

T E N D

LIFE ENRICHING
INVESTMENTS

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A. BUSINESS OPPORTUNITY

1. TODAY'S LACK OF MEANINGFUL INVESTMENT

If you have worked hard to create some or even considerable wealth, you may frustratingly find yourself in a no-man's-land when it comes to wealth management and investing. For today's incumbent players, the 'red carpet' treatment¹ is accorded only to super wealthy families who have access to alternative and exciting investment opportunities. Opportunities, which have often outperformed the stock markets over the past decade.

Consequently, when it comes to investing, off-the-shelf, uninspiring financial products are the norm for most clients. Providers tend to be stuck in an 'old-school' wealth management mentality and typically push products with no emotional value to their clients. Equities, bonds, ETFs, and investment funds are generally not products consumers get excited about; these are merely technical, impersonal ways of holding cash and are acquired in the hope of increasing their value and later being converted into something that might bring real value to the client's life. The problem is that the modern generation expects more instant gratification whilst at the same time wants to invest their money more meaningfully and purposefully. Collaterally, as many studies² confirm, the modern generation has significantly lost trust in today's providers to meet their expectations.

¹ Due to their asset-based revenue model, private banks mainly consider the ultra-rich worth serving; and the retail banks' value proposition is too narrow to satisfy the needs of affluent people.

² Edelmann 2015 Global Trust Barometer; BCG UHNWI characteristics; EY 2015 Customer Pulse ; Spectrum Group 2014 "Today's affluent investors"; Wealth-X "World Wealth Report 2014"; McKinsey annual Villa Tobler event "Wealth Management Trends"

2. NEW GENERATION OF CONSUMERS

Ever-accelerating technological progress is shaping a new generation of consumers. This is a globally-aware generation whose mindset and behaviours are being facilitated by networked digital technologies (in particular digital platforms and digital ecosystems). This modern generation is continuously progressing and has a changed life context, i.e. a "keep options open" "asset-light" life plan. Its members' reality is influenced by the shared economy, including a massive shift from ownership to access and from financial wealth towards experiences.

However, there is no single path to fulfilment. It is very personal and knowledge, passions, experiences, interests, online status and relationships are essential to the modern consumer's life. Clearly, time is the ultimate luxury and is both protected and consumed with purpose and intention. Ensuring a positive impact is a driving force for their consumerism; they seek out products and services that have a responsible and ethical return and that are going to make a real difference in their personal lives and, indeed, to their environment.

For this modern generation, wealth means more than money and assets: it's about experience, eco-credentials, ethics, and taste - enabling the creation of stories, memories, emotions and personal enrichment. It's about realizing the dreams and passions money can buy. However, the reality is – in the context of investing – that access to the most delightful and exclusive 'passion objects' is very often reserved for the ultra-rich, people with millions to invest. But now, through technology, there is the opportunity to democratize access to a far broader client base and in so doing, satisfy the desires and aspirations of modern consumers.

It is this new generation of consumers, which are our target customers. These target customers are particularly evident in emerging markets and in the big mega cities in the world. This is where we will set our focus on.

3. INVESTMENTS DRIVEN BY PASSION, PURPOSE AND MEANING

In the face of these challenges and changed expectations, modern consumers are in search of a place that broadens their investment universe by enabling them to invest in special tangible assets that fulfil a passion or pursuit of a personally important interest; they seek investments that are driven by purpose and emotion. A place that combines ownership and the potential rewards of unique investments with the satisfaction of real-life experiences.

To enable this new way of investing money, TEND establishes co-ownership of these special objects of passion, purpose and meaning, lowering the entry barriers that exist today. TEND uses the Ethereum blockchain to run its application and to tokenize (i.e. convert and certify) the clients' assets. Tokenizing means creating "slices" of the precious object, which can then be stored and traded as tokenized assets on the blockchain. The Ethereum technology creates utmost confidence in the traceability of the co-investments and ownership is recorded on that decentralized, tamper-free ledger. As wealth is best enjoyed in the company of family and friends or like-minded people with shared interests, TEND enables the creation of micro-networks and peer communities. In order to drive loyalty and growth within the TEND community, the sourcing of the special investment opportunities will be made based on the shared interests of the clients themselves, meaning they are co-created by those clients.

