

Carri: P2P Delivery Network

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Abstract

Carri is a Decentralized PeertoPeer (P2P) Delivery and Supply Chain Network.

With it's platform (carri.app), Blockchain-based Carri Network, and native token, the Carri Coin (CRC), Carri is creating a seamless, fast and trustless blockchain-based network for merchants, drivers and end-users.

Our software platform will be free-to-use for merchants, giving them the means to decentralize delivery and logistics operations, reducing costs for everyone involved.

Carri is a plural form of the Latin word Carrus(n); which means a four-wheeled vehicle, usually horse drawn, designed to transport goods and people. In modern times, the most familiar four-wheeled vehicle many of us use or drive in some way is the car. "Car" is believed to be derived from the Latin word Carrus.

Carri is reviving ancient and informal mechanisms for connecting merchants with those who own and drive cars, the wagons of today. Except we are replacing informal ways of operating with modern peer-to-peer, and therefore a highly secure platform and marketplace that will connect merchants with car owners, who want to use their vehicles to transport goods in return for payment.

However, unlike other marketplace-based transport companies, Carri is decentralized by design, and therefore more cost-effective and secure for merchants and users.

In its application, Carri will build a decentralized, interoperable, fast and secure blockchain network, giving drivers, merchants and end-users incentives for using the platform and the native Carri Coin.

Our vision is everything drivers, merchants and end-users need will be built-into the platform and designed within the ecosystem. This means there is going to be no need for third-party applications or companies to control user data, and charge enormous transaction fees that increase the cost of the transportation and delivery of goods.

Carri Coin (CRC), the native token of the Carri Network, is designed as a utility token, giving users the best prices on the network for buying services. It will come with an incentivized discount system, alongside a governance token. Members will also have the option to earn rewards when they take actions that will improve the security of the overall network.

Carri as a DAO (Decentralized Autonomous Organization), will always be governed by and for its members. As part of that, Carri Coin's can be used to purchase products and services, or used as a voting mechanism, to propose changes and improvements to the overall network and its features.



Problem/Opportunity

Right now, the global delivery industry suffers from several structural problems that can not be solved until a new business and operating model paradigm is offered as a solution. These problems include the following:

- **High fees**, especially from third-party apps, which can take as much as 30% of the cost in service and delivery fees, mainly in commission from drivers and merchants. As a result, merchants need to charge a premium to customers, to pass on the cost of the fees, making transport and logistics more expensive than it should be.
- Monopolized and Centralized Industry: With multinational corporations, including several that are VC & PE-backed, controlling the delivery sector, which pushes up prices, reduces competition and lowers the overall quality of service.
- **Privacy and Security.** Keeping customer data in centralized servers and cloud storage, without sufficient security, makes data breaches more likely. Millions of customers and end-users have had data stolen from the following companies: Doordash, Dunzo, and Drizly.
- Non-transparent Tracking: With the recent boom in delivery apps and more restaurants than ever delivering food to customers, usually through these apps, there's a deficit of data that merchants need to be aware of. Such as stock levels, use-by-dates, storage, transport conditions, supply and expiration dates. All of this can cause problems for merchants and

ultimately customers, if food and meals they want aren't in stock.

• **Customer Support.** Marketplace-based apps make it more difficult for customers to receive any kind of support. It's difficult to speak with a person, instead of an AI-bot, which reduces the overall quality of customer care and service.

Solution

Every aspect of Carri, from the app to the blockchain-based Carri Network, and native token, the Carri Coin (CRC), is capitalising on the advantages of Web 3.0 and distributed ledger technology, such as the following:

- Decentralized on-demand Peer-to-Peer (P2P) delivery platform. Unlike traditional options, the Carri Network will be a P2P platform whereby users, drivers and merchants can connect and transact, without the need for more expensive third-party intermediaries. Transactions will take place within a secure and trustless blockchain environment and will be automated with smart contracts.
- Lower fees than traditional options. Carri's solution will automatically generate an estimated fee, based on a number of factors. Such as the estimated market value of the journey and what's being carried (size, weight, type of vehicle, distance and amount of fuel could be factored in), plus drivers and merchants preferred rates.



However, Carri will only provide market-based data as an estimated price, and won't force the driver or user to accept that amount. Drivers and users can make counter offers at any given time, and then agree on a price. At that point, smart contacts will be created dynamically on the blockchain network, then agreed by both parties before the transaction goes ahead.

- Transparent Supply Chain Tracking: Carri will make the blockchain software available for merchants, producers, wholesalers and distributors to record price, storage conditions such as temperature and humidity, date, location, expiration date, certification, and other relevant information to more effectively manage the supply chain. Access to this data will increase traceability of food through the supply chain, decreasing spoilage losses, improving visibility and compliance, and eventually creating an ecosystem where all the data is available to related parties or end-users. Also, merchants can benefit from this data, making it available to customers to demonstrate the freshness of products, and even how low their overall carbon footprint is, compared to other restaurants.
- **Complete privacy and security.** Carri's decentralized network is designed to provide complete security and privacy to every merchant, driver, user and member on the network. Using the smart contracts, transactions and records will be only available to the related parties which are given permission to access. Merchants will also be able to make their account public or private, and have the ability to make their products and services available only to the parties they want to conduct business with. Location and data-based services will be built entirely on the blockchain and will be automated and immutable. In the event of a dispute, trusted validators within the computative will conduct the relevant dispute.

a dispute, trusted validators within the community will conduct the relevant dispute resolution. We will never involve third-parties, except in the event of a criminal matter, thereby responding legally to the relevant authorities.

• **Direct P2P communications.** Blockchain technology will also allow for secure P2P communication between users, drivers and merchants on the platform.

