

Blockchain Working Group
Meeting Minutes
February 7, 2020
10AM to 4PM

1) CALL TO ORDER

Chair Crittenden called the meeting to order at approximately 10:03 AM

ROLL CALL: Quorum Established

2) APPROVAL OF THE DECEMBER MEETING MINUTES

Motion has been passed to approve the December meeting minutes with the amendment requested on p. 8 by Anne Neville-Bonilla: Revise the third sentence of her comment on the definition to read “Most people reading this report don’t know about blockchain. They won’t know that it is more trustworthy and immutable.”

3) AGENDA AND MEETING GUIDELINES

Orit went over the meeting guidelines with members.

4) BLOCKCHAIN AND ITS DEFINING CHARACTERISTICS--*Presentation by Brian Behlendorf and David Tennenhouse*

Working Group Comments:

- Liz: I feel like we should add in something about cryptography, since that’s such an essential component of blockchain
- David: Most peer-to-peer systems use cryptography, so cryptography isn’t actually very new.
- Brian: Does anyone else feel that the word “mathematical” or “cryptographic” needs to be added to the definition?
 - *Multiple working group members said yes*
- Kai: Other states have adopted their own blockchain definitions. There are some pros and cons of harmonizing definitions. How did you consider adopting a harmonized approach versus our own?
 - David: Basically when we parsed what was already out there, the definitions were relatively narrow. For example, they were tailored to specific applications. In other cases it was about the technology more than the function. We’ve learned that if we just talk about one specific technology in regulation we end up having to come back to the definition.

- Kai: It also felt like there were assumptions about success that were built into the definition. I'm nervous about that. Maybe we have to just decide, do we as a group assume "success," or do we use words like "may" because we don't assume success?
 - Brian: Not to push away the possibility of ambiguity, but I think active tenses are better. If there's anything in here that makes blockchain seem like "magic pixie dust," that's what we want to avoid.
- Jason: I do think it's important to include cryptography in the definition (cryptographic signatures, for example). This current definition may be too broad. It also doesn't talk about how there's a conflict-resolution mechanism, something like including proof-of-work.
- Radhika: I think of definitions as drivers, and I think we need to include something about "Why this technology as opposed to others?" If we add something like "sharing information amongst distrusting parties" that would help with the "why"? Other important key words: open source, consensus & governance
- Freddie: I want to caution not to approve a definition today. Senator Hertzberg and Assemblyman Calderon would need to consult with legislative counsel. We've seen in the past with definitions like this, the LC makes us shorten the definition because there are many other words we'd have to define.
 - For example, the counsel might require us to define "cryptographically," or "mathematically."
- David: Process-wise, is there any issue with us consulting with legislative counsel now?
 - Nope, you can consult with them as long as it's one-on-one
- Audrey: I would add "consensus" and also either "mathematically" or "cryptographically" to the definition.
 - And instead of defining "cryptographically" within the definition, we could source it.
- Arshad: I actually didn't feel a need to use the word "cryptographically" or "mathematic."
 - I would remove the words "increased trust." There are too many technical variables for us to go into.
 - David and Brian: We actually added the word "increased" trust because of comments from the last meeting.
 - Would also say "*may* also include smart contracts" instead of "includes smart contracts"
 - Third paragraph: "Blockchain technology is essential for..." I would replace with "facilitates," because there are perhaps other technologies that also do this.
 - I wanted to add something about cost-effectiveness, but I will send further comments on that at a later time
 - In terms of context, Napster perhaps was not the first peer-to-peer network.
- Radhika:
 - The *why* of blockchain: Reiterating the fact that it's decentralized is really important. When we're talking about automating decentralized processes.
- Michael:

