the number, the serial number of the physical exactly the physical tube corresponds to.

The digital version, right? So this is very important because they are obviously linked. The second thing is they will go to the next page and they will see the consent. Right. They, they literally have to go hopefully through the consent. So where it's almost is describing, what's going to happen with, with the sample.

I mean, this is very standard consent form and they say, oh, for, for how much that they are entitled to revoke the token and so on. And so. They then the, [01:10:00] the, the, the wallet is created right. In that part, the wallet comes with 12 words. These 12 words is very standard for every Ethereum blockchain based wallet.

Right? It's 12 words in English. You have the, the, the card to write the them in order. The order is very, very important. And this is how ownership feels. What I mean is if you lose these 12 words, you lose the ability to recover, to go to your, uh, individual data or secure room. Right? So this is very important and there's aspects where people has lost and we help.

And we just issue another kit, ~~but the other kit will never be, uh, Uh, or parable, right? I mean, it's,~~

Eric: [01:10:46] ~~it's, it's. Do you have like a, a hardware, hardware wallet for crypto?~~

Dan: [01:10:46] ~~Well, innocence that card, that card ISA is a hardware wallet in essence, right?~~

Eric: [01:10:46] Because again, like if you have like a ledger wallet, do you get these seed phrases?

So if you ever like lose access, you, you now use the see phrases. So for the listeners who trade crypto through a hardware, Wallet like ledger, same principle. You write the seed phrase fate, uh, C phrases down. You, you stick them on the back of a picture. You put them in your little safe deposit box. You tell your family where it is and you know, to anyway, sorry, I was just drawing the analogy to the seed phrases.

Dan: [01:10:46] No, no, totally. That's exactly the same process. The, exactly the same. It's a seed phrase. It's a 12 word seed phrase. Um, The main idea is, is literally how now ownership in the digital world is like, right. I mean, because was people would say no, but in the other experiences, you know, I have a, uh, an email and my password and I can always go and reset it.

And so, well that's not ownership. I mean, that's exactly the opposite. Right. Do you just own some credentials where you can use the, the company's infrastructure, right? The data that you put there is not yours, it's theirs, it's in their servers and they claim ownership and so on and so forth. So that's that obviously the world that we already, so this is where your 12 words is the proof that you will own the data.

And that bio sample is linked to those 12. And so for us, it's not that identity project. I mean, we, we do not know who is the owner of those 12 words, but at the end, they, these, these, this person would be in control of their bio sample. And what happens to the bio sample later [01:11:00] on? Obviously there is a, there's a roadmap full of integrations.

Uh, electronic health records that you might also incorporate identity aspects, but identity is really challenging in terms of the blockchain, because it's like, uh, again, linking a photograph or linking, uh, an email to these 12 words for us right now. Doesn't make sense. I mean, because it's, it will break the, the identity or the, the nymity kind of.

Eric: [01:11:33] Right, but, but you have the 96 snips, which is actually a far more accurate, specific than, you know, I mean, I think, uh, Chris maybe has the longest name on this, on this, uh, on this podcast, but that's, uh, you know what, that's, I'm not going to count all the letters, but that's probably somewhere under 17 versus 96, which is going to give you far more particularity as to, you know, the identity or the owner of those.

Did they, uh, genomic information.

Dan: [01:11:33] Totally, totally. And, um, yes, the good thing, or the good news is if you lose your card, I mean, you just need another kit and you, you, you can regenerate your, your data. I mean, you're the source of it instead of the Bitcoin, because Bitcoin will lost

Eric: [01:11:33] forever. That's the tragedy.

That's

Dan: [01:11:33] a tragedy in our case as well. You lost yeah. \$150. That's the cost of the kit actually. So almost has, is very generous and the, they just help you with half of it or

~~something like that. And if you lose a kit, I mean, it's just like, okay, here's another one, not no worries. And we're experimenting and just have the price, right?~~

~~Because you lost your 12 words and it doesn't make sense to charge you again and everything. Right. But that's up to somebody. Right. But, but the thing is, again, um, At least what you really, as a donor, uh, gained with this is control.~~

~~A~~

~~Couple of seconds ago. Yeah.~~

~~Yes.~~

Eric: [01:11:33] ~~Okay. So, um, so w we, we talked a little bit about the process for creating the NFT. Um, you get the saliva, it's a saliva based NFT, right? So you're, you're using the saliva and that's what you're getting the, the, the genomic data from right.~~

~~Yes, exactly. Yeah. The saliva and, um, but it could be blood as well.~~

~~I mean, blood is invasive, so, um, saliva, you can, you can even take it from, uh, from a kit and, um, but yes, the, the, I believe saliva is just great. Um, yep. Oh, he says,~~

~~so Chris, you have no idea.~~

~~You you're muted. Your microphone is muted.~~

~~Can you hear us Christian?~~

Dan: [01:11:33] ~~He cannot in teams. Um, let me just suggest him, uh, quantum mic thing.~~

Eric: [01:11:33] ~~All right. So this is actually where we're jumping into part four now. Cause we've, we've had some, some, some bumps along the way and taping. Um, so w w we're we're we're going to finish it up in this part. Um, you know, one thing I wanted to kind of focus on a little bit more was the, the community role. Of of Somos and, and how, you know, some of your current experiences with the community, how you think it can apply as you think, even like, you know, maybe to, to, to, to broader central America and Latin America.~~

Christian: [01:11:57] I believe it's an ecosystem [01:12:00] game, uh, in which we have to find the, the right people as Danielle, Gina bank and. In order, um, to first, um, land this concept in the Latin American market in the U S and then maybe because of the statistics, we have five, uh, next countries. Um, 80% of the, all the indigenous groups in the continent are among five nations.

