



BLOCKCHAIN PRACTICES

#BLING #UseCase #blockchain



Using Self-Sovereign Identity to Record Event Attendance

*BlockchainLab
Drenthe*



Self Sovereign Attendance

At many conferences, events and classes, attendees are required to sign in via some form of attendance list. They often end up putting their name and signature on a public list, which many people can see or access. These attendance lists usually have two functions - for the host organization to see who attended, and for attendees to prove that they were present. However, the typical registration sheet - usually a paper list open for everybody to see, is outdated and is often not GDPR compliant, as anybody with access to the list can copy the information on it. If an attendee had to prove their presence, they would usually have to contact the host organization and hope they had kept the list(s).

If any of the organizations involved had an incentive to manipulate the attendance numbers, a paper attendee list is very susceptible to fraud. Blockchain technology can offer a solution to this problem with the development of the Self Sovereign Attendance App. With this app, based on IOTA, people can check in on a decentralized blockchain, which is immutable, transparent and cryptographically protected, so that only the authorized parties can access and see attendee data. This app gives complete control of the personal data to the attendee, while ensuring that the host organization

can prove its attendance numbers in a safe and GDPR compliant manner.

Why use Blockchain?

BlockchainLab Drenthe uses three ground rules in order to determine if a problem could be solved using Blockchain and/or Distributed Ledger technology.

1. Multiple organisations/parties must be working with each other.

Many events have multiple additional stakeholders in addition to the organizers and attendees. Organizations that provide subsidies or grants to host an event for example. Many organizations pay their employees or members to attend certain

FOLLOW US



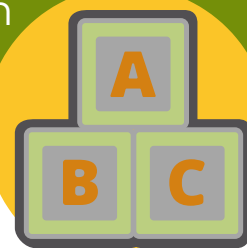
Interreg
North Sea Region
BLING
European Regional Development Fund





BLOCKCHAIN PRACTICES

#BLING #AttendancyApplication



kinds of events. Plus, for many professions it is mandatory to attend a certain number of conferences or courses in order to be eligible for a professional license/certification/membership.

2. These parties can't fully trust each other.

At many big organizations/associations/ events, it is impossible to know everybody, and this is invariably the case with international organizations. Exchanging data about attendees can be problematic, since event

There can be several incentives for a party to manipulate attendance figures. An event organization can inflate the numbers in order to collect more money from sponsors or grants. An attendee can falsely claim they were present to get a compensation or gain permanent education points for their profession. Also, an ill-willed attendee can steal information from the attendance lists, since it's open for everyone to access.

You can see that the problem we've identified meets all three criteria.

The only way to make sure all parties can access the information they need for their particular situation, but won't be able to alter, misrepresent, or misuse the data, is to set up a system where the data is immutable – i.e. it can't be changed - and all involved are only able to access the information on a "need to know" basis. These requirements match the properties of blockchain, as it is decentralized, immutable, transparent and cryptographically protected.

Self-Sovereign Attendance at work

Self-Sovereign Attendance is the solution to these problems! In BlockchainLab's pilot, the user/attendee is the owner of their attendance credentials and any associated personal information. As their identity is 'self-sovereign' the user is able to create and manage their own identification credentials, without requiring support from other organisations or third parties. The event organizer can create an event, where they give the attendee the possibility to "check in" to the event through a QR-code or Bluetooth-signal on their phone. The event/check-in data is encrypted and stored on the blockchain. This solution means:



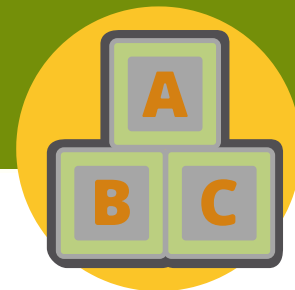
organizers may not know client organizations very well and vice versa. Parties also can't be sure what other organisations will do with the data that has been collected.

3. There may be an incentive for one party to "cheat" (i.e. one party can gain some form of advantage – perhaps by claiming they had attended an event when they did not actually attend it).



BLOCKCHAIN PRACTICES

#SelfSovereignAttendance



- Only the event organizer knows how many attendees checked into the event: and they can choose to share this information.
- The attendee has control over the proof that they attended a particular event: and they can choose to share this information without asking the organiser.

This solution provides the user (in this case the event attendee) many ways in which they can control the use of their personal information:

- The user collects their own data (the event host facilitates this by creating the event record which the user can attach their data to)
- Their data is stored in a decentralized ledger that uses a combination of encrypted data and offline-storage, so the information is safe
- The user can access their information 24/7

- The user can choose to share this information with other organisations in a safe and verifiable way, with or without sharing their personal information
- The user can choose to “forget” all events connected to an account by deleting the information.

Building the proof of concept

For this proof of concept, BlockchainLab stored an event on a Blockchain (they used IOTA's 'Tangle' distributed ledger) and at a BLING-meeting, they gave participants 2 QR-codes: one which loaded the proof-of-concept app on their phone, and one with the link to the event. Attendees were able to use their smartphones to register their attendance on the Tangle. BlockchainLab was able to see how many people registered: their next step will be developing the app.

Because this approach uses QR-codes, this registration method can be used for online events. When event organisers use Bluetooth to broadcast the event key, they will have a way to register a large number of people at the same time – if they are within 10-15 meters of the beacon.

After the event, the organiser will be able to attach extra information to the event (slides, presentations, documents) which the attendees can retrieve anonymously - since the organiser does not have their personal information and can't link attendees and downloads.

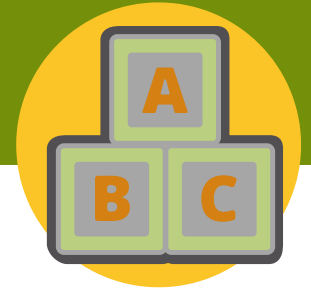
The attendee will have a wallet on their phone with details of all the events they attended, and the organiser will have a wallet on the blockchain, with information about the events they organised – without holding any personal information from the attendees. This approach also ensures GDPR compliance, as no personal information is stored on the blockchain.





BLOCKCHAIN PRACTICES

#BLING #UseCase



Pilot next steps

The proof of concept was successful, and BlockchainLab is continuing to develop the pilot - they are now building prototypes for the production app. With this solution they have shown how a blockchain-enabled solution can improve the safety, trust and fairness for different groups of users and organisations. The basic idea - of giving a user fine grained control of how they share information with different organisations - isn't limited to just managing attendance at an event. With some imagination, you can use the 'Self Sovereign Attendance' approach for a wide range of uses:

- Many professionals - medical specialists, physiotherapists, accountants, etc. need to prove they have undertaken continuous professional development or personal education activities to keep their professional registration. This app could provide the proof they need that they attended conferences, courses, meetings, etc.
- Students who need to prove they attended lectures, visited companies, etc.

This promises a lot more applications that use this concept in the future, and the BlockchainLab Drenthe will most certainly continue to explore them.

