



CDS (Clinical Decision Support) Connect Work Group

Meeting Summary

November 19, 2020

3:00 – 4:00 pm ET

Attendees: 51 people (48 attendees + 3 call-ins)

Organization	Attendee Names
AHRQ Members	Steve Bernstein, Roland Gamache, Ed Lomotan, Mario Terán (4)
Work Group (WG) Members	Yvette Apura, Noam Arzt, Randolph Barrows, Zeynep Behjet, Barry Blumenfeld, Chandra Bondugula, Edna Boone, Joe Bormel, Richard David Boyce, Chris d'Autremont, Dave Carlson, Lax Chepuri, Melanie Combs-Dye, Rina Dhopeswarkar, Jorge Ferrer, Nitu Kashyap, Narsimha Koppula, Wayne Kubick, Preston Lee, Dan Malone, Freij Maysoun, Maria Micheals, Ryan Mullins, Neeraj Ojha, Jerry Osheroff, Pavan (MBG Group), Bryn Rhodes, Joshua Richardson, Rebecca Rivera, Andrey Soares, Rhonda Schwartz, Danny van Leeuwen, VHALANWEDEML, George Wilson, Michael Wittie, Sandra Zelman Lewis (22) Call-ins (3)
MITRE CDS Connect Members	Noranda Brown, Matt Coarr, Susan Haas, Lacy Fabian, Michelle Lenox, Dylan Mahalingam, Chris Moesel, David Winters (8)

MEETING OBJECTIVES

- Share lessons learned for use of CDS Connect
- Share new features and resources available for CDS Connect
- Discuss topics of interest to members relating to opportunities for CDS Connect

ACTION ITEMS

- WG members are invited to share CDS-related blockchain use cases with Neeraj Ojha
- MITRE to pass Mr. Ojha contact information on to WG members interested in CPG-on-FHIR discussion
- MITRE to follow up with WG members on decision about December meeting
- Consider new metadata item on artifact: License information for a given resource (BR suggestion)



MEETING SUMMARY

Following roll call and review of agenda, WG member Neeraj Ohja (EunoChains) shared a presentation on blockchain technology, followed by a discussion of blockchain's potential role within clinical decision support development and governance.

Building an Accelerated and Participatory CDS using Blockchain Technologies (EunoChains)

Mr. Ohja provided a brief introduction to blockchain technology and its potential role in recording provenance for CDS artifacts. He shared lessons learned in applying the EunoChains “discovery, design, and prototype” cycle to the application of blockchain technology in the CDS Connect domain. After describing the blockchain value proposition (i.e., accountability and trust in artifact is established by digitally enforcing smart contracts within a peer-to-peer broadcast channel), Mr. Ohja invited the WG members to an open discussion on the findings, and to offer their own thoughts on the CDS Connect use cases.

Discussion

WG member asked Mr. Ohja about protecting any intellectual property surrounding the proposed workflow of CDS Connect use case—specifically if there had been consideration of “copyleft” provisions of the open-source software. MITRE clarified that the Authoring Tool (AT) and Java execution engine both use an Apache 2.0 license. The MITRE team continues to refactor the AT to allow components to be used on their own, and that publishing to Node Package Manager (NPM) is a future consideration.

On request, a more detailed explanation of the blockchain technology was provided to clarify the difference between its framework and the current centralized architecture used by the CDS Connect repository. Blockchain can provide a trusted, distributed framework—the critical foundation of any high-security network. The technology creates peer-to-peer networks through which transactions are broadcast to all peers. Peers validate each potential transaction independently against the agreed-upon smart contract; through consensus, peers decide if the proposed transaction should be applied. If consensus is reached, then the transaction is committed to all the peer's local ledgers, and the change is broadcast across the network. Smart contracts can be updated over time, which can allow a larger and evolving set of requirements to be enforced digitally as the repository grows.

A WG member asked about the overall security of the technology: If someone was able to use half of the audit log, how would control and security of the community of peer nodes be maintained? Mr. Ohja explained that, between hyperledgers and the separation of channels across users, there are measures and countermeasures in place to combat this. Additionally, an individual artifact itself could reveal details on the CDS review process, such as confidence in reviewers, timing of reviews, and information that impacts clinical significance and trust. If specific information should not be made public, then blockchain functionality could allow *validation* of that review process information while limiting its *visibility*.

A WG member asked what the benefit of using blockchain for the metadata might be. Mr. Ohja described the CDS Connect current governance scenario, where trust is put in a single curator and it is assumed that said curator is enforcing all policies and procedures. Users have trust by knowing they are going to the correct website, as specified by the correct URL in the public space. On the other hand, blockchain— by capturing policies and procedures in smart contracts—would allow trust to be established outside of a curator or CDS curation. Smart contracts can offer “guide rails” for different levels of involvement in the use of CDS and CDS curation. Mr. Ohja invited the WG members to help identify some of these new “out of the box” use cases.



CDS Connect

A WG member offered that this technology appears to allow a CDS team to see the use and propagation of their artifact based on the ledgers. Mr. Ohja agreed that tracking this information linearly is an advantage over the current repository framework (which tracks point-to-point use). Another WG member agreed that groups developing Clinical Practice Guidelines on Fast Healthcare Interoperability Resource (CPG-on-FHIR®) might have interest in a blockchain discussion, given the importance of provenance of creation and derivation of artifacts. Currently, provenance resource is a related document or reference. WG member expressed interest in whether blockchain had some potential value to work out transactions of use cases around digital signatures on bundles and authorizations to distribute. Mr. Ohja agreed that it could help with tracking forward and feedback loops in an integrated manner, recording all the data in an intervention and passing it back to the author. Although lineage is a good idea, it is not enforced in the Draft Standards for Trail Use 2 (DSTU2) form of FHIR®.

Another WG member observed that many in the healthcare space (e.g., insurance companies, payors, IBM Watson Health, trusted care networks, physician credentialing systems) are frenetically exploring blockchain use cases. He also noted how learning health systems—federated systems dependent on sharing data and data access in an agreed and controlled way—shares similarities with a blockchain peer-to-peer network governed by smart contracts.

What's New with CDS Connect

The MITRE Team discussed updates and features that have recently been implemented or are in progress. The AAT has deployed the CPG-on-FHIR® Library export functionality. The Repository team continues the CPG-on-FHIR® work and has started user testing early.

Announcements / Other Questions

Members were asked about their preference for a December 17 meeting. Less than a quarter of attendees indicated being available to meet on that day. A final decision on December meeting will be shared with members via email.

Closing