Pavo

IoT Blockchain for the AgTech Ecosystem

White Paper

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Introduction

Our Vision

By bringing together the cutting-edge technologies of IoT[1] and blockchain, and our extensive experience in crop cultivation we are serving an agriculture (“Ag”) ecosystem focused on highly technologized crop growing, processing, and distribution. We bring the high efficiency of IoT and transparency of blockchain into every stage of the entire lifecycle of agricultural business sectors.

The Pavo team has vast experience building traditional monitoring systems for almonds, hazelnuts and walnuts for the European market. Our present IoT solution for agriculture was developed in early 2017 and deployed later in the same year. This year, we’re launching the Pavo cryptocurrency based on the blockchain Ethereum ERC20 standard as the next step in developing the project.

[1] IoT (Internet of Things) is the network of physical devices, vehicles, home appliances and other items embedded with electronics, software, sensors, actuators, and connectivity which enables these objects to connect and exchange data.

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Our ultimate target is the trillion-dollar U.S. food and agriculture industry (roughly 6% of the GDP). American farm outputs alone total roughly 1% of the GDP, or over $130 billion.[2] Corn, wheat and soybeans routinely top the rankings of U.S. production numbers, and California - which produces over 80% of the world's almonds[3], and some $6 billion worth of grapes annually[4] - is the largest agricultural state in the country. (Globally, food and agribusiness comprise a $5 trillion industry,[5] accounting for one-third of global GDP.[6])

We are spearheading our efforts to further develop and mature our product in the tree nuts (e.g. almonds, walnuts, hazelnuts, pistachios) industry, where blockchain-enabled transparency, and the Pavo IoT platform, is most needed to establish provenance for consumers and build trust. Blockchain has a significant role to play in agriculture, where application of the technology is about food safety, provenance and financial services. Today is the age of transparency and provenance for our food, and, increasingly, consumer purchases, particularly for food, reflect their values.[7]

Our solution is already deployed in mid-size and large California almond and walnut farms (3). In addition, the Pavo system is deployed in hazelnut, almond and walnut farms in Europe.

Using the turn-key Pavo platform, every agribusiness professional will benefit from our IoT and blockchain capabilities with minimal expense, special expertise or major disruption to their day-to-day operations. Pavo brings a fresh, new, approach to an industry that is old, but crucial for humanity and its survival.

As the Pavo solution fully matures, we will gradually tackle adjacent sectors, such as indoor farming, and then move to expand market penetration throughout the entire agriculture ecosystem.

[2] United States Department of Agriculture, Economic Research Service
[3] Almond Board of California
[4] United States Department of Agriculture, National Agricultural Statistics Service
[5] McKinsey & Company
[6] The World Bank
[7] Jack A Bobo, one of Scientific American's most influential people in biotech, 2015.

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Market Overview

Globally, food and agriculture represent a $5 trillion industry, which only gets bigger with population growth. Some forecasts call for the total, global, caloric demand to increase by 70 percent by 2050, when there will be a projected 9.6 billion people on the planet, and crop demand for human consumption and animal feed will increase by at least 100 percent.

The smart agriculture market alone is projected to grow from $5.18 billion in 2016 to $11.23 billion by 2022, at a compound annual growth rate of 13.27% between 2017 and 2022.[8] The global indoor farming market is projected to grow at a compound annual growth rate of 22.4% and reach $9.9 billion in 2025.[9] In the United States, consumers spend more than $122 billion annually on fresh fruit and vegetables.[10] Our project has a play in each of these three arenas.

Agriculture supply chain participants are increasingly looking to technology solutions such as cloud computing, Internet of Things (IoT) networks and electronic sensors to ensure that their operations are both financially and environmentally sustainable, with growing consumer brand appeal.

[8] Markets and Markets, March, 2017.
[9] Grand View Research, April, 2017.
[10] UC Davis Department of Agriculture and Resource Economics, June, 2016.

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Problem Statement

Increased global caloric demand is placing new strains on agriculture. For example, by 2030, according to a United Nations report, some 40 percent of water demand may not be met.[11] To better manage vital resources, farms are seeking out new ways to collect and analyze data on crop yields, soil profiles, weather and climate.

With overall demand increasing, and consumer demand for safe, sustainable food becoming acute, market participants are still facing several challenges with regards to consistently delivering sustainable, profitable, high-quality crops:

[11] U.N. World Development Water Report

1. **Rising costs.** As food demand is increasing, utility costs – one of the largest expenses for indoor farms, a crucial resource in the face of diminishing arable lands – are rising.
2. **Price taking.** Farmers have traditionally been "price takers" rather than "price setters" despite doing the hardest work in the supply chain.
3. **Yield and quality.** Growers are striving to produce high-yield, high-quality product to remain competitive in a growing consumer market.
4. **Regulatory requirements.** The droughts in California and elsewhere have left in their wake a raft of legislation at multiple levels of government, leaving market participants struggling to maintain compliance.

Introduction

5. **Supply chain.** As the industry works to standardize and fully institutionalize food safety and provenance, farmers and other market participants are looking to elevate their game when it comes to sourcing and managing their supply chain.
6. **Product differentiation and branding.** Farmers are increasingly turning to sophisticated Consumer Packaged Goods (CPG) tactics, such as stressing quality and purity, to differentiate their products and stand out from the crowd.
7. **Environmental issues.** Increased electricity and water consumption due to drought and indoor farms leads to increased greenhouse gas emissions. Further, consumers are concerned about the unintended environmental side effects of solutions and nutrients used to nurture crops.
8. **Lab Testing.** Testing for food safety compliance, a cost often measured in the tens of thousands of dollars per crop, further adds to indirect operating costs.

Therefore, it is only natural that the agriculture industry is turning to technology to alleviate these burdens. As the agricultural industry experiences unprecedented challenges to feed the planet, fueled by population growth and caloric demand, farmers need to prepare for new regulations and increased competition to win over increasingly sophisticated consumers.

Unlike many technology companies that have issued private digital currencies (a.k.a. a cryptocurrency), **Pavo already has a working product** that is in deployment with customer prospects in multiple farm sites.

Pavo provides an IoT software platform for industrial agriculture, which unleashes significant operational efficiencies.[12] Implementing blockchain will provide increased product transparency for crops from seed through harvest to consumption. Proceeds from Pavo's coin issue will be used to accelerate continued product and market development.

[12] Learn more on the Pavo's technology in the chapter "Pavo Technology." Details on how it solves industry problems can be found in the chapter "Pavo Functionality Solving Industry Problems."

The Pavo Project

Project Overview

It's worth repeating: Pavo already has a working Internet of Things software platform that is in deployment in real-world environments in California, USA. We are continuously refining it to achieve the best crop performance while integrating with the blockchain to transform the solution into a unified ecosystem that makes it easy to trace each plant and optimize the entire supply chain.

The Pavo project is anchored in two major blockchain-enabled components that meet the needs of agriculture:

1) A fee-based hardware and software platform for growers designed to increase yield, quality and transparency for their product, create product differentiation, and maintain regulatory compliance[13].

2) A cryptocurrency for the agriculture ecosystem – including farmers, consumers, local businesses, wholesalers, manufacturers, and suppliers – to be used for secure, safe, and reliable payments[14].

[13] See chapters "Technology Overview" and "Pavo Technology in Details" for more information.
[14] See chapters "Technology Overview" and "Pavo Technology in Details" for more information.

The Pavo Project

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Further, the Pavo marketplace is conceived as a web and mobile app agriculture trading space where consumers, families, distributors, local restaurants and grocers can connect directly with farms to buy food and other agricultural products with unparalleled transparency on their provenance and maturation.

The marketplace also provides farmers the opportunity to presell crops via smart forward contracts, reversing a long-standing problem for farmers – having to wait until after harvest and delivery to get paid. Beyond that, the marketplaces addresses traditional inequities in farming – small and mid-sized farmers' lack of access to a full range of useful and necessary financial services.

Blockchain, combined with cost-effective, low-maintenance, cloud computing and Internet of Things technology, has the potential to profoundly transform farming. It's now possible to deliver compelling tools that enable farms of all sizes, indoor and outdoor, across a range of crop types, to deliver high quality product, and sustain a high-volume, high-margin agriculture business.

Farmers, and the agriculture industry as a whole, are only now fully transitioning to software-driven cultivation. Large numbers of farmers practice cultivation techniques that are not well documented or subjected to scientific rigor. Recently introduced regulatory requirements related to water consumption have forced famers to introduce basic record tracking and compliance capabilities provided by small, niche, vendors. These "point solution" software providers lack any IoT, blockchain component or an equivalent to Pavo's all-encompassing vision for the future of the agriculture industry. Similarly, cultivation equipment providers are either not specialized in indoor farming, or, being providers of only one type of product or service, such as lighting, cannot provide an integrated solution covering the multitude of sensors and the hardware and software platform that Pavo can support.

The Pavo Project

Drawing on our key points of differentiation, superior technology and seasoned management team, we are aggressively targeting a significant share of the high value crop industry, from tree nuts to white asparagus, from heirloom tomatoes to specialty mushrooms, in the USA. We see demand for our value proposition from other sectors of agriculture both in the USA and in other geographical markets. Consequently, we plan to transfer the proven Pavo solution first to other high-value crop sectors in the United States, and then to all agriculture sectors worldwide, starting with Europe, where our team already has vast experience of implementing monitoring systems in agricultural businesses.

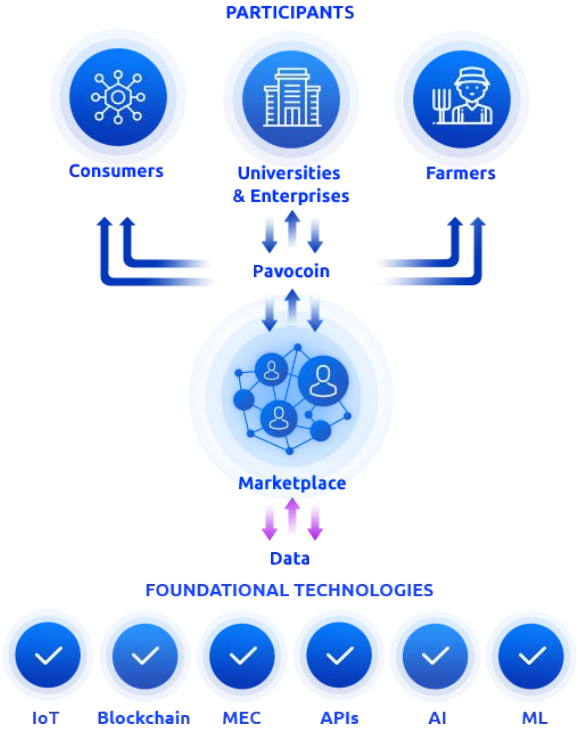
Pavo Token Economy

The Pavo Marketplace

The Pavo marketplace will be a central hub, powered by IoT and blockchain data, for our token economy.

Pavo's foundational technologies – Internet of Things, blockchain, Mobile Edge Computing (MEC), Application Programming Interfaces (APIs), Artificial Intelligence (AI), and Machine Learning (ML) will ultimately drive trillions of data transactions annually, feeding crop data into the marketplace to foster transparency and knowledge of crop provenance.

Marketplace participants use the Pavo token to buy and sell agricultural crops, data and ancillary supplies.



Pavo Token Economy

Pavo Token Circulation

We expect the Pavo marketplace to attract participants all along the agribusiness spectrum. Farmers will want to use our IoT Blockchain solution for higher yielding, better quality crops, which they can sell through the marketplace. Individuals, families, local restaurants and grocers will want access to vast and deep data lakes we create in the platform.

