THE WEAVE

Capture and connect real-world interactions and forever transform how industries progress.

Connect people, events, and object interactions as they occur. Automatically record them on participants’ unique, interconnected blockchains. Gain historical insight and real-time suggestions based on patterns, associations, and solutions.
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Simple concepts can have a big impact.

We live in an era when data and information are the crux of every industry - healthcare, government, manufacturing, retail, real estate, transportation, social, others. And all such activity in those industries are built on the basis of a simple exchange: the interactions between people and the goods or services they find compelling.

Yet current data systems are designed to capture bits and pieces of such interactions and do so after the fact, in secluded systems that are burdensome (at best) to retrieve and connect. Immense cost and effort is spend stitching such data silos together, with limited success. In our Internet-connected world, where the demand for immediate access to relevant information is a business differentiator and a consumer expectation, such systems feel archaic.

The Weave intends to transform those systems from passive, retroactive data repositories into active and in-the-moment systems. The Weave is a new multi-blockchain environment, where each person, entity, object, device, and location can have its own blockchain. It’s an environment like the World Wide Web, where you can participate by creating your own secure presence in the Weave, and enjoy its global benefits. Whenever an interaction occurs, a shared block is placed on each participant’s chain, immutably connecting all participants to that interaction. It’s a simple concept with broad implications.

The Weave is fundamentally different from other blockchain technologies. While others focus on decentralized value exchange or distributed code execution, the Weave focuses on enabling each participant to connect their real-time, real-world interactions... creating network-effects that empower every participant.

By connecting real-world interactions, in a secure yet public environment, our intent is to forever elevate and transform how entire industries (and people) progress.

While simple in concept, placing an immutable, shared block has broad implications.
The Weave™ establishes a robust and data-secure environment that can scale from individuals, to organizations, and across entire industries, interconnecting them all. Much like the early days of the World Wide Web, where hyperlinks connected information from different websites, the Weave connects interactions among their participants regardless of whether they are people, organizations, industries, transactions, locations, or events.

And just like websites revolutionized people and commerce, the Weave will revolutionize how people and industries define their interactions, and the information we can glean from each instance.

The Weave is an Internet-connected multi-blockchain environment where participants connect their interactions in real time, all while maintaining data security and privacy. Unlike nearly all other public-facing blockchain technology, the Weave guarantees block creation, which is a must for industries that need to capture interactions deterministically.

In the Weave, real-time interactions transparently integrate in its permissioned environment. The universe of people, and the industries with which they interact, are ever-expanding and integrated with the physical world, creating a continuum of interconnected events, transactions, and engagements across all types of objects and events.

Monolithic blockchains don’t achieve this. There are other environments similar to blockchains that are not monolithic, notably the Tangle, but those approaches didn’t match the needs of an ecosystem where people interact with the world around them. The premise behind the Weave needed a different distributed ledger and blockchain environment, so we set out to create one that would be perfectly suited to the real-time interactions that define how people (and companies, governments, healthcare, industries, manufacturing, social, and so on) engage with the world around them, and vice versa. We wanted to improve certain drawbacks of blockchains in ways that furthered our goals, and tailor the environment to realize our vision.

The Weave is not intended to be a replacement or alternative to existing monolithic distributed blockchain networks such as Bitcoin, Ethereum, EOS, or TON. The Weave is geared toward a public + private permissioned blockchain environment with standardized interactions and built-in verification mechanisms, geared to massive scale while still maintaining performance. It’s designed for use with people, organizations and industries that extend and protect the security of each, all while maintaining the permissioned security aspects of the Weave itself.

The following image shows a diagram of a standard, monolithic blockchain and how each block in that chain contains a hash of the previous block, in simple terms.
Introduction to the Weave

The Weave environment provides multiple security measures, immutability of interactions, handling of cryptocurrency tokens and their ownership, and transfers of value, among other features.

There are many details associated with how the Weave operates, and to properly explain how it operates and is different from other potential solutions for organizations, enterprises and industries, we need to start from a common context and understanding of the drawbacks (at least for use by enterprises) of other blockchain networks and protocols. So to properly describe what the Weave needed and how it differs, we must provide a basis from which we can compare.

To that end, let’s take a brief look at blockchains today. If you’re already versed in blockchains and how they operate, feel free to skip the next few sections and begin with the section titled Understanding the Weave.

How blockchains operate today

Let’s start our explanation by discussing blockchain basics, and then work our way down to specifics.

In the following sections, we take a brief and high-level tour of what a blockchain is, how blocks are created, why people use blockchains, and then describe some commonly held beliefs about the drawbacks of today’s monolithic blockchains.

Note: The blockchain environment moves quickly. New blockchain developments, protocols, or ideas may address one or more of the drawbacks described in the upcoming section, so the drawbacks shouldn’t be considered blanket assumptions for all other offerings. For our purposes, the Weave solves drawbacks that would prevent organizations, enterprises and industries from meeting their broadest reach and potential.

What is a blockchain?

A **blockchain** is a collection of sequential and interconnected data records (blocks), linked by special cryptography which create a public, unalterable, and ever-growing record of transactions or events. It’s like a massive shared Excel workbook, spread out across thousands of participating computers, all of which must make sure they have the same, current version each time there is a change.

**Cryptocurrencies** such as **Bitcoin** and **Ether** use blockchains to exchange value (tokens) in their publicly viewable blockchains. This works because anyone who wants to exchange Bitcoin or Ether must make the exchange on that single blockchain (workbook), and the only way to exchange tokens is to register a transaction in a new block (a new row) for the blockchain. Why do people register such transactions? For the same reason we use standard money – to buy something, pay for goods, invest, or get paid for services rendered. Cryptocurrencies, like common money issued by a government (called **fiat currency**), are simply a way for people to exchange value.
**How are blocks created?**

To create a new block (a new row in the spreadsheet) in a blockchain, a whole lot of computing energy is expended to validate that new block, and thereby allow it to become part of the immutable blockchain – it’s actually a race to come up with the answer to a puzzle, and finding that answer equates to the validation. Finding the answer to that puzzle is called mining. Once the puzzle answer is discovered and the block can thereby be added to the blockchain, the winner of the race gets paid for their efforts (in Bitcoin or Ether, in addition to the block’s cumulative transaction fee), immediately after which the race for the next block begins anew.

As of this writing, the size of Bitcoin blocks limits the number of possible transactions to approximately 1,500 to 2,000 per block (imagine 2,000 rows in the spreadsheet; each new row can have a separate transaction in each column), based on the block size limit of 1MB. Average transactions per block can be lower, and fluctuate based on activity. A new block is created every ten minutes or so. To get your exchange of value accepted into the next block (Bitcoin, for example) you must pay a fee – paid in Bitcoin, of course.

**Why do people use blockchains?**

The **Bitcoin blockchain** is solely for exchanging ownership of Bitcoin (value).

The **Ethereum blockchain** (and others) is used for exchanging value (Ether) but more prominently is used for running decentralized applications (dApps). It’s convenient to use the spreadsheet analogy again, and to equate dApps to Excel macros that can run in a given cell – they’re mini-applications called *smart contracts* that run whenever they’re activated. The concept is straightforward, but there are many and powerful implications for such a distributed system. dApps and smart contracts are much more complex than the macro analogy but the basic concept holds, though it doesn’t do them justice.

So people use blockchains to exchange value, or run dApps, or to earn value (Bitcoin or Ether or other cryptocurrencies) by providing the computing resources that keep the blockchain running. People also use blockchains for what they represent:

- **decentralization** – cryptocurrencies like Bitcoin and Ether are exchanged on a public ledger that has no centralized authority, unlike centralized banking, and also has decentralized apps that run on nodes that are distributed across a network (also decentralized).

- **trustless system** – since the blockchain ledger is public and decentralized, there’s no need to trust a central authority to exchange value, it’s trustless but cryptographically secure.

- **transparent and immutable transactions** – because blocks that have been verified and put on the chain cannot be undone or changed (said another way, they’re immutable), any exchange of value that gets verified on the publicly visible blockchain is considered done and irreversible.

- **storage of value** – many people buy and hold cryptocurrencies such as Bitcoin, Ether, Ripple, EOS, Stellar, Litecoin, and many others because they believe they will increase in value for reasons of scarcity, exchangeability, desirability, usefulness, or other factors. This is also the driver behind accumulating new tokens in early stages and holding them – as their underlying technologies come to market and gain interest and users, those early purchases of tokens could increase significantly in value, sometimes many hundreds of times their initial investment.
There are other applications too, which have the attention of businesses. Blockchains are also well suited for tracing sequential events or interactions. Some businesses want to use their own blockchains to track supply-chain events *in practice*, not in theory. For example, to track interactions of a box of lettuce from the originating field, to the field truck, to the cold storage where they waited, to the packager, freeway route, refrigeration status on the semi-trailer, to delivery at the grocery store and purchase by consumer – all for each box of lettuce. The keepers of such blockchains could then determine all the boxes that came from that field, or all the lettuce that passed through a given facility, or whether they took a freeway route through congested areas when they could’ve taken back roads and been more efficient.

There are many interesting advantages and applications for blockchains, whether to privately transfer value without the meddling or intermediate steps of a central trust authority, or run apps across a distributed infrastructure, or to provide the computing resources to keep such networks running.

For the Weave environment, the advantages of using the blockchain were compelling and user- and utility-driven. However, the drawbacks of existing blockchains required we create something new.

### What are the drawbacks of existing blockchains?

Despite the strengths, applications, and undeniable value that blockchains and their tokens have created, there are drawbacks to many of the blockchains in operation today. These are primarily based on the Bitcoin and Ethereum blockchains (as mentioned previously, the Tangle is a different kind of blockchain altogether).

The drawbacks of blockchains commonly consist of the following:

- **scalability** – the challenge with ever-growing public blockchains is their ability to scale to the volume of transactions that such popularity attracts. Five transactions per second is not sufficient for an everyday value exchange (Bitcoin or Ethereum), especially when Visa is capable of handling over 65,000 transaction messages per second[7]. Efforts are underway to increase Ethereum’s scalability, and both EOS and TON address scalability as a primary element of their respective offerings.

- **resource usage** – mining Bitcoin blocks uses massive amounts of power and computing resources, using approximately 75 TWh of electricity annually (more than 200 million KWh daily) which is as much energy consumption as the entire country of Austria, or enough energy annually to provide power to 6 million U.S households. As compute power increases, so likely will their resource usage, as many protocols are designed to increase difficulty to ensure time-distance between creation of blocks.

- **theft of tokens** – since most cryptocurrencies are completely trustless and decentralized, once tokens are stolen they are irretrievable. The theft of tokens amounted to $1.1 billion in the first half of 2018 alone, and according to CNBC it was apparently easy to do[8].

- **nefarious use of value and exchange** – with supposed anonymity came illicit activity, such as the Silk Road black market[9], money laundering, hacking heists of exchanges such as Mt. Gox and Coincheck[10], and others.

