HashnStore

Application for Factom M3
Authority Server Election

April 2018

Matthias Fortin – Elie Bonin – Frédéric Faye

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Introduction

About us

HashnStore is proud to apply for the election of running an Authority Server in the Factom Protocol. During the past two years members of our team have shown unresting support for the Factom project through different means; vulgarisation articles to further the understanding of the Protocol mechanism, but also by being successfully part of the testnet for month and pushing for concrete application in a given industry.

Our team is comprised of three french engineers eager to promote a more honest world. The background experiences of the members go from IT and Finance, to Industrial project development. Having good ties with the French school system as well, our reach among diversified fields is rich.

Main Goals/Mission

HashnStore main goal is to firstly promote the Factom Protocol ideas and principles in countries part of the European Union; secondly to facilitate the onboarding of entities, be they private companies, public institutions or simple associations, onto the Protocol. France is probably the most proactive country on the blockchain topic in Europe, working hard on implementing blockchain-based legislations (cf. Decree of December on decentralised systems to hold and exchange financial assets). Operating from France provides an insurance to be supported by existing public entities, in accordance with the current local dynamic toward this technology.

Having said that, the European Union as a whole is not dragging on the question; the European Commission understood the possibilities offered by this technology and is eager to see its benefits applied across the continent, rending the European Union a particularly fertile and promising area to deploy the Factom Protocol.

In addition to that, the integrity and privacy in the European Union is a very hot topic, and 2018 will have its lot of innovations due to the coming application of the General Data Protection Regulation from a general data perspective, but also the integration of the Markets in Financial Instruments Directive (MiFID) in every financial system, rending mandatory for every transaction to be reported and stored. The Factom Protocol has a strong role to play in this new UE legislative environnement.

Team

The core team of HashnStore is made of young talents covering a wide range of skills, from business development, IT and sysadmin skills to project management and crucial decision-making capacity. They worked in various fields such as the Finance, software and M&A industries, from both the private and public sectors, gathering precious contacts. Also, being graduated from top French schools, their alumni network has wide ramifications which could prove to be useful to further the Factom Protocol.

Team presentation

Matthias Fortin (Discord : @Matty)

Location: Paris, France

French Engineer, Degrees from Arts et Métiers and CEA - Linkedin
Frontend Development and Marketing / Financial Management

Experiences:

- Strategy and Investment Analyst within a leading Electricity Company : Assessment of Group strategic options in Europe, Recos to ExCom, Support to lobbying and Valuation of investment projects in Europe and support to M&A.

- Previously, Matthias worked within the Nuclear engineering division of its company for 5 years on some of the biggest industrial projects (Nuclear New Build projects).

- Matthias has been part of the Factom community few time after he discovered the Blockchain technology (mid-2017). He is now part of a blockchain task force within his current company. He has been in contact with Factom executives to assess potential use cases in his company.

Matthias is also Treasurer of a state-approved organisation, l'Entraide Scolaire Amicale. This non-profit organisation is helping +4000 children in France with a budget of around 300,000€ (c. $400,000), 3 permanent salaries and accounts signed off by a Statutory Auditor. This position requires high personal integrity, organisation (setting up procedures) and management (team of 4 accountant volunteers).

Elie Bonin (Discord : @Zod; modo)

Location: London, UK

French Financial Engineer, Degree from ECE Paris - Linkedin
Left the trader's position to deepen his involvement in crypto-related projects.

Experiences :

- Spent three years on a hedge funds trading desk - oversaw every aspect of the financial buy-side industry, from decision-making processes to regulatory compliance and IT systems enforcing them. Followed closely MiFID integration.
- Worked on an whole Eurosystem project, creating strong ties with people involved in European Banking decision makers.
- As an engineer, has project management skills and IT skills (Python, PHP, C#, SQL).

Elie has been involved in Factom since May 2016 - as a early investor and tech enthusiastic, he wrote multiple articles about the Factom Protocol since then, aiming at making the tech ideas more available and understandable. Willing to further his involvement into the Protocol development, he is now applying with this team to run an Authority Server, taking advantage of his past experiences and connections to get the Protocol adopted.

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Frédéric Faye (Discord : @Singtah; testnet experience)

Location: Samoens, France

French Engineer, Degree from ECE Paris - Linkedin

Software Embedded Systems Architect
Experiences: Three years as an embedded systems architect and developer. Currently managing an international software team for an IoT project at Somfy Group.

French engineer with programming skills (C/C++, Java, .NET), Agile-scrum management skills combined with continuous integration and non-regression tools (Jenkins, SVN, Git and Jira). Bottom-up development for end consumer products. He is used to integrate various proprietary and open source radio stacks and API into other software projects.

Participates regularly to Blockchain related events (La Maison du Bitcoin, SIdO). Frédéric has had interest in Factom since November 2016 and has been an active member of the Testnet community. He has been running nodes since September 2017 and has acquired experience in blockchain technologies through various personal projects:

- Mining rigs setup and monitoring,
- Smart contract development on Ethereum with Solidity
- Running Ethereum nodes

He is also willing to develop a PLM application on top of the Factom Protocol for his company, Somfy Group.

Team Organisation Overview

At the start Elie Bonin will directly have a full-time position, dedicated to creating awareness around the Protocol. He will be assisted by Matthias Fortin as a part-timer, while Frédéric Faye will supervise the Authority Nodes set up. Both Matthias and Frédéric will be onboarded with a full-time as soon as practicable.

The HashnStore Foundation (see "Legal Aspect and Economic Structure" section) will be the perfect tool to communicate on the benefits of the blockchain technology and more specifically on the Factom protocol (creation of a dedicated website for the francophone community, translation of Factom materiel in French, community event orgnisation…).

We expect to have the three core members fully dedicated to HashnStore SAS once salary level 3 is triggered (see "Financial projections" section) at the latest. Once financially strong enough HashnStore will recruit new staff members in various branches.