CONSUMERS

- Individuals, families, local restaurants, local grocers, all connecting with farmers
- Purchasing all kinds of crops, from almonds to strawberries, from carrots to kale

- Hundreds of millions of annual transactions
- Better food on their table

ENTERPRISES & UNIVERSITIES

- Corporate data scientists and university researchers all tapping Pavo's unique datasets
- Consuming higher order analytics and unique, proprietary, raw datasets

- Millions of annual Pavo token transactions
- Reduces research time

FARMERS

- IoT Blockchain solution provides higher yields with higher quality crops
  Issue smart coupons to customers via
- Pavo token
- Pre-sell crops with Pavo smart forward contracts

- Hundreds of thousands of annual transactions
- Higher top-line revenues

Pavo Technology

Technology Overview

Farmers are increasingly turning to technology to better manage cost inputs to the production process. Pavo's IoT blockchain software platform is designed for the data-driven agriculture professional of the future. Right now, the IoT software component exists and is deployed at three farms in California, USA.

We continue to perfect it to allow our clients to achieve better product characteristics while increasing process automation and minimizing expenses. Through the implementation of the blockchain element, we'll enable our clients to not only produce better crops but also to optimize their sales, distribution, and supply planning activities.

Pavo IoT Deployed in Central Valley almond orchards

Pavo Technology

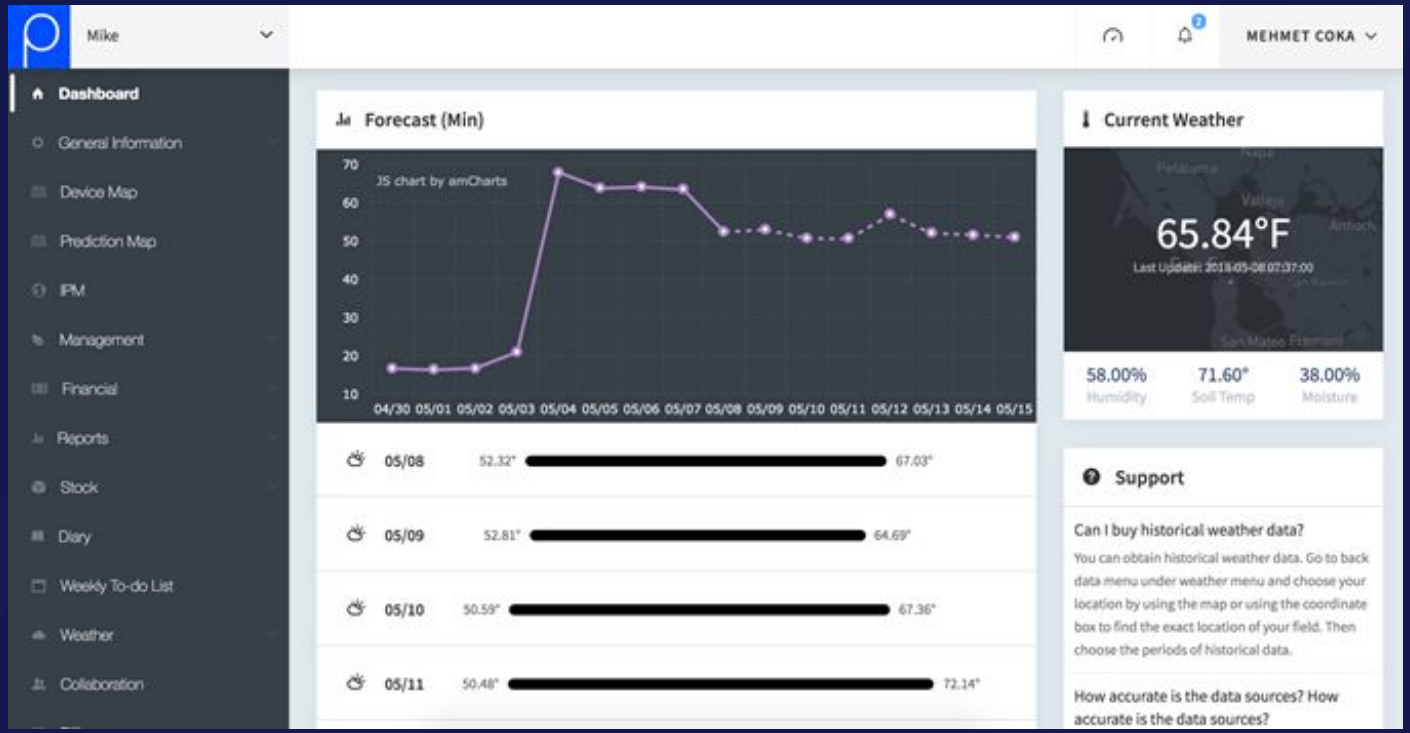
Specifically, the existing Pavo **IoT software platform** helps the user:

- Record and monitor production practices in real time via the Pavo IoT gateway.
- Record, report, and analyze activities from planting to spray records to shipping.
- Track labor costs and productivity to optimize human resources and related costs.
- Easily measure and track the entire cultivation operation from anywhere.

These activities help the grower document, archive and learn from past experience, leading to better yields, lower costs and higher top-line revenues.

How it works right now. Soil sensors are placed into the soil close to the plants, and CO2 sensors located in the room where the plants are grown regularly collect sensor data. This information is then transmitted through the gateway into the data storage from which it is presented to the user through an intuitive and user-friendly interface. The user tracks the information and uses it to optimize the whole growing cycle by ensuring that vital crop measurements stay within optimal ranges.

Pavo Technology



Screenshot of working Pavo software

Pavo Technology

What's changing. Right now, we are perfecting this technology through more research and development of our sensor systems, delivering new sensors which will allow us to collect data on new cultivation parameters, at greater frequency. In 2018, we're looking to introduce luminosity, contaminants, water quality parameters, such as pH, ORP and salinity. We are also accordingly updating the interface to store more complex data.

As a next step in improving the Pavo IoT system, we are adding automation and environmental control ("orchestration") features which will allow us to not just collect information for use in operations, but to manage the entire cultivation operation from anywhere. This way, growers won't even have to go into the greenhouse to adjust the environment, as they will be able to do it from a distance through the same interface.

Further introduction of AI functions will help growers make decisions without having to create a script. This way we can start creating automation systems that can replace human labor.

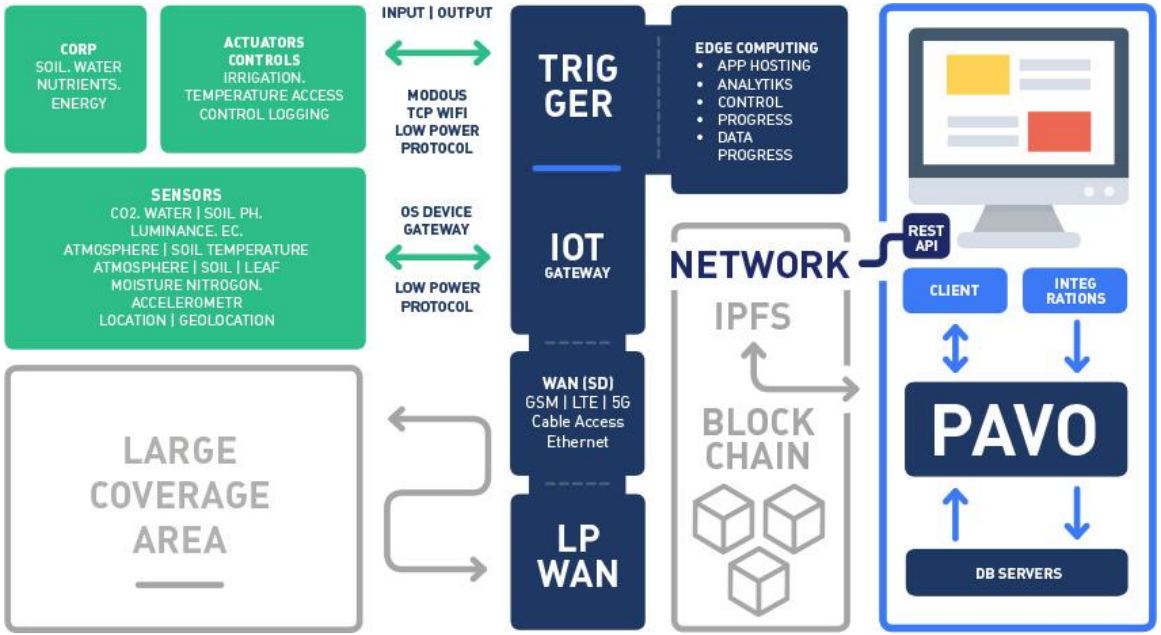
What sounds complicated shouldn't have to make it difficult for growers. Right now, deployment is being done with the assistance of technicians but further improvements on the hardware will allow us to deploy applications with real time capabilities. This means that users will be able to pick up sensors at any store, install them themselves and use an app on their phone to enable data collection.

In addition, implementation of **the blockchain element** and **marketplace functionality** will allow us to transform a platform with narrow specialization for farmers into a full functioning ecosystem for all participants of the modern agricultural market.

Pavo Technology

What it means. Key data about the growing process of each harvest lot will be stored in the blockchain and cannot be falsified. Pavo will be able to certify the reliability of all information collected from growers and other participants of the product supply chain.

Transparency of information makes it possible to elevate the trade process from questionable and inefficient person-to-person interactions to a modern e-commerce form, where each grower will have a personal page with Pavo-certified products available for purchase, and buyers will be able to make purchases from their laptops or mobile phones. All transactions will be processed with smart contracts.



Here is the layout of the Pavo platform.

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Elements of the model:

Crop *- information about the soil, water, nutrients, energy and plant material that reflects the grower's livelihood.*

Sensors *- sensors in the crop gather environmental data and send it through the Pavo IoT gateway, on the blockchain.*

Actuators *- irrigation devices, temperature controls, and even physical access control devices may be controlled through the IoT gateway to manage the crop.*

Edge Computing *- distributed compute power ensures the solution scales for large operations.*

Wide Area Network (WAN) *and* ***Low-Power WAN (LPWAN)*** *- these communications technologies carry the data to the Pavo cloud-computing platform that hosts the main application.*

IPFS *- InterPlanetary File System technology provides a highly scalable, distributed data storage solution.*

REST API *- use of standardized Application Programming Interfaces (APIs) enable integration with currently used niche or other solutions.*

DB Servers *- database servers respond to end user interactions to view, manipulate and store data.*

Client *- end users (i.e. farmers or growers) access the data through a web browser or smartphone app, where crop information is presented and can be acted upon.*

