HRISchain Executive summary

HRISchain is a decentralized blockchain platform that brings the contributors involved in new hire on-boarding together under a unified Ethereum smart contract. This unification will allow for a faster and more transparent dataflow and create a better hiring experience for both candidates and employers.

By building HRISchain on the Ethereum blockchain, HRISchain will be able to initialize each step of the hiring process via auto-activated smart contracts. Each time a contributor completes their required actions in the process, a smart contract will be initiated to start the next step and continue until the candidate's profile is successfully built. This process will allow for accurate data verification and ensure integrity from each contributor. When each contributor has completed their responsibilities, each candidate will have a true distributed and immutable profile to present to recruiters and employers.

The marketplace will benefit by having ready to hire candidates with bon-a-fide skillsets and salary requirements verified on their profiles. To have this type of "ready-made" candidate who can in-essence start immediately/within a true two weeks' notice will be a game changer for the employment industry.

Problem statement

There are multiple problems in today's candidate marketplace. First, the sheer number of outdated resumes on the internet and within employer databases. Second, the number of inaccurate and/or false resumes that employers and recruiters encounter. Third, the lack of current contact information to reach candidates to see if they are in-fact seeking a career or job opportunity. Finally, the ability to get candidates to market faster than the competition is never ending process.

These problems can be solved and/or reduced by using the blockchain to build accurate and complete data about candidates without continuously needing to hire intermediaries to verify information about the candidates.

Outline of vision

Employers, recruiters and candidates interested in using a cutting-edge technology platform to find candidates and employment opportunities can simply sign up on the website by creating a user profile. Employers and recruiters will pay an annual membership fee based on the amount of HRIScoins they would like to hold in their wallet. Candidates will be able to sign up for free and they'll receive some free HRIScoins to get started. Additionally, candidates will have free access to curated career, resume, and employment related materials.

Once a candidate's profile has been successfully completed and verified by a Trust Partner who manages certain aspects of smart contracts written on the Ethereum blockchain, the candidate can submit their profile as their resume/application for hire to available opportunities posted by Employers and Recruiters. These opportunities will be Employer and Recruiter specific and the artificial intelligence built into the platform will match candidates to the specific qualifications as specified by Employers and Recruiters. Employers and Recruiters can search for verified candidates to contact for availability and they will have the confidence to hire available candidates immediately without the need to verify the candidates resume, specific skillsets or background further. HRISchain allows conditional access to each necessary agent such as background screening, employment verification, drug screening and recruiting providers only when necessary to verify a candidate's data. We create a true and immutable profile of the candidate for matching to an employer's job requirement.

I believe HRISchain will have a profound impact on the employment industries existing processes. The ability to bring each contributor under a unified platform will allow for greater partnerships to be made. And all contributors will be rewarded for milestones they complete to help candidates stay on top of their credentials and ensure they are ready for new and better opportunities when they come their way.

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Blockchain technology solution

Below you will find as concise a blockchain solution as I can develop with my current knowledge and understanding of the industry. I define my four choices of entrepreneurial strategy, my digital ecosystem and token distribution methodology, and attempt to solve the last mile problem.

The four choices for entrepreneurial strategy:

1. CUSTOMERS

For this blockchain the "customers" are also providers of data and users of the blockchain.

- **An Employer of Record** such as Massachusetts Institute of Technology www.mit.edu

- **Employee Providers** such as United Recruiters www.unitedrecruiters.com

- **Background Screening and Providers** such as HireRight www.hireright.com

- **Drug Screening Providers** such as LabCorp www.labcorp.com

- **Local, State and Federal governments** such as USA www.usa.gov/

- **Trust Service Provider** such as DocuSign www.docusign.com

- **Candidates** seeking a new opportunity such as Whit Gallimore

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2. TECHNOLOGY

Utilize DocuSign's System of Agreement Platform to unite each customer under a simplified contract https://www.docusign.com/products/system-of-agreement that would ensure accurate candidate data is captured for entry onto the blockchain.