Campaign Factors

Testnet Results

Frédéric Faye - @Singtah on Discord - took part of the testnet meetings and kickoff mid January and had his server up and running in February. He was among the first enthusiastic people setting up a node to be part of this experiment.
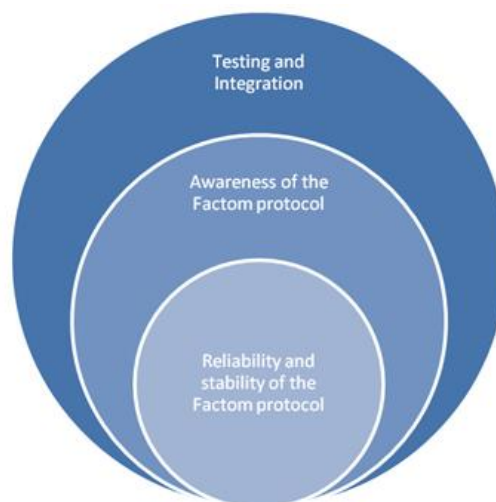
The performances of his server on the testnet were constant and very appreciated. After a rather short period of time of three weeks of a steady participation, Frédéric's node was on the verge of being **upgraded to the Authority Node level**. The testnet doesn't allow servers to run on a dynamic IP. Due to that, his node was kicked from the testnet after his internet provider has updated his IP address. Nonetheless, Frédéric's server performance were top notch. In addition to this, he ran another Factom node, that stayed online for nearly three months without any hiccups.

This testnet experience has provided Frédéric with enough **knowledge and confidence to set up and manage an Authority Server** on the mainnet. Given the professional configuration HashnStore pledges to deploy and use, Frédéric will have in hands all the necessary tools to perfectly run servers part of the Factom Protocol Authority Set.

Protocol Support

The blockchain technology and its lot of innovation provide undeniable advantages for a broad range of applications, but they are still hard to assess for most of its observers. The overwhelming talks about the crypto-assets price is a proof of that. Very little is discussed publicly about the possibilities of the technology.

One obvious thing also strikes our mind at HashnStore; the Factom Protocol won't be adopted over a short period of time. Thus, a realistic approach has to be taken its adoption. This is why the very first goal of HashnStore is chasing, just after reliability and stability the Factom protocol, is **awareness** about securing data through hashes.

A view of our priorities order

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Awareness

The first attempt was done through articles read by thousands, while if invested with the Authority Server responsibilities, HashnStore would act as follow:

- Given our **deep connections** with various top French schools, we aim to trigger awareness in the future local elite's mind through conferences, dedicated courses on the Factom Protocol and workshops.
  - In French Engineering and Business schools,
    - The team members have relations with several major Engineering and Business schools (ECE Paris which has very strong ties with the international group SII Group and INSEEC Group, Arts et Métiers part of ParisTech a consortium gathering 10 of the most famous French Grandes Ecoles in Engineering and management)
  - In Alumni networks
    - Matthias has a degree from Arts et Métiers which has the biggest European Alumni network
- The National Assembly has a strong grip on the French economy which is used to see new regulations overnight. Knowing this, HashnStore will **lobby** the Factom Protocol straight away to influent and interested deputies. Even if no legal action is taken in favor to the Protocol, having deputies sensitized to the topic is important and will trigger positive exposure for the Protocol. We have **already contacted several public figures** known for supporting the blockchain technology :
  - Mounir Mahjoubi (Secretary of State for Digital) - He recently signed the "European Blockchain Partnership" on behalf of France,
  - Pierre Person (Deputy) - Rapporteur of the fact-finding mission about crypto-assets**,**
  - Laure de La Raudière (Deputy) - Rapporteur of the fact-finding mission about blockchain use cases.
- HashnStore will organise dedicated meetings with **target companies** and Startups to help them understand how blockchain technology and Factom protocol could be profitable for their business:
  - Well-established French companies will be first considered in favoured sectors for the use of Factom protocol : Supply chain (CARREFOUR, DANONE, etc), Luxury (LVMH MOET VUITTON, KERING), Banks (BNP PARIBAS, CRÉDIT AGRICOLE, SOCIÉTÉ GÉNÉRALE), Insurance (AXA), Wine (PERNOD RICARD). These major French groups have a cumulated market cap around 400 billions euros. French top companies are to be reckoned with.
  - Direct communication to selected Startups will be realised. This would be accomplished by visiting the main incubators in Paris (StationF, Paris&Co, Far Ventures).

Testing and integration

Only after awareness is achieved through public and political exposures then the benefits of the Protocol can be understood, leading to a phase of **testing and integration** into already existing systems:

- Having a feet into both top French schools and a vast network of companies, through alumni but also schools's relations, we'll be able to onboard young talents eager to sharpen their skills in a very nascent technology with interested firms. Hence, HashnStore will contribute to realise a win-win situation for both parties.

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- The overall French system is structured around monopolistic data center entities, be they for the labour market, social subsidies, insurances, taxes collection, etc. The public establishment is currently thinking on ways to reduce its functioning costs which are seen as unbearable on the medium-term. With the correct awareness and the ear of the correct people, we strongly believe HashnStore has the potential to get the Factom Protocol to be seen as **a viable solution for public entities** to lean toward more sustainable budgets. This action can be achieved at various scales as the France comprises state, regional, local and city-level layers.
  - Kaula would be consulted to benefit from their experience with the action taken on the japanese social security initiative.
  - In addition to contacting French deputies, Matthias and Elie's working experiences gave to them precious contacts in the public sector with key people.
- In its quest for adoption, HashnStore will chase companies **specialised in data security and integrity**. We are aiming to trigger a domino effect by speaking directly to the companies able to deploy the Factom Protocol to numerous of their clients. These companies can be found by checking the commercial chambers data, but also by dragging attention through giving conferences there.