Pavo Technology

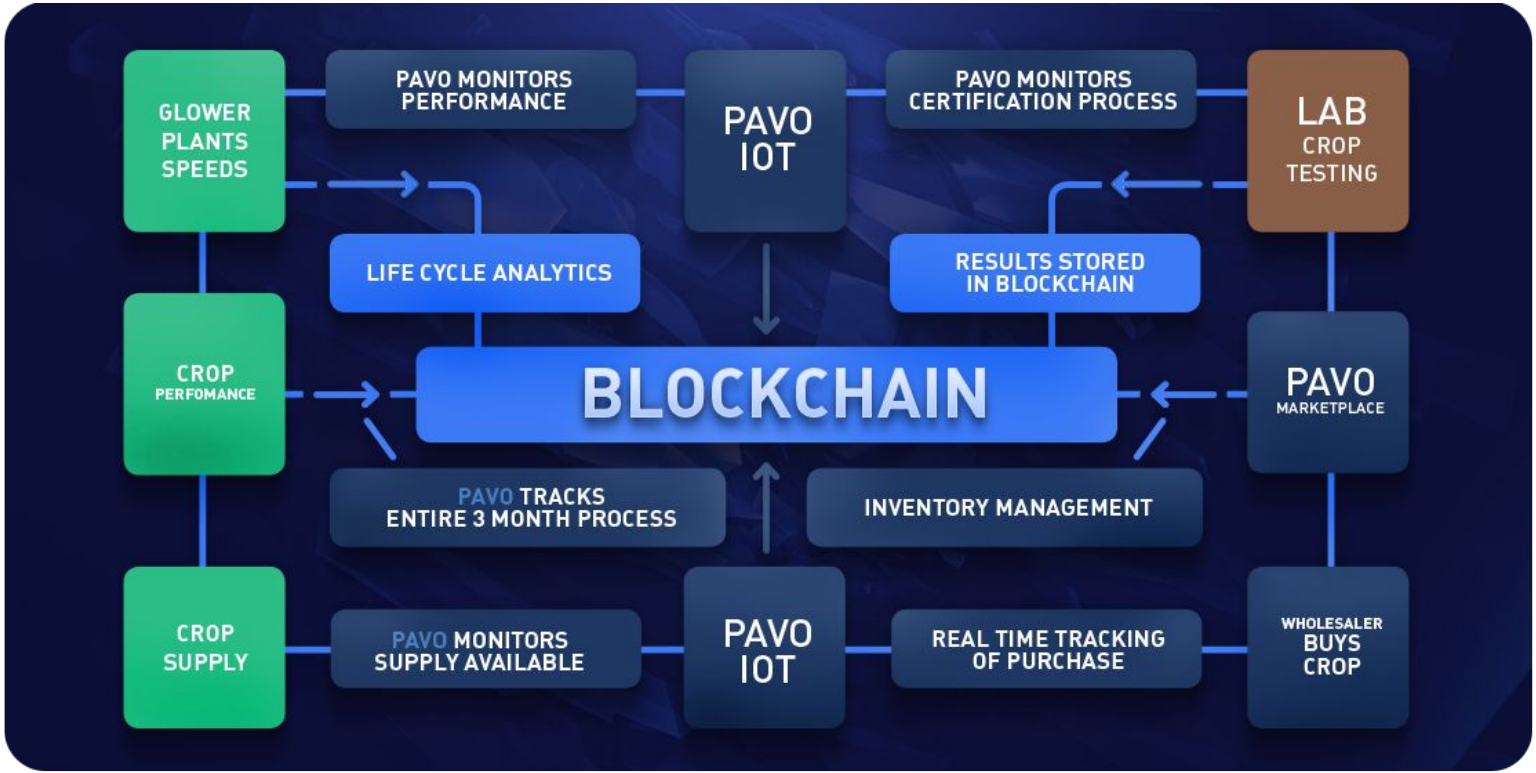

Diagram of information flow in the Pavo ecosystem

Pavo Technology

Pavo Technology in Detail

The Pavo platform is enabled by a hybrid (hardware/software) solution that is easily accessible through user-friendly desktop, tablet and mobile interfaces. Pavo users can view key activities and metrics related to their operations in real time with high precision reporting and sophisticated analytics built on top of that intelligence.

When the Pavo solution is in place, it delivers full visibility (e.g., overseeing growth stages, harvesting, managing inventory, and tracking sales), along with a better understanding of the end-to-end grow operation. The Pavo dashboard displays at-a-glance information on the vitals of the grow operation such as resource utilization and the cultivation staff's actions in reverse chronological order, in the form of a detailed news feed.

Once enough information is gathered in the system over the course of multiple rolling grow cycles, recommendations customized for each farm site significantly reduce power, water, supplies usage and undue maintenance costs. Constant monitoring of streams of sensor and operational data helps Pavo automatically compute a GrowScore per farm or indoor zone that is presented in the form of a heat map. The aim is to always promote better cultivation recipes and crop management practices for every specific site, with customizable granularity per farm site.

Pavo also facilitates on-site communications and assigns tasks to pre-defined human resources, with an eye towards optimal resource scheduling and further process automation. Cultivation staff can not only reach vital performance indicators on-the-go but can also conveniently log their expert impressions on the current crop conditions to form a more complete picture of crop performance overtime.

Pavo Technology

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The Software Component

Pavo is focused on delivering compliance, smart contract and yield management capabilities to the agricultural industry by transforming its clients' data into actionable intelligence and catapult them into the 21st century. By collecting and consolidating information from "things" with the intelligent IoT blockchain platform, Pavo's clients can transform raw data into a mission-critical operational decision support tool.

By gathering crop, supply chain, and other ecosystem data within the Pavo platform, we provide our clients with more than just reporting: advanced analytics, predictions and optimized operational systems are now possible. Our clients will ultimately be able to move away from making guesses to making data-driven decisions that counter-balance margin-reducing trends such as lower wholesale prices and higher electricity costs. We provide a single point of truth for the grower with immutable authenticity.

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The Hardware and Sensors

Pavo provides an intelligent platform that automates the collection, transmission and analysis of environmental (temperature, humidity, pH, CO2 content), soil, fertilization and irrigation data streams in a secure manner with wireless, ultra-low power sensors. This functionality is complete and is already being deployed by farmers.

The data collected is used to examine the crop environment by applying cloud-computing, edge-computing and big-data analytics to create methods that will improve production efficiency.
The platform is designed to manage and integrate with internal and external processes such as control systems for production, irrigation, climate; API management for logistics, access control, biometrics and compliance among other third-party applications all while securing data, managing connectivity and giving the user real time access with a mobile application.

With high value crops and indoor farming, security is of paramount importance. Existing solutions are fragmented, disconnected, and costly to maintain. Pavo takes operational security very seriously. Development plans include support for cultivator identification and authorization per farm or indoor zone, automatic and ad-hoc audits as well as incident alerts for added safety and security.

Pavo Technology

A Highly Scalable Solution

The Pavo solution is architected to support the development of a REST API that can be tapped by adapters which can seamlessly integrate with a multitude of third-party irrigation, lighting and cultivation systems, among others.

In addition to blockchain-powered components, Pavo's enterprise-grade software platform is architected for the high performance and scalability demands of real-time grow operations management. It is built on an auto-deployable, redundant, distributed cloud-based back end that can be scaled up or down on demand.

Machine Intelligence for Agriculture

What makes the Pavo platform truly different from other enterprise solutions, such as basic inventory management software, is its focus on marrying applied machine learning with the team's decades of experience in agricultural yield management techniques. The Pavo team includes data scientists and executives with direct experience in implementing enterprise-grade predictive analytics solutions that turn data into actionable insights[15].

[15] Details are in the "Team" section.

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Pavo's unique actionable insights, delivered via a web browser or smartphone app in the form of plain-language instructions, positively impact key performance indicators for growers. Such insights go beyond basic analytics capabilities that report on what has already happened and venture rather into the territory of predictive and prescriptive machine intelligence.

In an effort to make agriculture the most data-driven industry, Pavo utilizes machine learning algorithms extensively. The Pavo platform automatically analyzes the multi-modal data that it collects from a wide variety of sources such as sensors, select third-party vendor feeds, existing crop management systems, and human data inputs from day-to-day operations. The Pavo platform automatically analyzes the multi-modal data that it collects from a wide variety of sources such as sensors, select third-party vendor feeds, existing crop management systems, and human data inputs from day-to-day operations.

The highly granular data is cleaned up, wrangled and put into a machine learning-ready format. Sensor level and plant level data is transformed into a dataset that lends itself well to machine learning. This typically takes the form of a large matrix that is the result of means denormalizing many different data attributes from separate sources, through a periodic, automated process.

Predictive models drive many high-value use cases, including but not limited to:

- Crop Identification
- GrowScore (Automated Corrective Crop Monitoring)
- Crop Quality Recommendations
- Crop Yield Prediction
- Predictive Maintenance
- Crop Demand Prediction
- Lab Test Optimization
- Fraudulent Data Detection
- Intrusion Detection

The Pavo IoT platform combines LPWAN Wi-Fi location and the new Low Power LAN protocol into a single device. The Wi-Fi location capabilities allow geolocation services using much lower power than GPS-based location solutions. Pavo supports multiple sensors, interfaces, and I/Os and is interoperable with any adjacent open system.

Pavo Technology

PavoCoin

PavoCoin (PAVO) is a cryptocurrency payment system that enables agriculture market participants, such as growers, producers, innovators, retailers and service providers in our network to accept digital payments from their customers and community members. PAVO is a functional usage coin.

PAVO facilitates transactions among ecosystem participants and serves as an electronic alternative to traditional payment instruments like cash or credit cards. This mitigates both security risks and risks due to a nationally-chartered financial institution shutting down an account.

Our mission is to offer a multi-purpose blockchain focusing on value exchange that maximizes the total value for all stakeholders. We are actively developing cutting-edge usage token functionality and wallet features such as recurring payments, proof-of-receipt and exclusive escrow for future exchanges of value provided directly to a PAVO wallet after payment.

Furthermore, PavoCoin will facilitate smart contract execution between market participants and data sharing across the entire supply chain.

A Simple Wallet

For many users, PAVO will be their first cryptocurrency experience. This presents both an exciting opportunity to introduce millions of users in the agriculture industry to cryptocurrency and a significant responsibility to design an experience that is simple and secure.

Instead of requiring a complicated wallet setup when users install the app, users will be gradually introduced to the concept by earning and using PAVOs.[16] User wallets are created automatically and synced between devices with an encrypted cloud backup. This matches the seamless experience users expect from mobile apps. Additionally, as users earn more and become familiar with cryptocurrency, they will have the option to take control of their wallet, off-device, for increased security.

[16] See the Chapter “Pavo Business Model” for details.

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Smart Contracts

Blockchains are global, transparent, secure ledgers that are ideally suited for storing data that is valuable to many different collaborative and potentially competitive parties. Consequently, blockchains present immutable ledgers that anyone in the world can view and everyone can verify. They are perfectly suited for creating and codifying agreements – smart contracts – between members of the agriculture market. Pavo takes advantage of the digital and verifiable nature of blockchain to solve the myriad of challenges the industry faces as the market enters the mainstream. Blockchain smart contracts are ideal for recording and facilitating the exchange of value, goods, services, and confidential data.

Putting agriculture data and agribusiness transactions on blockchain smart contracts will increase the speed of service, save companies hundreds of thousands in reduced paperwork, keep track of quality and yield-related transactions, and provide the recipes for great new innovative products.

Within the Pavo platform we intend to use smart contracts to support the forward sale of crops, issuance of smart coupons to buyers of agriculture products, and to secure transactions through the marketplace. Each transaction will go to the Deal Creator Contract. The Deal Creator Contract will verify it, creating a Deal Contract, exchanging tokens if necessary, and send the amount to the created Deal Contract.

To provide decentralized, disaster-resistant ledgers for the agriculture industry, blockchains are a modern requirement. Any other architecture is fragile or dangerous by design.

Pavo Technology

Pavo Functionality Solving Industry Problems

Pavo provides a solution that is responsive in many ways to the challenges facing the agriculture industry and the high value crop industry in particular:

- A software solution that helps with regulatory compliance from seed to market.
- A solution that helps farmers better manage the costs of labor, supplies, water and electricity.
- A way for farmers to better track their product and test results, and to better brand themselves as providers of a safe, high quality, environmentally friendly product.
- A secure digital cryptocurrency to obviate the problems and help farmers with innovative financial services.

