GiG: A Peer to Peer Protocol for the GiG Economy

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Abstract

A decentralized application (DApp) for the labor marketplace, that connects employers with freelancers is described. GiG, a system that uses the Algorand blockchain, is intended to reduce friction and to eliminate fees collected by employment agencies, recruiting platforms, and financial institutions.

The native currency of the system is the Gig Economy Token (GET). The algorithm used for its creation funds a Treasury System managed by a DAO (Decentralized Autonomous Organization), while guaranteeing scarcity. The DAO finances expenses for the ecosystem through proposals created and voted by the GiG community.

GiG offers multiple tools that will give value to freelancers and employers, gaining the ability to interact without the need of trust, transacting on a peer to peer basis.

One of the envisioned features is geographical information about actors and jobs. The possibility of browsing profiles and filtering them by geolocation will allow employers to easily identify freelancers within a desired area. This feature along with an implementation of time-stamps, will also help employers ensure that the freelancers check-ins and check-outs would be more accurate and reduce the risk of fraudulent activity.

Other features for the DApp will be tools for collecting evidence and data for each job assigned, providing the ability to generate analytic re-ports based on specific metrics implemented on the job smart contract. Once the smart contract is completed the escrow would be released.

The final layer for the DApp is a required Reputation System that would allow users to rate their interactions.

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1 Introduction

The Intuit 2020 Report[1] cites, among many predictions, that the gig economy will be about 43% of the workforce by 2020. Specifically, "work shifts from full-time to free agent employment". This trend could be made even more pronounced by possible economic crisis: "the Great Recession will continue accelerating the long-term trend toward a contingent workforce. Contingent workers – freelancers, temps, part-time workers, contractors and other specialists – are hired on a non-permanent basis and don't have full-time employment status". Finally, "over the next decade, small businesses will develop their own collaborative networks of contingent workers, minimizing fixed labor costs and expanding the available talent pool".

The tendencies that these predictions suggest, heighten the importance and value of systems that allow freelancers and employers to connect and interact.

Another tendency that has been manifesting lately is decentralization. Thanks to the birth and development of blockchain technology, people engaging in all kinds of financial interactions have started to disintermediate middlemen, and use peer to peer platforms.

All around the world, there's lots of work that needs to be done, and many people who need to work. Unfortunately, the people who are willing to pay a certain amount of money for a certain job to be done, very often can't connect with the people who would be willing to do the work in exchange for such amount, and who would benefit from said labor opportunity.

1.1 Understanding the GiG Economy

In a GiG Economy, temporary, flexible jobs are commonplace and companies tend towards hiring independent contractors and freelancers instead of full-time employees[2]. Let's break down the details of this:

During most of the history, jobs where stable for a lifetime, and often beyond a lifetime. For example, in the Middle Ages, a smith would often work during his whole life as a such, and wouldn't change his employer during this time. Furthermore, the descendants of this smith would learn the craft from his parent, and would continue being smiths. This way, the job of being a smith spanned so long that it lasted even more than a lifetime. This happened because becoming decently productive required a lifetime of learning and a few secret tricks from your parents in order to be able to construct great results from the rudimentary tools available. This started to change with the Industrial Age. Strong, fast machines allowed to replicate a lifetime of performance in a few days, and the value shifted from being able to construct great merchandise to being able to command a machine to make great merchandise. As technology improved, inevitably the life-long jobs started to lose importance. Even more,

some people started to specialize in creating technology faster, which made the improvement even faster, and the life-long jobs less valuable. This change shifted to high gear in the Information Age we currently live. Whereas in the Middle Ages a craftsman could only learn from the few people in his town that knew the craft, today, anyone with access to the Internet can learn from videos, papers and documents from the best specialists from all over the world. In the Information Age, whoever can read, digest and use the available information has a very valuable edge over the others in the whole world.

The other side of this valuable edge in the Information Age is that companies are interested in looking for this few specific people that already know and understand the market the company is trying to serve. And finally, the ability to reach these specialists across the world using the Internet means that a company doesn't even have the need of an office or even full-time employees in the same office or city.

All these factors make this labor market significantly different from traditional markets:

1. Specialists can appear anywhere in the world, and companies are willing to hire them regardless of if they live in the same continent in the world or not.

2. Dissemination and movement of information allows people from unexpected parts of the world to reach markets in other parts of the world.

3. Competition becomes global. The cost of hiring specialists in a local market becomes less different because these specialists are now sought by companies from all over the world.

4. Competition becomes global. The cost of being mediocre is now higher, because local companies may choose to hire strong remote specialists over mediocre local ones.

5. The cost of running local operations in new locations is lower. Companies from other places of the world can hire local specialists to deliver specific actions in their city without having to fly full-time employees to that city, or having to open and staff a local office.

6. Discovery of the best specialist that can fulfill the job becomes the bottleneck. The market is now an information-discovery market. A company can run operations in a remote city in the world if it can manage to find and hire good freelancers to deliver that work locally. Freelancers looking for work have to figure out a way to be reached by remote companies looking for freelancers.