While describing their drawbacks, it’s important to also point out that these blockchains are incredible feats of creativity and development, and have filled needs and desires that few saw before they were met. They are ongoing concerns and these systems continue to improve their underlying protocols and
technology, and have created tremendous interest, following, utility, and value. Bitcoin alone has once climbed to over $290 billion in market cap, with the entire cryptocurrency space at one time boasting a combined market cap of $1.1 trillion\textsuperscript{1}. It seems likely that as time moves forward the market cap for blockchain and cryptocurrencies will continue to grow over the long term, despite occasional deep corrections and setbacks, and perhaps by large multiples, especially as cryptocurrency becomes an easy way for everyone to exchange value or buy goods from the convenience of their secure mobile phones.

With these numbers and their potential for future innovation and value, blockchain environments are compelling and hold tremendous promise and utility.

### Understanding the Weave

With a baseline understanding of how blockchains operate, along with a sense of their advantages and disadvantages, let's learn how the Weave operates in comparison including its similarities and important differences.

We imagined and then designed the Weave as a blockchain environment specifically fashioned for use in a shared, multi-user, multi-object environment that could scale to billions of people, entities, and interactions. The intent with the Weave is to incorporate the best elements of blockchains, and to learn from the drawbacks inherent in monolithic blockchains.

We needed the Weave to provide scale that could handle multitudes of interactions and transactions, occurring between users or entities and the entire universe of interesting objects, locations, and events. We also wanted the Weave to strengthen these block-based interaction connections with time, but to do so in a trusted and secure environment that became easier and more robust over time.

The Weave is designed to enable its participants to engage with each other and the physical world around them. The Weave is also designed to extend to many extended applications by standardizing its block, such that each organization, enterprise, or industry can engage and interact with users and other entities who have a presence within the Weave. These could include interactions from industries such as government, healthcare, finance, distribution and supply chain, finance, manufacturing, and others - and all of the customers or other businesses who interact with them.

To understand how this design comes together, let's dive into the details.

### How the Weave works

Since many elements of the Weave work interdependently, it’s useful to get an overview of the baseline facts and elements. The following list briefly describes those basics, with more detailed explanations of each provided thereafter.

- **The Weave** is an underlying blockchain and cryptocurrency operational environment.

- **The Upheaval ecosystem** is designed to connect Weave participants to the physical world around them. It includes the ability to gather insights and data associated with the interactions, to detect patterns and and create analytics, and to otherwise provide services to Weave participants that turn the interactions into actionable data and insights.

- The underlying operating environment for the Upheaval ecosystem is the **Weave**. The Weave was designed specifically for the Upheaval app (how users interact with the Weave) and Upheaval ecosystem.

- **The Weave** operates by binding individual blockchains whenever an interaction occurs between two or more parties (such as a user and a treatment, or doctor visit). This binding is achieved by creating a block that describes the interaction or transaction and also contains a cryptographic
hash of each participant’s previous block and its address, which is then added to the block in the appropriate header and added as a block to each participant’s blockchain. The blocks describe the interaction and include the aforementioned hash of each participant’s previous block, but are not identical since each block includes cryptographic signatures from the respective individual blockchains in the appropriate header. This interaction-based block is called a **shared block**.

The following visual illustrates the concept of a shared block in operation:

These **shared blocks** and the interactions they represent, as we move through time, create an increasingly immutable Weave of interconnections that will eventually generate a ubiquitous fabric of interconnections – everything is (or will be) connected to everything else with which there has ever been an interaction.

The shared block, also called the **Weave Block**, is **standardized** so that partners and entities with a presence in the Weave can access the services of the **Upheaval ecosystem** by using the standardized block. The shared and standardized **Weave** block has similarities to an IP packet, where various headers and their corresponding fields are used to denote object or user addresses, originator and participant blocks and Weave domain IDs, hash information, participant prior-block hashes, interaction payload, and other similar fields and payloads that identify and record the interaction.
All partners or entities that have a presence in the Weave environment must be registered with the **Upheaval ecosystem** to participate, a requirement that’s designed to protect Upheaval users and the integrity of the **Weave** environment. Registration occurs with a Weave subscription.

Creation and deployment of the **Weave** environment for the Upheaval ecosystem will include a cryptocurrency, using the symbol **UPC**, commonly referred to as **credits**.

The following sections describe these concepts in more detail, and explain how they work together.

### Multiple Blockchains, Connections, and Binding

In the **Weave**, each user, entity, object, location, event, or other participant in the Weave gets its own **blockchain**. An entity who participates in the Weave (such as a hospital) can have multiple entities within their Weave presence, each of which is unique and associated with that entity’s Weave presence. Each participant blockchain has a unique 256-bit signature, and that signature becomes part of the hashing function of each block on its chain, allowing for traversal through a shared block on the same chain. The following image shows the scale of a 256-bit identifier. A blockchain is created when the user, object, location, or event (or external subscriber, customer, advertiser, or partner) engages in its first interaction in the **Upheaval ecosystem**.

#### Scale of a 265-bit Identifier

(count of unique values)

115,792,089,237,316,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000,000

In the **Upheaval ecosystem**, all interactions and transactions occur **with** someone or something: a patient visits the hospital and receives treatment from a physician, and is prescribed a medicine provided by a pharmacy, and so on.

A **block** is created whenever an interaction occurs. The standardized block captures the interaction and is placed in each participant’s blockchain – by definition, an interaction includes two or more participants. By placing the block in each participant’s blockchain, the interaction becomes part of each blockchain in an immutable fashion by including cryptographic signatures in each block, making any attempts at modifying that interaction much, much more difficult (the interaction would have to be found in each participating blockchain, rather than just one, and the difficulty of modifying any single blockchain is multiplied by the number of involved blockchains).

As each user continues to interact within the **Upheaval ecosystem**, their blockchain grows as would any other blockchain. The important difference with the **Weave** is that each blockchain is tied to all others with which they have interacted, creating a history of their interactions, over which users have control in terms of privacy, sharing, and so on.

The objects, locations, and events that are part of the **Weave** are maintained by the **Upheaval ecosystem**, which also provides robust security, tracing of interactions, and an immutable history of all interactions. Objects can be created by each participant of the Weave, as their business or organizational needs dictate, with globally used objects reconciled.

Any entities that want to interact in the **Weave** must have a subscription to the Weave (an **entity** is a non-person account, such as a business), similar to getting an SSL certificate for a secure website, allowing them to participate in the Weave and capture interactions. The ability to track interactions, in terms of source and destination (all users who
interact with entities, and the valid identity of such entities) creates a more environment, where ulterior motives or nefarious activities are much more difficult to mask, hide, or deflect.

As mentioned previously, the standardized and shared block can be thought of as an analog to an IP packet, with an important exception: while an IP packet is discarded once its data is unpacked at its destination, the Weave block created for its destination blockchain becomes part of that blockchain’s immutable and chronological series of interactions, and based on its shared-interaction contents, that block becomes tied to all other participating blockchains in the interaction across the entire Weave environment and time continuum. And since its structure is standardized and its header fields contain information about all other participants and their unique Weave addresses, including hashes, that block is easily traversable and searchable, with inherent links and addresses of participants. All subject to existing security and privacy requirements and settings.

Let’s look at an example, to see how this works.

Sarah goes to her doctor appointment. At the reception desk, Sarah shares a code on her Upheaval app, providing the reception desk with identity verification and basic check-in, medical, and insurance information. Instead of filling out a redundant copy of a medical questionnaire, check-in completes securely, in just moments. A shared block is created from her interaction at the hospital reception desk, placed on the individual blockchains for: Sarah, the hospital, reception, and her insurer.

Sarah meets with her physician, who prescribes treatment, and medication in the form of a prescription. A shared block is created from her interaction during her doctor appointment, placed on the individual blockchains for: the doctor, Sarah, the medicine that was prescribed, the pharmacy, and her insurer. All participants can then walk their individual chains, and gather information from their perspective. For example, the drug manufacturer can determine (with privacy protections in place) where their drug is being prescribed, under what circumstances, how much, and how often.

When Sarah goes to her pharmacy, the pharmacist already has the prescription ready and payment is made, since the previous block (of which the pharmacy was included) provided secure information that facilitated (and streamlined) the preparation, approval, payment, and delivery of medicine for Sarah - including other medicine Sarah takes to avoid complications.

Since these interactions are recorded in blocks in each participant’s blockchain, as time continues and interactions/transactions occur, those interactions or transactions become further and more expansively validated (validation occurs upon creation of the next block, and technically, that occurrence for any blockchain that participated in a given block’s transaction).

Like a standard monolithic blockchain and the subsequent blocks that validate transactions in previous blocks, the distributed nature of the interconnected blockchains in the Weave environment make these interactions/transactions immutable. There is no way to undo or modify a blocked interaction or transaction, as doing so would require modifying every blocked interaction/transaction, on each affected blockchain (all of which grow and fan out to other blockchains with each subsequent interaction with other objects, and each connected recorded block), from that point in time forward.

With each of these connections \( n \), the Weave becomes more interconnected, or bound. As the Weave environment grows and those \( n \) connections expand by virtue of interactions and transactions, the degrees of separation shorten between all users and objects, eventually closing any relational gaps of any significance\(^{14}\). As it matures, the Weave becomes a holistic mesh where everything is connected to everything, such that you could traverse the entire universe of users and objects (or at least those included in the Weave environment) by walking the connections from one interaction to another.
So for the Weave, new blocks are created with each interaction and can scale to the compute power available to the Weave environment. Resource usage is minimized since identity is already established for participants in the Weave environment, and validation can occur nearly immediately as a result (value exchange in the Weave is detailed later in this whitepaper). Management of the system itself is permissioned to ensure data integrity, security, continuity, and other Upheaval-required functionality, and participants can use their existing security, privacy, and data repository safeguards to ensure data for which they want to limit access is appropriately secured. This is similar to having a website or web server where known customers can see their information and history, as their identity validates such access, but others without proper validation cannot.

**Referenced objects**

To provide the necessary performance in a highly scalable environment, yet ensure the richness of interactions with data payloads that are enabled and encouraged, the Weave includes the ability to encode data content (pictures, videos, MRIs, or perhaps documents, contracts, code, receipts, medical history, so on) by use of a URI and hash. This approach facilitates the immutability of any content included in an interaction among participants in the Weave, but offloads the contents of (what would otherwise be) large data blocks within the Weave itself (or the subscriber’s proprietary system, as required or preferred).

This use of reference for heavy objects facilitates fast block creation and interactions, while also providing for large data interactions (such as aforementioned images, videos, or substantially larger data blocks) to be immutably included by reference and their contents ensured to have integrity with hashes of the content itself as well, all managed to ensure data integrity, user privacy, and compliance. The offloading of these so-called heavy objects has multiple benefits: it enables those participants to access the data in one store, rather than having multiple copies; it ensures a single source of the data that, by virtue of its hash, can be assured to be authentic and unchanged; and has the potential for various identity and security elements since its single source prevents unwanted copying and proliferation by unauthorized parties.