Pavo will help the agricultural ecosystem by delivering capabilities along several key lines of user value, providing a solution to several major problems faced by the industry[17]:

Yield management and quality maintenance. Based on the scientific and horticultural expertise of our leadership team, engineers, and advisors, we anticipate that farmers may see yield increases of as much of 30% from using the platform (which is supported by early data collected from initial deployments currently testing the product.) We expect a similar yield growth for other high-value crops, and lower but still significant yield growth for other agriculture sectors.

Price setting. Through the Pavo marketplace, farmers will be able to take charge of how their product is retailed, by directly connecting with consumers, issuing smart coupons and highly differentiating their offerings.

[17] See details in the Problem Statement Chapter.

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Improving quality. Pavo provides an ever-expanding repository of knowledge for the farmer to draw upon to control their operations for success and sustainability. Farmers must have a strong understanding of what goes into the production of every element of their growth strategy.[18]

For example, to grow high-yield, high-quality indoor produce, growers work to create a controlled photosynthetic process, which includes atmosphere, lighting levels, humidity and other elements. Knowing and controlling what works is the key to grower success and sustainability.

Cryptocurrency in circulation among ecosystem participants. In certain geographies, many ecosystem participants don't even have bank accounts and have to deal in cash. To overcome this hurdle, Pavo's blockchain-based cryptocurrency will provide a secure payment vehicle throughout agriculture.

[18] Farmers will still need to do some things manually, as we will not become legally bound to be the compliance authority resource; we will be a data keeper and mediation and presentation platform only.

Pavo Technology

Integrated compliance. Pavo also helps growers achieve peace of mind by ensuring compliance every step of the way, from seed to sale, thanks to easily traceable section and batch-level unique identifiers. One of Pavo's features is the ability to "tag" and follow plants throughout their full cycle of production and sale.
Pavo knows how many plants there are, their location, harvest result, transport and distribution. This is the same data required by regulatory agencies. Pavo will create the necessary integration with compliance solutions to pass this data in the most automated and simplest way possible, making it easy for farmers to fulfill their legal responsibilities[19].

Supply chain transparency and efficiency. Pavo smart contracts between farmers, consumers and suppliers can facilitate the transfer of crop forecast information upstream in the supply chain, to better inform suppliers of their customer's coming demand. Efficiency and transparency upstream in the supply chain should lead to lower costs for farmers. Indeed, smart contracts may be struck between farmers and suppliers that guarantee lower prices in return for sharing crop yield forecast and related data.

Seed-to-sale assurance of quality, purity and provenance of agricultural products. Consumers are increasingly demanding better assurances about the quality, purity, source and environmental sustainability of the product they are purchasing. In an increasingly crowded market, the Pavo platform will enable farmers, manufacturers and distributors to establish and differentiate their brand by drawing upon detailed crop data gathered via blockchain and IoT technologies.

[19] Hazelnut crop yield prediction, Pavo, April 2018.

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An ecosystem peer review ledger. Pavo enables a blockchain-based Yelp- or eBay-style review system for all ecosystem participants to share ratings and opinions on their dealings with other participants. This helps to build trust. (Think Amazon reviews for farmers and agribusiness participants.)

Decreased electricity consumption and minimization of waste leakage. Due to constant control over the condition and composition of the soil and the use of machine learning and artificial intelligence algorithms, the application of nutrients becomes more accurate, which helps to minimize over-application of nutrients and waste that leaks into the environment.

As possible next steps of the development of the Pavo platform we anticipate the following:

Smart forward contracts. Blockchain technology enables the creation of smart contracts for preselling crops before harvest, that is, selling them *on forward.* We see a market segment in agriculture that is underserved by such financial instruments.

Smart coupons for farmers. Through the Pavo marketplace, farmers will be able to directly issue smart coupons to consumers, increasing transparency and improving end-user prices.

Green electricity for indoor farms. Pavo will establish itself as a wholesale buyer of electricity, with a preference for renewable sources such as solar, wind and thermal generation. Pavo will re-sell the electricity to growers who pay with PavoCoin (where possible), and establish a marketing program whereby growers who use Pavo-brokered electricity may qualify for a Pavo “green” stamp for their product.

Pavo Technology

Summary

As an integral part of any farm operation, the Pavo platform helps optimize operations at all scales (i.e., hobby, mid- sized, industrial). Incremental operational efficiencies are delivered by novel ag-tech capabilities that are based on in-depth scientific knowledge of horticulture.

Farmers using Pavo can consistently improve crop quality while maximizing crop yield:

- Pavo IoT technology provides a high degree of customization of the platform for the unique characteristics of each grow operation that cannot be gleaned from high level data, such as weather conditions.
- Cloud computing solutions, software automation and IoT technology can help manage light application and electricity consumption, minimizing environmental impact, while blockchain-based payment and supply chain solutions can enable growers to better manage costs for supplies.
- Ubiquitous wireless connectivity can transport data from sensors in the soil or hydroponic baths to cloud-based storage, where it's processed by machine learning and artificial intelligence algorithms to guide growers in the proper application of nutrients to increase yield and assure plant health. This helps to minimize over-application of nutrients and waste that leaks into the environment.

That same technology, which enables tracking for the plants through the entire life cycle, helps industry participants comply with regulations requiring tracking and accounting for all plant material, to ensure crops aren't diverted to the black market.

Pavo Technology

By creating an immutable, decentralized ledger of crop data, blockchain technology can help across the ecosystem in the areas of product provenance, quality and safety; secure payments and refunds, and decreased transaction fees; trustworthiness of ecosystem partners. Pavo automatically stores pertinent data on the blockchain and makes it available to the user through the web browser and smartphone apps.

To take one example, blockchain technology can make agricultural supply chains more transparent, so that consumers know where their product comes from, and whether or not it has passed safety standards set by regulators to protect the health of consumers. Growers, producers and distributors can use blockchain technology to ensure they get paid for shipments, and to generally enforce agreements, typically through smart contracts. Internet-based shared ledger technology, i.e. blockchain, can improve transparency in what has historically been a murky ecosystem.

The Pavo cryptocurrency offers industry participants a way to secure trade and business practices amongst themselves, and reduce the problems associated with dealing strictly in cash, particularly in developing countries and regions.

Pavo Business Model

The agriculture ecosystem is expansive and still experiencing rapid growth. The industry needs to produce 70% more output by 2050 to feed a rapidly growing global population. The market is highly fragmented and uses traditional payment methods that are expensive, unreliable, unsecure and slow.

Pavo provides an intelligent state-of-the-art IoT blockchain platform for industry participants to manage their business from seed to market. For example, Pavo enables growers to make smarter, faster agricultural and business decisions based on real data.

Pavo's cloud-computing based platform and leading edge IoT technology enables real-time management of gardens, ensuring the highest yield of the highest quality product, while ensuring regulatory compliance, sustainable business practices and higher revenues for farmers.

The platform will also power an online marketplace to enable trade, commerce (e.g. forward crop sales) and professional networking amongst industry participants. It will help increase food production and provide greater transparency on the food on our tables.

Pavo also provides a private cryptocurrency specifically for the agricultural industry, to resolve the lack of attainable financial services to ease their lives and provide better cash flow. The Pavo coin offers a secure, reliable, safe, payment instrument.

Pavo Business Model

Pavo

Revenue Model

Pavo intends to generate revenue as follows:

- SaaS subscription fees for the IoT blockchain platform
- Transaction fees for marketplace transactions
- Transaction fees on forward crop sales
- Professional services

Pavocoin economics

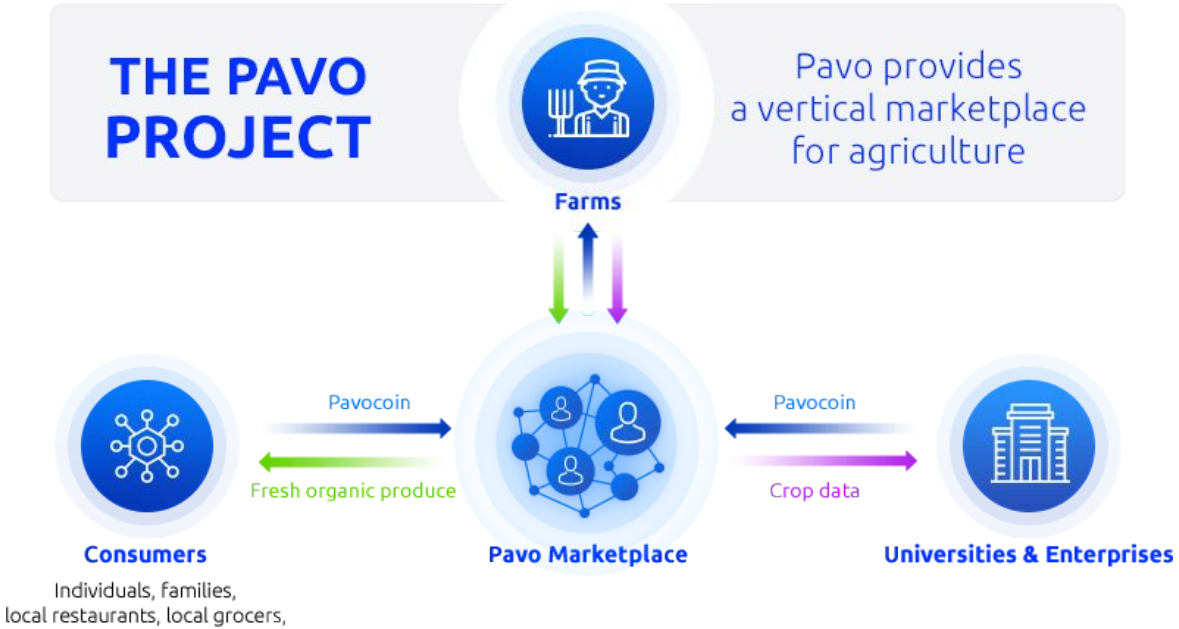
The Pavocoin token is an internal coin on the platform and can be used to:

- Pay the Pavo SaaS platform subscription (it can also be paid in other currencies, but payment in Pavocoin will be rewarded with a discount of up to 10 percent, and sometimes higher, with additional incentives) and in the future - for other platform fees and payments for services and products
- The preferred payment method in the Pavo marketplace.
- The basis for smart forward contracts and smart coupons.
- Voting for incentives distribution and platform policy (e.g. community engagement)
- Voting for conflict resolution on the platform, a form of bounty, community support and loyalty program

Pavo Business Model

All smart contracts on the platform will be executed using tokens. All users need to buy tokens to use the platform, and the crypto-exchange module in the self-service portal will manage conversion of external currencies (and crypto) to tokens and back (and will do so automatically without any effort from users).

All prices will be set in fiat currency (and/or cryptocurrency). During each transaction, the actual market token rate will be used automatically to determine the number of tokens to pay as platform fees.



How IoT, blockchain and the Pavo coin power the marketplace

Pavo Business Model

Pavo

Consumers, small businesses, institutions and farmers Drive Demand

To create an evergreen user reward pool, Pavo uses revenue from in-app purchases to buy PAVOs from the market. Coins are then distributed as rewards throughout the Pavo community. Another partner may choose to create an ad-supported platform, where the revenue generated from user attention is used to reward content providers with PAVOs. A third partner may use a subscription model, where the subscription revenue is used to reward contributors with PAVOs (e.g., agricultural magazines, online news).

The Pavo SaaS solution leads the industry in cost effectiveness, providing a high return on investment - from 12 to 20 times, by our informed calculations. Deploying sensors in the garden and setting up a Pavo account for a typical grow site only takes a few days, and the upfront costs are very modest compared to alternatives. In fact, based on our calculations, the average farmer can recoup the investment within two years.