Vision

Carri's vision is to create a paradigm shift within the transportation and supply chain industry, while at the same time creating the decentralized eCommerce concept (DeCommerce) where end-users, sellers and service providers can work together without third-parties profiting from everyday transactions.

Our initial focus is creating a completely decentralized on-demand delivery solution platform. A network whereby buyers and sellers of transport services can come together. This solution will also demonstrate and leverage the viability of using blockchain technology on such a large scale for everyday transport transactional requirements.

Carri will be completely decentralized and therefore community-governed, and will give back to the community with rewards to drivers, sellers, and Carri Coin currency token holders.



Introduction to the Blockchain ecosystem

When it comes to on-demand delivery services, there are numerous companies in that sector, some operating on a global scale, and others on a local and regional level. It's a competitive and highly lucrative market, with VC and PE companies flooding the sector with funding over the last 5 years, and several have successfully been listed on public stock exchanges during this time (IPOs). Other smaller operators have been acquired by larger ones, in the race to achieve scale and dominate markets.

However, we need to remember that all of these companies are built on Web2 (also known as Web 2.0) technologies. The Web 2.0 revolution, which started in the aftermath of the Dotcom bubble bursting in 2000, has revolutionized social interactions, bringing producers and consumers of information, goods, and services closer together, and allowed us to benefit P2P interactions on a global scale, in ways that were unimaginable only 30 years ago.

However, when it comes to on-demand platforms (e.g. Uber, Airbnb, DoorDash) and two-sided marketplaces (e.g. eBay, Groupon, etc.) a middleman is always needed to act as an intermediary between two people who don't know or trust each other. Both parties want what the other can offer, but without an intermediary platform, there's no guarantee of service or payment for that service.

These platforms have done a fantastic job creating an on-demand economy. Especially in cities across the world, where there is a critical mass of users (customers) and service providers, there are extensive convenience economies, powered by these platforms and individuals or companies delivering products and services to consumers. These platforms have made this possible, but at the same time, they dictate the transactional rules, control the data, and maximize their profit advantage at the expense of service providers, drivers, and others in the ecosystems they have cultivated.

Web 2.0 technologies, whether SaaS, PaaS, IaaS, AI, ML, cloud-based apps, or anything under those general and extensively broad categories are all built on the foundations of data being centrally stored and managed. More often than not, data is stored, processed and passes through a number of cloud-based servers and data centers. Data is protected by sophisticated cyber security measures. Understandably, in many ways, to protect customers, businesses and the providers of these services. Also, data protection laws require every reasonable step to protect customer data.

Unlike Web 2.0, Blockchain technology is proving to be the driving force behind the next generation of web-based services and platforms. It's being referred to as the third Internet revolution, or Web3; also known as Web 3.0. Blockchain is reinventing how data is stored and managed. It is providing a universal state layer of data, one that is collectively managed and distributed. Decentralized, rather than stored in centralized servers, with the potential for services to be distributed accordingly.



Blockchain started with the emergence of 'digital currencies', now known as cryptocurrencies, starting with Bitcoin in 2008. But now it's so much more than that, with Blockchain technologies creating a value settlement layer for the Internet. It ensures files and data can be sent and shared, stored and processed in a copy-protected way, enabling true P2P transactions without intermediaries.

Carri will employ all of the benefits of Blockchain, Web 3.0 solutions, blockchain-based tech stacks, and other applicable Web 2.0 solutions throughout its technology architecture and solutions. This will ensure we can create a completely new type of distributed delivery and supply chain platform:

No central control: Carri removes middlemen from the equation, making sure that user data is not controlled by any one company or organization, including Carri. Blockchain technology and decentralized data storage also reduces the risk of government censorship, and reduces the effectiveness of Denial-of-Service (DoS) attacks.

Increased information interconnectivity: From search engines to social networks, the second wave of the Internet revolution has changed how everyone finds information, goods and services. With much larger data sets, people need an easier way to find it, which is one of the reasons algorithms have evolved as the volume of data has increased. As well as making it easier for platform-based companies to extract more value from users (e.g. Google, Facebook), it helps users to find the information they're trying to source.

More efficient browsing: Search engines are smarter, both for the platforms themselves,

companies looking to get found using SERP results, and for the users. Algorithms make it easier for users to find semantically-relevant results based on search context and metadata. This makes it simpler and far quicker for users to find the information they are looking for.

Improved advertising and marketing: Consumers have more choice when it comes to advertising. Some people choose to filter it out of their web browsing experience. However, for those that opt-in, adverts are a useful way to find what someone is looking for. Web 3.0 technologies, such as Blockchain, aims to improve advertising even more by leveraging smarter Al systems, and hyper-targeting specific audiences based on consumer data.

Now we will take a look at the core blockchain technologies that will make the Carri Network function.

Carri Network: Core Blockchain Technologies

Hyperledger Sawtooth

Carri will be using Hyperledger Sawtooth technology to enable the operation of its platform. Hyperledger Sawtooth is an open source Enterprise-level Blockchain-as-a-service platform that can operate countless smart contracts without needing to understand at a base level the underlying design of the core system it is operating. Hyperledger is an umbrella blockchain development project, sponsored by organizations such as the Linux Project, IBM, Intel, and SAP.



Hyperledger Sawtooth separates and partitions the core ledger system from the applicationspecific environment, thereby simplifying the application development and keeping the system safe and secure. Within this architecture, developers can build applications (such as dApps) in their preferred languages, and these can be hosted and run on a system periphery without needing too much interaction with the core blockchain system, which in this case is Hyperledger Sawtooth.