- One of the biggest concerns the Majority Leader shared with me is being too narrow and prescriptive with the definition.
- Brian: Distributed ledgers and smart contracts were the two essential components we wanted to add in
- Liz: Perhaps preface the smart contract piece with “Examples include smart contracts and payments.”
- Brian:
 - On “trust,” I propose adding a paragraph putting “trust” in greater context
 - On “decentralized,” it is in there
 - On “smart contracts,” I think it's actually an essential mechanical piece of how these systems work. It's not a use case.
- Orit: Can I make a suggestion that language for consideration and comments can be sent Brian and David ?
- Orit: We aren't going to vote on this today, but we'll refine the definition and get some feedback from the legislative counsel
- Liz: I'll send over some suggested language for “smart contracts”
- Liz: I think it could help the group to share other definitions that have tried and failed in the legislature
- Orit: As an action item, we'll take the next iteration of the definition to legislative counsel
- Meredith:
 - I'm wondering from a process standpoint, if each working group member can send over the top 3 things that we want changed in the definition
 - Some of my comments include adding citations where something is not common knowledge; perhaps re-phrasing things like “terrific job” when referring to Wikipedia; etc.

Public comments:

- We need to make sure we're not too narrow with the focus of the definition.
- “Decentralized” and “distributed” are two different terms and mean two different things. We should clarify this.
- The concept of trust is only as good as the information that goes in. If we put non-valid data into a blockchain, the information is still untrustworthy.
- I think it's important that the definition be accurate. There are very specific capabilities that blockchain systems have, and I'm hearing in some cases that these are being called into question. From a technical perspective, if you don't include these capabilities, you don't have a distributed ledger or a blockchain system. It's important to focus on the definition being accurate. I do have a lot of concerns that a definition that's easy to understand is not accurate.

Last word from Brian and David:

- David: Seems like we've gotten a lot of feedback. What we might come back with is this definition but with things in square brackets that are amendments. Otherwise, we're not

going to converge. We'll talk offline and see if that works. We'll also meet with the legislative counsel and some of the representatives.

- Brian: I accept that there's always something that will be missing in the definition. We just need to find a middle ground that may be imperfect but is not wildly wrong. I feel like we are pretty close with the definition though.
- Camille: Also important to note that this definition is for the purposes of the report and not for the legislation itself.

5) CONSIDERATIONS FOR APPROPRIATE APPLICATIONS

Ethics report: Michele & Radhika

Michele gives an overview of her report

- Michele: I've argued in my past work that we should use a top-down approach when it comes to the ethics of emerging technologies.
 - In terms of the types of ethical considerations, I divided them into three parts: equity, accessibility, sustainability.
 - Equity: Will this technology affect vulnerable populations before it affects other populations? Will this tech touch the unbanked differently than the banked populations?
 - Accessibility: Industry representation. As this industry is being developed, is our workforce balanced in terms of diversity?
 - Certification--I will bring this up in Arshad's presentation
 - Public education--This technology has a really high learning curve and people are intimidated because of that. We need public ed for it.
 - Sustainability--Radhika will talk more about this.
 - I just designed this ethical framework to provide something to consider as we move forward with the legislation.

Working group comments on Michelle's report

- Audrey: There is a difference between someone trying to build a new technology and failing, and someone who has explicitly malicious intentions
 - There are actual bad actors, and we should be aware of them. But then there are people who are trying to build good things and their technology happened to fail. We seem to conflate these two groups.
- Audrey: Is this ethical consideration report for government uses of blockchain, or should the private sector be held to these standards too?
 - Michele: Great question. I'm on the fence too about that.

Radhika gives an overview of her report

- There are privacy considerations we need to be aware of including data sovereignty and the right to be forgotten. We need to figure out if we want this report and legislation to

make bold implications on privacy like CCPA did. A lot of things about blockchain might also enhance privacy.

- Roadmap for environmental considerations is also important for California.

Reports on security/privacy/risk management: Jason Albert

Arshad and Jason give overviews of their papers

- Arshad:
 - A report was published this week by the law firm DLA Piper. They did a survey of the data breaches in violation of GDPR. DLA Piper's report indicates that in the 18 months since GDPR has been passed, there have been 160,000 violations of GDPR. That's because the law is very prescriptive for protecting privacy.
 - Essay in The Economist on privacy implications for low-income populations had three policy recommendations:
 - 1) The consumer consent model is irretrievably broken, and the onus needs to be on the data platforms
 - 2) Consumers should have full control over their data
 - 3) Privacy reps need to check algorithms for signs of bias

Digital Identity presentation: Jason Albert and Radhika

- Jason: Fundamentally, digital ID is one of the great potentials of blockchain. Digital ID can be self-sovereign and can be under my control. What I share is under my control.
- Radhika: What are the implications for California? That's the key question for the group.
 - Responsibility for ownership and control over data is the central conversation.