**The Weave block as a standard block**

The Weave block is well-defined in terms of structure, fields, their use, and the various identification (addressing) schemes implemented for any given block, and for each block in a Weave blockchain. Weave block header sections are transparently and deterministically defined, to facilitate interoperating with other blocks, placement on multiple chains, varied and different payloads, as well as to facilitate interoperating with Weave subscribers, external partners, and interoperating with other blockchains.

The Weave block can be variable in size as needed for payload or interoperability, much like an IP packet can vary in size to accommodate varied data payloads or MTUs for a given segment (or in this case, a given environment). The analogue of a Weave block to an IP packet is useful for conceptual comparison, and is germane from an historical perspective; the intent of the Weave block as a standard block is similar to the interoperability and standardization that was facilitated with the well-defined structure of an IP packet. But as an extension to that analogue, the standardized Weave block introduces the added concept of block-header included hashes, from each participant’s blockchain, that provide immutability on both sides of the interaction.

In a world where multiple blockchains exist, and multiple Weave subscribers interact, the value of having a standard block definition that can be used on more than one blockchain provides an opportunity to advance and accelerate overall adoption. More useful and robust yet (in our opinion), the possibility of having a standard block that is placed on multiple blockchains, with the hash from each block immutably tying those two blockchains together for that particular interaction, provides an opportunity for standards-based, validated interactions between two (open or closed) blockchain systems.
Such block standardization can facilitate the following benefits:

- **Interaction** – within the Weave, and externally, a standardized block facilitates deterministic interaction, much like routers can quickly parse a packet (or even just a few fields in its header) and determine how to properly handle or forward the block. This has implications for edge-of-network or edge-of-interaction software services.

- **Extension** – header fields in the standardized Weave block are defined to facilitate known and yet-to-be defined payloads and references, such as specifying that the payload is another blockchain block (and its starting address and length), or some other known or registered block or service. Compare this to the various protocols in the TCP/IP suite, or even loosely to the basis of TCP and UDP port numbers, and the services listening at known ports that can accommodate the type of (in our case) block data or transactions found inside the payload.

- **Cooperation** – requests for extensibility to any standardized block will be welcome, and/since such cooperation and standardization further adoption and acceptance, which drives use and innovation.

- **Global addressability** – the underlying addressing scheme for blocks and Weave incarnations will use an IANA-like address block and range coordination, with customized address identifiers (similar to UUIDs, but larger) that approach the address capacity of IPv6, but with an addressing and identity approach more like section-aligned and section-cordoned UUIDs for unique address spacing.

There are many more advantages to a standardized block that can be used across multiple blockchains, but even if this approach is only useful (or only used) for blocks within the Weave environment, such block standardization is useful and good discipline for ensuring a robust development infrastructure. And also historically, it’s not uncommon for software companies, including enterprise organizations, to create solutions for their internal use that they eventually publish or make available to partners, customers, or subscribers.

The following table provides a quick look into comparing the Weave to other blockchain offerings, highlighting many of the advantages and capabilities that have been discussed so far in this whitepaper:
The Upheaval token – the Credit

An integral part of the Weave environment – and the Upheaval ecosystem that runs on top of it – is the creation, distribution, management, and ecosystem associated with Upheaval tokens, commonly referred to as credits.

It’s useful to provide some overall context for the Upheaval token (the credit) and the discussion structure. The following list provides overviews of four primary elements for Upheaval tokens – creation, distribution, management, and economic activity.

- **The creation of credits** is managed by the Weave, which is the central managing authority for credits, during a genesis event. There is no concept of mining Upheaval tokens (such as what occurs in other blockchain environments like Bitcoin and Ethereum); rather, there is a set number of credits created during the genesis event, which are subsequently distributed at various stages, and available for value exchange.

- **The distribution of credits** will occur in stages, beginning with investment windows during which blocks of credits (called Token Blocks) will be sold at significant discount. The first Token Block will be offered to Accredited Investors using SAFT Agreements. Credits available for sale during in these Token Blocks is limited to a maximum hard cap of 30% of total tokens. This hard cap ensures that Upheaval maintains a minimum reserve ratio of 2.33:1. It’s possible that less than the 30% hard cap will be offered for sale, resulting in an even more robust reserve ratio.

Remaining credits (the reserve) will be used by Upheaval over time to build, scale, attract partners and engagement, and otherwise advance the ecosystem. We have a long-term and global-scale outlook and mindset, and will use credit proceeds, as well as reserve credits, to drive development and market fit progress through milestones on our roadmap. More specifics about distribution is provided later in this whitepaper, in the Distribution of Tokens section.

- **The management of Upheaval credits** has many facets:
  - All credits have a unique and deterministic credit ID bestowed upon creation. Credits are always associated with exactly one wallet, and transfers can only occur when confirmation that enough credits are available, and the destination wallet is valid. Credit ID(s) are then transferred when creation and validation of the shared block is applied to both chains in the transaction.
  - In the Upheaval ecosystem, the amount of credits any user or entity has is private. A secure yet user-friendly wallet will be integrated into the Upheaval app (and a Weave subscriber’s portal) and seamlessly available to its owner, but obfuscation prevents a user’s or entity’s identity from being associated with their wallet, thereby protecting their credit balance and their privacy.
  - Theft of tokens is deterred by a combination of many elements. The structure of Upheaval credit IDs, the process necessary for value transfer from user wallets, the shared blocks placed onto participating blockchains, and the credit confirmation process applied by the Upheaval ecosystem all work collaboratively to deter theft. Structures will be implemented to retrieve stolen credits, and/or nullify validation for stolen credits, with appropriate safeguards for maintaining value protection and fairness.
The economic activity facilitated by Upheaval credits fuels great experiences, and easy exchange of value, which collectively builds long-term value of credits:

- All partners, such as advertisers or subscribers, use credits to pay for engagement within the Weave environment, and must have a valid account (subscription). This also means each partner has a blockchain, which grows with the addition of a shared block upon each interaction and transaction.

- Credits are awarded for growth, engagement and interaction in the Upheaval ecosystem. The award of such credits are strategically determined, time-bound, and based on progression through the Upheaval ecosystem. These engagement awards are designed to drive expansion and breadth of the ecosystem, and to fuel a network-effect based user experience that will resonate with users throughout the world. More about this credit award strategy, and how it fuels engagement and growth, is described in upcoming sections.

- An important concept called mini-computes is also part of the economic activity that fuels the value of credits. Mini-computes enable users and entities to earn credits by making otherwise-unused processing power available for use, paid in credits.

Now that we have an overview, let’s take a closer look at each of these elements. The following sections are intended to lay the intellectual groundwork for future work, a robust infrastructure, and ongoing improvements.

In the next section we start at the beginning – the creation of Upheaval credits.

Credit creation

Upheaval credits will be created during a genesis event that will predate the general availability (GA) launch of the Weave environment and the Upheaval ecosystem and app. Upheaval will create 1.8 billion credits in the genesis event, with each credit further divisible into mini-credits (1/1,000th of a credit).

There are three primary reasons for creating such a large number of credits (1.8 billion), and the ability to further divide each credit into mini-credits: 1) global distribution and efficacy as a common currency, 2) liquidity within the self-perpetuating economic engine of the Weave environment, and 3) ample reserves for expansive ecosystem engagements.

Let’s take a brief look at each of those reasons, in turn.

For global distribution and efficacy, we designed the Upheaval credit to be globally useful regardless of local economy. For example, in some African countries one credit may represent significant local value, so exchanges of mini-credits for medical visits make their use more likely and tenable. Contrast that with other countries where 20 credits may be a more common exchange.
For **liquidity** within and outside the Weave environment, there must be sufficient credit volume in circulation to enable simultaneous value accumulation, services or goods purchases, fees, value exchange, currency flow, and other uses.

For **ample reserves**, our adoption and engagement strategy will include credit awards for certain user interactions (first company in industry to subscribe to the Weave, for example), who provide mini-computes (for which the credit unit must be sufficiently granular), and for other incentives or achievements. Ample credits and volume are necessary to ensure robust and liquid finance activities within and outside the ecosystem.

Each credit will have a unique address, which itself is even further divisible into smaller units. The addressing scheme will be a specialized structure called the **Weave Unique identifier** (WUID) that is similar to a UUID, with modifications made to tailor addressing scope and capabilities for the **Weave**, and to accommodate addressing characteristics that can extend beyond the Upheaval implementation of the Weave.

It will be possible to use address prefixes, masks, and assignments using specified initial bit values to allocate token space to additional Weave environments.

Like other cryptocurrencies, there is a hierarchy to the credit and associated units. The **symbol** for Upheaval token will be **UPC**, and **one UPC** is divisible into mini-credits, and micro-credits:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Number per UPC</th>
<th>Common uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPC (the Upheaval Credit, commonly called a credit)</td>
<td>1</td>
<td>Value exchange, purchases</td>
</tr>
<tr>
<td>mini-credit</td>
<td>1,000</td>
<td>small transactions, ad placement, fees</td>
</tr>
<tr>
<td>micro-credit</td>
<td>1,000,000</td>
<td>micro-transactions, micro-fees</td>
</tr>
</tbody>
</table>

As necessary, further units based on the UPC can be created. For example, as shown, the **micro-credit** is available if the need for increments smaller than a mini-credit is necessary. The WUID is designed with ample faculty to further divide credits into very small increments, for use in very small exchanges, fees, or other utilities.

**UPC / Credit distribution**

Prior to the **genesis event**, investment windows will be opened to sell early blocks of tokens, at defined and significant discounts, to qualified investors.

A portion of the reserved credits will be used to develop, maintain, expand, and continually improve the Weave environment, the Upheaval app and its ecosystem. Those activities include attracting and retaining the best talent for long-term success, and developing a strategic and long-term business infrastructure, such as computing resources and capacity.

Another portion of the reserved credits will be used in our **Strategic Adoption and Engagement** campaign to reward users and entities for adoption and deep engagement, which includes credits awarded for certain progressions through structured engagement milestones. These credits will be specifically designed to drive adoption and expand the subscription base of the Weave, in a strategic and geographically diverse plan intended to generate self-propagating adoption. **We’re reserving 200 million UPCs** for our Strategic Adoption and Engagement campaign. More on that campaign is described in the upcoming **Distribution of Tokens** section.

Additionally, a portion of the reserved credits will be used for community- and expert-based technical scrutiny of the Weave environment, its constituent parts, premises, assertions, and code. Credits will be awarded for individuals or organizations who find issues, provide solutions, scrutinize and validate the resolutions, and participate as technical
experts. These review requests will be called (a) Call for Scrutiny (CFS), and will be facilitated with the intent to generate cooperation, collaboration, technical scrutiny, interoperability, and global interaction with the standards-driven elements of the Weave and its capabilities. We believe such scrutiny, captured in a competitive but cooperative environment, generates some of the best solutions and creative ideas available. It’s also a great way to engage with passionate technical people, validate their contributions, and even recruit them. It also facilitates cooperation across industries.