All of this means it's faster and more secure, and the benefits of Hyperledger Sawtooth mean that it's an Enterprise-scale easy to implement blockchain framework, with the ability to implement private blockchains, a customized consensus mechanism, and faster, more secure operations at scale.

Other libraries and frameworks, based on the Hyperledger Greenhouse family will be used to build supply chain functions, identity management, EVM compatibility, and marketplace functions. Some of the technologies involved include Hyperledger Grid, Hyperledger Quilt, and Hyperledger Indy.

Native Token, Carri Coin (CRC)

The platform's native token, known as the Carri Coin (CRC), will be hosted and operate on Layer2 Ethereum solution — the Polygon Network — as an ERC20 token, which has Mark Cuban and others as investors.

Polygon is known for cheaper transaction costs and cheaper block times, which is why it's

Market description (not more than a page and half with graphs)

In this section, we will examine the size of the overall on-demand delivery market including apps and therefore companies that deliver a broad range product or work in a specific niche, such as groceries and liquor. This overview will be global, because on-demand delivery is a massive global market, whereby companies and individuals are solving the same problems the world over.

We intend this to provide insight into the overall scale and size of this opportunity, and therefore the total addressable market.

Delivery Apps Market

The food delivery market has increased dramatically over the last five years, with accelerated growth in 2020 due to a pandemic-driven necessity. However, in response this has increased the overall customer-base for these apps and service providers, as those who have tried them for the first time are likely to continue.



Platform-to-consumer marketplaces, such as DoorDash and Uber Eats have led the way. Food delivery started off with takeaways. But now almost anything can be delivered door-to-door, such as fast food (McDonald's, KFC, etc.) to groceries, liquor, and goods previously only available in stores.

Combined with that, a network effect of more delivery drivers/riders, alongside route optimisation software, has reduced average delivery costs and timescales. Although consumers benefit, there is a negative side to this network effect. Food operators are operating on razor thin profit margins to compete. Also, drivers are competing for work, thereby undercutting one another in the scramble for work.

Only the large marketplaces and apps are generating healthy and growing profits. While at the same time, drivers, riders, and those selling the food or other goods, aren't profiting as much, at the expense of the platforms. Customers are largely unaware of these problems and practices.

Several of the largest aggregator marketplaces (Just Eat, Grubhub) now offer a platform-toconsumer on-demand delivery system, increasing their market share and profit margins. The whole global market has undergone a period of consolidation, reducing the amount of competition.

And then the Covid-19 pandemic started. The sector was propelled several years into the future, as millions of new customers started ordering takeaways and other goods and services using these apps and marketplaces. Grocery delivery service, Instacart achieved its 2022 goals early into lockdowns starting. Uber Eats, Deliveroo and DoorDash all reported a massive acceleration in

orders from March onwards, as the world went into lockdown.

Although this is cooling down as parts of the world goes back to normal, the sector expects it to have a long-term effect.

In this analysis of the sector, we will assess operations in China, the US, Europe and UK. China, the US and UK are the three largest markets. Europe, with a focus on Germany, Italy and Spain could surpass the US within a few years.

Global Food Delivery App Market

Food delivery has really taken off in the last five years. On-demand taxis, also known as ridesharing apps, took off several years beforehand and are a more established market. But food and related delivery sectors are younger and still growing quickly.

For food delivery to work in any one city or two, the platform-to-consumer model relies on a critical mass of customers, restaurants and drivers to work. With more consumer choice (restaurants), the number of customers increases, but that needs a comparable increase in drivers to deliver the purchases customers make, or the model falters. Hence in smaller towns, DoorDash and Deliveroo, and others, will open their platforms to third-party delivery services.

Market leaders include Uber Eats, Just Eat Takeaway, Delivery Hero, Deliveroo, DoorDash, and Meituan Dianping, in China.



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Uber Eats, thanks to the massive ride-sharing market Uber already has, was able to quickly establish and expand their platform-to-consumer business. Just Eat Takeaway and Delivery Hero in the UK and Europe soon established platform-to-consumer marketplaces, buying up several subsidiaries each.

Deliveroo and DoorDash also quickly started to generate significant revenue, given the relative size and strengths of the UK and US demand for food delivery.

As an indicator of the size of the potential market (current estimates as 650 million consumers), Meituan Dianping, in China, has 40 percent market-share, and generated more in 2019 than any comparable Western company.

Note: The above table doesn't include Ele.me, another Chinese app, believed to be generating approximately \$7 billion already.

Over the past five years (2014 - 2019), there have been peaks and troughs in funding. Some of this has been influenced by the later-stage funding needs of the largest companies, and when they have landed within the context of investment cycles.

Only in 2016 did funding levels and investment drop dramatically, to lower than in 2011, when there were concerns about profitability. However, funding recovered significantly since then and is likely to continue given the increased popularity and increased profitability of food delivery services.

We expect that market consolidation and maturity in the US and Europe will reduce funding and investment levels, while other emerging markets are still ripe for investment opportunities. Markets such as Latin America, Asia Pacific (APAC), Middle East North Africa (MENA), and Africa, are likely to see more investment in this sector in the years ahead.

More global consolidation is expected in the next few years. Although some markets (e.g. India and South Korea) have cultivated and supported the growth of home-grown services, rather than multi-nationals.

Depending on any potential improvement in US - China relations, there is a chance Alibaba, Tencent and Didi could invest or make acquisitions in the US. Along the same lines as SoftBank's investments in Uber, Didi and Rappi.

Top Food Delivery Apps

Food delivery is a global industry, made possible by huge Venture Capital (VC) and Private Equity (PE) investments and a change in workforce habits, known as the gig economy, which has swept North America, Western Europe, and Asia in the past decade.