Becoming the Francophone Reference: HashnStore Foundation

In the meantime, a **<u>continuous effort</u>** to create exposure, awareness, will to innovate, but above all to gather all interested and acting parties will be developed. Aiming to become the **francophone reference** on the Factom Protocol and a driving force at the European Union scale, we will dedicate resources:

- To run a francophone association (HashnStore Foundation) that would be used as an interface for interested parties, a gathering point for enthusiastic people. To this effect, several already existing community can be leveraged, or partnered with in France (Cryptup, which is managed by Elie Bonin, [ethereum-france](), [CryptoFr](), [BlockchainFrance](), etc).
- To translate Factom material in French and to make it available through a website to help spread the Factom word within the Francophone community.
- To provide a technical support for any interested party willing to implement the Factom Protocol into their systems.
- In association with schools, subsidising the development of proof of concepts by students.
- To ensure a news watch about the Protocol and its use cases and get the results exposed in top news papers ([LeFigaro](), [LeMonde](), [TechCrunch](), [bitcoin.fr](), etc) through paid marketing and existing relationships.

Technical Aspects

Servers Spec and set up

The below explanation has the hypothesis that two Authority Servers will be granted upon the M3 election. To get optimal results on the mainnet, HashnStore will kick-off with three servers, among which two will be considered as main servers, hosting the Authority Nodes.

One main server will be physically hosted by HashnStore, with direct access to it. HashnStore would like to insist on the decision taken here. Having our main server physically hosted ensures a higher degree of decentralisation. In the current environment of constant hacks and ddos attacks on major tech players, multiplying the ways servers are hosted is not only safer but is also a proof of responsibility and care for the Protocol.

The second main server will be hosted by OVH, in France, it will host the second Authority Node.

The third server will act as a backup, and will be hosted by AWS. A Factom Node will constantly run on this server, and will remain ready to be subject to a Brain-Transfer from any of the two main servers. Finally, we will opt for a second AWS server punctually only to push updates in pre-production. To be explained below.

If financially viable, after some time, we will add a second backup server to the whole set.

In addition to this, HashnStore pledges to run two cloud servers on the testnet for every Authority Node granted to them. In accordance with that, HashnStore would run a maximum of four servers, either hosted by OVH or AWS, on the testnet, in the case we receive the management of two Authority Nodes.

Hardware specifications:

Nature	Main Server 1	Main Server 2	Backup Servers
RAM	8 Go	30 Go	30 Go
CPU	Intel Core i7-4770K 3.5 GHz Quad-Core	8 vCores 3.1 GHz	8 vCores 3.1 GHz
Memory	250 Go SSD RAID 1	200 Go SSD RAID 1	200 Go SSD RAID 1
Bandwidth	1000 Mbit/s Fiber	1000 Mbit/s Fiber	1000 Mbit/s Fiber
Type of connection	Professional	Professional	Professional
Hosted	Physically hosted in Paris	Pro service - OVH	Pro service - AWS
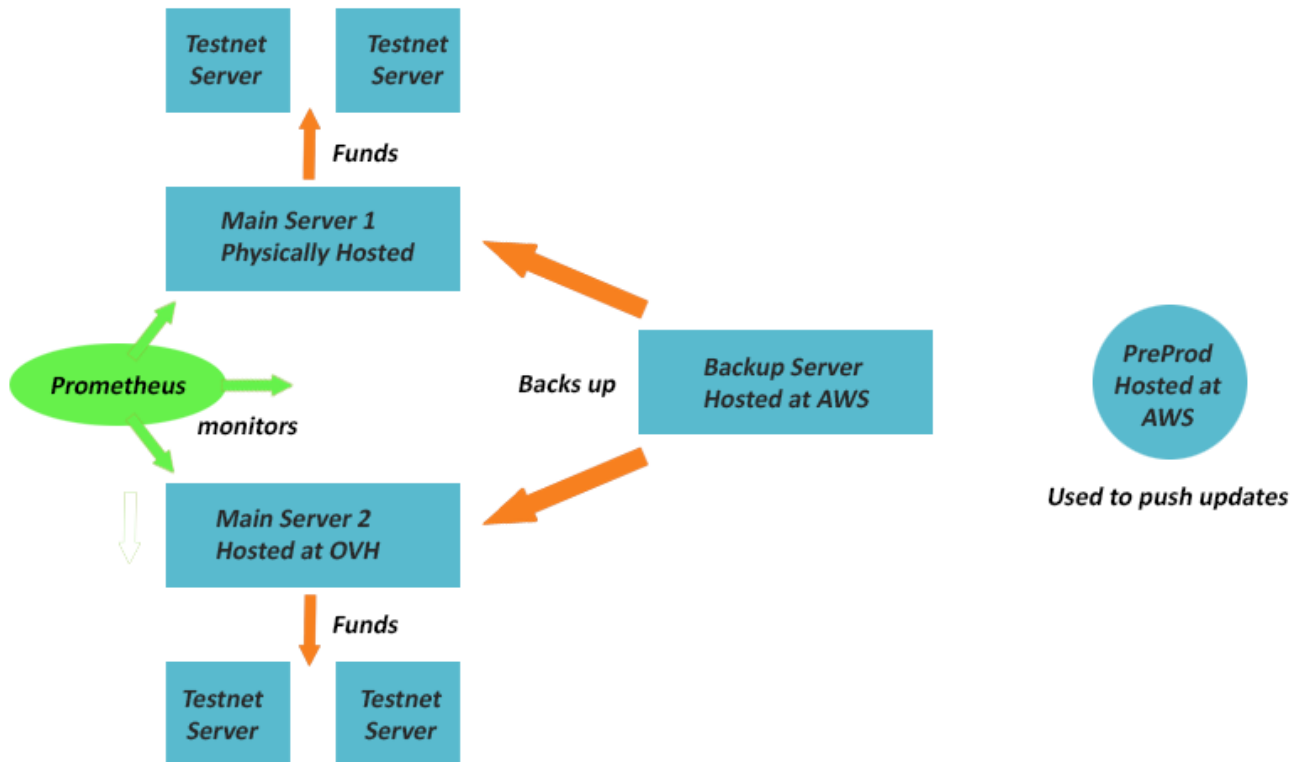
Overall view of the servers infrastructure

Server watch task

Guillaume Evrat and Vincent Dorut will be in charge of the sysadmin aspect of HashnStore. Their knowledge in the whole crypto space and very early adoption are deemed precious by the whole team. Their company in the crypto space is Nakamotech.