So, um, That would be our next stage in the road. But, uh, right now our, our main concern is how we change the game and how we democratize biobanking and precision medicine for

more than 60 million Latinos in the U S so yes, 40, 40 million in the Mexicans [01:13:00] only. So MIT says that by the end of this year, we're going to have 100 million ancestry users.

And if you extrapolate the percentage of Latins, Latin Americans or Mexicans, we are expecting, uh, around 13 to 15 million, um, Latin American or Mexican ancestry users by the end of this year. And we're going to have, uh, Two ways of doing it the way it has been done before, in which big, uh, corporate autocracies own data, or maybe we can rely in cryptographic functions and in this idea of a web 3.0 in which we have these blockchain based, uh, privacy consensus, preserving ecosystem hardware died.

[01:14:00] We came to know, uh, software and then software became software as a service. But now we have not only software service, but we have different services that correlating platform as a service. And there are some cases only some for example, we chat, but that's a very bad example maybe because of the surveillance capitalism, but it's a whole world.

They do everything. And it's the connection between different parts of the puzzle, this ecosystem as a service. So I ambioned that, that we are gonna, we already provide the highest resolution ancestry test for Latinos, but that's just the starting point, how we give value to our customers and how we change the game will be all the difference.

Uh, give back the ownership to the user, creating [01:15:00] these, uh, largest primary can biobank the centralized in which we do not own any

sample.

Eric: [01:15:07] And so you said 13 to 14, million or 13 to 15 million samples by the end of 2021. That's what

Christian: [01:15:16] MIT says. That's what they are expecting. Not

Eric: [01:15:20] for some most, not for some of us alone, but you mean just overall, right?

No,

Christian: [01:15:24] the goal is 10,000 users, right? So we are already over a third, three, 3000. So we are on our way, completely organic with the right collaborations and key partnerships and right. People and teams like bank.

Eric: [01:15:42] Got it. So, so I mean, what you're saying is it's a very large addressable market. And you have a, you know, a creative solution in a space that's clearly needing a creative solution.

Yes. I like it. So yeah, that's the thing. Yeah. So, so that's certainly, uh, interesting. Um, and, uh, yeah, I don't know how to, I'm going to have to cut this part out because I'm trying to like capture my next slot, but I'm blanking. Um, so, uh, at least my part off, not your part of all this right now, I'm just taking off.

I can, I can keep going all day. Cause it's all just one big cut. But anyway, um, getting back to it. So, um, so, so I guess to wrap up maybe with, within, you know, the, the disinformation,

obviously. Um, needs to be kept secure. Um, you know, we talked a little bit about privacy enhancing technologies, um, but, but, you know, in terms of taking this information and protecting this information, is this, is this a, is this a market where privacy enhancing technologies are going to be helpful or, or are the limitations within that sort of driving you to look to other ways of security?

Dan: [01:15:56] That's a very good question. Um, brutally honest today, we don't know, uh, obviously we are promoters of these, uh, Uh, cryptographic, uh, technology as a, as a mechanism to decentralize the governance, um, make it more secure in, in many ways. Sorry, but to be honest, this is, uh, a new ecosystem is, is, is. Price discovery kind of experiment in in many ways.

And this is about obviously collectibles, crypto art, uh, luxury items, fashion designs, uh, coffee, right? Uh, proof of origin or pedigrees for cats, pedigrees for, for dogs and so on and so forth. What I'm trying to tell you is that. We're stealing that, um, process. We think we, we are a little bit ahead because biobanks are hiring our services.

The main idea again, is they're interested in the cryptographic signatures, the same way us laboratories today. Use cryptographic signatures to protect the document. That gives you a COVID-19 result to get inside an airplane and prove that these document is genuine. And it's not cloned because literally by, by scanning a QR code, which is a new kind of, of weight, a way to interact is a verification.

Uh, Uh, aspect, right? So it's a verification feature for the document itself. And this comes directly from cryptographic technology. And the thing that makes it very reliable is because it's stamped into an immutable ledger as a blockchain, right? It's th the, the interface is Gino bank, but to be very honest, that the immutability is being brought.

By the, by the blockchain. So again, returning to your, to your question at the end of the day, this is already a feature for many laboratories in terms to protect their, their, uh, brand, their reputation against Photoshop. Right? So we Mexico, we had a case where 99 Argentinian students went to Cancun. They, they were in a party they returned to, to Argentina with fake COVID-19 certificates.

