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HOW A DIGITAL NETWORK CAN INCREASE THE SCOPE
OF OPPORTUNITIES IN THE BUSINESS WORLD
THE SMART LOGISTICS CHALLENGE

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Initial considerations

This digital application stands as a non-disruptive way of taking advantage of the wasted potential in enterprises that have unoccupied space for storage, inactive transportation vehicles or even unused goods (**STG – Storage, Transportation, Goods**). It is also an alternative way for the enterprises that require these services to obtain them by providing some type of service and not necessarily money. As it is strongly based on the shared economy principles, it does not function the same way as a typical services' market does. It is also not a secondary channel for businesses to specifically sell a service or promote a brand only for doing so.

All enterprises can theoretically increase their potential, although smaller and medium sized companies are the ones that would probably benefit the most. All the deals that happen are win-win since all parties can look for the exact deal they require. Also, it should complement the normal work cycle of enterprises and cause no considerable changes to it. It can be simplified to an extra process that channels what was or will not be used. At a first stage, the application works entirely as a matchmaker in the sense that enterprises are joined by interests and must decide afterwards what the exact deal should be.

On the core of the application lies the matches between companies. Those matches happen when interests are coincident. The algorithm behind those matches searches for a combination that, under specific circumstances or impositions like available storage capacity or proximity, benefits both sides of the deal the most. There are certain measures, like the evaluation of a company, and restrictions, like the timer that forbids any matches for companies that were matched very recently, that are useful to avoid suboptimal matches and control the flow of the network.

Regarding the company which provides this service, it should be able to support any costs related to the maintenance of the servers that store all the data and should charge a fee to every enterprise that belongs to the application network. That fee is dependent on the volume of the services that each company might benefit from and it should be significantly less than what each enterprise would have to pay in case deals were to be made solely with money. Also, this company simply acts as the provider of the digital network / channel that enables connections that otherwise would never be possible. It should not take legal responsibility in case some party doesn't carry out what was agreed when the execution moment arrives, but it has the right to ban an enterprise from the network for doing so.

Wasted Potential

It is fundamental to establish what exactly wasted potential in enterprises is. I considered it to be any period when there is availability to provide a service, which can be reflected in spare space for storing goods, inactive transportation trucks or unused goods, but it simply was not requested due to lack of information of external companies and a channel to inform about this

availability. On the other hand, it might be the inability to hire a service from a company due to factors such as the lack of capital, which can stand as an obstacle to further expansion of a company.

Types of enterprises: A / B classification

Since the core of the application is to channel the wasted potential in either storage, transportation or unused goods, at least an enterprise involved in a match must provide one of those services. That enterprise is classified as a type A enterprise. Enterprises that require one of those services are type B enterprises. This A / B classification system is based solely on the type of service provided for that match which makes it entirely situational. Both companies could provide STG services and a possible match between two type A enterprises would happen. Both types can benefit from matching and need to provide information based on their classification and type of service they are providing.

Type A

These are the core enterprises in every match since they are the ones that provide one of the specific services (STG). It is important to consider that all enterprises can provide any of the 3 STG services without necessarily being specialized in that sector, as long they possess the requirements to do so. A furniture company, for example, might have storage to offer and occasionally available space in their vehicles. However, it is important to have in consideration what is to be expected from that service in terms of quality and capacity but also what is demanded regarding payment. Quality does not come cheap. However, hiring a reasonable but cheaper service, along with the opportunity to show the value of one's company to the hired enterprise, might be even more beneficial than quality.

For a match to happen, a type A enterprise needs to previously inform about their willingness to provide a service. Along with that, it needs to grant specific information to the application depending on the service they're willing to provide. A period of time, a date, the available capacity, the available trucks, the amount of unused goods, their type and condition, different demands ordered by interest and any other technical detail is all needed information for the algorithm to be able to match correctly. Other factors like the enterprises' location or evaluation influence the algorithm but are automatically considered in each match and aren't to be dealt by the enterprise directly.

Type B

These enterprises look for a service from a type A enterprise but can provide any type of service. A consulting company that needs to move considerable amounts of documents between facilities could provide a consulting service in exchange for that service, for example. There are many situations that can justify a match. These types of companies also need to provide information regarding the service they need and the service they provide (similar to the parameters of a type A enterprise). The provided service must fit in standardized existent

sectors. Some examples might be energy providers, food distributors, electrical tools manufacturers and security companies. Like it was emphasized before, this classification is merely situational whether they provide a STG service or not.