There may be other technical and organizational uses for the UPCs that further the scope, robustness, application, and longevity of the Weave and its tenets. Such efforts will also come from Upheaval’s credit reserves.

**UPC / Credit management**

The management of Upheaval credits is specifically designed to provide privacy and security, suppress the possibility of double-spending, deter and prevent theft, all with the underlying tenet that credit management is designed to protect users and their credit value.

A unique ID / address in the form of a WUID (described in the previous section) is applied to every credit, is extensible as a unique address to the smallest fraction of any credit increment, and is irrevocably assigned at the genesis event. These addresses enable deterministic verification of whether a user has sufficient credits to complete a transaction, and they enable a clear trail of transactions to protect users and entities/customers/partners from fraud and theft.

The WUID-based ID has conceptual similarity to an IPv6 address or a UUID, with the inherited utility of blocking sections of addresses, using abbreviated notation where reasonable and useful, and the potential for extensible services applied as additional layers to the address itself.

Balance verification (including double-spend protection) is achieved with a secure and centralized authority that maintains a mapping of IDs and wallet ownership, decoupled and obscured from participant (entity) identities to ensure privacy and security. Before a Weave block for value exchange can be created and verified by the system, verification occurs to ensure the wallet transferring value has sufficient credits to complete the transaction. This is achieved by a combination of the entity’s Upheaval wallet and encrypted elements of their blockchain in the Weave, and other digital means as needed. Safeguards will be implemented that ensure obscurity between balance verification for a value transfer, and overall credit balances for a given wallet (credit balances for a given user or entity will be opaque). Transaction-based mechanisms will ensure no race-condition double-spend attempts can be successful, and the Upheaval Terms and Conditions have strong policies to address any fraud-based attempts to do so.

An important distinction is made here, to clarify the limited role of the centralized authority: its role for credit verification and double-spend protection is only for validation of sufficient credits for the value exchange. There is no approval mechanism, nor any other requirement; only the existence of sufficient credits for the transaction.

User and theft protection – one advantage to balance verification and privacy-enabled transaction history (unique credit IDs and a permissioned blockchain that registers value transfer transactions) is the facility to nullify stolen credits (when theft is unequivocally confirmed) and return stolen credits to theft victims. Safeguards will be in place to prevent abuse, including provisioning significant proof of theft (similar in concept to proof of stake) mechanisms to discourage frivolous claims.

Transfers of significant value may additionally and potentially require two-factor authentication (2FA), or additional safeguards such as a picture of the transmitter that includes time and location to validate the transfer is valid. Note that transfers of significant value require 2FA and a picture of the transmitter, but not the receiver; only validation of the sender is necessary to prevent theft.
Credit balance obfuscation – users and entities in Upheaval can view their credit balance, but unlike other blockchain environments, the balance of any given wallet (whether identifiable or not) is not accessible to the public. Wallets that “hold” credits are integrated into the Upheaval app, and allow only the authenticated user (and the Upheaval credit validation subsystem, only as necessary to facilitate a requested transfers of value) to view credit balances, or evaluate whether sufficient credit(s) exists.

Any transaction found to be false, faulty, or fraudulent may be subject to forfeiture of some percentage of the credits transferred in the transaction. All users engaging in the Weave environment must have an account, and automatically receive an associated wallet. User activity is subject to Upheaval terms and conditions. Theft or fraud from users or entities may result in held credits to be frozen, closing of the Upheaval account, and notification of appropriate authorities. This approach is not dissimilar to the Proof of Stake algorithm used in other blockchain environments.

The Upheaval Economy

With Upheaval credits explained, the important question of how economic activity is tied to those credits can be addressed. Some economic value drivers were discussed in the previous section – awarding entities for engagement activities, for example – but the vibrant and distributed economy that self-perpetuates will include more than that.

Economic drivers for other blockchains are often based on value transfers and block mining. For example, Bitcoin and Ethereum reward miners for generating blocks, which creates intrinsic incentive for engagement in those blockchain environments. Value store alone can be an economic incentive, but economic drivers based on activity (including industry engagement, investment, and spending) can create an active, robust, and expanding economy.

To that end, the economic activity facilitated by Upheaval credits is intended to be active, vibrant, and rich with opportunity for participants. In this sense, the Weave as the underlying environment becomes the foundation for activity and creativity – but not the impetus for such activity.

This is where differentiation between the environment (the Weave) and the ecosystem (the Upheaval app and analytics services) can be clarified – they are separate. The Weave can exist/be provisioned as an environment without Upheaval (a potentially compelling option, but not discussed in this whitepaper), and the Upheaval ecosystem can be developed and deployed without using the Weave (still interesting and compelling but missing the scope, shared block security, online cryptocurrency economy, and next-generation experiences enabled with the Weave). The Weave and Upheaval are separate concepts (much like electricity and the devices it animates are separate, or how Disneyland can exist without visitors but not be enjoyed). However, it is the relationship between the Weave and Upheaval that enables so many interesting things to occur.

Upheaval credits are based on the Weave being an environment for the Upheaval ecosystem. Organizations secure subscriptions to the Weave and become participants, such as an insurance company or online retail or banking ecosystem, and transactions among them can be secured using UPCs (based on the standardized Weave Block shared between them in the Weave). It’s worth stating at this point that the Weave and how it operates is patent-pending technology, as explained later in this whitepaper.

With that differentiation established, we can continue describing economic activity inherent to the Weave environment.
Partners and subscribers

All partners use UPCs to fund their engagement in the Upheaval ecosystem. Partners may be suppliers with a direct relationship that provide goods or services to Weave participants; they could be retailers that offer purchasing or customer service interactions for Weave participants; manufacturers that provide products or post-purchase services to Upheaval users based on user-initiated object or location interests. All such interactions are subject to stringent privacy requirements, and are only associated with interests surfaced by Upheaval users whose interaction indicates interest in related goods and services.

Subscribers are entities with an established presence in the Weave, and who may also be interested in analytics (data and statistics) for activity around interactions, objects, locations, events, or other future types of participants in the Upheaval ecosystem (as stated previously, data security is a development pillar and always a first-order priority). Such subscribers may be owners or manufacturers of certain goods: imagine an object in the Weave that represents a drug manufacturer who wants to understand more about how their product is applied, with all privacy securely in place. They may be interested interested in what, how often, and when users are prescribed or search for their drug, or similar solutions, including perhaps what time of day and from where such searches or prescriptions are made. Subscribers may also be restaurant owners interested in a city, region, restaurants, or other data the Upheaval ecosystem gathers or could compile. Market studies based on products or locations may be interested in short-term subscriptions or reports. Or subscribers might be interested in aspects of data that the Upheaval ecosystem gathers, such as usage patterns for types of objects, scan frequency or time between scans in certain areas, scan responses to marketing campaigns, and other pattern analysis and big data insights that Upheaval will generate (or extrapolate, in deterministic ways).

There are many other subscription-like data and insight services that Upheaval can create as the ecosystem gains subscribers, and the corpus of content expands beyond its already significant collection of data.

Fueling growth and engagement

A portion of Upheaval’s reserve credits will be used to drive the growth, engagement and adoption of the Weave. For convenience, we call this the Strategic Adoption and Engagement campaign. A system of credit awards will incent partnerships that extend the reach of the ecosystem, expand the surface area of objects, and enrich the experience for subscribers, users, and all participants.

It’s anticipated that growth will benefit from rewards for subscriptions, engagement and activity, until the point at which network effects and critical mass of connections gains sufficient traction to drive adoption on its own. The finite amount of credits dedicated to rewarding partnerships for engagement and expansion is designed to take the Upheaval ecosystem through the point of self-sustaining adoption. At that point a critical mass of engagement, credits in mass user circulation, availability of goods and services accepting credits for transfer of value, and expanse of credit distribution will self-perpetuate, and no longer require credit awards for engagement activities. Making the time period of credit awards finite, and restricting awards to random yet specific activities, is also based on deep research and specifically fashioned to drive early adoption and sustained engagement.
Finally, mini-computes™ are introduced as part of the overall economic activity in the Upheaval ecosystem. Mini-computes enable users and entities to participate in the Upheaval credit economy by offering decentralized and distributed compute services, which the powerful network-effect of the Upheaval ecosystem will perpetuate.

Each device with the Upheaval app, and all subscribers in the Weave, are eligible to run mini-computes, allowing opt-in users and entities to provide portions of their device’s unused processing power to the Upheaval ecosystem as available compute cycles that earn those users payment, in credits, based on the going rate. The award of such compute cycles is based on many factors, and include a first-to-respond algorithm that allows network-near and capacity-ready devices to earn the mini-compute award, and with it, the credit(s) paid for the utility. Mini-computes fuel the Weave and the Upheaval ecosystem in two ways: they can create blocks for interactions, and they can provide processing power that external users require to interact in the Upheaval ecosystem. Mini-computes will run on desktops, virtual machines, or mobile devices, with settings that determine when a device is on battery or directly connected to a power source.

This is similar to the facility provided by participating nodes in other blockchain environments, where nodes perform mining operations or other processing, but with important exceptions for the Weave – users (unlike nodes) are not required to participate, and no special software installation or configuration is required to participate. Massive mining rigs could run the desktop version of the Upheaval app or Weave portal to offer compute power, and get rewarded for the processing they provide, rather than gambling on whether they win the block creation race. In this way, a decentralized and global compute fabric based on useful utilization - rather than chance - can be created. There are other differentiating factors, but those are most significant.

Mini-computes fuel the Upheaval ecosystem in three ways:

- **Mini-computes** can create blocks for transactions/interactions as needed (only non-user blocks are eligible for mini-computes, all activity is encrypted on-device and opaque from the device);
- **Mini-computes** provide processing power that partners and subscribers require to interact in the ecosystem;
- And importantly, **mini-computes** are a commodity resource available to satisfy cloud-based computing needs for distributed applications.

To clarify, the Upheaval infrastructure and the Weave do not depend on mini-computes for the computational needs of the ecosystem or environment, but they can use them. They are invisible to users and subscribers.

All mini-computes run and process in an encrypted, secure, and completely privacy-protected environment.

Mini-computes for **internal** transactions or activities are simply part of the ecosystem – they can provide processing power for how posts are constructed, comments are posted, objects are recognized, and so on. They are invisible to users while using the Upheaval app, and to subscribers.

Mini-computes for **external** interactions — such as advertisements, external-blockchain transactions, customer subscription services, or any other non-internal interactions — are commodity compute cycles that are billed using Upheaval credits from the Upheaval ecosystem. These are considered paid mini-computes, offered up to users and entities as demand requires and makes available.