The cost of deployment of the Pavo system and the monthly subscription fees depend on the size of the grow space and other parameters of the farm and are calculated in a custom way for each client.

Currently, investment on deployment starts at under USD 10,000 and monthly fees start at USD 250, but prices depend on a number of factors and may change with time including the potential decrease of installment prices with a planned upgrade of the system hardware.

Pavo Business Model

Indoor Farm Size	Projected Payback Period	Cumulative Five-Year Projected Gross Revenue Lift
“Medium” grower with 10,000 sq. ft. of grow space	< 18 months	14%

To increase the speed of adoption, Pavo will subsidize the cost of the IoT installation for growers and its usage for an initial 12-month period starting with the date of the ICO closing (this policy may change over time). This way, growers get a brand-new Pavo system providing significant value at no cost for one year, a year which makes Pavo’s offer extremely appealing. Additional token grants may be awarded based on utilization - rewarding those growers (and distributors) most actively committed to the success of the platform. This solution will help both to expand the Pavo network aggressively and to teach growers to use Pavo coin naturally.

Pavo

Initial Coin Offering (ICO) Details

Initial Coin Offering (ICO) Details

PAVO will be the digital utility token that powers and incentivizes the Pavo user ecosystem and content platform. Pavo intends to be fully transparent in all its financial conduct and transactions. The controlled release of tokens will give Pavo projects and PavoCoin the opportunity to grow and increase in influence based on merit and value creation. Escrowed funds and planned ecosystem industry projects will set Pavo apart from other token-generation events.

200,000,000 tokens will be issued by Pavo. There are currently no plans to generate additional tokens. The initial distribution of tokens will be through a series of offerings in different phases.

PAVO Token Distribution

Allocation	Amount
Pre-sale Tokens	40,000,000
ICO	60,000,000
Team, Partners/Advisors/Contractors	30,000,000
Controlled Reserve Fund	40,000,000
Community Reserve	20,000,000
ICO Incentives and Bounty	5,000,000
Growers Reserve	5,000,000

Initial Coin Offering (ICO) Details

Pavo

Timeline

04.12-04.26		04.27-08.06		08.07-09.15
PUBLIC PRESALE PHASE1		PUBLIC PRESALE PHASE2		MAIN SALE

Initial Coin Offering (ICO)
Crowdsale starts 08.07.2018
Crowdsale ends 09.15.2018

Initial price of token is USD $1
Presale bonus structure:

Purchase of USD-1,000– bonus of 27% through August
Purchase of USD 1,001-2,500– bonus of 30% through August 6
Purchase of USD 2,501 and up– bonus of 33% through August 6

08.07-08.18 – $1 + 25% bonus MAIN SALE PHASE
08.19-08.25 – $1 + 18% bonus MAIN SALE PHASE
08.26-09.01 – $1 + 11% bonus MAIN SALE PHASE
09.02-09.08 – $1 + 5% bonus MAIN SALE PHASE
09.09-09.15 – $1. No Bonus. MAIN SALE PHASE

Tokens are available for purchase 24/7. All changes to the bonus take effect at 12:00 PDT of the date stated above.

Fiat currency will be accepted during the PAVO Initial Coin Offering (ICO). Major cryptocurrencies will be accepted.

During the Initial Coin Offering (ICO) round, funds will be immediately placed into Pavo's escrow storage, an offline repository for proceeds in cryptocurrency, and an escrow bank account for proceeds in fiat.

All participants of the ICO must identify themselves to meet minimum Anti-Money Laundering (AML), Counter Terrorism Financing (CTF) and Know Your Customer (KYC) requirements.

Initial Coin Offering (ICO) Details

Pavo

Token features and capabilities

Name: PavoCoin, PAVO
Based on: Ethereum

- Safe cryptocurrency transactions.
- Desktop wallets for Mac OS, Windows, and Linux keep cryptocurrency safe while allowing for easy transfers, balance viewing, and simple use.
- Tokens are created with an ERC20 token smart contract.
- Multi-signature accounts implemented in two clicks.

Initial Coin Offering (ICO) Details

Pavo

Transparency and Audits

Pavo is committed to a fully transparent process for the ICO, and beyond.

- Founders and team members who own PAVO will be prohibited from liquidating more than 20% of their position within the first calendar year, in order to firmly establish PAVO as a stable, reliable store of value.
- A minimum threshold of USD 1 million in proceeds is required for a successful crowdsale (“Soft Cap”).
- The maximum amount of funds collected during the ICO is set at USD 30 million (“Hard Cap”).
- Assuming the Soft Cap is exceeded, but Hard Cap is not met, any unsold tokens (from the amount allocated for the presale and ICO stages) will be burned. Any funds received after having reached the Hard Cap of 100 million tokens will be returned to the sender.
- Smart contract voting will be leveraged for community approval requirements. The voting may approve the unlocking of the coin reserve, club membership policy changes, and other changes that affect the Pavo community.
- We will engage one of the Big Four accounting companies or another internationally recognized accounting firm for annual third-party audits.

Initial Coin Offering (ICO) Details

Pavo

How to Get Pavo Coins

Please register at www.pavocoin.com to get notified of the opening of the ICO.

Where to Get	**Pavocoin.com**
How are Transactions Secured?	All transactions will be secured with state-of-the art cryptography, and the blockchain integrity will be protected by CPU- efficient, ASIC- resistant proof of stake, satisfying financial services needs for under-served farmers.

Listing on an exchange will only occur if, and when, doing so makes sense for users and will not result in speculation in the token.

Tokens may be available for trading in the future when applicable laws permit for such trading, but no assurances can be given that such trading will take place.

Initial Coin Offering (ICO) Details

Pavo

Pavo uses peer-to-peer technology to operate with no central authority. It is truly decentralized and easily facilitates transactions. The network collectively carries out the issuing of Pavo Coins. It works everywhere, anytime, so business can be transacted 24/7 globally anywhere in the world.

Transfers can be made from any major cryptocurrency wallet. The minimum purchase amount using fiat currency is USD 500, provided that a wire transfer option is available[20].

Token buyers must register at pavocoin.com and complete AML/KYC/CTF procedures. After registration, users gain access to their personal accounts at pavocoin.com where they will have separate wallets for all the currencies accepted as payment for Pavocoin. In their accounts, users can choose the desired number of Pavocoin tokens and transfer the required payment in any of the accepted cryptocurrencies or generate an invoice for a wire transfer. Once the payment is received, funds will appear in the corresponding wallet in the user's account and may be used for purchasing tokens[21]. Until the token purchase is made, the funds may be withdrawn from the account at any moment by sending a request to support@pavocoin.com.

When buying tokens with currency other than USD or cryptocurrency, the exchange rate is fixed at the time of token purchase.

To take part in the public presale, a buyer will need to purchase at least the specified minimum number of Pavocoin tokens. The general token sale has no minimum entrance threshold, except for the minimum transfer amount specified by the relevant blockchain or bank used by the buyer.

[20] Pavo does not charge any processing fees. Processing time and fees are determined by the payment processor. Token holders are responsible for paying all processing fees and financial charges imposed by the payment processor in connection with the payment, including withdrawals from the account at pavocoin.com.
[21] Tokens are purchased at the price in effect at the time of purchasing, not at the price in effect at the time when funds are sent or received by the platform.

Initial Coin Offering (ICO) Details

Pavo

After the token purchase is complete, information about Pavocoin tokens credited to the token buyers should appear in their accounts at pavocoin.com immediately.

After the Pavo token sale is over, Pavocoin tokens will be issued and transferred to the buyers' accounts. Once this step is complete, Pavocoin token holders may at any time transfer their Pavocoin tokens to any third-party ETH wallet supporting ERC-20 standard[22] or to pay for the services or products. All proceeds from the Pavocoin ICO will be deposited in escrow where they will be kept in the currency they were purchased in. After the Pavocoin tokens are issued and distributed, proceeds will be released from escrow.

Once the Pavocoin ICO ends, no further deposits to accounts at pavocoin.com will be permitted. Decisions on how to handle funds received after the end of the Pavocoin ICO will be made based on the transfer date and time. Only transfers sent out before the end of the Pavocoin ICO will be accepted; the rest will be returned to sender in the original form of payment minus transfer fees and bank charges. Accepted funds and all other funds remaining in users' personal accounts at pavocoin.com will be converted to Pavocoin tokens automatically at the purchase price in effect at the end of the Pavocoin ICO[23]. For funds in currencies other than USD, the exchange rate will be fixed at the time of conversion.

Users who wish to withdraw their funds from their accounts must contact the support team at support@pavocoin.com no later than 12:00 PM PDT on September 15, 2018 to avoid automatic conversion.

If a payment is received after 12:00 pm PDT on September 15, 2018, the payment will be returned to sender minus transfer fees and bank charges even if it was sent before the end of Pavocoin ICO.
By September 30, 2018, Pavocoin tokens will be issued to participants and deposited in their accounts on pavocoin.com.

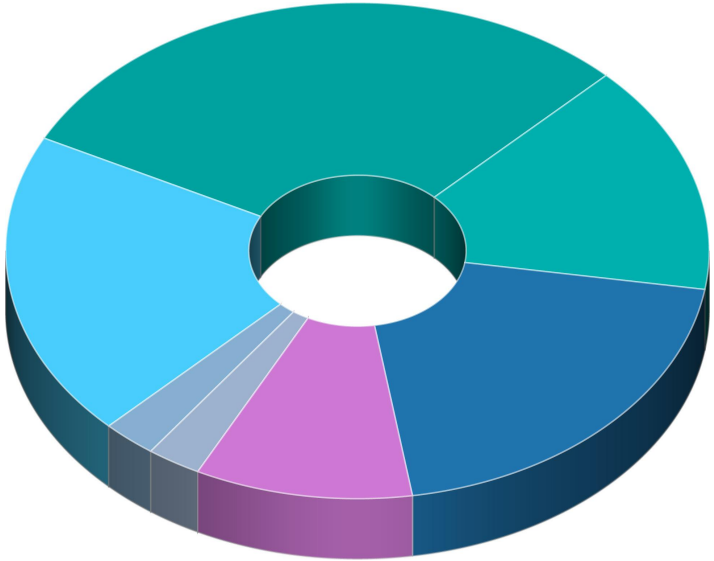
[22] With the exception of the tokens frozen according to the terms of acquiring (team tokens and others).
[23] Unless the hard cap is reached. In this case funds remaining in users' personal accounts at pavocoin.com will be returned to sender in the original form of payment minus transfer fees and bank charges.

Use of Funds

Pavo is committed to the cryptocurrency community. We also do not want our Initial Coin Offering sale to affect the Bitcoin price. To that end, we plan to exercise caution as we convert the Initial Coin Offering proceeds to fiat currency to pay for expenses.

The conversion of the Initial Coin Offering proceeds will be staged and distributed over time and through multiple cryptocurrencies and exchanges. This may dilute any impact that volume transactions might make on either PAVO or other cryptocurrencies in the market.

- Pre-sale tokens **40,000,000**
- Token Generation Event **60,000,000**
- Employees, Founders, PR, Partnerships & Contractors **30,000,000**
- Controlled Reserve Fund **40,000,000**
- Growers Reserve **20,000,000**
- ICO Incentives and bounty **5,000,000**
- Community Reserve **5,000,000**



Pavo Roadmap

The PAVO technical roadmap include the following milestones:

Q2 2017 Start Development of Pavo application

Q3 2017 Deployment of POC Sensors and initial Data Baseline creation

Pavo genesis - initial data gathering, Pavo data scientists start creating control-guide structures, reports and the first version of the web dashboard.