In China, with a potential customer-base of 650 million, food delivery companies have grown even faster than the West. In comparison, the US is the second largest single global market, and the best funded.

Consolidation of the market in the US and Europe and market maturity will lead to less funding in the West, although South America, Africa and Asia are still ripe for investment.

Delivery Apps: Statistics

Below is a table of data and statistics on the number of annual users for some of the largest delivery apps on the planet. This includes the most important market leaders, alongside market leaders in more niche but growing segments, such as Liqueur or Grocery delivery. Data for those segments is included below.





GROCERY DELIVERY APPS*

TOTAL NUMBER OF ACTIVE USERS (AS OF 2020):

In millions, unless otherwise stated





* Data is taken from media reports and press releases, and tracking data sources, as most of this is not publicly available, unless reported directly by the companies.



Carri Business Model

Carri is a decentralized, blockchain-based enterprise P2P delivery and supply chain platform, providing a network whereby users, sellers and drivers can work directly together, and complete transactions for the transportation of goods. On this platform, there are no third-party intermediaries.

Fair Price Algorithm

We want to ensure everyone who uses this platform to earn money is paid a fair price. At the same time, we want to ensure that users and customers pay a fair price. No one should be overcharged, and we are creating an algorithm to guarantee fair pricing across the platform. It will also work out more cost-effective than traditional platforms, because there won't be third-party intermediaries generating massive profits from these transactions.

Carri's solution will generate an estimate for the average market price, for every town, city and country Carri operates by creating channels on its blockchain. An algorithmic formula for calculating the delivery fees, specifically generated by Carri, takes inputs from merchants, drivers and users, creating an estimated price in the market where the user/customer is located.

Although we estimate this fair market price, it's only a recommendation. Neither the driver nor user/customer have to accept this price. Between them, they can always come to a mutually agreed price, or users can see other delivery prices offered by other drivers if available. Once agreed, a smart contract is created and recorded dynamically on the blockchain, which both parties confirm and the customer pays for the service the driver provides.

Users/customers can request or schedule future deliveries from their favorite driver, or select from a wider range of drivers available. A fairer and more open pricing strategy is better for everyone on the platform. This way, no one is forced to accept a price given to them by a thirdparty. Users can also see average market prices that include traffic data and the supply of available drivers for the date they need to have something delivered.

Immutable and Transparent Tracking

Carri will use the advantages of blockchain technology to create a trustless environment where all of the data will be immutable and transparent to every party within that transaction. In most on-demand food apps, there is limited information about the food supply and overall food chain, such as storage and supply data. Carri can change that, with IoT devices, giving merchants the opportunity to track everything, from where food is grown and made, to how it's transported, where it's stored. Merchants – restaurants and takeaways – who want to share this data with customers can do so within the Carri app, or on their own websites, and physically instore.



Privacy and Security

Carri's P2P network will ensure complete privacy and security for drivers, users and sellers. Carri will use both permissionless and permissioned blockchain technology, to ensure user data is completely private. At the same time, this blockchain will be free-to-use for drivers and those making deliveries.

Private data can only be viewed with the permission of the related parties. Only in the event of dispute resolution or the legal requirements of law enforcement agencies in the event of a driver, seller or user being involved in criminal activity would user data be provided to third-parties.

On the platform, Network Operators working for the benefit of the whole Carri network, will perform actions, stake coins and ensure the security of the network. Operators receive token rewards in return for the work they do on the network. In the event of dispute resolution being needed, Network Operators are the people who will investigate and can request user data to verify both parties' versions of events.

Fair Governance

Carri is a Decentralized Autonomous Organization (DAO), governed by merchants, drivers and token holders. Any changes and future developments on the network will be decided and agreed upon by the votes of members of the network, and everyone who has contributed to it. Every member in the community is eligible to earn rewards and benefit from governance rights; and this includes merchants, users/customers, drivers and network operators.

Trustworthy P2P Communication

With blockchain technology, Carri can ensure everyone on the network has a completely trustworthy P2P communication channel. Drivers and customers/users can establish trust-based working relationships, can review and save their favorite sellers and drivers which will facilitate positive customer service experiences and transactions.

Rewards and Incentives



Benefits and Rewards

The Carri network is designed to be favourable to merchants, users and drivers. P2P payments through Blockchain technology will ensure drivers get paid instantly without losing a large percentage in commission payments from third-parties. Also, Fiat and cash payments, as well as other crypto payments will be available, but this time transaction fees need to be paid in Carri Coin. Drivers and merchants will also benefit from rewards for their contribution to the network, when they opt to get paid in the native token (CRC), alongside benefits for driving more miles, and referring new members, merchants or drivers to the network.

Drivers can also speculate on the CRC token price, as they will have the option to stake their tokens with operators, earning rewards in return.

Revenue Streams

Carri is aiming to be the most cost-effective delivery and supply chain platform possible for merchants, drivers, and customers, such as businesses wanting products delivered. The way we ensure this is to minimize commissions, subscription and membership fees when they're paid by users and customers on the platform in the native token, the Carri Coin (CRC).

However, at the same time, Carri will earn on commissions, subscription and membership fees in its multi-currency network, and fees will be paid in Carri Coin for transactions paid in Fiat, other currencies and tokens. The revenue from these will be shared by our platform, operators and the network.

More revenue streams will open up in the future, with paid/premium features such as RFID tracking, extra users, advanced tracking and fleet management, inventory integration and marketing to Carri users. Carri will use the power of token economics to cover the cost of operations, while at the same time creating a long-term and sustainable token economy that will be profitable for members across the whole network, especially early adopters and investors.