They got inside their plane. When they arrived to Argentina, they were tested and a hundred percent of them were positive. So they, they, they instruct, uh, strictly talking the, they put in danger, the lives of the other. Passengers in that plane and the laboratory in Mexico was fake. They don't even have a registration with the corresponding CDC.

Uh, you know, like here is called the coffer priests, right. They didn't have the, even the, the registration. So now we have a collaboration deal where. The government of Kintana wrote to, to use cryptography again and privacy enhancing technologies to, um, incorporate with laboratories so they can offer these verification process for everyone.

So again, this is related. To the kits, because at the end of the day, someone's will know exactly how many kits they been issuing and they will be able to legally discard those who are not the responsibility. And this again is, is, uh, is, uh, it's a closed circuit, right? Uh, uh, of things that happened and everything that the stat, every, every time that they start to

school of the bio sample or the data or the document that represents result changes, there's gotta be a signature there from somebody, right?

Eric: [01:15:56] Yeah. So, so, you know, when I think about it, you know, with the most, uh, kick the, the recipient or the donor in this case is. They're not identifying themselves there. It's the snips that identify them. So from a, from a, like, you know, from a pet or privacy enhancing technologies that might protect the sensitivity of the information as it's being shared with other institutions, you know, Different research projects may not even have the capability.

What you're doing is you're minimizing the amount of data to just sort of you can't, you know, I mean, I guess at some point in the future, you could theoretically link some of those snips with an individual, but, you know, for the most part, you're getting just those snips to an entity and you know, they're doing the research based on, and they're identifying it based on the various snips, but it's not going to be individual specific.

So the, the. Perhaps some of the privacy issues are mitigated just by the nature of the fact that you're not associating a name. You're not associating the fact that it's a 45-year old male non-smoking, you know, uh, had a hip replaced, whatever you're not including all that information, you know, as you developed a use case for perhaps, you know, you talked about maybe, um, You know, this could be also associated with hospital records.

So you start to provide additional data like, Hey, treatment options, all of a sudden thought that works. Once you move into that realm, obviously, you know, as you're, as you're sharing that information, um, you're at that point, you're probably going to have to be much more focused on, you know, if we're giving all this data.

Yeah, we really don't want to provide all this data. How do we mitigate, how do we maybe do some sort of secure multi-party computation where the people who are gaining the data are only getting what they absolutely need. Maybe they're getting the characteristics, but there's no way that they could really deconstruct or de-anonymize, you know, this, um, uh, you know, the individuals.

So it's, you know, you're, you're at the cusp and it's exciting. And, uh, you know, I certainly, uh, I certainly. Wish you guys the best. Um, I hate it when people call me when I'm in the middle of the podcast. So we're even at the end. Um, so, um, at any rate, uh, we, we covered a lot. You, you th you know, uh, it'd be between Chris and Dan.

We probably have the longest podcast that we've ever done on the encrypted economy, but it's been a great one because it's, it's real. And it's, you know, it's, it's w we really got into the weeds and. You know, we, you know, th th th the focus on something that's in this unique in the Latino community and how the Latino community is actually approaching entities for its own, you know, unique issues.

And obviously the lack of genomic information is a unique issue since, you know, I mean, certainly you want more genomic information. Everybody wants more data, but there's, you know, relative it's much less than in the Latino community and it needs to, needs to catch up for, for research purposes. So. I, I, I love this podcast.

This was great. It was great talking to both of you. Um, I'm going to be [01:16:00] following up, seeing how you guys are doing I'm actually, you know, I'm actually doing some work with some most on something else, uh, you know, in the U S so, uh, you know, I'm all in. So gentlemen, uh, thanks so much, you know, actually before I'm not going to break without giving each of you an opportunity to say, where can people find you and learn more about what.

Sanford, I'll go with you first. W w people want to find out more information about Dan or, or Gina bank? Where do they go? Of course. No,

Dan: [01:16:28] thank you very much. Please visit us in our webpage Gina bank.io. That's our webpage. Please send me an email, uh, contact me, uh, Daniel Giovanni. I am very vocal in LinkedIn.

My profile is Charlie. You read Daniel and, uh, yeah. Uh, please find me on Twitter as well. And, uh, hopefully we can, we can support each other there.

Eric: [01:16:54] Excellent. And, and Chris, how about, uh, where can people find you and learn more about, so most ancestry that's a good [01:17:00] place.

Christian: [01:17:00] You can find me and let's chat in LinkedIn.

And you can find those in Somos, ancestry.com and we will be releasing a discount code for certain amount of people that hear these products. Oh,

Eric: [01:17:20] look at that. Excellent. Great. Yeah. Well, we're not exactly at millions, you know, we're like, you know, 999,000 per podcasts. No, not really, but

Christian: [01:17:29] there's a, there's this quote that says that the right message repeated, uh, with enough passion eventually will reach the right ears.

Uh, so yeah, you can find us at some senses, three other to come check the, the, we are section in which we talk more about these drinks.

Eric: [01:17:54] Excellent. Thanks so much.