Guillaume Evrat (Discord : @guigs)

Location: Paris, France

French Engineer, Degree from ECE Paris - Linkedin
Blockchain developer and IT Engineer

Experiences:
- Currently working at BNP PARIBAS in the blockchain department. Through BNP, Guillaume is part of the R3 consortium and is working on several projects using Corda network. Part of his mission is to integrate the deployment of the corda nodes on their servers and handle the maintenance and security.
- Spent four months at Engie Lab Research (French energy provider) to work on blockchain technologies. Created projects on Ethereum and deployed nodes using Parity for private network. Also worked on IOTA technology to use IOT, managed deployment of nodes and used the IOTA network on raspberry.
- Spent six months in consulting company working on blockchain technologies. Used Colored coins, Ethereum and NXT to create assets on blockchain and exchange them.
- Created BOT to analyse bitcoin markets on differents exchanges and make arbitrage strategies

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- Spent one year in corporate and bank as IT developer

French engineer with programming skills (.NET, Javascript, Solidity), blockchain skills (cryptography, P2P network) and **server administration for node deployment**. He is interested in blockchain technologies since 2015 and tries to involve himself in the community as much as possible. He launched his company with Vincent Dorut to provide blockchain services for enterprises. He also built a mining rigs and deployed some Ethereum nodes on his own servers. Finally, he started using the Grin network (Mimblewimble protocol) and mined on testnet.

He regularly participates in blockchain events and hackathon in Paris. He also developed some softwares for ICOs:

- Create token and crowdsale smart contracts for ICOs
- Create HD wallet for bitcoin and ethereum to received funds from crowdsale. Managed the signature to forward funds to ICOs funders.

Finally, He is always willing to work on new blockchain related projects and to improve his skills and move forward with the technology.

Vincent Dorut (Discord : @merlin)

Location: Paris, France and lisbonne,portugal at theblock.cafe

French Engineer, Degree from [ECE Paris](#) - [Linkedin](#)
Blockchain developer and IT Engineer.

Experiences:

- Currently build his own company, with Guillaume Evrat, to provides blockchain services and consulting for enterprises. He also worked as consultant for an ico, still private.
- Spent four months at Engie Lab Research (French energy provider) to work on blockchain technologies. Created projects on Ethereum and deployed nodes using Parity for private network. Also worked on IOTA technology to use IOT, managed deployment of nodes. Monitoring of three mining rig and one asic.
- Spent six months in SII a consulting company working on blockchain technologies. Used Colored coins and NXT to create assets on blockchain and exchange them. Also worked on opentimestamp Proof-of-Concept.
- Spent six months at camptocamp, a FOSS consulting compagnie working on geospatial data infrastructure. Dockerize infrastructure, monitoring with Nagios and collectd, and after with prometheus to monitoring containers.

French engineer with programming (C++,Java, Javascript, Solidity), blockchain skills (cryptography, P2P network, game theory) and devops skills (docker, nagios, Shinken, prometheus). He has been interested in blockchain technologies for a long time and he is deeply involved in the French community. He is administrator of the biggest French forum and Slack about cryptocurrencies: [CryptoFR](#).

He is currently running Bitcoin and Ethereum nodes. He regularly participates in blockchain events in Paris (Breaking Bitcoin, Edcon, ETHcc, etc) and helps in the organization of a few Bitcoin and Ethereum events in Paris. He is also one of the investor of [theblock.cafe](#) in Lisboa which is a coworking spaces for crypto enthusiasts. He is also **involved in the "proof, timestamp and anchoring" ecosystem** on Bitcoin using both opentimestamp and chainpoint for some personal projects. He is also a member of chaintech, a french blockchain association.

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Daily Routine and Network Monitoring

We will use Prometheus as the monitoring and alerting solution, as it offers an easy to deploy and elegant interface. Signals to be monitored are:

- Host resources (processor load, disk usage, network usage, system logs, cpu temperature, and every signal we deem necessary)
- Application uptime

On top of that, both main servers and the backup server will be subject to one-minute ping to test their reactivity. Sufficient script to be set up to be able to reset the node efficiently if needed. Any unexpected endeavour shall be duly logged and alerted through both email and GSM text message.

Also, depending on the usage of the network, if necessary, we will provide a fully redundant infrastructure with load balancing behind a HAproxy. Any plan to deploy a redundant infrastructure would be done only after having consulted the Guides and the Factom Foundation, to get top notch advises. The Audit Servers accomplishing this redundancy aspect, HashnStore is not willing to duplicate an already existing feature of the Factom Protocol, but stay open to this solution, depending on the network results.

Push an Update

To push updates onto our servers, HashnStore pledges to follow the best practices provided by factom-testnet.com. To do so, as explained a bit above, we will get an AWS server running punctually only for this purpose. It is economically more viable while ensuring a sufficient degree of security. A fully sync Factom Node will be deployed on this AWS server. HashnStore will then wait few days to monitor how the Protocol update behaves. Pre-production is important. If no network issue occurs in the meantime, a Brain-Swap will be processed from the main servers with the AWS servers running on the last version, one at a time.

Authority identity of main server 1 will be swapped with the AWS server, this way we can ensure a continuous Protocol usage. While the AWS server acts as the Authority Server, the main server 1 will also receive the update, after which another Brain-Switch will occur between the main server 1 and the AWS server. This whole process will be repeated for the main server 2. And finally, the backup server will also receive the update.

After the updates are done, the AWS server will be closed.