With a dynamic rate convergent token reward model, Carri will reduce the CRC token reward in such a way to ensure the circulating supply never reaches the proposed fixed token supply. Our operators are rewarded based on their contributions and roles they play within the network, and proportional to the time and investment in the Carri network. Carri will adjust the rewards and earnings dynamically by the current price of token, total number of users and transactions, and total number of operators to ensure all members on the network get a fair pay for their work and contribution, while making it profitable for investors and token holders.

Also, Carri will use the governance and voting model to ensure extra funds are allocated for the development and maintenance of the network.



Go-to-Market and Retention Strategy

Carri will initially launch in Los Angeles, California, for the pilot location. This will be a proof-ofconcept launch, and once proven successful in this pilot location, we will open the network to other cities that could achieve a similar critical mass for organic user-based P2P growth.

After the pilot launch, it will be opened up to new operators from around the world to launch in new cities. We will assess each city based on a set of local requirements, and will then focus marketing on that city to attract new users, customers and drivers. The network will reward these actions and this work.

Users (Target Market)

Our main target market are customers of food and delivery apps, eCommerce platforms, and other social platforms. It's built with cutting-edge blockchain technology, but from a user perspective it won't feel much different from using another mobile app. Although paying with Carri Coin will benefit and reward users the most, there will also be payment options in Fiat using their bank accounts, other crypto currencies and stable coins, and even cash payments for participating businesses and drivers. For some, cash is king and for others they simply don't have the money or time required to set up bank accounts to purchase anything online that way. In an effort to make Carri accessible to everyone, we are looking at other ways people can pay through third-party apps similar to Venmo and PayPal as well as specialized mobile wallets designed specifically for unbanked populations.

We are aiming to ensure the application, platform and network is user-friendly for those with no familiarity with cryptocurrency. However, we acknowledge that our main target market has very specific needs which will be addressed in all areas of the app. On-boarding is achieved through creating an account on our platform, which they can use to transfer other cryptocurrencies or stable coins, or buy/swap for the native token, the Carri Coin (CRC) as well as using Fiat money from bank accounts, credit cards, and through third-party apps.

Users will receive discounts when they pay with Carri Coin, and on these transactions there won't be any fees. While paying no and very low fees, Carri will reward its users for their orders, referrals and contributing to the network security by staking.

Merchants (Target Market)

Carri's platform will be the first of its kind, uniting supply and demand with high-tech solutions that will also use industry supply chain standards, such as GSI barcodes and GTIN numbers. Carri also helps merchants by giving them options to customize their needs through custom product fields which are easy for both merchant and customer alike.



Carri will be the first global app to offer free basic features for merchants. This means that all those who sign up, whether they're an independent retailer or big business, can use one of our flagship apps at no cost, and save thousands on platform subscription fees each year. That's not even counting savings from using tokens rather than fiat currency for transactions! By getting involved with Carri, you can enjoy a range of benefits that will help your business in the present time and into the future. Alongside using our platform for free transactions for an extended period – which is sure to be beneficial when it comes to lowering overhead costs – merchants are also eligible for rewards by accepting payments through Carri Coins; additionally, they have opportunities beyond just using their currency as well as speculate on token value in–network with staking functionality.

Drivers

Drivers are at the heart of our network. Over time, as we expand across the world, we want to appeal to on-demand economy drivers everywhere, giving them the option and ability to earn more this way, based on a fairer and driver-centric system, compared to the traditional on-demand platforms.

Carri will ensure onboarding materials for drivers are easy-to-understand, to get started on the Carri Network. This will help them benefit from the P2P power of blockchain technology, in return for them providing a valuable service to users (customers) and businesses. On our network, drivers can regain power from the big companies in this sector, and earn more than they could from those platforms.

Drivers will be offered referral rewards when they refer new users or drivers to the network. Carri will also play an active and forward-thinking approach to community relations on the platform, creating marketing materials to sell the benefits of joining Carri to drivers around the world, alongside organizing webinars and live Q&As on the platform, and across a series of social networks, such as Telegram.

Carri is partnering with electric and autonomous vehicle manufacturers to provide lease opportunities for drivers and companies an opportunity to create their own delivery and transportation businesses. With additional incentives for EVs, Carri's aim is to help reduce the global carbon emission due to millions of diesel and petrol-based vehicles used in deliveries or logistics.

Partnerships

Carri will work with a range of partners to make the whole network possible, which we will cover in more detail here.

1. Blockchain Technologies

Carri will use several blockchain and web-based technologies to create the network and platform.



Carri Coin (CRC) will be created as an ERC20 token and will be merged with the Polygon network to ensure faster transactions for users, and minimize gas fees.

For the blockchain network itself, that will be developed using Hyperledger family, thanks to its plug-n-play business framework and domain specific available libraries. This means we can create a range of valuable features, such as decentralized identity and storage, customized consensus, a public and permissioned blockchain, and Ethereum Virtual Machine (EVM) compatibility. Some of the Hyperledger technologies used are Hyperledger Sawtooth for building a public and permissioned blockchain network, Hyperledger Grid for supply chain standards, Hyperledger Indy for identity management, and Hyperledger Quilt for interoperability of the ledgers and payment systems and Hyperledger Caliper for blockchain performance tracking and analytics.

Carri will also develop and deploy front-end and back-end microservices to develop a dApp (decentralized application). We will source and deploy software and hardware oracles, to offer multi-currency support and location tracking, for the benefit of merchants and users.

2. Network Operators

P2P platforms, such as the model Carri is using, rely on network operators to ensure everything functions smoothly and securely. It also guarantees a perfectly decentralized approach, instead of the top-down model employed by larger corporations in this and other markets, which takes power and control away from drivers, users and customers. We are bringing that power back to the people, with a decentralized management model.