Working group comments on Jason and Radhika's report

- Jason: We don't want your healthcare records on the blockchain. We want them on your computer, and you use blockchain to transfer to insurance companies.
- Brian: Some things I didn't see in this report:
 - A stronger statement that PII (Personally Identifiable Information) should never be published in blockchain
 - We may want to include a bit about custodial services
 - It's an important question for CA if bad data is uploaded onto a blockchain system. What is the response to that? Must every node delete that entry?
- David:
 - In terms of my question of "no PII should ever be written to the blockchain"--we should think about that statement. I'm all in favor of a "be very thoughtful before doing this," but I'd be careful about a prohibition. That might force people to use a less-good technology to store the PII.
 - There were multiple references to chapter 10 of the Radhika's Enterprise Blockchain book--be sure to cite that
 - Are these recommendations in scope? We should look at them again.
- Jason: Should we reorient some of the working groups based on where we are now? For example, I'm not a security expert but I have written a lot on privacy.

- Orit: Sure, let's come back to that question later.
- Arshad: I've heard two very important things come up--trust and privacy--and both are related to security.
 - Most security convos will be pretty technical and will be a waste of time for most of others in the group
 - So I suggest having a security subgroup with all the technical experts on this panel, and that invites security experts from elsewhere
 - Anne: We should be sure that we're not falling into the problem of "mission creep."
- Michele:
 - In terms of the certification for blockchain developers, I am very concerned with things like access for lower-income folks. I would be more okay with it if we're talking specifically about certification for those working on blockchain *for the state specifically* (not for the private sector)
 - Arshad: Yes, I was also thinking of blockchain certification for the state too. Was not discussing the private sector.
 - I do want to solicit opinion on ethical strategies for regulation
- Sheila:
 - We are drafting a "Bill of Rights" type document for blockchain, and it's difficult. I think that it gets to the question of liability, which we haven't figured out yet.
- Michael McGee (Hertzberg's office): It'd be good to have input from industry on what types of regulations would be very problematic for the private sector
 - It would be helpful to get recs from the working group of useful regulations versus what would hurt the industry as a whole

Public comment:

- The group was created primarily to inform policy for the state. I just wanted to say that a lot of discussion has been about issues of privacy, identity, and security. The internet infrastructure really gave us a way to communicate online. But it didn't have privacy/security built in from the beginning, and that's been centralized in different places now. Given the frequency of cybercrime, these centralized networks seemed to have failed. My suggestion is to focus on decentralized aspects of blockchain.

Decision-making approach presentation, Sheila Warren

- Sheila: Would a decision-making framework like what's been done with the World Economic Forum be helpful for determining what are good use cases for government? (See handout for example of the infographic she refers to.)
 - *Many in the group says yes*
- David: The one bad thing is that the WEF framework can no longer withstand the test of time. It's old and outdated. So it'll be hard to come up with something that will be durable, but important to do that.
- Radhika: I worry that a decision-tree like this is very prescriptive and people will look at it as absolute. I worry about edge cases.

- I would rather ask an array of questions and have multiple starting points
- Liz: The most valuable thing of this type of decision-tree is “when is this technology even appropriate to be considered?”
- Brian: I do think a decision tree like this is very valid fundamentally
- Anne Neville-Bonnilla: This is super helpful in the government context
- Meredith: I like that this is user-focused.
- Sheila: In terms of process, this should be one of the last things we finalize. We need the definition first, and we need to figure out what the guide is oriented around. In the interim, it would be great for people to send comments on this framework.
- Sheila: It seems as though folks agree that a simplifying document like this, whether it’s a decision tree or some other toolkit, would be helpful.

Public comment:

- I worry about this type of a prescriptive approach and decision-tree. It simplifies and dumbs down things to a level that’s not helpful. There’s tremendous potential of blockchain for all uses.