This new place is for people who have a broad set of interests; who may have had a long-term desire to fulfil a particular passion. They don't need to be a specialist or expert; in fact, TEND wants to give everyone access to a whole variety of interests and maybe spark off an eventual passion. TEND is not going to drown its clients with random lists of thousands of products – the platform handpicks and proposes relevant ones for each individual.

Importantly, TEND provides a fully serviced platform and offering, including taking care of those associated but time-consuming responsibilities of the co-owners, such as maintenance, insurance and security.

4. BIG MARKET SIZE

The latest wealth pyramid³ includes 35 million millionaires and 365 million so-called affluent people, i.e. totalling some 400 million people, globally. Their combined wealth is approximately 220 trillion USD (116tr USD and 104tr USD respectively) or about 85% of the world's total wealth. Growth of wealth in the emerging markets has, in the last 15 years, been three times faster than in the mature markets⁴.

Based on our multi-dimensional market analysis (40 key data points out of 2000 available data dimensions⁵), we have identified the most promising markets for TEND. We gave a particular emphasis on (a) a market's future attractiveness (e.g. urbanization and emergence of megacities as dominant geopolitical and wealth creation factors in the coming decades); and (b) the ease of new business entry (e.g. high or low competitive environment, margin pressures, share of wallet opportunities, attraction towards a Swiss brand); and (c) a market's assumed consumer readiness and desire for TEND.

This analysis drove the following prioritized target markets list:

- Switzerland (target audience of approx. 1 million people),
- Germany (target audience of approx. 13 million people),
- France (target audience of approx. 12 million people),
- Italy (target audience of approx. 14 million people),
- UK (target audience of approx. 13 million people),
- Brazil (target audience of approx. 3 million people),
- Mexico (target audience of approx. 4 million people),
- India (target audience of approx. 4 million people),
- Indonesia (target audience of approx. 2 million people),
- Singapore (target audience of approx. 2 million people),
- Taiwan (target audience of approx. 7 million people),
- South Korea (target audience of approx. 6 million people),
- China (target audience of approx. 22 million people),
- Middle East (target audience of approx. 3 million people).

The total identified target audience size is some 100 million people. The attractiveness of TEND is considered high in those markets due their substantial share of this new generation of consumers (as described above under A.2.). Our objective for the next decade is to attract some 2% or 2m of clients from these markets. TEND's digital, blockchain-powered business boosts the economic viability and commercial attractiveness through its ability to serve potentially huge customer volumes.

³ Credit Suisse Global Wealth Databook 2015/2016

⁴ <https://www.capgemini.com/experts/thought-leadership/world-wealth-report-2016>

⁵ Those data points mainly comprise macro-economic parameters, infrastructure data, etc.

5. SUSTAINABLE REVENUE MODEL AND NETWORK-BASED VALUATION MODEL

The willingness to pay combined with the purchasing power of our target segment is very high, giving us a variety of revenue stream opportunities.

A subscription-based model, benefiting from the values of simplicity, transparency and authenticity, allows us to provide our customers with a service they can trust because we make zero gain from their data, transactions and activities. Our model entails a yearly subscription fee per user giving access to the unparalleled investment world of TEND. This subscription fee may vary from market to market and is intended to cover the operational costs of TEND plus a margin. We estimate this yearly fee to be between 500 CHF to 1'000 CHF per user.

In addition, TEND will charge a fee for the tokenization of assets. Hence for each asset that is onboarded to the TEND platform, a respective tokenization fee will apply. The exact amount will depend on the respective asset's complexity and risk profile. We estimate this tokenization fee to be between 0.5% to 2% of the asset value.

Additionally, TEND will provide investment-related advisory services (portfolio advisory services) for advanced investors. We estimate this advisory fee to be between 0.5% to 1%.

Furthermore, TEND will – at a later stage – provide credit facilities to the co-owners of an asset, i.e. a co-owner can obtain a credit advance in turn for provisioning his co-owned asset as pledge. We estimate to charge a fee between 8% to 10% of the leveraged asset value.

Finally, TEND will provide other asset-related, value-added services (e.g. tax statement services) for which we will charge a competitive fee.