Utilize DocuSign's blockchain technology solutions https://www.docusign.com/products/blockchain to automatically write the agreements to Ethereum and create executable smart contracts that would initiate each specific step of the hiring process https://www.blockchaintechnologies.com/smart-contracts/. Write the data on either a private blockchain or a consortium blockchain depending on the needs of the Employer of Record. https://blog.ethereum.org/2015/08/07/on-public-and-private-blockchains/

For consensus, use Practical Byzantine Fault Tolerance Algorithm (PBFT) https://blockonomi.com/practical-byzantine-fault-tolerance/. For network reliability, use a Fixed Mesh Network https://computer.howstuffworks.com/how-wireless-mesh-networks-work.htm

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3. IDENTITY

The identity of this blockchain initiative is the creation of a new solution within the digital trust economy for automating the hiring process of W2 employees and 1099 workers. This initiative would accelerate the hiring process by incorporating smart contracts on the Ethereum blockchain to execute each step of the hiring process. A trust partner, DocuSign, ensures the execution and the integrity of the process by monitoring the smart contracts for data integrity. This solution aims to have a critical impact on the marketplace and bring much needed advancement to how human resources are on-boarded and their skills verified.

4. COMPETITION

This blockchain's competition is the current status quo and the current processes involved in hiring new W2 employees and 1099 workers and there are thousands of employers and employee data verifying companies in the marketplace.

Examples of real-world competitors that my business could compete with if done smartly:

- **Indeed** (https://indeed.com)

- **Monster** (https://monster.com)

- **CareerBuilder** (https://careerbuilder.com)

Digital ecosystem and token distribution:

HRISchain's platform will be powered by tokens called Human Resource Information System Coins or HRIScoins. We will create 100 million HRIScoins and users will be able to purchase HRIScoins in USD, ETH, BTC, LTC. From time-to-time, the company will offer air drop campaigns to the community and to incentivize new users. Once a viable community has been built around the platform, we will seek listing on major exchanges around the Globe.

To receive HRIScoins, Employers, recruiters and candidates will sign up on the website and create a user profile. Employers and recruiters will pay a minimum monthly membership fee and they can purchase more HRIScoins if they would like to hold more in their wallet for trading and interacting with Recruiters and Candidates. Candidates will be able to sign up for free and they'll receive HRIScoins to start interacting with Employers and Recruiters. They'll have a future minimum purchase amount and they'll be able to share/give tokens to friends if they like.

When Candidates, Employers and Recruiters want to communicate with each other they will have to send HRIScoins to the responding user's wallet. Once a reply has been confirmed on the blockchain the engagement and hiring process can start immediately.

The last mile:

Issues that could arise in the last mile would be that a candidate is entertaining multiple offers and suddenly exits the marketplace. Additionally, having "ready-made" candidates available at all times for particular industries or specialized jobs has always been a challenge and ensuring candidates are providing accurate and up-to-date data about themselves has slowed the hiring process down tremendously.

HRISchain will partner with the necessary organizations to ensure that candidates who mark their profiles as available for hire are always ready to start immediately. HRISchain will remain in constant contact with candidates by sending automated prompts to profiles that have been dormant or need to be updated. For example, this will include the prompting of candidates to take a new drug screen that would be considered "good" for a certain number of days or sending notifications to remind candidates to make any new updates to their profile such as a new address or a new certification and once they do, they'll be rewarded with a few more HRIScoins. This type of blockchain interaction will create an economy of scale for employers who can successfully navigate the blockchain and source the best "ready-made" candidates for their openings.

Special considerations/concluding remarks:

This blockchain endeavor is an ambitious one, I'll admit that first off. I'm also not sure if using Ethereum is the best blockchain for this solution…I've read that Aelf is potentially better for this type of solution. Also, can I really get all of the necessary contributors to come together and work to build a better hiring system for each of them? Seems daunting! I really don't know and that concerns me; I'm still learning about different blockchains and my idea could be a completely amateurish one, as well. With these things said, I wanted to put it out there and see what you all at MIT thought.

Important Notes from the original assignments that lead to the execute summary……

HRISchain utilizing HRIScoin blockchain solution assignment for MIT Certification

For this assignment, you are required to choose a blockchain initiative that interests you. It could be an existing application that you have come across in your own research, one of the examples listed above, or an idea that you may have for blockchain technology as a solution to a business problem.