Matching algorithm

For an enterprise to be selected for a match it needs to provide availability (Boolean value). Enterprises will be matched prioritizing the parameters that each party provided before the match and also accordingly to independent factors such as location and service evaluation. Simplifying how the algorithm could work: it iterates through the list of all available enterprises located in a certain geographical scope and filters the ones that do not match the requirements imposed by each enterprise. From all the remaining enterprises, the algorithm chooses the one which essentially leads to better results in terms of both monetary and time costs and that also fulfills the involved needs in the best way possible.

The matching algorithm is also dependent on a timer, which means that any enterprise that has recently been matched will have to wait before being matched again. Despite being a limiting factor, this timer is essential because it assures that all enterprises under the same conditions will eventually be matched and avoids any chances of using the application to continuously and purposely sell a service. Logically, this timer should be based on the number of intervenient enterprises in a determined area.

Evaluating a service

A way to better assure that enterprises can provide a service that meets certain requirements is to provide a way to evaluate each other's services. After providing the agreed services, both enterprises are able to state their satisfaction regarding the service they just hired. A service that was not carried out as it should must be penalized with a consequent negative evaluation. This forces businesses to keep a reasonable standard of quality if they want to keep being matched with enterprises. This kind of reputation-based system is not the decisive factor of each match, but it plays an important role in the performance of the algorithm in the sense that enterprises need to perform well in order to be matched with enterprises that also perform well.

Data security

It is of extreme importance to assure that all the information that is gathered by the digital application is kept safe. As a standard safety measure, the information should be encrypted and selectively revealed between the enterprises of a match. Fundamentally, the amount of revealed information should be limited to what is required for both parties to perform that specific match. Enterprises should not have access to any past matches of other enterprises or

even a company evaluation since the application itself controls those factors integrally and ensures companies get optimally united.

Size of companies and specialization

In practical terms, sector giants and specialized companies in any of the STG services might not benefit as much as small or medium sized companies, since they have their working processes thoroughly optimized and planned which leads to less wasted potential and less room for improvement. However, there is no imposition in these types of enterprises joining the network as the timer limits any type of monopoly to be created. If it did not exist, those enterprises could theoretically transform the application into a market by continuously providing a service that was not actually wasted potential.

A relevant factor to consider regarding this matter is the location of those big companies. They allocate facilities strategically, but it is not possible to include all companies in the same geographical scope. However, nearby companies share, by definition, that same geographical scope. Therefore, the matches that will be established will result in less costs and less time wasted. Ultimately, various factors can be improved due to how close these relationships can be. Below, the following image represents a hypothetical scenario that shows how efficient this approach can be in terms of numbers of relations established and costs reduction.

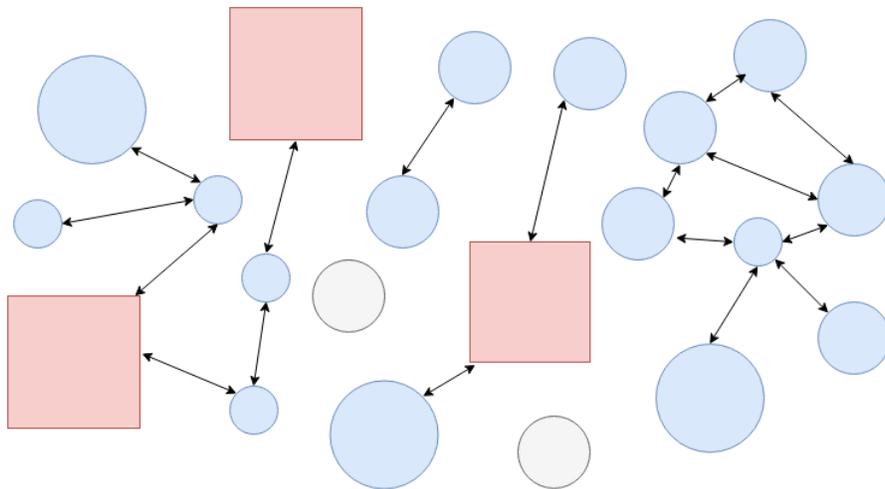


Image 2 –Red represents STG specialized companies. Blue is any type of company belonging to the network. Grey stands for companies (possibly with low capital) not included in the network.

In way of conclusion, despite being a complex approach to implement, it is technically possible with the technology we possess nowadays. The benefits are quite evident and the scalability of such an implementation is outstanding. With an increasing number of enterprises belonging to the network, the number of possible matches raises and the wasted potential in each of these enterprises can be transformed into growth.