TEND itself doesn't intend – at this stage – to charge a transaction fee for purchase or sale of investment objects as this would negatively impact the investment of the user – we want the client to achieve the maximum appreciation of their investments. Due to its technology-based operating model and processes, TEND has a competitive cost advantage over traditional financial service providers due to the latter's low automation ratio and slow adoption of new technology; and can disrupt the incumbent industry with its differentiating revenue model.

Above and beyond the revenue opportunity, the value of TEND is driven by the micro-networks it enables. TEND's micro-networks are intensively interactive or private; they are not necessarily big, but they are intimately connected. The subgroup network effect is not about size but the intensity of connection or interactivity. Hence, TEND's micro-networks rather follow Reed's law (so the formula is $2N - N - 1$) in terms of the utility they bring to its users and less the more familiar Metcalfe's law. Meaning TEND is a powerful community that is already extremely valuable for small values of N: the advantage comes from the fact that the marginal cost of interactions goes down significantly even when operating on a small scale. This is unlike traditional wealth management which is (a) not structured to capitalize on network effects, and (b) costly and inefficient in its selling process with its high volume of calls to investors to make sales appointments and pitch products. As a result, even where TEND membership is of a moderate size, the value of TEND over traditional wealth management will be much higher.

6. RANGE OF COMPETITIVE DIFFERENTIATORS

The uniqueness of TEND is characterized as follows:

(a) TEND gives access to a combination of investments and experiences people of which could previously only dream of, thereby creating stories, memories and a unique and emotional return on investment

(b) TEND improves people's lives by removing their frustration with existing wealth management services, enabling and empowering them to live their lives with purpose and meaning, delivering value by refocusing their perspective of wealth, whilst giving them back precious time

(c) Every person is different, as is their wealth, hence we have built a hyper-personalized client product; TEND celebrates individuality

(d) Offering crowd-funded, sustainable, philanthropic investments with a view to making a better world, enabling people to join in and be part of a more meaningful and positive investment of money.

(e) TEND offers connection and community, i.e. "creating with" and "feeling a part of" something bigger than normal. Thus, the TEND platform serves as an enabler for social value in line with the emerging social trends, like the sharing economy

(f) TEND makes blockchain "tangible" through the combination of a sophisticated platform with real-life objects and experiences; unlike most other blockchain ventures TEND is not a pure technology product but have an important real-life angle for the clients

B. CLEAR EXECUTION PLAN

1. CUSTOMER-CENTRIC PRODUCT DEVELOPMENT

We are following an uncompromising goal of building a product our customers will love. As Steve Jobs famously said “you’ve got to start with the customer experience and work back toward the technology – not the other way round”. Instead of us trying to inflict a standard app on customers, we are going to create a better and very different app than any other. With that aim, we continuously carry out extensive user testing, make changes based on what we learn; we then do more testing and make further changes, and by repeating this process until we exceeded the client’s expectations, we are going to have a product that is far superior to the investment apps currently available in the market. Eventually, the TEND product will become synonymous with the art of investing and experiencing wealth.