Credits for mini-computes are shared between the Upheaval ecosystem and the user or entity that enables their device to run mini-computes, on a graduated scale based on the entity’s subscription.
The use for mini-computes will grow as the Upheaval ecosystem expands its users, objects, locations, events, partners, and subscribers... as well as its network-effect usefulness for outside subscribers. It’s possible that existing mining companies, mining rigs, or other computing resources could become providers of mini-computes, which would require engagement with the Upheaval ecosystem as a partner or entity, subject to the same requirements and terms of any Upheaval ecosystem partner or subscriber.

The Upheaval ecosystem will initially only provide mini-computes as processing units. As the ecosystem expands and the number of users, entities, partners, and subscribers grows, other compute-related services (such as cloud-based protocol services used by distributed apps, smart contracts, or other online services) may be introduced and offered to augment the compute and Weave environment.

Weave Summary

The Weave is a unique new blockchain environment where each participant has its own blockchain. Interactions among those participants, including posts and transactions, bind participants with a shared block that is cryptographically signed by each and is placed in each participant’s blockchain. Every interaction in the Weave environment creates a block, so all activity contributes to the environment’s cryptographically generated immutability, building an ever-strengthening mesh of interconnections, as well as a unique chronology of interactions for each Weave participant. Block creation is rapid, can scale to billions of participants, and does not involve process-intensive validation.

The Weave introduces a standardized block that enables interaction with blockchains outside the Weave environment. Such interaction requires external partners to have an account within the Weave to participate, such that a Weave user, internal partner, and that partner’s external blockchain can share a block for a given transaction and maintain the integrity, security, and history of the interaction.

The Weave is specifically designed to be an exceptionally robust, scalable, secure, and performant blockchain environment. The Weave connects real-world interactions in real-time, enabling all participants to create immutable connections with users, objects, locations, and events that reflect their interests. The Weave and the way its environment operates is patent-pending technology.

UPC is the symbol for tokens generated and managed by the Weave environment, and individual tokens are called credits. All credits will be created in a genesis event, reserved for three primary efforts: to sell during investment windows in Token Blocks; to drive early and widespread engagement, object validation, technical scrutiny, and industries-wide adoption during our Strategic Adoption and Engagement campaign; and to attract and retain the best talent available and build the global presence and momentum required to create a long-term, user-experience-centered and ecosystem-expanding organization that delivers our vision.

Each credit has a unique and inherently structured UUID-like address called a WUID, which is centrally maintained and verified upon each value transfer to curtail theft, prevent double-spending, and ensure a robust sense of value security for Upheaval subscribers and credit holders. Additional structures that stake owned credits to confirm the veracity of a value transfer will be in place too, to deter fraud and theft.

A strong engine of economic activity will drive the continual exchange of credits, which in turn will build increasing engagement, expansion, value, benefits, and rewards for engaged users, entities, and subscribers. Subscribers and all participants pay for services in the Weave and Upheaval ecosystem using UPCs. Partners can earn credits for specific engagement and expansion of the ecosystem, including progressing through the ecosystem in ways that earn higher rewards for their efforts. Subscribers pay with credits to receive metrics about their product activity in the Upheaval ecosystem, or as permitted, to see category-based data and metrics that are associated with their hierarchical category of products or services.
The Weave has many underlying services that are coordinated by the Upheaval ecosystem – a collection of software subsystems and distributed logic that enables the expansive, responsive, and interactive environment.

Overview of the Upheaval Ecosystem

The Upheaval ecosystem (also referred to as its infrastructure) carries out the following processes:

- Manages and maintains identity and security of users and participants, as well as security and privacy settings for entities and partners that interact with the Weave environment.

- Associates various detection and/or scan codes with an object, and provides an Upheaval-created unique identifier to create a one-to-many relationship with a given object and its various possible codes or identifying mechanisms. For example, one Upheaval ID (UID) for a given object within the Upheaval ecosystem may have associations with a bar code, one or more QR codes, RFID, and an image collection, all of which refer to the same physical object; the Upheaval infrastructure UID enables many object detections or scan codes to be reconciled to a single object.

- Contains the subsystems that manage dynamic notifications and other significant subsystems.

- Creates and refines a semantic association process and repository to create associations between objects based on the various metadata generated by the scan and post, and other data. The semantic association process is iterative, and refined based on additional data and posts that are processed by and incorporated into the Upheaval ecosystem, object data, user activity information, and other repositories.

- Looks for patterns in semantic associations and user activities (such as time of scans, nearness of two scans, geographic location, others) to create ephemeral categories and/or associations that can create or suggest additional online content feeds, recommendations, product associations, user suggestions, notifications, and other user experience and overall ecosystem enhancements.

- Provides management and maintenance of affiliate purchasing programs, marketplace activities, advertising, and other entity engagements with the ecosystem and the Weave environment.

- Captures, organizes, and maintains extensive and large-scale analytics data, metadata, and storage repositories, and the like, that facilitate reporting on scanned objects and user interaction with them.

- Integrates Upheaval with the Weave environment, including the Weave token management subsystems and its blockchain operational systems, on behalf of both the Upheaval app and the Upheaval ecosystem.
There are other processes and expanded functionality managed by the Upheaval ecosystem and infrastructure, but the previous list captures subsystems most relevant to this whitepaper. To organize these further, we can put them into the following categories:

- User protection, experience, and content management
- Big data analytics, partner and entity administration
- Weave integration and token integrity management

The following sections describe and show these elements in more detail.

**User protection, experience, and content management**

The following sections provide details about how the Upheaval ecosystem manages user protection, facilitates and enables the Upheaval app user experience, and provides overall content management for the Upheaval app and the ecosystem.

**Manages identity (engaging with the universe)**

To get started with the Upheaval app and access the ecosystem, individuals create an Upheaval account to identify themselves as individual participants in the Weave. This identity enables engagement with entities who have subscriptions to the Weave environment, and other users with Upheaval accounts. It’s how people become participants in the interactions with other entities, and is the basis of each person’s blockchain.

The Upheaval ecosystem provides options for users to view, manage, and tune their data privacy settings, and select which elements of their profile are visible to other users with fine-grained control.

Certain profile information is necessary for online interactions, such as user name and other basic identity information.

There are many aspects and processes associated with identity, data security, privacy, and protection of user data in a public environment such as Upheaval. As mentioned previously, user data protection and identity information security are primary pillars for the Upheaval ecosystem.
Dynamic notifications (interacting with the universe)

The Upheaval ecosystem also manages an integrated notification engagement and experience.

The process includes the facility to assign dynamically determined notifications to boost and deepen user engagement, satisfaction, and interaction with the Upheaval app and Weave participants. Dynamic notifications are created and managed by the Upheaval infrastructure, the analytics process, and so on, to deliver timely and compelling prompts to users to engage with the Upheaval app and subscribers to the Weave.

Dynamic notifications employ the concept of expirations, such that users have a specified amount of time to respond to notifications before they expire and are relegated to archive. This approach creates a research-based desire to engage with the notifications (and thus, the ecosystem and other users) to avoid missing out on the information and activities of others, as well as to secure the advancements some notifications provide, creating user investment in the ecosystem and recognition awards.

Since Upheaval has the unique approach of incorporating objects, locations, events, and other social nexus aspects that expand the user-based experience, the use of notifications has an exponentially expanded opportunity for notifications that engage users.

Notifications could be used by Weave subscribers for various reasons. For example, Weave subscribers in the healthcare industry could use notifications to remind users to take medication, arrive at a doctor’s appointment, or participate in studies. Social or marketing applications could include updates on industries, trends, or news that a user has chosen to follow. And for retail Weave participants, notifications could be used to notify established users of sales, coupons, or other special events.

Semantic associations (connections throughout the universe)

With semantic associations, the Upheaval ecosystem creates connections among objects that are based on ideas, similarities, patterns, and analysis. Semantic association has multiple dimensions, and works across patterns in object interest, time, location, events, and similar user interests. The Upheaval semantic association engine expands from this too, looking at more than just user data; it also searches for and correlates patterns between the users’ graph and graphs of world data to further enhance the user and all participants’ experience.

Trends for semantic association can be macro or micro, and make associations based on multiple inputs. While complex, the intent of semantic associations is straightforward: use AI, machine learning, big data, and incorporate usage patterns to create an experience where Upheaval can suggest or inform users as if a close friend were making recommendations and observations at their side, in the moment, and based on a user’s history.

The semantic association engine of Upheaval is constantly tuning and learning, and delivering suggestions to users (in various forms, including notifications, feed suggestions, and other experience-enhancing ways) to improve their Weave experience, based on their interests in Weave participant offerings.
The volume of data that passes through the Upheaval ecosystem is significant. The Upheaval ecosystem does extensive data collection, analysis, as well as metadata management and associations as allowed by privacy and security settings among Weave participants. Specific and dedicated subsystems manage the big data analytics elements that occur as a matter of course in the Upheaval ecosystem.

**Big data analytics, partner and entity administration**

Performing extensive analytics (analysis of the universe)

The Upheaval ecosystem performs extensive analytics based on the broad stream of data that runs through the ecosystem and its subsystems. The analysis provides business and behavioral insights that Upheaval uses to create more meaningful, engaging, and expansive experiences for its users.

This analysis includes pattern insights and other artifacts that become available due to the advanced nature of the Upheaval semantic associations engine, and its multi-layer graph technology. This approach expands greatly on current-generation graphs, and is a unique advantage of the Upheaval ecosystem; the incorporation of objects, locations, events, and other elements from the real world offers unique data, associations, and patterns that have great analytic potential.

The Upheaval ecosystem and its analytics subsystems incorporate both depth and expansiveness simultaneously, leveraging logic-based insights of real-world interactions with objects. This unique and patent-awarded approach enables creation of data repositories based on a behavioral continuum that isn’t available, with such data-rich depth, anywhere else.

The business intelligence analytics performed and provided by Upheaval also includes subsets of analytics that can be based on ontology, hierarchy, location, events, time, and a large collection of interrelated or completely independent factors. These insights can then be used to further the Upheaval experience, the services it provides to users (such as purchase suggestions or event suggestions, and many more opportunities), and semantic associations that uncover otherwise untapped patterns and connections.

In addition, such analytics can be used to provide data analytics services to interested organizations – always and as a first priority while maintaining user data security integrity – in the form of analytics subscriptions.

Subscription services (cataloging the universe)

Weave subscribers may be interested in statistics, analytics, and other data associated with user interactions, block creation patterns, and other similar data and information.

Subscriptions include an administrative dashboard that contains various levels of data and information about objects, locations or events. All subscription services are provided in ways that protect individual user data. Data security is always a first priority in the Weave and Upheaval.