Connection Down

Set a program that ping the servers every one minute to see if the connection is up or down. If one of the main servers is down, we will act accordingly to Brain-Transfer the Authority Identity from the defective server onto the backup server, to ensure continuous and smooth Authority Server operation. The main server will be sync again with the network and left running for at least 6 hours as such. If no network issue occurs in the meantime, another Brain-Transfer will be processed, in order to get the Authority Node hosted back onto the main server dedicated to it.

Server Damaged

If one of the main servers is damaged in any way, it will be instantly spotted through ping-check and swapped with the backup server as mentioned above, in the Connection Down paragraph. The server will be reset and the full node reinstalled using docker or a sh script as soon as practicable. If this action

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results in a failure because of the damaged being too severe, the physical server will be replaced by a brand new one. In the meantime, the Authority Node operations will continue to run on the backup server.

Server Access

To use the most secure access to the server, we will set up only ssh connection to the server. We will set up only access to authorised people. We will also set up 2FA to connect to the hosting provider platforms. And we will set up firewall to manage access to the server. In TCP/UDP connection we will only allow access to the port useful by the nodes. Set system that monitors connections to the servers and automatically block ips that might be spamming the network.

Securing the private keys

The generation of private keys is a very important step and shouldn't be taken lightly; HashnStore will then use the most secure way to create these keys. To setup the private key generation process we will use a Factory-sealed offline linux computer with an access to a printer, an online computer, a usb drive with a ubuntu bootable os and another usb drive.

On the online computer, after installing linux from a trusted sources we will download factomd, docker and ssss a shamir secret sharing tool, then verify integrity of each tool. Then copy each tool on usb drive. Boot the offline computer on the usb key then install docker and factomd from the usb key. After that, all necessary private keys will be generated using the factomd cli.

Once the EC address is generated from the offline computer, the private EC address will be used to create the root chain Identity that will allow HashnStore to be identified on the mainnet. Confirmation will be done once the server is fully synchronized with the network.

A (3,5) Shamir secret sharing scheme will be use to split private keys but also the password to encrypt these keys between each member of HashnStore. Each part of the secret will be printed on a paper and given to a different member of Hashstore.

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Location

For security and decentralisation reasons, the team chose to run two servers; one will be physically held and running in Paris, France on a dedicated machine hosted by HashnStore; the second server will be hosted by a professional and world wide known hosting company, OVH. This second server will mirror the first one, and will also be located in Paris, France.

The office of HashnStore will also be located in Paris, France, or very near to the French capital. Being located in Paris, France, provides two valuable advantages:

1. HashnStore is currently the only francophone and France-based team publicly applying to run an Authority Server, adding to the decentralisation aspect of the whole Factom Protocol.
2. France, and especially, Paris, where the power is gathered, understood quickly the paradigm shift blockchain will trigger, and is already discussing major legislative texts to allow the deployment of this technology in well established industries, such as the financial one.

France has already had a blockchain legislative talk group for some times now. Developing strong and close ties with deputies in France is one of the main goals of HashnStore, hence, **being in Paris is a strategic advantage**. Also, France offers lots of tax niches, and there is in the legislative pipes the idea of creating a specific legal status for companies aiming at becoming "providers of cryptoasset services" - status we would naturally apply for to further the reach of HashnStore.

Furthermore, unlike many countries such as Germany, the US or Italy, France has never decentralised the decision making power. The natural effect of this is all parties of interests are gathered in the capital: companies HQ, top French schools, influential groups, and so on. The capital is the perfect French place to promote the use cases offered by the Factom Protocol.

Last but not the least, French is the sixth **most spoken language** and is expected to be the most spoken by 2050, with most of the speakers in Africa. This part of the world is seen by many has the next global growth marketplace. Having a francophone early stage Authority Server is an asset for the whole Factom Protocol.

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Legal Aspect and Economic Structure

HashnStore will be structured in two different entities.

HashnStore Foundation

The first entity, "HashnStore Foundation", will be a non-profit organisation promoting the Factom protocol and more generally the blockchain technology. This francophone association will be mainly used to realise pedagogical activities through public conferences and realtime demo of real world uses cases of the blockchain technology. It will also host a website to help spread the Factom word within the Francophone community and will translate Factom material in French. Several already existing community can be leveraged, or partnered with in France (Cryptup, ethereum-france, CryptoFr, BlockchainFrance, etc). Members of the HashnStore team are involved in these various community and manage them in some ways.

The HashnStore core team members will be the founders and will constitute the board of this non-profit organization at its creation. Later on, HashnStore core team members will leave executive positions within this organisation as new members join this association.

HashnStore SAS

The second entity, the **most important one for this application**, is going to be a French SAS, a for-profit organisation: HashnStore SAS. This structure will be responsible for running the servers, collecting the Factom tokens and using the resulting revenues to promote the Factom Protocol (see "Protocol Support Ideas" section). It will also funds the HashnStore Foundation.

A SAS is a very flexible structure for a for-profit organisation. It is largely used by the startups. It enables a great freedom of organisation between partners as rules are defined by articles of association. Being a for-profit organisation will enable us to leverage capital to finance growth.

Three partners will be appointed to the SAS's direction:

- Matthias Fortin as President ("Président"),
- Elie Bonin as Managing Director ("Directeur Général"),
- Frédéric Faye as Deputy Managing Director ("Directeur Général Adjoint").

These partners will share an equal part of the SAS's equity. Moreover, this structure facilitates the admission of new partners in the capital of the company with no executive positions. The first new partners to be naturally considered will be the server watch contractors. The three core members will take appropriate decisions to ensure the reliability and the stability of the Factom Protocol.

Incubators

While launching this for-profit structure, HashnStore will seek the support and assistance of French incubators. Blockchain being a hot and strategic topic, we expect this prospection task to be fairly simple.

Being part of an incubator will provide the team with legal, financial, business and network support, allowing HashnStore to thrive. We have identified some of them: StationF, Paris&Co, Far Ventures, just to name a few.