7. With global specialists available for hire, hiring a full-time employee, and training him to become strong enough to compare with a specialist, is a losing battle. Not only is more expensive, it also takes more time, time that is used by the competition to get a hold of the market. Thus temporary, flexible jobs triumph over hiring full-time employees.

2 Advantages of using a Blockchain

The connection between job seekers and employers in the GiG economy is often done by recruitment agencies. These companies are actors that fulfill several roles in the market:

1. They have the information of reliable people that can work for certain jobs in a specific area.
2. They offer arbitration services.
3. They provide insurance to the employers.
4. They have information about companies that need employers and know their requirements.

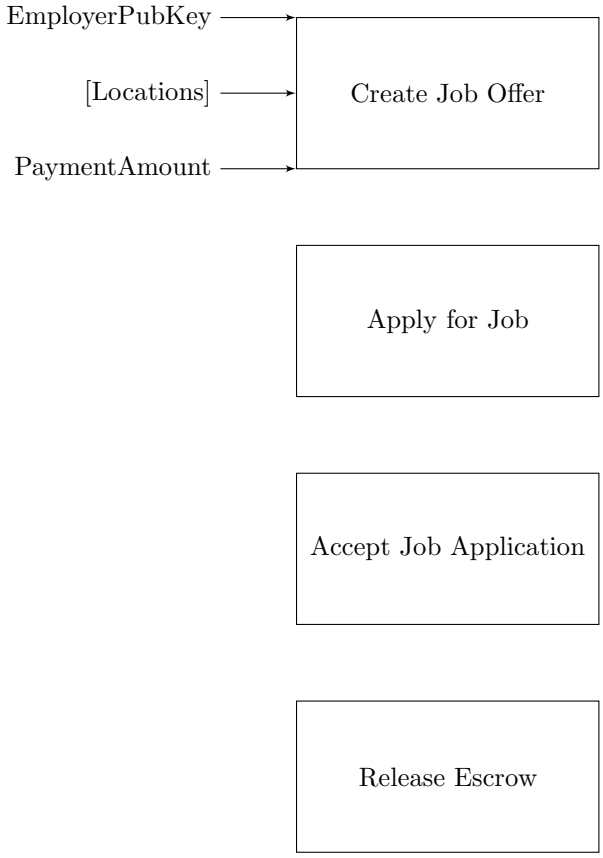
Although these companies have a very important role in today's market, we believe that the situation will change in the coming decade. The blockchain acts as a shared and decentralized database that can be used to build bridges between actors in the economy.

Bitcoin is the first example of how a decentralized database can remove middle man in order to create shared information without the need of a third party, in the case of the cryptocurrency, that third party is the bank.

In the GiG economy, the recruitment companies are the third party that will suffer a metamorphosis due to blockchain technology. Some of the roles that a recruitment agency covers, can be performed by a decentralized system. In the present, the intermediaries take a relatively big percentage of the proposed salary as a fee, from 15% to 30%. By leveraging the blockchain, the GiG economy decentralized application will allow market actors to connect at extremely low prices.

The Gig economy DApp will let employers post job offers to the blockchain. Then, job seekers will post job applications and begin an application process entirely in a peer to peer manner. The details of this process will be explained in the following chapters.

3 System Overview



4 Architecture of the GiG Economy DApp

4.1 Architectural approach for the DApp

For the DApp to be successful, it must offer:

- An easy to use and effective way for users to interact with each other in the GiG Economy.
- An easy to use way for users to interact with the blockchain.
- An effective way to be discovered by new users.
- A compelling reason for veteran users to continue use it.
- A significant edge over currently-available solutions for users to decide to leave their current systems in favour of the GiG Economy DApp.

We will explore the solution space looking for hints of architectural design that allows us to cover these reasons.

4.1.1 The application platform

The AlgoSigner project offers a good hint on how we can construct the GiG Economy DApp. We can offer a website that offers in a nice way the information that is being stored in the GiG Economy Smart Contract, while offering an interconnection via AlgoSigner to interact with the Smart Contract. With good support from AlgoSigner, we can cover the requirements of using the blockchain easily, and being easy to find and use the GiG Economy Platform by new users.

4.1.2 Broadcasting and responding requirements

There must be a way for employers to post job offers, and for freelancers to check the offers and apply to them. It may not be viable for the platform to store the complete job offer in the blockchain, as it may include lots of data and incur in significant transaction costs. For the same reason, it may not be viable for the platform to put in the blockchain a full application with the full profile of the freelancer. This means we need to look for alternative ways to store this information. Potential alternatives include using already-existing social networks, or implementing profiles in distributed networks, such as IPFS.

All the transactions that are posted to the blockchain become public. So there is another concern related to storing freelancer profiles (or references to profiles) in the blockchain. The profile may include sensitive information, and freelancers may not want to expose such information to everyone. On top of that, there are laws and regulations that affect how we can store and retrieve such sensitive information.

4.1.3 Communication requirements

There must be a way for employers, freelancers and arbiters to communicate with each other. This poses an initial challenge, as people may not want to reveal much of their contact information. This is very relevant, for example, for arbiters. If a malicious party discovers enough contact information of an arbiter (name, address, friends, family), he could use this information to coerce the arbiter into choosing an specific outcome regardless of evidence provided.