Think about your chosen example in terms of the four specific choices that start-ups face once an entrepreneurial idea has been generated, as outlined in Professor Stern's framework:

- Who are the customers?

- What technology is used?

- What is the initiative's identity?

- Who is the competition?

- How do these four choices impact the initiative?

Start writing here:

- Who are the customers?

For this blockchain the "customers" are also providers of data and users of the blockchain. I believe the impact could be immense for each customer because they would each be able to provide their specific data to an immutable ledger and be able to access this data repeatedly in the future with speed and integrity. Customers:

- **An Employer of Record** such as Massachusetts Institute of Technology www.mit.edu

- **Employee Providers** such as United Recruiters www.unitedrecruiters.com

- **Background Screening Providers** such as HireRight www.hireright.com

- **Drug Screening Providers** such as LabCorp www.labcorp.com

- **Local, State and Federal governments** such as USA www.usa.gov/

- **Trust Service Provider** such as DocuSign www.docusign.com

  - What technology is used?

The technology used in this initiative would include any of the above customer's in-house systems they already use for evaluating candidates for new positions and/or for providing data on candidates.

I would utilize DocuSign's System of Agreement Platform to unite each customer under a simplified contract vehicle https://www.docusign.com/products/system-of-agreement that would ensure accurate candidate data is captured for entry onto the blockchain. This agreement would detail each customer's specific duties and functions related to the information they provide about each candidate and include their confidentiality responsibilities. DocuSign is a member of the Ethereum Enterprise Alliance https://entethalliance.org/ so I believe they would make a great trust partner to ensure the right smart contracts are executed at the right time and integrity is maintained during the process.

I would then use DocuSign's incorporated blockchain technology solutions https://www.docusign.com/products/blockchain to automatically write the agreements to Ethereum and create executable smart contracts that would initiate each specific step of the hiring process https://www.blockchaintechnologies.com/smart-contracts/. The data would be written on either a private blockchain or a consortium blockchain depending on the needs of the Employer of Record. https://blog.ethereum.org/2015/08/07/on-public-and-private-blockchains/

For consensus I would recommend using Practical Byzantine Fault Tolerance Algorithm (PBFT) https://blockonomi.com/practical-byzantine-fault-tolerance/. For network reliability I would recommend a Fixed Mesh Network https://computer.howstuffworks.com/how-wireless-mesh-networks-work.htm

The customers would perform their specific duties when notified by the smart contract. When their required activities are complete, the data gathered would be written to the blockchain and continued until the hiring decision has been made by the Employer of Record. Once all new hire steps are completed, an Ethereum smart contract would release

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the completed employee file to the Employer of Record for storage on their in-house employee filing system. The completed employee file and all actions related to producing the new hire file will remain immutable and be contained on a distributed ledger and verified by the authorized nodes.

- Who is the competition?

This blockchain's competition is the current status quo and the processes involved in hiring new W2 employees and 1099 workers. Currently, I'm not aware of any single company providing this solution. That being said, DocuSign might be doing this process with a few businesses or have plans to do so and Adobe is quite experienced in the digital trust economy https://theblog.adobe.com/blockchain-and-the-digital-trust-economy/ and they could have something in the works, as well.

- How do these four choices impact the initiative?

If you look at the way the hiring process has evolved over the years and the sheer number of organizations in the hiring industry, it is only a matter of time until an organization capitalizes on a completely automated method. I think it could one day happen via smart contracts on the Ethereum blockchain.

If you look at companies like DocuSign that provide e-Signature solutions and the relationship they've built with Microsoft https://www.docusign.com/solutions/microsoft for Cloud based document storage, you'll see that they are on the right path.

The next step on the path is writing it to the blockchain and people are trying to figure this process out. https://channels.theinnovationenterprise.com/articles/how-blockchain-is-revolutionizing-the-hiring-process

Start writing here:

This is my attempt to go further in-depth with my blockchain initiative:

- What are the current settlement and reconciliation processes involved in the transaction?