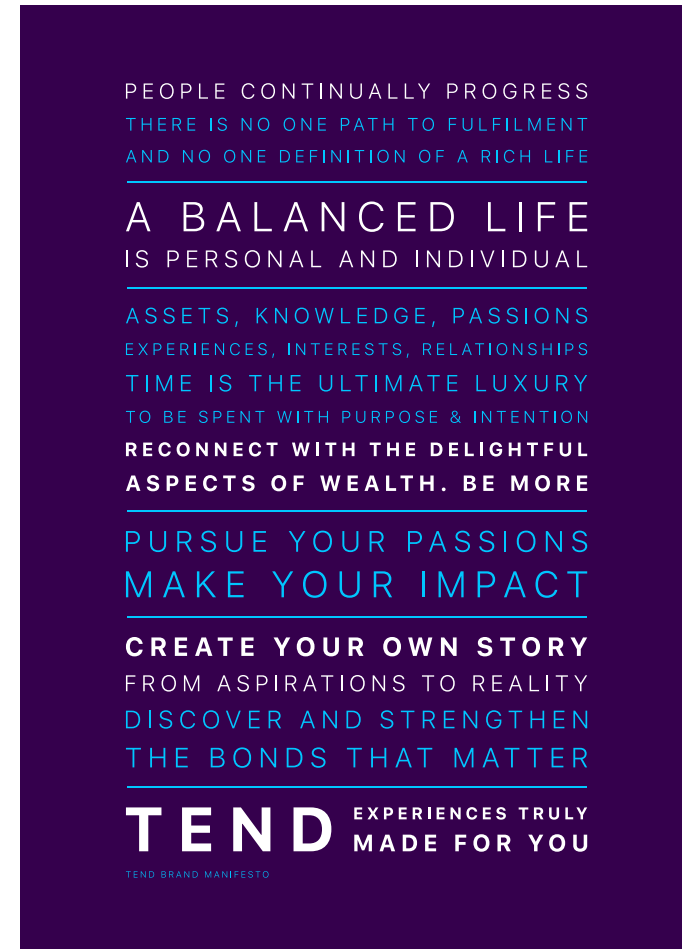
This continued co-creation approach is a core element of our execution plan: In developing the alpha version of the product, we have already attracted 20 pilot users for intensive testing, conducted more than 50 lab interviews and undertaken an extensive consumer design research.

2. ESTABLISHING A NEW, FRESH BRAND

The TEND brand is a new, legacy-free brand which is more trustworthy, ethical, and quite simply better than established brands. It's a brand you will want to be associated with and which gives you the identity you seek. (By comparison, according to a global study, 71% of Millennials would rather go to the dentist than listen to what banks have to say!)

TEND is about attending to your passions, attending to your interests and things that matter to you. Through TEND customers connect to the pleasurable aspects of their investment; TEND enables each client to have and tell his or her unique story.

By stimulating these sensations, we will create a unique, emotional relationship with our clients – our brand manifesto being the source of inspiration.



3. WINNING CUSTOMERS THROUGH DIGITAL STRATEGIES & NETWORKS

We have a clear client acquisition program, mainly driven by word-of-mouth, influencer marketing and social media presence, PR and a referral incentive program. The application itself has a number of "sharing" features that allow our customers to attract new clients in a very direct, easy and social fashion within their networks and their preferred channels.

We have carried out substantial research in order to ensure a robust model and to predict the client growth as accurately as possible. We approached the modelling effort by researching existing literature on the adoption of new innovations, on the viral nature of online diffusions and on existing quantitative models of the spread of ideas from epidemiology. The final model has benefited from scientific literature across multiple disciplines, evidence from the application in quantitative models and existing models used in the app start-up culture and community.

The three models we explored in detail are the Bass model in marketing, the SIR model in epidemiology, and the model of Skok and Reiss.

The Bass model

The Bass model is one of the most cited models in the literature. It analyses the diffusion of a new product depending on the rate or degree of imitation(p) and innovation(q) that exists in the market. For TEND, we chose $q=0.3$, as we believe TEND has a relative advantage to other products, a high degree of compatibility with current values and attitudes, is simple to use, and fosters connectivity. The coefficient of imitation calculates the word-of-mouth diffusion. We chose $p=0.015$, as TEND will target just part of the overall population but the target market is well connected, so the diffusion will be faster.

Formula: $N(t) = m * (1 - e^{-(p+q)t}) / (1 + (q/p) * e^{-(p+q)t})$

3. WINNING CUSTOMERS THROUGH DIGITAL STRATEGIES & NETWORKS. CONT

The SIR model

This epidemiological model explains how a virus affects a population. We analysed this model and implemented it to understand the potential growth of TEND. The mathematical model calculates how an infection spreads across a population over time.

- Susceptible $S(t)$: number of susceptible people; or in our case, potential clients
- Infected $I(t)$: number of people infected; or in our case, the number of current customers
- Recovered $R(t)$: number of people who have recovered, or former customer

Formula: $N = S + I + R$

The model of Skok and Reiss

In a nutshell, this model calculates the viral growth of a company by the number of invitations sent by each new client and the conversion rate of their friends.