Q1 2018 Deployment of Pavo IOT Gateway First Generation

Deployment of second-generation Pavo Sensors

Improvement of metrics, frequency of samples, data volume.

Q2 2018 Launch of Pavocoin and ERC20 P2P smart contracts

Subscription fees for the Pavo platform can be paid in tokens and support for B2B smart contract use cases facilitating legal transactions between known parties.

Q2 2018 Launch of Pavo mobile app on Google and Apple stores

Access to real time and historical weather data. Set alarms for specific weather conditions. Capture photos while creating a stage record. Advanced alerts for frost, powder and mildew. Track fertilization and irrigation.

Q3 2018 Pavo Platform with hyperledger Beta

All the info about the growing cycle now gets stored in the blockchain; an essential step to enable the platform to confirm and put Pavo-certified products in the marketplace.

Q4 2018 New Pavo mobile app features

Water PH and EC. Leaf moisture reporting. Alerts on wind conditions.

Q4 2018 Pavo IOT gateway Gen 2

Deployment of third-generation Sensors

Smaller sensors with increased battery life, introduction of NDVI[1] and Automation + Orchestration capabilities.

Q1 2019 Launch Pavo Platform with hyperledger

Full production version, API and SDKs,[2] certification is now available

Q2 2019 Launch of Pavo Marketplace

Market place, ERC20 smart contract interface, mobile and in-browser application development

Chatbot and QR Code settlement system.

Pavo-certified products

Q3 2019 Pavo IOT 2.0 IOT Gateway Gen 3, self-provisioning sensors

Automation and orchestration version 2

Full edge device IOT Gateway with the ability to deploy and manage applications in real time.

[1] NDVI (Normalized Difference Vegetation Index) is an indicator of plant health, and can be checked using infrared sensors.
[2] SDK is a software development kit.

Partnerships and Alliances

Pavo

Pavo will also work and partner with other vendors and organizations in the industry to help unite people around the world who are committed to high-quality products and regulatory compliance.

We expect to play a vital role in the community, which will strengthen all stakeholders and will positively influence the demand for and the value of Pavo's cryptocurrency, PavoCoin (PAVO).

Finally, Pavo will actively support and fund blockchain innovation for agriculture, such that it increases the use and importance of PAVO.

Pavo's operational model is focused on providing the capabilities for farmers to optimize efficiency, deliver high-quality product and establish strong consumer brands. Each capability is geared to improve the whole.

Pavo

The Pavo Team

The Pavo Team

Pavo

The Pavo team is uniquely positioned to take on this challenge. Our team is comprised of experienced entrepreneurs who bring in-depth know-how across the dimensions of business, IoT technology, software, blockchain, and the agriculture industry. The Pavo network and team shares the same spirit in which cryptocurrencies and tokens were originally envisioned: transparency, fairness, accessibility, and innovation.

In launching the Pavo ecosystem, the Pavo team is pioneering unprecedented operational visibility and control via an IoT platform and an ecosystem powering a decentralized economy. All of agriculture will benefit from Pavo's IoT platform, helping transform the practices of thousands of creative growers that produce higher-quality products with greater yield throughout the industry.

By adopting the Pavo platform, all network participants – consumers, farmers, innovators, producers, suppliers and others – will be aligned on the long-term growth of the network. The combination of a community of users actively engaged in earning and spending the Pavocoin and a large reward pool for third-party participants who enhance it with new use cases provides a strong foundation for the future development of PAVO.

The Pavocoin is being developed by Pavocoin AG, based in Zug, Switzerland. The Pavo team consists of members who have successfully collaborated with one or more team members on previously successful business endeavors. The founders are Allan Young and Erhan Cakmak.

Allan has successfully operated two of the San Francisco Bay Area's larger incubators, Runway and Topline, which have been home to hundreds of early-stage technology startups and post-revenue startups.

The Pavo Team

Pavo

Erhan, a former GE and Aspect executive, co-founded and led, as president, the successful contact center SaaS company Bright Pattern. Most recently, he was Chief Operating Officer heading international expansion for the San Jose-based IoT software company N3N, Inc., a Cisco Investments portfolio company. He also is Co-founder and Chairman of Agrotics, an Ag-Tech IoT company.

The core team also includes Mehmet Coka, Ari Gorman, Dave Dabbah, David Howard who, combined, bring several decades of combined experience in software development, disruptive financing solutions, innovative IoT platforms and agricultural experience. The Pavo team possesses all the necessary knowledge and skills to continue building a powerful IoT platform to transform the Ag-Tech industry and help it flourish.

We embrace token-generation events (ICO) as a path to expedite growth capital and mass distribution for cutting-edge business models. At the same time, we respect the value attributes of traditional venture capital investors that provide connections and advisory expertise. Our team is unique because we are approaching the Initial Coin Offering with extensive venture capital expertise that most blockchain start-ups forfeit through the initial coin offering process. Several of our team members have deep and wide venture capital and private equity experience, which gives us an advantage over any eventual competitors. We believe this access and expertise is critical for the success of the Pavo ecosystem.

The Pavo Team
Founding

Allan Young
Co-founder and
vice-chairman

Allan Young has a unique ability to recognize potential in obscure opportunities and bring them to realization both from an investment and management point of view. He founded Runway Incubator, one of the largest technology incubators in the San Francisco Bay Area and Silicon Valley. Before incubating high-growth emerging technology companies, he co-founded a technology startup backed by Y Combinator. Allan also brings relevant experience in private equity, having been a venture partner and analyst in private equity firms such as Sorensen Capital, and in blockchain consulting and advising several blockchain and crypto companies. He began his career as a founding associate at the University Venture Fund, a student-run fund that achieved 4 IPOs.

Erhan Cakmak
CEO and
Co-founder

Erhan has more than 25 years of executive management experience. Most recently, as COO of N3N he oversaw the expansion of the IoT company into the US market. At GE, he was Director of Central Europe. He also built several enterprise software companies, including Aspect and Bright Pattern. At Aspect Software, as General Manager he built Europe & South Africa, except the UK from scratch to a $100M business. He holds a master's degree in economics from Bergische University in Germany and has completed the Stanford University executive program and the distinctive GE Crotonville Academy program.

The Pavo Team
Founding

Ari Gorman
CTO

Having held CTO and Technology leadership positions in multiple technology companies focusing on voice networks and application delivery, Ari brings more than 20 years' experience in telecommunications and related fields. As co-founder of Novatel Networks, he spent the past 16 years building the company through organic growth and acquisitions before it was acquired by New Spring Capital in February 2016.

Dave Dabbah
CMO

Dave is a marketing, operations and business executive with over 15 years' experience working with both start-ups and public companies in B2B and B2C markets. He has successfully launched and rapidly grown numerous start-ups including EmailLabs, Lyris, Ephox and SonicCloud. Dave is a branding expert and has helped over 10 companies in the Silicon Valley build, position and grow their brands.

The Pavo Team
Founding

Mehmet Coka
VP Agriculture

Mehmet Coka previously founded Agrotics, Inc. an IoT and analytics platform for the agriculture industry. At Agrotics, Mehmet was responsible for the implementation and development of the IoT platform, the application, and the agricultural development for maximizing crop quality and operational efficiency.

Atakan Cetinsoy
VP product management

Atakan has 20+ years of hi-tech product management and product marketing experience with both global brands and VC-funded startups including Apple, Yahoo!, Fedex, Strands and Deem. Throughout his career, Atakan has repeatedly conceived, launched and successfully commercialized software products in SaaS software, machine learning, B2B travel, fintech and digital media verticals by leading motivated, customer-focused teams. Having worked closely with customers and prospects in identifying predictive use cases, proposing machine learning solutions as well as deploying and measuring them, Atakan has developed an in-depth understanding of the most effective ways to integrate data science into product portfolios and go-to-market planning to solve complex business problems in a globally scalable manner.

The Pavo Team
Founding

David Howard
VP Corporate Strategy

David has 20 years of Silicon Valley marketing experience, in telecom, hardware, software, IoT and SaaS. Prior to joining Pavo he worked directly with and for Erhan Cakmak on marketing, partnerships and business operations. Before that, he worked for Salesforce in the Analytics business unit, where he arrived upon that company's acquisition of self-service analytics startup BeyondCore; prior to that, he was at the data visualization powerhouse Platfora, which was similarly acquired by Workday. His career has also included tenure with companies such as Bell Canada, Alcatel S.A. and Cisco Systems.

Mike Kwan
VP Business Development

Michael has 18 years of sales leadership and business development experience in digital marketing, enterprise software, SaaS, and transportation. He has been a part of three successful acquisitions during his time with Overture, Zipcar and Flywheel Software. Michael has built and led sales teams to record breaking success in multiple industries. Michael is a UCLA graduate and completed the Kaufmann Entrepreneurial program.

The Pavo Team
Founding

Basir Momand
Director, Field Engineering

Basir has 30 years of experience in IT, Software Development, Infrastructure Planning, Call Center Technology, Tech Support, and VoIP. He has previously served as Senior Director IT and Support/Infrastructure & Call Center General Manager of CallSocket LP.
Before that, he was CTO of Alliance Financial after serving as the Director of Customer Service/Infrastructures for Global Investment Group. In addition, he has led the Senior Technical Worldwide Support Engineer/Telecommunication team at Siemens-Munich, Germany and at Aspect. He was assigned to Siemens on a special project to establish the partnership between the two companies to introduce Aspect's Technology in Europe and South Africa.

Darwin Farrow
Senior Data Scientist

Darwin has a stellar track record building cross-functional teams that deliver results, most recently at Akila Digital, as the Head of Data Science, and prior to that, as Senior Manager of Analytics for Skype.

The Pavo Team
Founding

Ekrem Buyukkaya
Senior Developer

Born a developer. Writing code since the 4th grade, his family grows apricots, and he has a passion to help farmers and agricultural ventures. Ekrem is a top APP/web developer, still with a great passion for coding. Studied at Ozyegin University.

Mustafa Akcoban
Software Developer

Guven Akcoban Junior
Software Developer

Advisory Team

Jeff Burton

Co-founder of Electronic Arts (EA) and strategic advisor BitDegree

Serial Entrepreneur and Builder of Global Enterprises.
Believer that technology and the unifying strength of multicultural exchange in the pursuit of problem solving and business growth can lead to profound economic, social, and global benefit. Long-term personal network builder in Europe and Silicon Valley over the past 35 years, resulting in strong, enduring professional relationships.

Keith Teare

Executive Chairman at Accelerated Digital Ventures

Executive Chairman and Chair of the Investment Committee at Accelerated Digital Ventures, a UK Venture Company. Previously was a founder and a partner at Archimedes Labs in Palo Alto, California. Two of Keith's companies were "unicorns" – valued by others at more than $1 billion.

Advisory Team

Nick Evdokimov

Founder of ICO box

An inspired visionary blockchain entrepreneur with vast experience founding and developing innovative blockchain projects and automating and scaling up digital marketing processes. Focused on ICO technology, and ICOBox which has successfully completed more than 10 ICOs and has over 40 ICOs in the pipeline.
Came to blockchain industry in 2014 and immediately got involved with cryptocurrency mining assets, including mining facilities and capacities. A founder and former CEO at AppinTop – a successful automated mobile marketing platform for app developers. Founded and promoted AdtoApp, the programmatic mediation platform for in-app advertising, based on adjustable algorithms matching the supply and demand sides. Founded and developed SEOpult.ru – a Russian market leader in automatic search engine optimization. Author of books and articles on internet marketing and blockchain technologies. Over his 14-year career as an Internet entrepreneur, Nick developed numerous digital marketing and blockchain products.