Subscription services may be provided for individual objects, owned object hierarchies, ontology hierarchies, individual locations (such as store locations), geographic locations, events, event hierarchies, and many other such interesting groupings of Upheaval elements. For convenience, we refer to any such grouping simply as an object in the following list. Such subscriptions may include the following:
- **Object detection data reports**, which can include any information included in collected object detection metadata
- **Online content reports**, which can include visits, visitors, users, Upvotes (positive ratings)
- Interesting analytics created in the **Upheaval analytics process** described earlier
- Interesting associations, or semantically near objects, based on the **Upheaval semantic association process** described earlier
- Observed or anticipated **next-scan behavior likelihood or tendencies**, and so on, based on the analytics and semantic association processes, as well as other processes such as scan behavior and frequency, geographic location, time of day, and so on (user interaction scans)
- **Analytics data** on activities, engagement level, and responses to dynamic notifications that are captured and analyzed. As part of the **Upheaval infrastructure process**, behavioral and other analytics reports are created for objects, associations, comparisons, activities, and so on, and may be included in certain subscription levels.
- Other compelling and interesting data or analytics based on the overall Upheaval ecosystem and/or processes

In addition, as a potential future service provision of the Upheaval ecosystem, partners may want to register scan codes with Upheaval, to ensure the canonical metadata associated with an object based on that code can be proactively provided by the owner. This is on a subscription basis, with fee schedules based on registering a code, and renewing it on a subscription schedule (such as annually, for example, or other time frames). In such cases where partners register codes, the following process applies:

- Customers can get scan codes from other sources, or from Upheaval if available, to associate with their object
- Customers can then provide some of the metadata used in the Post screen in the Upheaval app, such that the data presented to a user for interaction is based on the owner’s submitted information.
- Customers can then manage their codes, and the metadata they provided, using the Upheaval dashboard. They can modify such metadata information as needed from the Upheaval dashboard.
- Customers can then renew their scan codes, based on the subscription schedule if desired.
- Customers may also be offered to purchase ad space on the Post screen when their object is scanned, or in the dynamically created online content, and so on.

The concept and utility of scan codes for the Upheaval ecosystem includes many various opportunities for the partner that initiated the scan code registration or subscription. In simple applications, such codes could be used to perform A/B testing on products and placement, times and locations of scans, or propensity of users to scan based on product label designs, marketing programs, advertising campaigns or initiatives, or promotions.

More complex promotions could be implemented as well, based on unique codes for each manufacturing site, distribution center, or by expiration date or regional factors, among many other considerations.
The Upheaval ecosystem and by extension, engagement with the ecosystem using the Upheaval app, are completely intertwined with the Weave blockchain environment. This is similar to a house (the Upheaval ecosystem) being built upon and inextricably connected to a solid concrete foundation (the Weave).

The interconnection between the Upheaval ecosystem and the Weave environment is more pervasive than that, though, so perhaps an extended analogy may be that the visible house is the interior design and engaging visible elements of the house, and the Weave is the collection of subsystems – electricity, heating, cooling, plumbing, networking, and even the framing inside the walls – that provide the core strength of the house and enable its systems to work collectively and in concert.

With the Weave environment comes its inherent generation and management of cryptocurrency tokens, which includes many aspects that ensure transaction integrity, secure value storage, and double-spend protection, among other things. To extend the analogy again, the tokens are the utilities that bring the house to life – it’s the water that flows through the pipes, the current in the wires, the heat emanating from within, the activity that streams through the network and all devices – the activity that makes the house vibrant, alive, and ready for all the interesting activity within.

The following sections briefly describe this integration; later in this whitepaper the Weave is described and explained in detail.

**Integration with the Weave™ environment (securing the universe)**

The Weave is an independent hybrid public/private blockchain environment that was specifically imagined and designed to capture and connect real-world interactions in real-time. The Weave is designed as a completely separate environment, but when integrated, is inextricably tied to the Upheaval ecosystem. This is similar to a house designed to be built on a concrete foundation, with its various subsystems – as a design and environment those subsystems can be considered separate, but once the house is built with those subsystems, they are indistinguishably tied to that structure.

With the volume of interactions, however, any blockchain-like environment that can scale to a global ecosystem that crosses multiple industries, simultaneously, with potentially billions of users must have a fundamentally different design premise. This is the case with the Weave, with its shared block invention and the introduction, definition, and implementation of a/the standardized block.

More information about the integration of the Upheaval ecosystem and the Weave environment is included in the following section, called The Weave Environment.

**Token management (economy of the universe)**

The Weave environment enables the facility of token generation, token management, and secured transactions and value store for Upheaval tokens.

Many of the challenges (and opportunities) associated with ensuring token transaction integrity and the storage of token value require in-depth discussion and detailed explanations. Those explanations are handled in their own subsection of this whitepaper, called The Weave Environment.
The energy consumed in validating blocks for Bitcoin is tremendous. Since the Weave is a permissioned blockchain (based on engagement in public interactions), the energy overhead of creating and validating blocks is small in comparison; the processing and storage requirements are for the Weave environment and its subscribers and partners. So in blockchain or distributed ledger terms, and in the realm of cryptocurrency and the energy used in mining, the Weave is an eco-friendly and environmentally friendly blockchain entrant.

Importantly, however, we are protecting the Upheaval ecosystem and the Weave environment in other ways – the intellectual property, inventiveness, and development efforts put into the Upheaval app, Upheaval ecosystem, and the Weave are protected by an allowed patent and a pending patent.

The first awarded patent is specifically designed to protect our next-generation approach to facilitating detecting and posting with object (and many other forms), location, and event detection, in addition to making posting and engagement easy.

For the Weave, its associated pending patent covers the processes described in this whitepaper and other Upheaval-internal documents for shared blocks, reconstruction, references to heavy objects, and many other new and novel processes inherent to a blockchain environment such as the Weave.

These awarded and pending patents enable us to drive forward with development and inventiveness, and to realize our vision of the next-generation blockchain environment with all its imagined technological advances. Without such protection, companies might try to copy our ideas, co-opt our inventions, or imitate the Weave and the services its ecosystem will offer to its subscribers. We have a grand, bright, and expansive view of the future for the Weave, and how its environment will transform industries and how they progress, and we’ve protected the path to realizing that for all of us.
This section outlines our roadmap and milestones. With each step, we get closer to releasing the Weave to the world.

**Roadmap and Milestones**

The following visual describes our development milestones and timelines. This roadmap reflects our best estimates. Many of the infrastructure elements are already underway or significantly complete.

- **Q2 2017**
  - Upheaval idea vetted, created; patent filed

- **Q3/Q4 2017**
  - Define Upheaval global infrastructure, UI screens, define interactions and strategies

- **Q1-Q3 2018**
  - Build Upheaval infrastructure, research and refine user experiences and interactions

- **Q4 2018**
  - Alpha version of Upheaval in testing, details of the Weave articulated; second patent filed

- **Q1 2019**
  - Refine Upheaval global infrastructure, UI screens, define interactions and strategies

- **Q2 2019**
  - Beta testers of Upheaval and the Weave continue, refinements ongoing.

- **Q1 2020**
  - GA release (General Availability) for Upheaval & the Weave to the world. Revenue positive operation, momentum to profitability.

- **Q2 2020**
  - Release of v2 of Upheaval, expanded ecosystem and app capabilities

- **Q3 2020**
  - Release of v3 of Upheaval, further expanded ecosystem and app capabilities

- **Q1 2021**
  - Q2 2021 Release of v2 of Upheaval, expanded ecosystem and app capabilities
Distribution of Tokens

The distribution of Upheaval credits is designed to provide stability and long-term development resources, to fund meeting our milestones and vision. Primary to our goals is attracting and retaining the best and brightest talent; encouraging and rewarding adoption and deep engagement; and engaging with strategic partners to ensure long-term growth and sustainability. We believe continually innovating user and subscriber experiences, so they are wowed and constantly delighted, will get us there.

<table>
<thead>
<tr>
<th>Distribution</th>
<th>UPCs allocated</th>
<th>% of total UPCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Token Block 1, Series 1-3 (3%)</td>
<td>54 million</td>
<td>3.00%</td>
</tr>
<tr>
<td>Token Block 2</td>
<td>108 million</td>
<td>6.00%</td>
</tr>
<tr>
<td>Token Block 3</td>
<td>162 million</td>
<td>9.00%</td>
</tr>
<tr>
<td>Token Block 4</td>
<td>216 million</td>
<td>12.00%</td>
</tr>
<tr>
<td>Strategic Adoption &amp; Engagement (Reserve)</td>
<td>200 million</td>
<td>11.11%</td>
</tr>
<tr>
<td>Reserve</td>
<td>1,015 million</td>
<td>58.89%</td>
</tr>
<tr>
<td><strong>Totals:</strong></td>
<td><strong>1.8 billion</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

With this distribution, and the addition of the Founders and Development Team allocations, we achieve the following reserve ratio:

**Upheaval-Weave Reserve Ratio: 2.33:1**

The targeted value of a **UPC** at the conclusion of all token sales is **$1.80 USD**. Discounts are most significant in the earliest Token Block sales, with a **50%** discount for Token Block 1.

UPCs allocated to the **Strategic Adoption and Engagement** campaign are part of the Reserve, though its use is specific to the campaign.

Tokens will be offered during multiple **investment windows**. Token Block 1 will be offered in three series, all using SAFT Agreements and limited to investors who meet KYC/AML requirements, and can demonstrate they are Accredited Investors.

Tokens available in all Token Blocks will not exceed our **hard cap** of 30% of all created tokens.
Proceeds from the sale of UPCs will be used as follows:

These allocations are subject to change based on management decisions, opportunities, and other factors that mitigate the best and most strategic use of resources.
The team

Upheaval founders and co-founders have decades of experience in enterprise software, and have worked with some of the largest companies in the world. The team of Upheaval Advisors has the diverse collective experience necessary to ensure Upheaval successfully navigates its planned course to becoming a worldwide enterprise technology company. Together, the team will deliver amazing user experiences, attract and retain the best talent, and deliver exceptional opportunities to partners and subscribers.

Founders

David Iseminger – CEO

David has been in technology for more than two decades and is self-taught in networking, protocols, programming, and data analytics. David has been at Microsoft for most of his career, starting as a Network Performance Analyst, then as a Group Manager in developer content, focused on Windows networking. After branching out to startups and consulting, David returned to Microsoft to join the Microsoft Cloud & AI Group, where he’s been for the past handful of years.

David is the author of a dozen technology books with various publishers, including Wiley, Macmillan, Microsoft Press, and one ...for Dummies book. His developer-centric books cover programming, networking, directory services, and databases. His other technology books provide guidance on web server management, Active Directory enterprise-scale design and deployment, and QoS and RSVP protocol definitions for enterprises, among others.

In addition to writing and Microsoft, David created four online courses that explain networking, wireless, and understanding the cloud. His courses are offered in brick-and-mortar and online academic institutions, where he’s taught more than 30,000 students throughout the world.

In his spare time, David enjoys coaching his kids in soccer and watching them compete in other sports. He’s been on the Board of Directors for his local school district for over ten years, and is an active education advocate both locally and nationally. David is a voracious reader, a hard rock aficionado, and an insatiable technology enthusiast.