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Financial Projections

General Presentation

HashnStore SAS proposes to defer to the Grant Pool **40%** of the distributed factoids in the case one Authority Server is granted to them. Should HashnStore be granted two Authority Servers, this number would be raised to **50%**. Factoids will be sold to cover HashnStore expenses.

During the first two weeks all FCT rewards will be dedicated to ensure server performance and reliability (through server watch contractors and server backup). During this first stage, the members of HashnStore will not receive any remuneration.

As the reliability of the node is demonstrated and the Authority Server is financially stable enough, HashnStore members will receive salaries and increase personal involvement.

One member will have a full time position to the Authority Server tasks from M3 launch. The other members will have part-time roles. In the case where running the Authority Server is financially stable enough, these members will also be onboarded as full-time employees.

The main priority of our organisation is not to generate high profits but to secure and to expand the protocol. Thus, generated revenues will mainly be used to cover increasing expenses. That is why in all our simulations profit tax is always limited to 15%.

Cash Management

As part of the Euro zone, our reference fiat money will be Euro (€). A minimum of 8,000€ (c. $10,000) funds will be guaranteed at the launch of the Authority Server corresponding to 5 months of vital expenses (no salaries).

Tokens and more generally crypto assets are extremely volatile. That is why to hedge itself against this, HashnStore pledges to sell every month 15% of the monthly factoid distribution after expenses are paid. We call this action the Euro Hedge. It protects us against the price fluctuation and also provides extra financial means to HashnStore to cope with any difficulties with cash on hand.

The remaining tokens (85%) will constitute the **Factoids reserve**. As the value of this reserve fluctuates over time, it will be considered first to cover expenses.

The very first goal of HashnStore is to ensure Factom protocol development. Stability and reliability of the Authority servers are then a priority. Without a stable protocol, awareness and integration around the Factom protocol shan't not be possible. This is reflected through the use of **thresholds** on the token reserve value. These thresholds will trigger different **salary and expenses levels**.

Salary levels (gross remuneration) for a full-time position:
1. 1,000€/member (c. $1,250)
2. 2,000€/member (c. $2,500)
3. 4,000€/member (c. $5,000)

Thresholds :
1. As soon as a the total factoids value staked by HashnStore reached 40,000€ (c.$50,000), the second level of salaries is triggered,
2. As soon as a the total factoids value staked by HashnStore reached 80,000€ (c.$100,000), the third level of salaries is triggered,

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The same thresholds works the other way around, i.e. if the price of the factoids decreases too much, we may have to scale back our salaries to keep our overall expenses within a viable range. New thresholds can be envisioned in case of a strong increase of factoid's value.

Below is a presentation of financial trajectories for 1 Authority node (base case scenario A - 40% of the distributed factoids deferred to Grant pool) and for 2 Authority nodes (base case scenario B - 50% of the distributed factoids deferred to Grant pool). As a conservative assumption, we have considered full-time positions for the three core members from M3 launch.

Base case scenario A : 1 Authority node

In this case, HashnStore manages one Authority Node, hence two nodes are run on the testnet. Having that in mind, hypotheses are:
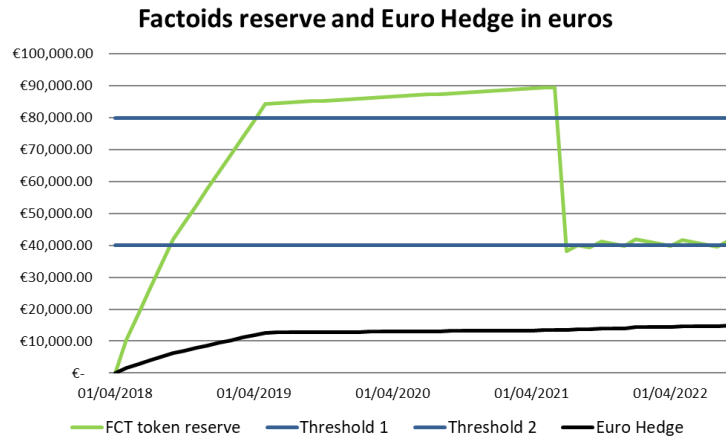1. Factoid price = 20 € (c. $25)
2. Overall monthly expenses excluding salaries = 1,650€ (c. $2,000) - including server costs, travel, server watch activities and miscellaneous expenses
3. Efficiency = 40%

Below is the evolution over time of the Euro Hedge reserve and the Factom token reserve :

Factoids reserve and Euro Hedge in euros
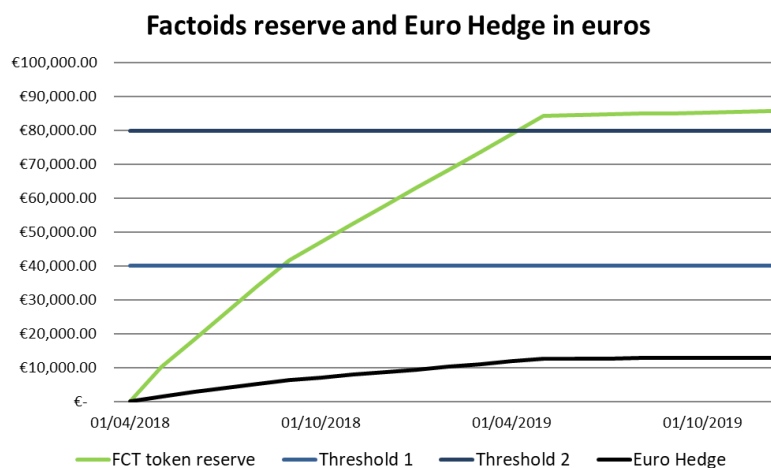
The 1st threshold of the factoids token reserve is reached after 4 months, the 2nd after 1 year then this reserve stabilises in value. The Euro Hedge Reserve stabilised around 12,000 € corresponding to 7 months of vital expenses of the protocol (no salaries).