- InitialCusts: Initial customers at the start; In our case, the user base in our pilot
- C: The cycle C is the recommendation frequency per year, i.e. the cycle time until the average user shares the platform with his/her friends
- VK: The Viral Coefficient VK is calculated by the number of invitations (INV) sent by clients and the conversion rate (CON) of these invitations
- R: The Retention Rate R is calculated by multiplying the percentage of users that remain on our platform after their first year

Formula: $\text{NewCusts} = (\text{InitialCusts} * VK^C) * R$

whereby: $VK = INV * CON$; $C = 365/tc$

For our purpose, the model of Skok and Reiss provides the most reasonable approximation for potential customer adoption. Our particular focus on word-of-mouth marketing and a rather small number of initial customers during the pilot phase leads us to the conclusion that the model of Skok and Reiss is the most applicable one in our case.

We modelled several scenarios to assess the impact of various digital strategies for growth (e.g. digital marketing versus influencer marketing versus paid ads). Our sensitivity analyses revealed that there are several major factors that positively impact our growth rates. We have included all these insights into our client acquisition program.

4. WELL-DEvised GO-TO-MARKET PLAN

We have a plan to build a global business – right from the start. This won't happen overnight, of course; it requires careful market entry planning, especially in terms of local operating compliance. Nevertheless, we will push towards the simultaneous roll out in a number of markets as early as possible so as to get global traction ahead of competition. Each market will be entered and serviced by setting up an operational centre in one of its megacities so as to ensure close proximity to key service providers.

Based on our thorough, multi-dimensional market analysis and criteria (see under A. 4.), we have decided upon the following current go-to-market plan:

a) Start in Switzerland

For many reasons Switzerland is the ideal starter market for us. Not only is it one of the richest and most innovative countries, it is also the new epicenter for blockchain – the Cryptovalley Zug (CH) is where we have centered our operations. Being surrounded by companies dedicated to blockchain is key to progressing our product and platform, particularly in the early years. Further, we have an extremely strong network of pilot customers, ambassadors, test users, fans and contributors. In short, a sizable community which will contribute to the success of TEND. Lastly, the rock solid regulatory environment and legal framework of Switzerland make it the perfect starting base for us.

4. WELL-DEvised GO-TO-MARKET PLAN. CONT

b) International expansion

(i) Entering key European markets. Aiming for scale, we will focus on those largest neighboring European markets:

- Munich (Germany): As the largest neighboring country of Switzerland and with its attraction to real assets, we believe we are perfectly placed with our offering.
- Paris (France): Same applies to France, plus it has a vast source of prestige objects.
- Milan (Italy): Similarly, Italy.
- London (UK): With its enormous wealth concentration and history, the right place for our offering.

(ii) Entering the 2 largest Latin American markets.

- Sao Paulo (Brazil): Sao Paulo is expected to be the 6th richest city in the world by 2025. A fascinating city with a young population anting to make Brazil flourish – access to TEND will help satisfy those ambitions.
- Mexico City (Mexico): Mexico City is considered the Silicon Valley of Central and South America, with most of the continent's start-ups being located there. A vibrant city full of potential – matching our venture.

(iii) Entering East Asia. Asia has become the wealthiest region in the world, ahead of the USA. We will participate in that global power shift and launch TEND in selected Asian countries.

- Singapore (Singapore): A thriving metropolis in South East Asia, with big ambitions – like us.
- Jakarta (Indonesia): The epicenter of Indonesia's 250 million population.
- Seoul (South Korea): Hyper-modern, fast-paced mega city at the forefront of technology adoption.
- Taipei (Taiwan): Well-established megacity with a next generation of modern consumers.
- Hong Kong (China): With its one-of-a-kind cosmopolitan touch the entry point to China
- Beijing, Shanghai, Guangzhou, Chongqing, Hangzhou (China): The largest metropolitan cities in China with a huge desire and aspiration to become economic leaders in the world..

4. WELL-DEvised GO-TO-MARKET PLAN. CONT

(iv) Entering India & Middle East. India is in the midst of a significant program to bring 1bn people into the digital age, and democratizing access to banking and economic inclusion. Meanwhile the U.A.E. is transforming itself in order to thrive in the post-oil era.