Neil Taylor – CTO

A software innovator, Neil has been building cutting-edge solutions for thirty years in numerous systems and organizations. From international credit card processing centers to military embedded systems, his experience covers both b2b and b2c applications in a variety of markets.

Neil views building sustainable systems that provide consistent and dependable service levels as a challenge, and a requirement. Too often, market pressures lead to compromises in system maintainability, but he has devoted himself to finding a successful balance between the short- and long-term goals of a system.

Fully embracing the concept that the whole is greater than the sum of its parts, Neil builds strong, empowered teams that are prepared to rise to modern challenges. His work has taken him across the globe, enabling him to cultivate skills to work effectively and efficiently with distributed teams in Asia and Europe.

Most recently Neil has been updating sales enablement and marketing automation software that is used across the entire agency force at State Farm and Farmers insurance companies. These updates bring decades-old systems up to current standards using cloud-scale technologies including distributed databases, micro-services, and big data.
**Kirsten Iseminger – Finance Director**

Kirsten has a finance and banking background that includes corporate banking, premier client-relationship banking, and online learning. In her early career Kirsten worked at Bank of America, in various roles that provided exposure to many facets of finance and banking.

To expand on her finance experience, Kirsten earned her Certified Financial Planner (CFP®) certificate and practiced in that capacity, adding boutique finance experience to round out her corporate roles. To extend her reach, Kirsten produced and continues to teach an online personal finance course, now syndicated to hundreds of learning institutions across the world, where she helps people from all walks of life understand money management and how to build wealth.

Kirsten spends much of her free time volunteering, where she brings her finance knowledge, organizational skills, and results-oriented drive to fundraisers and charities. She also enjoys evaluating red wines, with an occasional glass of her favorite from the Red Mountain AVA of Washington state.

**Co-Founders**

**Kelly Birr - Partner Architect**

When asked how his brain works, Kelly calls it *Invention-on-demand*. Kelly is an expert at bridging the gap between technical creations and what the customer needs. His passion lies in the challenge of invention and problem solving.

As an entrepreneur and technologist, Kelly has founded multiple technology companies over the last 15+ years, which provide products and services to some of the world’s largest organizations, across multiple industries.

Originally an independent tech consultant, Kelly has been the backing force in creating large-scale technical solutions along with the security to support those solutions. Thriving under the pressure of invention and the collaboration of a fast-moving team, Kelly often directly oversees research and development of products and technologies.

Kelly puts his heart and soul into his work and is thrilled to do what he loves. He is inspired by the opportunity to create solutions that can make people’s work and life more interesting.

**Greg Boyer – Senior Engineer**

Greg has worked as a UI/UX designer and Front-End Developer for over 13 years. He has worked across a variety of industries to design, develop, and maintain user interfaces for sophisticated software applications.

He has a passion for learning new technologies, and utilizing them to solve complex problems with simple, beautiful, and intuitive interface designs.

Most recently, Greg has worked on a video clip search tool for the Walt Disney Company, and on Rewards Genius, a platform for sending digital gift cards, at Tango Card, Inc.

Greg enjoys working collaboratively with other designers, engineers, and stakeholders to produce quality products that positively impact users.
Ionut is a skilled infrastructure engineer, with over fifteen years of experience spanning from designing and developing end-to-end enterprise products, to leading global engineering teams across the United States and Europe. With a main focus on distributed data platforms, he spent the last ten years designing data solutions for financial and insurance markets.

He loves cutting-edge technology, so the intersection of financial systems and distributed processing led him to blockchain and the decentralized world, where he’s had contributions to several open-source projects.

When he’s not working, Ionut loves taking long motorcycle rides exploring his new home, the Pacific Northwest, where he moved to six years ago from Romania, or traveling the world in search of new experiences.
Upheaval’s advisors have robust and varied backgrounds, extensive experience, and proven track records of success in the top tiers of their industries. Their engagement with Upheaval serves as an extension to the depth and breadth of our ability to create, refine, and deliver on our ambitious vision.

Upheaval advisors have intentionally diverse experience and sector expertise. They have strategic knowledge in the varied areas where Upheaval will interact, grow, and expand our reach. Their collective guidance will strengthen our delivery of the Weave environment and services, and hone the necessary company-building and talent acquisition efforts that our mission will require. Upheaval’s advisors have great depth and breadth of experience, in all facets of technology and business and community, and will help Upheaval grow into a worldwide software and cryptocurrency company.

**Jason Child**

Jason has over 25 years of progressive experience in all aspects of Finance and Accounting for enterprise-sized technology companies. Jason specializes in scaling disruptive companies and working with/learning/gaining insight from awesome people.

Jason has direct and extensive experience guiding successful companies, from early days through tremendous growth and industry dominance. At Amazon.com Jason was Finance Director/Vice President during Amazon.com’s growth from $900m sales run-rate in early 1999 to $50B+ run-rate in late 2010. His tenure at Amazon.com included roles as VP Finance, CFO of Asia Pacific; and VP Finance, CFO International where he was the finance leader for $25B+ of international business with primary locations in Germany, UK, France, Italy, Spain, Japan and China.

Jason then joined Groupon, building its finance team from scratch across 48 countries during the phase when Groupon was the fastest growing company in history (according to Forbes). Jason was CFO during Groupon’s growth from $750m in sales in 2010 to $7.6B in 2014, and led the company to a successful IPO that raised nearly $1B USD.

Jason served as CFO of Jawbone and Opendoor.com, is currently CFO for Splunk, and sits on the Global Advisory Board for the University of Washington’s Foster School of Business. Jason lives in the San Francisco Bay area.

**Dave Russell**

A veteran lobbyist and policy advisor, David Russell developed a passion for the legislative process during eight years as a senior staff member in the United States Senate. In private practice, he provides regulatory, legislative, and political advice to a diverse range of clients across numerous regulated industries.

A native of the Pacific Northwest, Dave served as Legislative Director and Chief of Staff to a senior U.S. Senator and later as Chief Counsel for the Senate Committee on Commerce, Science, and Transportation, which has jurisdiction over technology, communications, and numerous tech-focused regulatory agencies. Mr. Russell is equally at home in both the authorizing and appropriations arenas and has extensive experience with the Senate confirmation of presidential appointees, congressional committee hearings, and Senate floor procedure.

In 2017, Dave led the successful campaign to elect his wife to the School Board in Falls Church, VA, where they raise their two children. An avid CrossFitter, he can often be found in D.C. traffic jams enjoying the Grateful Dead channel or calling in (hands free) to his favorite soccer talk shows on satellite radio.
Nicole has an uncanny ability to build community, clarify common goals, and generate shared energy that brings success for everyone involved. The breadth of her social networks – from personal to professional to far-flung interests that somehow establish strong relationships – are extensive and ever-expanding.

In professional life, Nicole is a chiropractor with over 20 years of direct patient care experience. Her desire to connect people with their innate health potential and to one another, through chiropractic care, has its roots in her upbringing in a large, dynamic and supportive family.

While in Kansas City for graduate school, Nicole nurtured her naturally gregarious spirit. When she crossed the country with her husband and leaped into private practice in Washington, the community connections she cultivated became an essential priority for the success of their business, and for their family.

Nicole’s enthusiasm knits others into her extended family network - whether the nexus is her practice, her expansive social media connections, social events, or other efforts - where quick study of what defines success becomes a mission with indefatigable drive. In her practice, Nicole takes care of people of all ages using various chiropractic techniques, including specialty certifications for adjusting pregnant mothers and a specific cranial adjusting technique. She finds her most fulfilling work is helping others recognize their physical and emotional growth potential, with heartfelt empathy and compassion for her patients’ quality of life.

Mark is an experienced IT executive with a focus on developing quality leaders and driving a positive and productive culture. As a Vice President in USANA Health Sciences IT department, Mark has been a leader in changing the culture of the organization to focus on delivering rapid solutions that create a great customer experience. This was done by implementing Agile development practices with an emphasis on software quality assurance. Those efforts have increased code deployment by 60% as measured by our weekly scorecard metrics.

Mark is an extremely effective problem solver with 20+ years in technology roles, leveraging analytics, strategic thinking, and an open attitude, to deliver results against business objectives. As an example, Mark has created a global helpdesk/desktop management team that has reduced overall costs by 50%, enabling 2,000 employees in 24 locations with improved working environments through standardized processes, technical solutions, and global vendor agreements.

In the past year, Mark has owned the design and execution of the strategic plan for re-implementing a global ERP/MRP system to support USANA’s two primary manufacturing locations in Beijing, CN and Salt Lake City, UT using Oracle ERP. That effort is a multi-year, multi-million dollar project that will dramatically increase (at least 3x) USANA’s ability to support our manufacturing and fulfillment needs for at least the next 15 years.
**Scott C. Whiteford, Ph.D.**

For the past 22 years Scott has studied leaders, their teams, and their organizations. He has been instrumental in helping develop leaders through a strengths-management approach and building companies from a human capital perspective. Focusing on leaders, Scott offers proven solutions that help companies develop and retain strong executives, grow their teams (through focusing on the leader’s strengths and the talent of his or her team), and create individualized goals, actionable processes, and measurable objectives. He also implements strategies for teams to work together for cohesive, results-based outcomes. Focusing on organizations, Scott helps build companies through developing a vision, a mission, core values, competencies, and customer engagement. As a trusted advisor, he facilitates strategy sessions, works with companies to select and develop strong employees, and helps them establish a culture of success using his expertise in sociology and positive psychology.

Scott’s background in sociology and positive psychology will be essential in determining Upheaval’s direction/vision/mission, team building, employee selection, employee development, and customer engagement. Through his research prowess, Scott will deploy a myriad of quantitative and qualitative processes to build the organization and examine customer engagement and retention, which will lead to a productive culture and a deep understanding Upheaval’s users.

Scott is the Director of Leadership Development and Analytics at Talent Plus, Inc. and is a visiting instructor in sociology and leadership at both the University of Nebraska-Lincoln and Algebra University-College in Zagreb, Croatia.

**Kevin McCandlish**

Being part of a team of professionals who share Kevin’s drive and commitment to place clients first has always been a priority in Kevin’s career. As a Partner at Bristlecone Advisors, Kevin works with many of their multi-generational clients to develop sound strategies that ensure long-term financial security. Kevin has extensive experience in the banking sector, and during his career has worked with some of the largest banking institutions in the United States.

In addition to graduating from the University of Washington Executive Development Program at the Foster School of Business, Kevin holds the designation as a Certified Trust and Financial Advisor. These advancements serve to further his careful and deliberate approach to each client situation.

Away from his work with clients at Bristlecone Advisors, Kevin serves on the Snohomish County Advisory Board for Campfire USA, Planned Giving Advisory Board for Fred Hutchinson Cancer Center, and is a Director with the Alderwood-Terrace Rotary Club, where he has been a member for the past 20 years.