As we mentioned earlier, crypto-assets are extremely volatile that is why we have explored a **stress event** at some point in the future: a crash in the factoids value from 20€ (c. $25) to 10€ (c.$12). The corresponding evolution of the reserves is displayed below :

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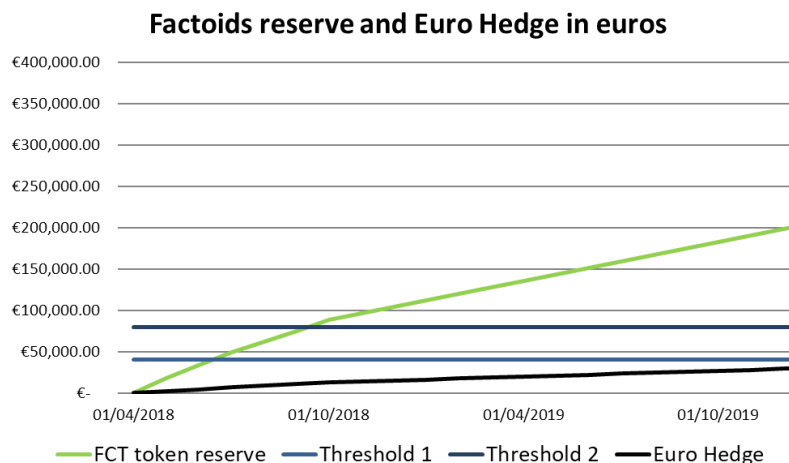
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Factoids reserve and Euro Hedge in euros

In such a case, we would have to scale back our salaries somewhere around the 2nd salary level. The important point is that the Euro Hedge reserve is not impacted at all as factoids reserve is used 1st to cover expenses. Factoids value should be sub-6€ to necessitate to stop paying full-time position salaries of the 3 members (salary level 1).

Base case scenario B : 2 Authority nodes

In this case, HashnStore manages two Authority Nodes, hence four nodes are run on the testnet. Having that in mind, hypotheses are:
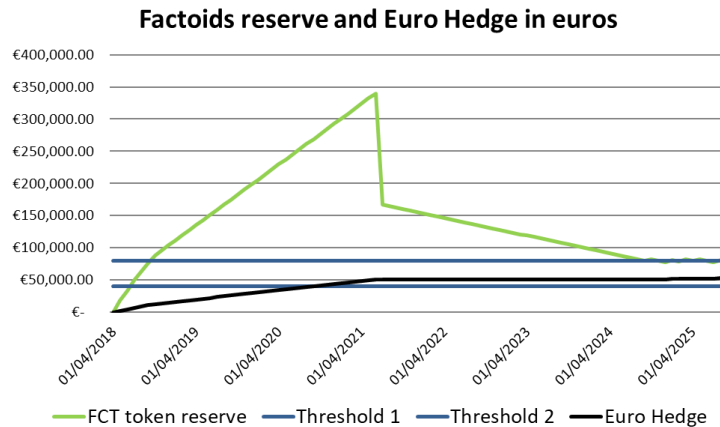
1. Factoid price = 20 € (c. $25)
2. Overall monthly expenses excluding salaries = 1,900€ (c. $2,400) - including server costs, travel, server watch activities and miscellaneous expenses
3. Efficiency = 50%

Below is the evolution over time of the Euro Hedge reserve and the Factom token reserve :

Factoids reserve and Euro Hedge in euros

The 1st threshold of the factoids reserve is reached after 2 months, the 2nd after 5 months then this reserve still increases in value. The Euro Hedge Reserve stabilised around 50,000 € (stabilisation appears mid-2021) corresponding to 24 months of vital expenses of the protocol (no salaries).

In case of a **stress event** at some point in the future (crash in the factoid value from 20€ (c. $25) to 10€ (c.$12)), we have the following evolution of the reserves:

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Factoids reserve and Euro Hedge in euros

In such a case, we would not have to scale back our salaries slightly lower than the 3rd salary level. Again, the important point is that the Euro Hedge reserve is not impacted at all as the factoids reserve is used 1st to cover expenses. Factoid value should be sub-4€ to necessitate to stop paying full-time position salaries of the 3 members (salary level 1).

Sale and Transfer of Factoids

HashnStore SAS will fund its activity mainly by selling the factoids distributed by the Protocol. The sale of these factoids has be correctly and duly processed, and can be done in two or three different ways:

- HashnStore SAS will register in its name on numerous trading platforms supporting factoids, or bitcoin, such as Bittrex and Kraken. The factoids will be sold there against BTC which will be sold as soon as possible against fiat.
- HashnStore SAS will remain open to any sale over the counter to parties willing to acquire factoids for fiat. Such transactions will be duly processed, with appropriate sale contracts.
- HashnStore SAS will also remain open to any transaction involving the sale of Entry Credits against fiat. In this case, HashnStore SAS will convert the correct amount of factoids into Entry Credits for the interested party against a payment in fiat. Such transactions will be duly processed, with appropriate sale contracts.

In each of these cases, every step will be duly documented and reported. HashnStore SAS will act at every step in its own name. Any fiat proceeds from the sale of factoids will be transferred to a HashnStore SAS bank account.

Any sale or transfer of factoids has to be **agreed upon by at least two of the three core members**, be the confirmation made verbally or written.

Overall Plan and Expected One-Year Timetable

The exact experience of Factom Inc showed us that both awareness and adoption are not given. Time is needed for these ideas to mature, and this is something we acknowledge. The vision of HashnStore to further and promote the Factom Protocol won't and can't be rushed, especially in France, where the "Precautionary Principle" is written black on white in the Constitution.

Awareness Phase

After having confirmed and ensured that we are able to safely run an Authority Server, HashnStore expects that the awareness phase in France should take up to fifteen months, with a intense presence and talks with the key people (security solutions companies like SII Group, selected French companies in strategic sectors, French deputies, and top schools). During these fifteen months the intensity of our lobbying for the Factom Protocol will increase.