Network Operators provide security and validity for the whole system, with each playing their own role, alongside providing support and operating local networks of merchants, drivers and users, with their permissions.

For those wanting to become an operator, individuals or companies need to stake Carri Coin's (CRCs) at a minimum rate, depending on the different regions and locations. In some cases, there could be higher demand for specific cities and regions, which could result in an auction being created so that operator rights could be earned that way, when demand for a particular location is high.

The total number of operators in any one location — when somewhere is either geographically large or requiring multiple operators (e.g. New York City) — would be determined using dynamic modelling, influenced by the total number of users and drivers in a particular area. This also allows for scope for the network to expand and therefore number of operators to increase, as the platform and total number of drivers and users grows over time.

3. Other Partners

Other partners include some third party services for banking integration, APIs for communication and data sharing, oracles, and external APIs to provide data and information from third-party sources, such as Google Maps.



Also, IoT devices, such as sensors and GPS enabled tags will be available as an option for merchants to improve their traceability on supply chain and deliveries. Carri, will have agreements with third party companies for the supply and integration of such devices to the merchant operations.

Carri's goal is to provide an opportunity for drivers of delivery vehicles (who are currently diesel and petrol-based vehicles) to lease electric cars and trucks with a focus on reducing emissions. Carri aims to work closely with EV manufacturers in order to produce specially designed, safe and reliable EVs that will hopefully be used more often due the partnership.

Product

In this section we will cover in more detail the various components of the platform and network, which include:

- A User Software (mobile and web client)
- Merchant Software (mobile and web client)
- A Driver App (mobile and web client)
- Operator Software (web and desktop validator application)

Key Product Features

In this section we will cover in more detail the various components of the platform and network, which include:

1. For Users

- More affordable prices than competing companies that use centralized business models without markups;
- Simple and transparent pricing;
- Pay using Fiat, cash, cryptocurrencies and the native Carri Coin (CRC);
- Request and book future delivery schedules;
- Rewards and discounts for paying with and using the Carri Coin;
- Privacy guaranteed, no sharing data with third-parties;
- Rewards and discounts for referring other customers/users.



2. For Drivers

- Get paid directly, without losing money on huge commission payments;
- Choose your base and hourly delivery fees, and know what you're earning;
- List scheduled ride and/or delivery timetables, so that customers know when drivers are available;
- Earn rewards for miles driven when customers pay in Carri Coin (CRC);
- Drivers can also take part in staking, and therefore earn rewards that way too;
- Drivers can also take part in in the governance of the network;
- Rewards and discounts for referring other customers/users and drivers.

3. For Merchants

- Direct payments from customers without huge commission cuts from third parties
- Easily manage products, drivers and sales
- Streamline supply chain with immutable and transparent product tracking
- Communicate and advertise directly to your customers
- Earn rewards and incentives for payments in native token
- Can participate in governance

Governance

Once a member is approved, anyone can join the governance network by staking a minimum number of Carri Coins (CRC), thereby automatically giving them a voice and say, through voting when votes are required, in any future changes and proposals.

Votes can take place over a distributed network, including the website, with a domain separate to the main website/platform and a range of other platforms.

When someone or a group of people, such as those responsible for oversight and the operation of the Carri Network, want to make a proposal, a percentage of the overall pool of tokens are locked in a smart contract. Voting is done through a candle auction method.

With each proposal with a deadline, the token amount required is locked according to the choice of those making the proposals. When the vote is complete, the proposal that accumulates the most number of tokens (votes), wins the vote. Deadlines can not be longer than one full week (7-days).

Once the relevant proposal wins, all of the locked tokens revert to the original owners and the proposed change is applied across the network. Some changes will require an investment of development time, which will cost tokens to implement, and therefore a percentage of tokens will be needed to pay for this.



As one of the ways we aim to reduce fraudulent proposals across the network, if any proposal loses a vote, a percentage of the locked tokens reverts to the Carri Network reserves.

Blockchain Technology

An integral part of the Network is the Carri Coin (CRC), which will be deployed as an ERC20 token on the Polygon Network, making it easily accessible for investors, traders and supporters.

Those who want to buy Carri Coin's – CRC tokens – can do so two ways. Purchases can be made without going through a Know Your Customer (KYC) verification processes, allowing for permissionless buying and trading. However, token holders wanting to play more of a role in the Network, either to benefit from incentives and be a member of the Network, alongside drivers, merchants and operators will need to go through a verification and KYC process, thereby getting the relevant permissions from the Network.

For business operations, Carri is developing a permissioned blockchain, responsible for accepting and verifying the creation of new network accounts, P2P rides, delivers, storing customer data, user and driver locations, consensus mechanism, and the governance of the platform. Permission is granted once a new user, driver or merchant is verified by a Network Operator, who are themselves verified by management and/or other Network Operators.

Operators ensure the Network is safe and secure for everyone, overseeing P2P rides and

deliveries, and also handling any customer service queries and dispute resolution problems.

We will outline the Network Architecture of everything in this section in more detail in a Technical Paper.

i. Roles in the Network

Network Operator: Operators provide security, validity and verification processes for the whole Network, and within that context, the local network of drivers, users and merchants they're directly responsible for overseeing, granting permissions and handling customer service and dispute resolution questions. Becoming an operator, either as a company or individual means staking CRC tokens at a pre-agreed minimum for a wide range of different regions and locations, and the number of Operators in any one area can increase depending on the number of users and drivers; although within a capped limit. If demand for Operator rights is high, for any one region and location, an auction would be held to determine who could win those rights.

Merchant: For merchants to sell to users on the platform, they need to open a wallet, a merchant account, and be verified by an Operator, so that they can open a public storefront on the app. On the other hand, some merchants such as distributors and wholesalers may choose to have private accounts where only parties who have the access code can reach the merchant's profile.