Justice and Civic Participation: Michele and Kai

- Kai: In the voting context, there seems to be a turnout-security tradeoff with internet and blockchain-based voting. It’s a set of tradeoffs that are familiar to people who work in voting. Our goal was to write things that the group would get behind rather than talk about our personal opinions. Right now, there are good, but not great, internet blockchain and non-blockchain-based internet voting systems. And right now, it seems like paper voting is still better than all those options.
 - Where we ended up: Internet voting is not ready for scale but it’s worth trying in some places because the turnout advantage may be very real.
- Michele: Should California be a place where we do a small pilot of Internet-based voting? Or do we let Seattle make the mistakes and learn from that? We’re not sure.

Working group comments:

- Brian: This is not the internet voting working group. We shouldn’t make a case for or against that in our report. We’re verging too much on that. We shouldn’t do pilots of internet voting.
 - There are three main components to voting: Registration; casting of ballots; and reporting. I do think there’s a case for blockchain tech for the reporting of precincts and for registration. I agree that actual ballot casting should be paper.
 - There is much more to voter and constituent engagement than casting a ballot. There’s public comments to legislation; collecting signatures for a ballot prop; etc. for which we could explore blockchain uses.
 - This report had a focus on voting but there’s other civic engagement use cases.
- Radhika:
 - In cases of voter suppression and gerrymandering, blockchain could be useful.
 - How do we make sure this is an inclusive system that doesn’t leave anyone out?

- Sheila:
 - There is a distinction between the person and the count when you're thinking of blockchain uses for voting. When it comes to straight up counts of votes, there is a use for blockchain.
 - As a broader question of internet voting, I agree that's not our decision to make.

Public comments:

- The universal agreement in the cybersecurity community is that there is no way to secure an online election system. Not now, and not in the foreseeable future. The reasons are rooted in fundamental issues of computer science and the internet. This is not going to change. That includes blockchains. Blockchains do not change this fact at all. We should abandon the idea of using blockchain for online voting. Online voting is much too dangerous of a technology, given the stakes (democracy).
 - Online voting systems have been piloted many times, including in the US. The way pilots go is that they don't give you real info about security. Attackers won't attack until a real election.
 - Achieving security on a small-scale is also not the same as achieving security at a large-scale.
 - Liz: I would like to challenge that doomsday scenario of voting a bit.
- Orit: Michele and Kai--do you feel like you have a clear idea for next steps?
 - Kai: In the report should we say: (1) Blockchain is preferable to other internet voting apps?; (2) We should never use internet voting ever?; (3) We shouldn't even mention internet voting?
 - Ben Bartlett: There is an argument to be made using blockchain for collecting petition signatures. Currently, gathering petitions for a ballot measure is VERY expensive. Some good work can be done there.

Vital Records: Senator Hertzberg and David Tennenhouse

- Senator Hertzberg's office: Vital records is a great first step to using blockchain for state operations. Specifically, marriage certificates are a good test case, and other states have done this successfully. We still need to do more research for birth and death certificates.
 - Digital identity is an ongoing thread
- Brian: Government is an issuer of credentials. But to which blockchains? A public one? The ones the industry is setting up? That'll change over time too. Should there be some guidance on how govt makes that decision, and whether they should build their own?
 - Senator Hertzberg's Office: We were going to start with private, but were hoping to get more guidance after today's meeting
- Meredith: The section on "blockchain for local government" has sections (like access) that could be overarching for the entire report
- Radhika: Proving who you are to receive services from the government is the big issue.