- It is to be expected that the first three months will be modest, with most of the actions taken to be about finding the appropriate person to talk to or network with. Deputies and schools will be our favorite targets during this time.
- During the next nine months, our presence in the interested schools will increase through workshops and conferences, launching various paid PoC developed by students. In the meantime, we expect that our speech will have found appropriate ears in the political sphere, and also through our dense and widespread alumni network. Also, strengthened by these supports and achievements we will start to chase for interested companies.
- During the last three months HashnStore will take advantage of the trained young talents to offer cheap solutions to interested parties willing to integrate, or simply test, the Factom Protocol. Also, our talks with deputies, or civil servants won't cease in an effort to bring the Factom Protocol into the politician speeches on data management and security.

In parallel to these, conferences to various parties will be held; marketing through paid articles will be ensured; and a link with the community will be established to gather information and advices.

Testing & Integration

Past these first fifteen months, HashnStore should have accumulated enough experience, expertise and funds, to be comfortable enough to fund new activities, such as a consulting branch, financial support for open source projects, a proper marketing team, launching an expansion toward nearby countries. It will also be the time for the phase of testing and integration, that HashnStore will support and oversee.

In accordance with the Grant pool philosophy, HashnStore will let the initiative to build ambitious projects onto the Factom Protocol by grants candidates and recipients. When financially strong enough, HashnStore will reconsider this approach.

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Envision the future

An interesting exercise would be to envision what HashnStore could be as a company, and what place it would hold in the crypto ecosystem in a five year time. Well, over this period of time, the talks with the political figures should have led to the obvious idea that any type of data produced on the French soil should be auditable through a shared database where their hashes would be stored. The Factom Protocol being one of the cheapest and most secure way to get this result, it would naturally be the chosen Protocol to enforce this new integrity paradigm. In this case, HashnStore would be the first and legitimate third party to get legacy systems updated to support the Factom Protocol features. HashnStore consulting branch, full of experience past young talents will thrive. Also, taking advantage of the factoids produced by its Authority Nodes, HashnStore would be able to contribute to the ecosystem that flourished around the Protocol, by selling hash storing services, but also be being one the biggest provider of factoids in France.
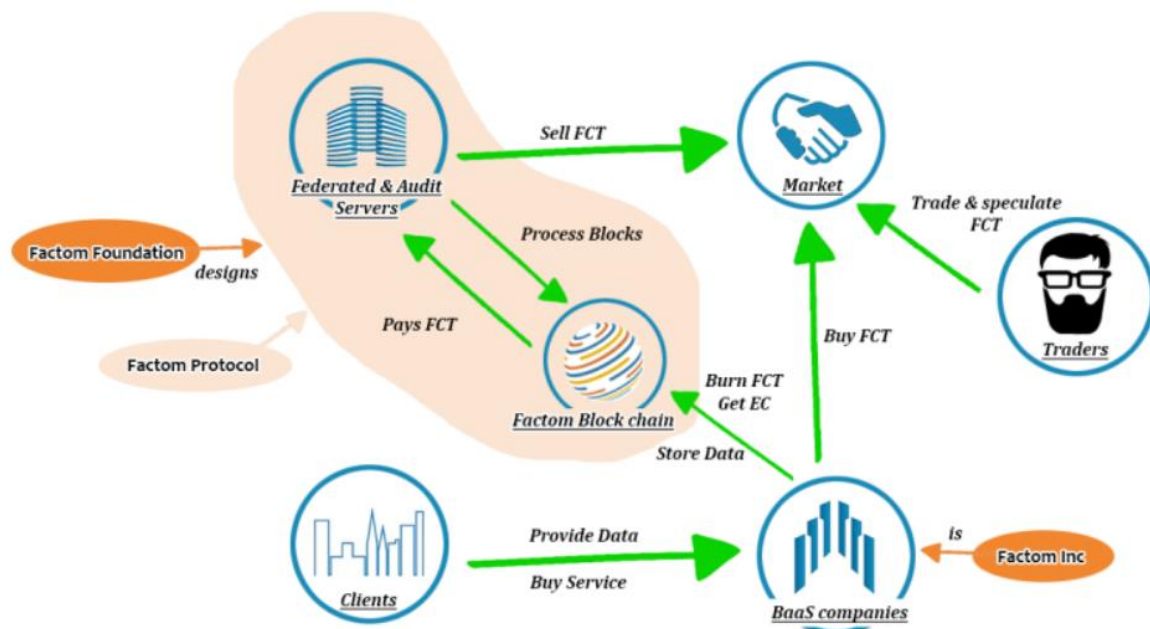
Factom Protocol's ecosystem as described by Elie in his article: to understand the protocol

Also, we know France is a European leader on the crypto question, hence we expect some legislation to be passed at the european scale based on the recommendations HashnStore pushed locally.

In five-year time, HashnStore sees itself as an uncountable European actor on the data integrity topic, providing its services on the whole continent.

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Community and Transparency

Transparency Reports

HashnStore pledges to be as transparent as possible with the community; every sale of factoids, investment, partnership or expenses will be reported on our website, in the cleanest possible way. Having said that, if HashnStore SAS happens to sell factoids to a third party willing to remain anonymous, its name will obviously be kept secret and the privacy ensured.

Also, a roadmap will be defined following the goals we have in mind - awareness, testing and implementation, a continuous effort. Every achievement made toward one of these goals will be duly included in these reports.

These Transparency Reports will be published on a monthly basis, and should be **notarized**.

Community contact

The core members of HashnStore were brought together through the Factom community itself, this is why the idea of staying close to this community is important for HashStore.That's why HashnStore will remain in contact with the Factom community through social network channels such as Twitter, Discord and Facebook. These channels will constitute ways to be contacted, but also space to display HashnStore pieces of work, achievements, articles, etc. This link is dear and important to us.

Through these media, the Factom community will be invited to rate and comment actions taken by HashnStore, in an effort **to gather constructive opinions** and to further the Factom Protocol in the best possible ways.

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