Proud parents of a US Navy Chief Petty Officer, Kevin and his wife and enjoy travel and entertaining with their friends and family.

**Steve Woodworth**

Steve has extensive sales, marketing and business development experience at small and large companies including DocuSign, Smartsheet and Ceridian. Steve’s experience in technical software sales includes Go-To-Market experience with Cloud, SaaS, eSignature, enterprise software and services.

Steve’s experience includes roles as International Market Director and Business Development Director, both for DocuSign, during which he was responsible for the startup of DocuSign’s first office outside the United States. Steve was responsible for developing and executing DocuSign’s international strategy, including developing the sales, marketing and customer success initiatives. He was also responsible for creating and strengthening DocuSign’s international partner relations.

Steve also served as VP of Sales for CenturyLink, where among other responsibilities he led Corporate Sales, Solution Architects, Lead Generation and Account Management to deliver its cloud management platform to the industry.

Steve’s current role is with Conga, where he serves as the Enterprise Account Director, helping organizations optimize their Salesforce investments by simplifying automation of data, documents, contracts and reporting.
Loren Lyon has extensive experience with emerging businesses, and has a strong background in manufacturing in Washington State. He “grew up” in high tech manufacturing with companies such as Eldec Corporation, Data I/O, Applied Microsystems, and SelfCHARGE. Loren has been CEO of three technology companies, and has been certified by APICS, ISM and ASQ.

Loren has been a board member and Chairman of Impact Washington, serving as its President from 2015 to 2019. Impact Washington provides manufacturing/operational consulting for the state of Washington’s manufacturing community of nearly 5,000 companies, and is part of the National Institute of Standards and Technology, as the NIST MEP for Washington State.

Loren serves as President of the Eastside Chapter of the Keiretsu Forum, an Angel Investor group, and is passionate about start-up and early stage businesses.

Loren is a recipient of the prestigious Ernst and Young Entrepreneur of the Year Award for Manufacturing, and has led companies that have been consistently featured in the Washington Technology Fast 50 (rapid growth) in Washington State. Loren graduated from SUNY at Albany with a degree in Operations Management.

Barry Allyn has over 25 years working on C++ client architecture and development on top of Microsoft Windows (3.0 - present). Barry has primarily focused his extensive software development career on client user interfaces (UI), graphics (2D/3D), animation, data visualization, performance tuning, componentization, cross-platform architectures, and debt-free architecture design.

Barry’s roles include significant contributions to some of the most widely distributed software in the world, with most of his career spent at Microsoft in key positions: Principal developer/development manager on Visio (2000-2013); Principal developer on Microsoft’s Visual C++ IDE team; Barry held a key architect/developer role on the Microsoft Office UI compositor/animation engine; and he was the architect/developer of data visualization in Microsoft Office, including mobile versions.

Barry is currently a developer on the Office Performance team at Microsoft. Barry graduated from Penn State University with a degree in Computer Science, with a Math minor.

Dale Alberda is an architect with over 30 years of experience, Dale is a creative designer and inspirational leader. He has enjoyed building many large scale projects with clients across a wide range of sectors including: corporate, commercial, healthcare, civic, historic restoration, transportation and master planning.

He has a passion for finding appropriate and innovative solutions that are a true reflection of their unique circumstance. He is highly regarded by both clients and colleagues for his collaborative approach, including a unique ability to produce crafted and thoughtful design tools that enable teams to imagine exciting outcomes and make smart, informed decisions.

His pursuit of excellence, from early concepts to the finest detail, has produced built work which is highly functional, is lasting and evokes a senses of delight. In addition to receiving numerous design awards, his work and his interviews regarding architectural design have appeared in several publications including: The New York Times, The Seattle Times, Popular Science and The BBC News.

Most recently his focus has been on leading the design effort for Amazon’s new world headquarters in downtown Seattle; a 3.3 million S.F. project comprised of six buildings, including the iconic Spheres. In addition, he is the design leader for a significant portion of Microsoft’s headquarters refresh project in Redmond that includes 5 new buildings totaling approximately 1 million S.F.
We have a clear sense of the future and how we will help create it, and understand the vast, industry-disruptive implications of what we will deliver to the world. We’ve seen shifts of this magnitude before, and wanted our name to reflect our intent and belief that we’re creating the next one. It is, without doubt, a zero-to-one\textsuperscript{xiii} vision and undertaking.

\begin{center}
\textbf{up • heav • al}
\end{center}

\begin{center}
/ əp ’ hēvəl /
\textit{noun}
\end{center}

a sudden change or disruption to something.

\textsuperscript{x}See the well written explanation in the Bits on Blocks site in the Gentle introduction series, by author Antony Lewis, which is where I first heard the analogy to Excel and macros. If you like what you see or read on that site, you should buy his book.
\textsuperscript{xi}Here’s the specific article where Lewis compares dApps to Excel macros, which is a handy and useful analogy.
\textsuperscript{xii}See the third quarter financial report for Visa Inc. as reported by BusinessWire.
\textsuperscript{xiii}See the CNBC article found at this link.
\textsuperscript{xiv}More information about the Silk Road black market.
\textsuperscript{x}Article describing the heists.
\textsuperscript{xv}On January 7, 2018 the total market cap for cryptocurrencies excluding Bitcoin was $813 billion, and on that day Bitcoin had a market cap of $294 billion, resulting in a total combined market cap of over $1.1 trillion in US dollars.
\textsuperscript{xvi}See information on degrees of separation and small-world networks.
\textsuperscript{xvii}See the book by the same name.
IMPORTANT NOTICES

Private Placement Offering for Simple Agreement for Future Tokens (“SAFT”)

Upheaval LLC, a Washington limited liability company (the “Issuer”), intends to conduct a private placement offering in the form of Simple Agreements for Future Tokens (“SAFT” or “Subscription”). Upheaval Tokens (each, an “Upheaval Token” or “UPC”) are a new series of blockchain-based smart contract digital tokens being offered initially through the Issuer. The Issuer will enter into SAFTs with each subscriber for future Upheaval Tokens (each, a “Subscriber” and collectively, the “Subscribers”) and the corresponding right to purchase future Upheaval Tokens (the “Offering”) upon the genesis of the future Upheaval Tokens and the commencement of the sale of future Upheaval Tokens by the Issuer.

The Issuer will conduct a series of Offerings for purchase through SAFT Agreements. These Offerings will end as specified in the Private Placement Memorandum for each offering, each of which may be extended by the Issuer in its sole discretion, earlier closed by the Issuer in its sole discretion, or earlier terminated by the Issuer in its sole discretion. Subscribers will be alerted to the Closing, extension or termination of this Offering and whether they were successful in entering into a SAFT by email.

For more detailed information, please see the Confidential Private Placement Memorandum, available on the investor portal at WWW.UPHEAVAL.IO or upon request.

THE SAFT AGREEMENT HAS NOT BEEN AND WILL NOT BE REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE “SECURITIES ACT”), OR ANY OTHER LAW OR REGULATION GOVERNING THE OFFERING, SALE OR EXCHANGE OF SECURITIES IN THE UNITED STATES OR ANY OTHER JURISDICTION. IN ADDITION, THE FUTURE ISSUED UPHEAVAL TOKENS HAVE NOT BEEN AND WILL NOT BE REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE “SECURITIES ACT”), OR ANY OTHER LAW OR REGULATION GOVERNING THE OFFERING, SALE OR EXCHANGE OF SECURITIES IN THE UNITED STATES OR ANY OTHER JURISDICTION.

THIS OFFERING IS BEING MADE TO “ACCREDITED INVESTORS” (AS DEFINED IN SECTION 501 OF THE SECURITIES ACT) IN RELIANCE ON REGULATION D UNDER THE SECURITIES ACT. THE ISSUER WILL NOT BE REQUIRED TO, NOR DOES IT CURRENTLY INTEND TO, OFFER TO SELL THE SAFT AGREEMENTS OR UPHEAVAL TOKENS AS SECURITIES REGISTERED UNDER THE SECURITIES ACT OR ANY OTHER LAW OR REGISTER THE SAFT AGREEMENTS OR UPHEAVAL TOKENS FOR RESALE UNDER THE SECURITIES ACT. THIS OFFERING IS ONLY BEING MADE IN JURISDICTIONS WHERE THE OFFER AND SALE OF SAFT AGREEMENTS AND TOKENS ARE PERMITTED UNDER APPLICABLE LAW. NEITHER THE UNITED STATES SECURITIES AND EXCHANGE COMMISSION NOR ANY OTHER FEDERAL, STATE OR FOREIGN REGULATORY AUTHORITY HAS APPROVED AN INVESTMENT IN THE SAFT AGREEMENT OR UPHEAVAL TOKENS. FURTHERMORE, THE FOREGOING AUTHORITIES HAVE NOT CONFIRMED THE ACCURACY OR DETERMINED THE ADEQUACY OF THIS MEMORANDUM, NOR IS IT INTENDED THAT THE FOREGOING AUTHORITIES WILL DO SO. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE. SEE “RISK FACTORS” SET FORTH HEREIN.

Each Subscriber will be required to execute a SAFT Agreement. Each prospective investor should review the SAFT Agreement and Private Placement Memorandum for complete information concerning the rights, privileges, and obligations of the Subscriber.

The SAFT Agreements described in this Memorandum are subject to restrictions on transferability and resale and may not be transferred or resold. Subscribers should be aware that they may be required to bear the financial risks of this investment for an indefinite period of time.

An investment in the SAFT Agreement involves a high degree of risk, volatility and illiquidity. A prospective investor should thoroughly review the confidential information contained herein and the terms of the SAFT Agreement, and carefully consider whether an investment in the SAFT Agreement is suitable to the prospective investor’s financial situation and goals.

No person has been authorized to make any statement concerning the Issuer or the sale of the SAFT Agreement discussed herein other than as set forth in the Private Placement Memorandum referenced above.

THIS OFFERING IS BEING MADE TO “ACCREDITED INVESTORS” (AS DEFINED IN SECTION 501 OF THE SECURITIES ACT) IN RELIANCE ON REGULATION D UNDER THE SECURITIES ACT. ONLY PERSONS OF ADEQUATE FINANCIAL MEANS WHO HAVE NO NEED FOR PRESENT LIQUIDITY WITH RESPECT TO THIS INVESTMENT SHOULD CONSIDER ENTERING INTO A SAFT AGREEMENT BECAUSE: (I) AN INVESTMENT IN THE SAFT AGREEMENT INVOLVES A NUMBER OF SIGNIFICANT RISKS (SEE “RISK FACTORS”); AND (II) THERE IS NO MARKET FOR SAFT AGREEMENTS, AND NONE IS LIKELY TO DEVELOP IN THE REASONABLY FORESEEABLE FUTURE. THIS OFFERING IS INTENDED TO BE A PRIVATE OFFERING THAT IS EXEMPT FROM REGISTRATION UNDER THE SECURITIES ACT AND APPLICABLE STATE SECURITIES LAWS.