Advisory Team

Dr. Darin S. Detwiler

LP.D., M.A. Ed. "Assistant Dean and Professor, Northeastern University"

Dr. Darin Detwiler, LP.D., M.A.Ed., is the assistant dean at Northeastern University's College of Professional Studies. His work at the university includes quality assurance supervision for all undergraduate and graduate programs. He is also a professor of food regulatory policy, responsible for the development and instruction of courses related to food safety, global economics of food and agriculture, and food policy for graduate students who work in the food industry. He additionally advises industry and government agencies, addressing food safety and authenticity issues in the U.S. and abroad.

Detwiler is the recipient of the International Association for Food Protection's 2018 Distinguished Service Award (sponsored by *Food Safety Magazine*). Starting with the aftermath of the landmark 1993 E. coli outbreak, he consulted with the U.S. Department of Agriculture (USDA) in strengthening food safety policies, particularly in the areas of consumer education, product labeling, and their pathogen reduction program. In addition to serving in various educational and advisory capacities, his committee work includes appointments to two terms as a member of the National Advisory Committee on Meat and Poultry Inspection for USDA, where his work improved standards and policies related to risk-based sampling. As the senior policy coordinator for a national food safety organization, he evaluated pertinent regulatory issues for the USDA and the U.S. Food and Drug Administration (FDA) as a consumer advocate in their stakeholder advisory group. He later served two terms as a council member for the Conference for Food Protection, identifying and addressing emerging problems of food safety to influence model laws and regulations among all government agencies.

Detwiler, a US Navy nuclear submarine veteran, received his doctorate of law and policy from Northeastern University with a research focus on state implementation of the FDA Food Safety Modernization Act.

Advisory Team

David Doll
Pomology Farm Advisor

As a farm advisor for the University of California, David's research-based technologies and on-farm research is extended directly to approximately 1,500 tree nut farmers within Merced County. Additionally, 9,000 farmers statewide are exposed to David's developed content through presentations and other media forms. David's work within this role includes applying concepts of horticulture, plant pathology, entomology, soil and irrigation science, and sustainable agriculture.

Daria Generalova
Co-founder of ICO box

ICOBox co-founder and a marketing, PR & communications specialist with 10+ years of experience. Having joined blockchain industry nearly two years ago, worked as a consultant to Argon Group and helped launch ICO platform Cryptonomos. Speaker at numerous international conferences in fintech and blockchain, including Money2020, Consensus, CoinAgenda in the US, World Blockchain Forum in London, Blockchain Labo in Tokyo, and others.

Advisory Team

Keith Spears
CEO at Heritage Impact Partners

Keith Spears is an expert at private and venture equity investments, mergers & acquisitions and new business ventures. Keith worked on alternative investments as a member of Hamilton Lane that has over $359 billion under management. Keith has worked on over 100 transactions and investments in the range of $1 million to well over $10 billion in size.
Keith is Head of Private Equity at First Capital. He was also formerly a Managing Director of Transom Capital Group, a private equity firm with over $130 million in assets under management. He was formerly one of the founders of Legacy Equity Advisors, a co-invest advisory firm which advised on $45 million in assets.
Prior to Hamilton Lane, Mr. Spears was a General Partner in an emerging manager fund-of-funds firm established in partnership with WestLB private equity group, which raised $125 million. Keith is also a former investment banker at Goldman Sachs and Credit Suisse First Boston.

Andrey Mow
ICO advisor and consultant, Partner at Transmosis and CoinFabric

Andrew is an entrepreneur, investor, and advisor to early stage startups. He is currently advising on numerous blockchain token offerings. Andrew brings a wealth of firsthand knowledge and experience to this fast-paced industry. He brings a global network of security experts, crypto influencers, institutional finance professionals, investment syndicates and engineers who are highly reputable in the blockchain community.
He has served 15+ years in business development and consulting experience for both enterprise and startup companies in the fields of security, IoT, blockchain, and eSports. He most recently helped develop Cybersecurity Apprenticeship programs for the States of California and Nevada.

Advisory Team

Andrey Verbitsky

Blockchain Guru

Blockchain, token design and economics guru. Helping companies to tokenize their businesses. Designed over 30 tokens. Product and UX pro. Behavioral economics dabbler. Launched multiple successful products on multiple platforms. Idea-to-product-to-revenue.

Kash Abbasi

Sr. Director Global IoT Partnerships at Cisco

An innovative and results-driven leader focused on achieving exceptional results in highly complex environments that demand continuous improvement through strong collaboration. Built strong skills at strategy, planning, business creation and execution, delivering results. Solid and extensive experience across sales, go-to-market, operations, services, channels, software and cloud. Excels at business partnering with executives, with a strong ability to drive transformation.

Advisory Team

Osman Yağan (PhD)

Research Professor at Carnegie Mellon University

Osman is a Research Professor of Electrical and Computer Engineering (ECE) at Carnegie Mellon University (CMU). Prior to joining the faculty of the ECE department in August 2013, he was a Postdoctoral Research Fellow in CyLab at CMU. He has also held a visiting Postdoctoral Scholar position at Arizona State University during Fall 2011.

Dr. Yağan's research interests are in modeling, design, and performance evaluation of engineering systems, with particular emphasis on communication systems and networks. Specific research topics include wireless communications, security, random graphs, social and information networks, and cyber-physical systems.

Dr. Yağan is a Senior Member of IEEE and has served as a Technical Program Committee member of several international conferences including IEEE Globecom, PIMRC, ICC, and WiOpt.

Jesse Martinez

Co-founder + co-chair of the Latino Startup Alliance

Jesse is the cofounder + co-chair of the Latino Startup Alliance, a non-profit supporting global Latino Tech Entrepreneurs and startup ecosystems. He is also the cofounder of dev/Mission, a non-profit focused on training diverse youth ages 16 to 24 for careers in tech. Most recently, Jesse was the first Entrepreneur in Residence (EIR) for the Salesforce Incubator (now Accelerate) where he incubated his fourth startup CareerForce - training the next generation of Salesforce Administrators that come from our diverse and underrepresented communities for career paths in the Salesforce Economy.

Advisory Team

Hakan Ancin (PhD)
VP Application Performance at SAP

Results-oriented, hands-on technical executive focused on delivering high-quality products. Demonstrated ability to develop and communicate an architectural vision and translate that vision into working software products.

Bill Banks
Piedmont Partners Group Ventures

Bill has 25 years of senior management, consulting, and entrepreneurial experience across a range of financial technology, data, software and financial services firms, with a diverse background in finance, investments, wealth management, business strategy and operations.

Bill is currently a Senior Consultant with Rein ventures, and a Venture Partner with Piedmont Partners Group Ventures, a private equity firm in the Bay Area.

Prior roles include COO and CFO of a disruptive fintech company MeasureOne, EVP of leading financial software and technology firm Junxure, Managing Director at Harvest Capital Strategies, a $2B alternative asset management firm, President of Panel Intelligence, a primary market-research firm for institutional investors and healthcare companies, and President of MCF Wealth Management, an investment advisory platform.

Advisory Team

Steve Olson
Early Growth Financial Services

Financial exec with 25+ years of executive-level management experience within technology-focused organizations. Successfully built organizations, processes, and infrastructure to support aggressive domestic and international expansion for startups in high-growth environments. Strategic perspective combined with strong finance, accounting, operations, administration, and technology backgrounds. Effective business strategy and execution skills.

Véronique Trausch
Partner, Findeal Advisors

In a career spanning over 30 years, Véronique Trausch held senior management positions at Citibank, Banque de Luxembourg and BNYanalytics, in the US, United Kingdom, Germany and Luxembourg. Véronique's particular expertise is in fundraising in mainstream asset classes as well as in alternative asset classes and real estate using her corporate finance and distribution experience

Advisory Team

Alex Moskovsky
CEO at ICOBox

Expert Internet entrepreneur with over seven years of experience. Founder, CEO and Chairman of the Board of numerous successful social media platforms and projects. Created SaaS solutions for social media marketing. Specializes in process automation in finance, fintech, and digital marketing. First got interested in blockchain in November 2015, urged on by the founders of several major startups he met at a fintech conference in Hong Kong.

Governance

Pavo

The founders and the Board of Directors of Pavocoin will be responsible for the efficient use of funds resulting from any sale of tokens from the Pavo reserve. Some elements of the platform will remain centralized until decentralized options become feasible or desirable. The Pavo foundation will be responsible for allocating Partner Rewards to platforms or apps in the ecosystem, creating developer extensions that provide visibility to the use of apps within the ecosystem (such as reporting on and visualization of activity), evangelizing the Pavo ecosystem to farmers, innovators, cultivators and app developers and content partners, bringing promising and diverse platforms and apps into the ecosystem, and more. Over time, Pavo will consider moving to a decentralized governance system such as those presented by others in the cryptocurrency community. Through our advisors we are connected to the ICO Governance Foundation, and intend to work with that organization closely.

Summary and Outlook

Blockchain-enabled applications are increasingly playing an important role in solving many agriculture-related problems.

For example, the United Nations predicts that by 2050, the world's population will reach 9.1 billion, some 20 percent higher than today. Most of this population increase will occur in developing countries. Urbanization will continue at an accelerated pace, and about 70 percent of the world's population will be urban (compared to roughly half today). To feed this larger, more urban and richer population, food production must increase by 70 percent. Annual cereal production will need to rise to about 3 billion tonnes from 2.1 billion today to support population growth. Sadly, the rate of growth in yields of the major cereal crops has been steadily declining; it dropped from 3.2 percent per year in 1960 to 1.5 percent in 2000.[26]

In developing countries, 80 percent of the necessary production increases are expected to come from increases in yields and cropping intensity and only 20 percent from expansion of arable land.

Furthermore, the pervasive inefficiency of food supply chains in developing nations is largely due to information asymmetry and power imbalances. Farmers often wait weeks or months for payment after delivery, forcing them to deal with large incumbents, who have market power, and the ability to drive down prices. This directly translates to lower income for farmers, as they do not receive their fair share, despite being, as the food producers, the most important part of the chain.

[26] United Nations Food and Agriculture Organization, How to Feed the World in 2050

Summary and Outlook

Indoor Farming

Indoor farming, globally, can help increase total caloric output, but requires careful management of water and energy - resources that are already scarce - to succeed.

Pavo's solution is transformative technology with the potential for dramatically changing the agricultural economy. It is directly applicable to any indoor crop, from kale to cucumbers, from strawberries to spinach. Automated data collection and analysis fuels the ability to better manage crop inputs, like water and energy, and corresponding automation of indoor farming operations.

IoT-blockchain solutions will save time and money for farmers, and increase yields. And, despite a common belief that farmers are slow to adapt, they have always been eager, and early, adopters of technologies that make sense and deliver genuine value.

At Pavo, our goal is to create a new agricultural model that paves the way for the next, digital, generation of indoor agriculture and transform the entire agricultural industry. Data democratization of the food chain will increase efficiencies, reduce waste, and increasingly transfer remuneration to the stakeholders delivering the greatest value.

Pavo will transform farming, and farmers, by integrating, firstly, indoor farms via the Internet of Things and blockchain technology, creating a model for highly efficient, democratized, agricultural economies around the world.

Summary and Outlook

From Information Technology to Internet of Things + Blockchain

Information technology has long been applied in farming to increase topline revenue for farmers, and provide other operational efficiencies. Communications technology has operated as a separate component to transfer data.

Now, Pavo's IoT-blockchain solution unifies the centralizing force of communications technology with the decentralizing force of information technology.