- New Delhi, Mumbai (India): Aside from the country's capital New Delhi, by 2025, for example, Maharashtra's 128 million residents (Mumbai is the capital of this state) will have a purchasing-power similar to Brazil's today. These mega centers are where the future of this sub-continent will be – and we will be part of it.
- Dubai, Abu Dhabi (U.A.E.): Both megacities are at the forefront of the region's development and their drive for innovation fits our model.

As mentioned above, the timing for international market entry, and in which order, may be in sequence or simultaneously, depending on operational and financial capacity. For each market entry, the following 4-year go-to-market activity plan applies in principle:

- Year 1: Establish local license, hire local team and build out operations in local market, launch beta product to gain first adoption insights
- Year 2: Officially launch the product and iterate and improve it with first wave of clients
- Year 3: Scale the client base to gain traction
- Year 4: Achieve operative break-even to become a profitable business

5. ECOSYSTEM OF PARTNERS

TEND will only engage in partnerships with reputable firms and service leaders to support our offering. Its leadership team has the relationships and network to make this happen. The partner management will, in most cases, be based on bilateral agreements, ensuring a stable and long-term competitive advantage. These partners will fulfil a variety of roles:

- Validation and certification purposes: in order to verify ownership of assets before tokenization, and to ensure compliance with regulatory frameworks, as well as providing trusted third-party confirmation.
- Provision of services for the experiences associated with the invested ownerships.
- Custody of the real asset and protection of its value through value-keeping or value-enhancing measures.
- Provision of additional wealth-related services, such as tax or legal consultation.

As the partner universe will be dependent upon the objects we source, the ecosystem will be build up accordingly. Thus, over time and as our business develops, we will continue to add new partners.

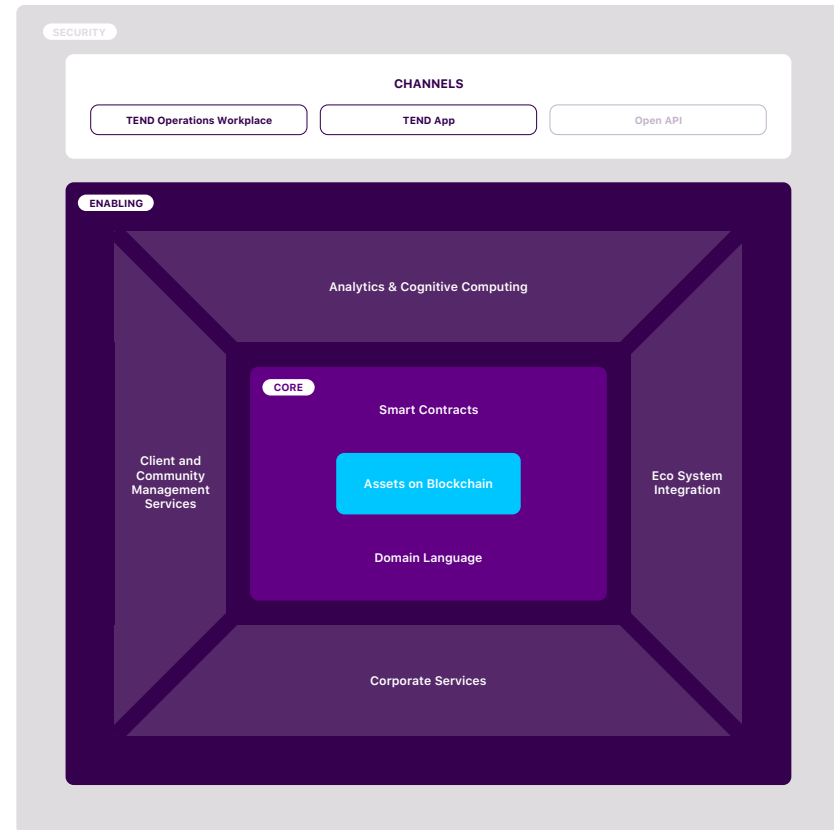
C. TECHNOLOGY PLATFORM

1. LOGICAL ARCHITECTURE MAP

The unique service and operating model of TEND requires a platform with a comprehensive set of capabilities which is scalable in terms of functionality, volume and geography as well as allowing further commercialization of the platform.

At the core of the TEND platform is the blockchain with smart contracts for the different types of real assets and transactions provided by TEND.