Finance, Payments & Commercial Business:

- Ben: Benefits are too important for people to gamble with (food stamps, housing vouchers). Two departments have identified two areas for pilots. Michele has communicated with Cheaney from California Health and Human Services and will follow-up on which departments are willing to do a pilot. Michele will work on getting this information by the next sub-committee meeting.
- Michele: Focus on small benefits that won't make or break someone's day-to-day requirements.
- Liz: Work on identifying a problem statement and agreeing on a potential solution.
 - Possibility of not having to file a CA Tax return. In 5-10 years, we can have State of California employees not having to file a claim. It can be a much simpler process.
 - Cannabis taxes: Current protocol requires driving truckloads of cash to Sacramento, which is inefficient and dangerous. How can blockchain address that pain point? Banking is currently prohibited with cannabis (federally prohibited).
 - Potential of using a CalCoin to pay cannabis taxes.
- Ben: What role does CA play in the remittances market?
 - CA last year sent \$6 billion in remittances to Mexico and people paid 6-8% in fees. CA may have an interest in alleviating this burden for its residents. Ben will reach out to DBO
 - Possibility of having a public bank in CA. Public banks could be used to aid remittances for CA residents.
- Permits and license: Michele - Still investigating a good pilot for licenses.
- Banking: Audrey - address cannabis, municipal bonds and public banks.
 - Audrey: Question: Should banking be part of the regulatory committee?

Utilities, Natural Resources: Anne and Amy

- Need to answer: Why blockchain and not other technologies?
- Blockchain technology is largely being used internally within companies and municipal utilities. Vast amount of work is in energy.
- If you want to use blockchain internally to make your process efficient, you can do that now. It's when it hits the consumer side or reporting the regulatory side where you might have challenges.
 - Michele question: What role does PG&E have in this? Answer: Still exploring
 - Any role for the CPUC to play with blockchain? Answer: If we want to make a recommendation around a regulatory sandbox, it would be up to the CPUC to investigate.
- Potential application in water: There may be some potential with the Delta, will need to call some experts from other states on water.

Education and Workforce: Meredith and Jason

- Potential Use Case: Community college students trying to transfer to other colleges. Transcripts can be sent via blockchain technology rather than sending hard copies via mail.
 - Idea of modernizing college applications
- Potential Use Case: Useful for foster youth who move school districts frequently.
 - Michele: Having records on a blockchain is helpful for foster youth transferring from one foster care to the next.
- Blockchain can be tied to the future of work
- Interoperability, ownership from workers perspective - public engagement
- Opportunities: reduce friction in paper-centric process; value added with blockchain; skill focused; changing workforce require new skills and need to track that with changing jobs.
 - Berkeley and MIT are working on this - Camille will connect with them
- Blockchain credential and role in the workforce - skills development for coding - need to work on this.

Property: Audrey and Kai

- Property issues are complicated - water, air, title authentication, etc.
- California did Torrens in the past but it hasn't prevented inaccurate data.
 - There are also issues of fraud with Torrens system
- Assessment: Blockchain wouldn't be helpful, it doesn't prevent document fraud.
- Kai example: If you use a digital wallet that has a key for your house, what if someone steals it and how can you get your house back? The new owner can now sell your house and the purchaser won't even realize they are purchasing a stolen home. What can you do about this? What can you do about fraudulent data?
 - Recommendation not do adopt the Torrens system
- Ongoing discussion: Should the record be electronic or paper? If you are a title insurer, enabling people to search digitally is really helpful. A digital system can help the user find everything about the property.
- David: Consumers in CA are paying over and over for the same thing. A system where title insurance can be transferable and reusable would be beneficial.
 - Arshad: Additional applications where titles can be tracked; DMV car titles, solar panels, registering all new developments with the state on blockchain
- There is minimal interest for a Torrens system, but support for some sort of blockchain system that will make things cheaper and more available to the public. Should the state create this? Or the legislature?

Public comment: Jordan Woods suggested that the working group look into [Chromaway](#)

- Potential use case: New home additions (Additional Dwelling Units, ADU)? Or new construction?

Future Agenda Items & Next Steps

- Breaking up Supply Chain into firearms, pharma, and food and ag
 - Pharma: Radhika and Assemblymember Calderon
 - Food and Ag: Brian and Radhika
 - Firearms: Sheila and Anne
- Voted for the Regulatory Subcommittee: Senator Hertzberg, Assemblymember Calderon, Liz, Anne, David, Ben Bartlett
- Security, ethics and privacy:
 - Arshad and David on Security and Risk Management (highlight differences and commonalities)
 - Michele and Sheila - Ethical considerations
 - Privacy and Digital ID: Radhika and Jason
- Finish the remaining member reports from February's BWG meeting