So we need to support a gradual level of contact information to be revealed, and we need to ensure this contact information is revealed only to the right parties.

4.1.4 Market expansion requirements

As the GiG Economy Platform expands, a way to discriminate jobs depending on circumstances is expected to be required. We may want to broadcast local jobs only to freelancers in the world that are in a situation to deliver them at the required location. This means we will have to investigate and implement a mechanism for specifying the outreach of a job, in order for freelancers to receive only jobs that may be relevant to them, and for employers to receive applications from freelancers that are in a good position to deliver the work.

This requirement also means we have to be careful when designing the smart contracts, so that we can configure them to have this calculated reach, and at the same time, are able to withstand global actions and usage. This is specially important for the GiG Economy Token, as the token should be fungible (every token is equal to any other token).

4.1.5 Continuity requirements

The GiG Economy Platform is expected to expand, change and evolve over time. Because it is intended to be a distributed platform, there can't be a single person or group of people that will govern it, as this group of people can be a weak point of the whole platform, and defeats the point of having a distributed application.

For this reason, we envision the Gig Economy Token as a mechanism for voting and administering the future of the platform, by constructing a Decentralized Autonomous Organization. The DApp must offer the mechanisms needed for people to fund and participate in this DAO.

As the platform evolves, it is expected that the Smart Contracts used by the platform will change. For the DAO to construct the next evolution of the platform, there must be a way to retire old contracts and replace them with new contracts, as well as ways for rejecting contracts for being obsolete or with known vulnerabilities. Inevitably, this leads to requiring some kind of listing of approved and rejected smart contracts, and the DAO must have the ability to update this listing.

5 Envisioned Features of the GiG System

5.1 Communication Between Parties

After the employer has published a job offer and a freelancer has applied, it is expected that they communicate in order to figure out the last details of the job and agree on them. Further communication is expected if, while performing the job the freelancer finds unexpected surprises that need further discussion with the employer, or if the employer doesn't agree with the freelancer on the completion of work.

Another party that has communication requirements is the arbiter. It is expected that the arbiter needs to communicate with both the employer and the freelancer as part of the process of gathering evidence before deciding who is in the right.

For these reasons, it's fundamental for the GiG DApp to have a way to interconnect these parties. We understand there is a great choice of communication methods, and we think the GiG DApp shall support a generalized mechanism for connecting to phone calls, chats, messages and video conferences. It must also support a notification system to help the user know when he is being contacted using any of the means specified.

5.2 Arbiter discovery and agreement

When a transaction doesn't go as expected, the parties will fill out a dispute. We have created a third stakeholder, the arbiter, who is intended to resolve the dispute. Not every person makes a good arbiter, and not every arbiter is good for every case. It is obvious that some kind of criteria must be used to figure out who is going to arbiter a case.

Even if we have a good arbiter for a case, it is possible for the freelancer or the employer to disagree on the choice of arbiter, most usually because the arbiter may have a conflict of interest on behalf of one of the parties.

All these reasons suggest making the arbiter part of the contract to be agreed before entering the escrow. We need a way for freelancers and employers to find and choose an arbiter they both agree to be good for the situation, so that they both agree later that the arbiter decided correctly, regardless of the side the arbiter decided to be in the right.

5.3 Automated Collection of Evidence

It often happens that in the heat of delivering work, a freelancer may forget to collect evidence of the work performed. This is likely to complicate further steps on the path, because the employer may not have enough proof of the work performed, and neither will have the arbiter, therefore they may decide the freelancer didn't deliver the work.

In order to reduce this and increase engagement, we envision several features designed to streamline delivering work and gathering evidence.

5.3.1 Geolocation Control

Many jobs require the freelancer to be located in a specific location at a designated time. For example, a B2B visitor is expected to visit the offices of the business being visited.

Assuming the DApp to be installed in a mobile phone, and expecting the freelancer to carry such phone on his daily work, we can use the DApp to help him. For example we can use GPS localization to help by:

- Offering a mapping feature that allows the freelancer to reach in an easier way the location where the work is intended to be performed, by finding the best route, calculating time to arrival, redirecting the route depending on the traffic, and many other features the mapping applications offer.
- Automatically storing a geolocation coordinate, along with the timestamp, when the freelancer reaches the destination.
- Suggesting taking photographs of the work place visited when the system detects the freelancer is at the specified location.

This way we can improve collection of evidence for freelancers, while not making it burdensome.

5.4 Automatic Timesheets

For hourly workers, it's expected for them to deliver a time-sheet prior to being paid. Tracking time tends to be error-prone, which means freelancers often forget the actual start time and end time, forcing them to estimate the time used, which, may cause employers to suspect of falsified timesheets.

We can use Geolocation Control and Time-stamping to be able to construct timesheets in an automated fashion. We can consider the job being started as soon as the freelancer is at the place required, and proof of it has been posted to the system, and we can consider the job being completed as soon as the freelancer leaves the place of work, again by posting it to the system. This way we can create better timesheets in an automated way.

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