Driver: Drivers are of course absolutely essential to the Carri Network. To become a driver, a user needs to join the Network, open a Wallet, then provide ID, vehicle registration details, and await the completion of a secure background check. All of this is essential for the security of users (customers) and merchants on the platform. Drivers earn rewards for miles driven, and can be paid in Carri Coin, and can stake tokens with Operators, to earn more, if they want. Also, if merchants and sellers have their own drivers and transportation solution, they can create, manage and track their fleet on their merchant platform.

User: Users can join and benefit from the Carri Network in two different ways. They can use the Carri app to order products from merchants and earn rewards and incentives for using Carri Coin. Being a user has no requirements, and everyone can download and use the Carri app without requiring a permission. And users don't have to make transactions in crypto currencies, they can pay using a direct bank transfer or even pay cash for accepting merchants.

Token Holder: Somewhat different from a user, a token holder can be anyone who buys and owns (and can sell) CRC tokens. They need to first open a wallet and go through the secure KYC verification process if required locally, and can stake tokens, earn rewards, and take part in governance on the platform.

ii. Consensus Mechanism

Because delivery (of products from merchants) and supply chain(between merchants) is largely confined to a local area and private companies, the Carri Network requires a

customized consensus mechanism. Carri has therefore created its own Consensus Mechanism for security, finality, and operations, known as Proof of Operation (PoO).

PoO, is a modified version of PoET(proof of Elapsed Time) where the block validator is chosen by the shortest wait time. Similar to PoET, new blocks are created and validated by preselected nodes, and where the next block winner determined by a lottery system. This lottery mechanism calculates the total amount staked, node reputation (based on reviews from other nodes, e.g. users, drivers, delegators, etc.), and time spent using the Operator Software. All three have weights on the score, and higher scores are more likely to be selected to create the new block.

In regions where there is going to be a limited number of Operators, Carri aims to create new sources of income for local communities. In these regions, people can create companies (such as cooperatives), to manage Network Operations in their town, city or region, thereby benefiting from a global delivery and transportation movement in a way that's not possible when large companies are dominating the market. We aim to benefit drivers and communities alike as well as the merchants on the network.

iii. Proof of Operation (PoO)

Proof of Operation (PoO) means that new blocks are created, and these are randomly displayed to Network Operators in quick succession, such as every 0.1 seconds, depending on the number of ongoing transactions on the network.



When an Operator validates the block they were assigned, the reward is calculated dynamically according to the current market/trading value of Carri Coin (CRC), the number of other Operators in the consensus and the amount staked. Nodes (e.g. Operators) with a higher operating score (which is calculated from a number of factors), are more likely in the lottery to be selected to see a block before others in the Network.

Once the majority of the nodes reach a consensus, the block is initialized and updated on the distributed ledger, containing all public and private transactions. Operation scores are updated daily, calculated on the basis of the average total amount staked in Carri Coin, including delegated coins, total active time dedicated to the Network, and reviews from local users, merchants and drivers. All of this, as a consensus mechanism, provides a secure transaction validity, while preventing possible attacks and mistakes on the Network, while ensuring active participation from nodes, thereby benefiting members.

Unlike other consensus mechanisms, such as PoS, dPOS, or PoA, PoO actively takes into account the amount of time Operators dedicate to the Network. In Ethereum 2.0 PoS, for example, the minimum amount required to stake is 32 ETH, and make it very difficult for retail investors to join the validator network. Carri will have much lower minimums to be an operator, but at the same time it'd require operators to be active on the network for tasks, and keep a minimum score of reputation to be able to continue to operate.

Naturally, a decentralized global network of this scale, with numerous local nodes to keep everything running in different countries, regions and cities, needs to operate securely and smoothly 24/7. No one person or company could keep this running, hence this being a decentralized model. Although we reward Operators for time spent on the Network, and using the Operator Software, we know no one can dedicate 24/7 to the Network. Therefore, we would aim to support Operators by connecting them with other nodes which are employed or contracted by the Operator. This could create numerous business opportunities for Operators to create new companies staffed with remote employees or freelancers across the world , with the geographic area they operate. An Operator Software system will be developed to give them the ability to perform the functions required.

Alongside earning rewards for new blocks, Operators also earn rewards for every positive action they perform on the network, such as transactions and network security (through transaction fees), legal, marketing, dispute resolution and staking rewards. To begin with, the requirements for becoming a network operator will be low, but there is a high probability that as the Carri Network grows, there will be more applications to become Operators than potential roles available. In that case, a voting system on the Network will determine who can become an operator. Winners will be selected based on the amount staked and reputational score.

We are also prepared for Operators not performing the role required, which means there needs to be a system of incentives in place to behave as expected, such as: losing rewards from the next series of blocks, alongside temporary and even permanent account deactivation.

As stated, no Operator is expected to work 24/7, or close to that, but there does need to be a predetermined minimum number of operators active and online to ensure the network in any one area can stay operational, for the benefit of all users. In the event of there not being enough operators online, the network in a particular area could go offline temporarily. This could result in every operator in a particular area facing penalties which smart contracts would implement.



As part of the work Operators are responsible for, local transactions are overseen in the local area, and logs and states are authorized and approved by signatures of users and drivers by smart contracts, known as Proof of Delivery. Alongside confirming local transactions, the whole global network needs a finality, which means block creation takes place in the global network by participating local operators, using the Proof of Operation (PoO) model. It's important to remember that Proof of Delivery (PoD) and Proof of Operation (PoO) should not be confused, because PoD is a smart contract that confirms a transaction has been completed.