A single solution collects data from the soil and air where the crop is grown, secures it with immutable blockchain technology, securely transports it across communications channels, safely stores it, and provides robust analysis and presentation for the farmer to take action, and profit from.

Blockchain Redefining Agricultural Trust

An inherent feature of blockchain technology is its redefinition of "trust." Under an Information Technology paradigm, agricultural environmental, regulatory and crop data is stored on centralized computer servers, and managed by administrators trusted, and obligated, to maintain data integrity, security and access authorization.

Centralized data administration is a source of risk – crop safety and quality data can more easily be corrupted. Data is more easily lost due to failed or absent backups. Centralized administrators may act on their own agendas, with their own interests in mind, impacting decisions related to data access and security.

Summary and Outlook

Applying blockchain technology to crop data ensures that information about our food, and its sources, is incorruptible. Blockchain and IoT technology simplifies data management throughout the complex system of farmers, brokers, distributors, processors, retailers, regulators, and consumers; information on the food we eat becomes simplified and transparent. Consumers can enjoy greater trust in the food they put on their table and consume, and regulatory agencies have greater confidence in the data reported to them.

Blockchain redefines trust across the agriculture spectrum with arm's length, cryptographic, security, eliminating notions of Hobbesian pursuits of self-interest on the part of data administrators, or other, nefarious, actors.

Pavo's IoT-blockchain solution provides a framework for institutions across the globe to redefine the relationship between government, corporations, enterprises and farmers and the citizens in terms of data sharing, transparency and trust.

Summary and Outlook

Precision Farming with Data Integrity

Classic centralized field management platforms that endeavor to provide data-driven insights are vulnerable as a single point of failure if hacked. Pavo's solution, with its crypto-economic security features work to ensure that data and technological infrastructure such as a national level distributed databases conforming to international agricultural standards and naming conventions remain impenetrable to attackers.

Data remains unsecured with classic platforms, even as they attempt to improve traceability and validate compliance with international standards. Integrating this legacy technology Pavo's IoT-blockchain infrastructure can ensure immutability of this unsecured data.

Pavo's platform help to create productive, less resource dependent, indoor grow operations and can provide critical analytical insights into the grow-cycles of plants. This is precision farming at a new level. For example, a farmer using indoor hydroponics and a closed loop system, with Pavo, may be able to reduce with water usage by up to 90 percent. Increasingly, global food demands will be met by crops grown indoors, in environments more efficient and more controlled than the outdoors.

By moving plants indoors, traditional dependence on the weather can be eliminated. Pavo will enable climate control within the container – be it a greenhouse or growhouse – creating ideal artificial growing environments as well as nurturing the wellbeing of the plants. With sensor arrays, the plants can "communicate" precisely what they need, twenty-four hours per day, seven days a week, 365 days a year.

Summary and Outlook

Cryptocurrency Enabling Better Financing and Liquidity

Agriculture is a $5.5 trillion-dollar global business, employing over a billion people.[27] Trillions of dollars are moving across the supply chain, but transactions are inefficient

For many smallholder farmers in developing countries, affordable access to capital remains a huge challenge. Mobile telephones have become ubiquitous, enabling micro-financing opportunities for small farmers. However, low transparency, which translates to higher risk, results in high transactions fees.

Pavo's platform and cryptocurrency addresses this problem for financiers and farmers alike. The borderless nature of blockchain-built currencies can improve the settlement process for everyone in the global, trans-national, supply chain, including farmers, buyers and banks. The low cost facilitates even cost-effective transactions for the smallest farmers in developing countries.

Blockchain enables real-time payments, concurrent with delivery, and better visibility to buyers, leveling the playing field for farmers. Farmers get paid sooner, and increased competition for their crops raises prices.

Absent blockchain, tax and other levy collectors and research organizations have no access to data provenance information: they receive their payments but cannot connect the money to the farmer who has paid. And, financing options are both costly and limited because the industry is perceived as risky — and for good reason, as there are many insolvencies.

Pavo's IoT Blockchain platform can change all of this by enabling real-time payment on delivery. Consequently, farmers get paid immediately, industry competition increases and keeps prices higher, and buyers save time and money.

Finally, adding transparency, trust, and efficiency to settlements can decrease risk and open the door to new financing vehicles for farmers and banks.

[27] United Nations Food and Agriculture Organization

Summary and Outlook

Conclusion

The agricultural industry is likely to see increasing global exchange through the adoption of digital products and currency, and blockchain-enabled Internet of Things solutions. This may affect everyone from rural farmers selling to consumers across the globe, to large nations tracking their aid relief. This could lead to fairer distribution of goods and currency amongst some of the poorest regions of the world, as well as increasing community-based agricultural models on a global scale.

This innovative technology simplifies data management throughout the complex system of farmers, brokers, distributors, processors, retailers, regulators, and consumers; information on the food we eat becomes simplified and transparent.

Improved data sharing about our food can also minimize the trillion-dollar problem of wasted food, increasing the total supply to serve a rapidly growing population. Increasingly, farmers, wholesalers, banks and consumers, will access data accumulated throughout the agriculture supply chain.

Pavo provides an IoT- blockchain solution for the agriculture ecosystem, enabling all participants to accept digital currency payments directly from their customers, suppliers and partners for their respective needs.

Disclosures

Pavo

Legal Considerations, Risks and Disclaimer

This whitepaper is non-binding in all respects and does not create any legal obligation of any kind on any person. The final implementation of the Pavo (PAVO) ecosystem is dependent upon several factors and risks outside of the control of Pavo including regulatory risks, contributor participation, the adoption of blockchain technology and the continued use and adoption of the Ethereum network. Nothing in this whitepaper or otherwise shall require Pavo to take any steps to develop or otherwise implement the PAVO ecosystem.
Pavo reserves the right to abandon the PAVO ecosystem and/or to change the implementation of the PAVO ecosystem contemplated by this whitepaper at any time and for any reason.

Prospective users of the PAVO ecosystem and other participants in the PAVO ecosystem are advised to participate at their own risk and without reliance on any statement contained in this whitepaper.

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The PavoCoin (“PAVO”) IS NOT A SECURITY OF ANY KIND. NO EQUITY, INTERESTS OR DIVIDENDS WILL EVER BE DISTRIBUTED OR ASSIGNED TO PavoCoin (PAVO) HOLDERS FROM THE COMPANY.

PAVO is a digital token for participation and use in the Pavo network and ecosystem and does not confer ownership of a stake in a business. The coin is to be used by the participants of the ecosystem, their respective Partners, Users and consumers of the ecosystem. While the Blockchain construct may potentially be attractive to regulators due to increased transaction security and reduced risk of manipulation, this new technology gives rise to legal and regulatory challenges that regulators are grappling to understand.

Disclosures

Pavo

USERS ARE NOT ELIGIBLE AND ARE NOT TO PURCHASE PAVO IF THEY ARE A CITIZEN OR RESIDENT (TAX OR OTHERWISE) OF ANY COUNTRY OR TERRITORY WHERE TRANSACTIONS WITH DIGITAL TOKENS AND/OR DIGITAL CURRENCIES ARE PROHIBITED OR IN ANY OTHER MANNER RESTRICTED BY APPLICABLE LAWS. "PERSON" IS GENERALLY DEFINED AS A NATURAL PERSON RESIDING IN THE RELEVANT STATE OR ANY ENTITY ORGANIZED OR INCORPORATED UNDER THE LAWS OF THE RELEVANT STATE. PURCHASED PAVO CANNOT BE OFFERED OR DISTRIBUTED AS WELL AS CANNOT BE RESOLD OR OTHERWISE ALIENATED BY THEIR HOLDERS TO MENTIONED PERSONS ("RESTRICTED PERSON"). IN PARTICULAR (BUT NOT LIMITING THE GENERALITY OF THE ABOVE), PAVO ARE NOT PUBLICLY OFFERED TO U.S. CITIZENS OR U.S. PERSONS (HAS THE MEANING IN 26 U.S. SECTION 7701(A)(30)), OR TO CITIZENS OR PERSONS FROM BOSNIA AND HERZEGOVINA, PEOPLE'S REPUBLIC OF CHINA, DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA (DPRK), ETHIOPIA, IRAN, IRAQ, SRI LANKA, SYRIA, TRINIDAD AND TOBAGO, TUNISIA, VANUATU, YEMEN, OR TO ANY OTHER CITIZENS OR PERSONS FROM A JURISDICTION, IN WHICH IT IS IMPERMISSIBLE OR RESTRICTED TO OFFER, DISTRIBUTE, PURCHASE, SELL OR RETAIN CRYPTOGRAPHIC TOKENS.

Disclosures

Pavo

The recipient of PAVO must have sufficient knowledge and experience in business and financial matters to be able to evaluate the risks and merits of PAVO token purchases and is able to bear the risks thereof.

You shall thoroughly and carefully consider and evaluate each of the risk factors and all other information contained in the Terms before deciding to participate in the PavoCoin Initial Coin Offering (the "ICO"). To the best of Pavo's knowledge and belief, all risk factors which are material to you in making an informed judgment to participate in the ICO have been set in the Terms. If any of these considerations, uncertainties or material risks develop into actual events, the business, financial position and/or results of operations of Pavo and the maintenance and level of usage of the PAVO platform and the PAVO tokens could be materially and adversely affected. In such cases, the trading price of PAVO tokens (in the case where they are listed on a cryptocurrency exchange) could decline due to any of these considerations, uncertainties or material risks, and you may lose all or part of the value of your PAVO token.

Glossary of Terms

AML – anti-money laundering

Counter-terrorist financing – a set of laws and regulations intended to reign in the financing of terrorist activity.

Farmer - a person who farms; person who operates a **farm** or cultivates land

Cultivator – one of multiple terms for the horticulturalist who manages an indoor garden and who is responsible for delivering the crop.

Garden – the space where indoor plants are seeded, sprouted, grown and mature.

GrowScore – a system-assigned normalized score that sums up the overall health of a specific set of plants in a given garden.

moles per joule – a measure of the amount of light a fixture produces for each unit of energy consumed. 1 mole is equal to $6.02214179 \times 10^{23}$ photons. 1 joule represents the work required to produce one watt of power for one second, or one "watt-second." Indoor farmers evaluate indoor light fixtures by this metric to ensure electrical efficiency in their gardens.

Infused Product Manufacturer – an enterprise that takes wholesale raw agricultural product and transforms it into consumer products such as pastes, oils, lip balms, shirts, industrial materials, and so on.

Glossary of Terms

ICO – Initial Coin Offering. The initial sale of a blockchain-based cryptocurrency.

IoT – Internet of Things. A communications network that gathers and processes data from a widely diverse and distributed set of sensors, devices and equipment.

IPM – Integrated Pest Management is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties.

Know Your Customer requirements – guidelines for the financial industry intended to prevent criminal money laundering by having institutions understand the source of their customers' funds.

PAVO – the shorthand name for the Pavo cryptocurrency.

Pavo – the IoT software platform for the agricultural industry.

PavoCoin – the name for the Pavo cryptocurrency.

Pavocoin AG – the name for the Pavo corporate entity.

Photosynthesis – the process of capturing light energy and converting it to sugar energy, in the presence of chlorophyll using carbon dioxide and water.

Glossary of Terms

Processor – an enterprise that performs the intermediary role of transforming raw agricultural product into another form before it is distributed to consumers (see also Infused Product Manufacturer).

Respiration – The process of metabolizing sugars to yield energy for growth, reproduction and other processes.

Root rot – a fungus that attacks the roots of plants.

Transpiration – water loss, primarily from the leaves of the plant.

Initial Coin Offering (ICO) – the launch of a new cryptocurrency.