  - **The Employer of Record** receives the physical W2 Employee or 1099 Worker on their Start Date and then creates an Employee File via paper or in an HRIS file depending on the Employer's technological capabilities. The settlement and reconciliation data for the Employee files come from the interviews of the Employee when they are still in the candidate phase, the legal documents they provide once they become and actual Employee, Employee Providers/Recruiters, Background Screening Providers and Drug Screening Providers.

  - **Employee Providers** implement their individual recruiting/headhunting methodologies. Examples include searching internal databases, external subscription databases, social media searches, and traditional advertising platforms such as websites, newspapers and industry periodicals. The settlement and reconciliation data created by Employee Providers include the verification of a candidate's resume, skillset, CV, references and availability to start. Once these tasks have been performed and the data collected, the candidate is presented to the Employer of Record

  - **Background Screening Providers** utilize external databases to verify a candidate's employment history as well as Local, County, State, and Federal driving records and criminal records. This data is settled and reconciled by the Background Screening Provider once the information has been received from the appropriate institution listed above. The information is then sent to the Employer of Record for the Employee file.

  - **Drug Screening Providers** take samples of the candidate's urine, blood, hair, or nails depending upon the needs of the Employer of Record. The data is settled and reconciled by the Drug Screening Provider once the sample has been received from the Lab. The information is then sent to the Employer of Record for the Employee file.

  - **Local, State and Federal governments** receive information on people who become potential candidates of an Employer from police and sheriff departments located within Cities, Counties, States and the Country

as a whole. The data is settled and reconciled within the internal databases of these institutions. This information is then sent to Background Screening Providers upon request.

- How could the use of blockchain technology impact the cost of verification of the transaction and its attributes?

  - The settlement and reconciliation processes for each entity listed above come with an entire host of fees. These include pay to humans for their work hours and benefits, network costs, power costs, hardware & software costs, transfer fees, data storage fees, recruiting fees, background screening fees, drug screening fees, government records access fees, etc.

  - Stream-lining the verification and hiring process of new Employees via blockchain technology will eliminate back office processes and middle-men by the score. By creating an immutable record that each entity listed above has access to and plays a part in building would create a virtually costless database. Granted, this would take a massive amount of time, patience, cooperation and understanding to complete for every candidate in the USA. Additionally, the initial architecture and data recording would be expensive but that cost relative to the long-term cost savings would be immense. I think ultimately, the ability to obtain future records about a potential candidate who's being considered for employment or contract opportunities via blockchain technology would be priceless.

- Identify evidence of the last mile problem in the transaction and suggest a potential solution, including suitable complements that may help.

  - By creating an immutable record that each entity listed above has access to and plays a part in building, the last mile problem will be greatly reduced. I would say evidence of the last mile problem "pops-up" from each data provider of candidate information along the way.

    o Do the Local, State, & Federal governments have the most update records on the candidate?

    o Are the Background Screening Providers able to access this information, verify it accurately with the governments and send it quickly enough to the requestor?

    o Does the Drug Screening Provider have a sophisticated and timely method of verifying whether-or-not a drug screen is positive or negative? How quickly are they able to provide the results to the requestor?

    o Is the Employee Provider reliable in verifying the candidate's credentials? How quickly can they do this and provide the information to the Employer of Record?

    Solution:

    As you can see there are several instances where the delivery of information can be delayed in the process and create bottlenecks in the delivery process. The customers of this blockchain are other businesses and that's where having a blockchain based application for each data provider and user to access whenever needed will solve the last mile problem(s). This would be a value-chain enhancing solution that would reduce the amount friction in the hiring process and it would definitely be a permissioned blockchain executed by Ethereum Smart Contracts as laid-out in my initial assignment. To expand on that point, remember, including an experienced digital trust partner like DocuSign www.docusign.com to help lay the foundation comes into play. DocuSign would help with beta testing and help determine how to formally settle and reconcile the necessary data that's being added to the blockchain and identify potential bad-actors entering false data to the blockchain. Additionally, they would verify speed of delivery and provide audit requests on an "as needed" basis. As time goes by and more and more candidates are added to the blockchain, the process will get easier and the users of the application become more comfortable with the features…and, of course, once the candidate's data is recorded on the blockchain, the information will be faster to access in the future should it be needed for audit or if additions need to be made to it.

Whit Gallimore   Author

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