Proof of Operation (PoO) is a consensus mechanism which creates new blocks, and these blocks will contain every global, local and private transaction. On the global network, public transactions, such as DEX trades and Atomic Swaps will be public. However, delivery details, logs and peer information will always be private and encrypted to the related parties.

vi. Summary

In a Carri Network block, each can contain the following:

- **Private local transactions,** encrypted and authorized by smart contracts, either between users and drivers (or users and merchants).
- **Private logs and records,** including P2P delivery data (a complete record of every journey, transaction and delivery on the network), encrypted and authorized by local Network Operators, and sent to the global network, to maintain a permanent record.
- **Public transactions and Atomic Swaps on DEXs,** validated by Network Operator, recording them on the ledger and sharing automatically with every Operator on the network (their nodes), to retain a secure and permanent record.

Token Economics

a. Limited Supply of Tokens

Carri Network will operate on a Limited Supply Model, with a maximum of 1.000.000.000 Carri Coin. All of the coins will be premined and saved in an escrow account. Rewards are paid dynamically, and updated with the current value of the tokens, according to information collected and provided by oracles.

After the initial private and public token sales, the remaining tokens half-time will expand up to 5-years, or approximately when the total gross bookings reaches \$1 billion, when the other half is expected to generate rewards over a longer span of time once it reaches the half-life.

We are aiming to ensure a slow release of tokens, creating a network and a sufficient volume of transactions to support the network and token value.



b. Carri Coin (CRC) Token

The Carri Coin (CRC) token can be purchased within the app using Fiat currency, or any other number of cryptocurrencies, using Atomic Swaps. Merchants and drivers can be paid in Carri Coin, and when they want to withdraw what they've been paid they can sell the coins back to the Carri Network at the current market value of the token. These tokens will be immediately sold on DEX's, or saved for later when the Network requires larger reserves in the Treasury.

Carri Coin will largely be an incentive token, providing rewards for all members. It will also serve as a Utility and Governance token, used to pay for P2P deliveries from merchants, and the use of CRC will include discounts. Alongside these uses, it will be the main governance token of the network.

Carri Coin comes with the following features:

- Incentives
- Discounts
- Utility
- Governance

c. Governance and Voting

Once a member is approved, anyone can join the governance network by staking a minimum number of Carri Coins (CRC), thereby automatically giving them a voice and say, through voting when votes are required, in any future changes and proposals.

Votes can take place over a distributed network, including the website, with a domain separate to the main website/platform and a range of other platforms.

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d. Staking and Rewards

Staking and Rewards will be covered in more detail in the Technical Paper.

In this paper, we can outline the fact that Network Operators can expect approximately \$500 per day in returns from the initial pilot location, being paid in the current expected approximate value of the Carri Coin (CRC), once the minimum stake is deposited, and have started to successfully run an Operator Node.

Other locations can expect similar returns, depending of course on local dynamics, market demand, transaction amounts, and the effect of local economics. Once local demand increases, and Operators have increased the amount staked, and the number of transactions in their network increase, the amount of revenue they can generate from local operations will only keep increasing.

A set of minimum requirements will be updated depending on each geographic location, the population and demand from users. Once there is sufficient demand, more Operator positions will open up, helping to support increased demand.

Drivers will also benefit from this. If drivers work 8-hours a day, choose to be paid in CRC and stake daily earnings, then they will earn an estimated \$40 bonus, on-top of earnings from that day. These extra earnings are dependent on the Carri Coin value, and the value of total transactions in the network.

Also referral rewards will be around \$10 per user or driver, while around \$100 for a merchant

referral once it is in operation in the pilot location. This will also be updated depending on the location.

A detailed explanation of token economics is provided in a separate Carri Token economics paper.

Progress to Date

- Creating the business model, economic model, plan : Q2 2021
- Establishing the team, beyond the co-founders, and key partnerships: Q2 2021
- Creating a product requirement document for the development of the decentralized app: Q2 2021

Roadmap

Once the economic and technical models are complete, the business structure will be developed using Hyperledger Sawtooth, with the development of delivery features as the priority. At this stage of development, funding for the Carri Network will come from the CEO and private investors.



During the development process, Carri will be open for private token sales and interested VC investors. In the next stage of development, we will develop the Carri Coin (CRC) and implement it on the Carri Blockchain. Once this is successfully developed, we will apply to decentralized IDO launchpads to drive forward the public token sale listings.

Below is the roadmap so far, taking the Carri Network from a proof-of-concept Blockchain and dApp, in 2021, to launching the delivery dApp globally at the start of 2022.





Team

Carri Network has been founded by a serial entrepreneur, with extensive experience in blockchain technology, Mr. O. Melih Pamuk

Founder & CEO O. Melih Pamuk

Mr. O. Melih Pamuk graduated from Electrical & Electronics Engineering at Bogazici University in Istanbul, and first gained corporate experience as an Executive in Unilever's Logistics & Supply Chain department, in Turkey.

In 2015, he relocated to Los Angeles following his entrepreneurial spirit. Since then, he has been dedicated to bringing new ideas to life, and has founded and managed several successful ecommerce and delivery companies, and is currently employing and managing a team of over 60 people using a dynamic business model.

Mr. O. Melih Pamuk is an early supporter of blockchain technology, as well as being a selftaught Certified Blockchain Architect, and Smart Contract Developer.

He is also an amateur kickboxing fighter.

He's currently,

CEO of Fly Tech Services, flytechservices.com

CEO of Kushfly, kushfly.com

Founder & CEO of Juicefly, juicefly.com

CMO Can Susluoglu

Can is a visual marketing expert, videographer and creative storyteller. He has extensive experience as a Creative Director, and is committed to driving forward the growth of Carri Network.