A range of enabling services is required in order to deliver the full client promise of access to unique investments with a personal experience complemented by service excellence, as well as running TEND as a viable and compliant business. Lastly, Security is an all-encapsulating principle to protect our clients' assets and to ensure the on-going trust our clients have in TEND.



2. CORE ARCHITECTURE

TEND brings real world assets and asset-linked experiences onto the blockchain. Despite being by principle blockchain-agnostic, we have selected Ethereum as the blockchain to start with.

The TEND model builds on various types of assets. Each asset class has very specific characteristics and transaction behaviors, therefore we use asset-type specific language and modelling underlying the blockchain asset and the corresponding smart contracts. The smart contracts rule the transactions and their constraints as well as the asset life-cycle.

Onboarding of an Asset onto the TEND Platform

The types of assets that can be converted onto the TEND platform are limited to the purpose of TEND. When a client (or business partner) wants to register an asset on TEND, the TEND team captures all information about the asset in the TEND database through the admin interface. This includes asset name, asset description and original price, a copy of the proof of ownership document, location, and other basic data. Then the TEND team, in collaboration with ecosystem partners, performs a thorough due diligence of the asset. This includes certificate of authenticity, certification of quality, asset valuation certificate, compliance clearance (i.e. that the asset & experience can be fractionized/sold without violating any laws).

The TEND team defines whether the object is either to be physically stored centrally or de-centrally; the exact custody model will depend upon the nature

of the particular physical asset and the associated access/service model around it. The TEND team (together with the original client) defines the number of asset tokens for the asset and defines the asset-linked experiences. These tokens are finally recorded and transacted on the TEND platform.

TEND's Asset Token System:

We distinguish between two types of "Asset Tokens" and their operational feasibility, tradability and their asset token status.

Physical assets: ("Physical Asset Token")

These are physical objects that are invested in. The physical asset is represented by Physical Asset Tokens which are tradable on the TEND platform, but exclusively in conjunction with the corresponding, linked experience token (where such a linked experience exists).

2. CORE ARCHITECTURE. CONT

Experiences (Access and Services) linked to a physical asset: ("Experience Asset Token")

As we are tokenizing the physical asset, the access and service experiences are dependent on the custody solution defined for the particular physical asset. The Experience Asset is not tradable in itself on TEND but exclusively in conjunction with the corresponding, linked Physical Asset. However, the Experience Asset can be "rented out" to someone else on the platform, i.e. the owner of the Experience Asset always remains the co-owner of the Physical Asset, but he can "rent out" the Experience Asset for a specified period. In that sense, the Access Asset is a derivative token (an access right renting-out token) to the Physical Asset token.

Sell / Buy Transactions

The platform is a seller-driven platform. Tokens can be placed on the platform with a sell price by the current owner of the token, and be bought by any other TEND user. There will be different types of sell options depending on the seller's preference; for example, fixed price or auction mechanisms. Once a matching buy order is received by the platform, the FIAT money settlement is instigated (see below). Only once the payment has occurred will the transaction be completed, and the token ownership transferred from seller to buyer.

Type of settlements

The buy and sell process of any such tokens is then executed via TEND's own settlement bank account ("clearing") via FIAT currencies. In a second stage, settlement via use of cryptocurrencies will also be possible, which will allow instant settlement of the entire transaction.

Asset Token Wallet ("ATW")

Every user on the platform automatically gets an asset token, other crypto tokens, assets or currencies wallet during the onboarding process. This wallet serves as his or her digital wallet to show the user's TEND investments, as well as any other crypto or digital asset..

Key Generation

The public and private keys for a user are generated inside the mobile app, using our API to call up the Ethereum established key libraries (<https://github.com/ethereumjs/keythereum>) via a NodeJS integration. The generated keys are stored in the secure keystore of the user's device.

Cold Wallet or Multi-Sig Solutions

To mitigate the risk of loss or theft of the user's private key, we are exploring the option of including cold wallet other security hardware or multi-signature solutions to provide security beyond the crypto algorithms and to enable a secure key recovery mechanism.

3. ENABLING ARCHITECTURE

Client and Community Management

This set of services covers

- Client Onboarding, Client Data and Client Relationship Management
- Creation of micro-communities among clients, TEND staff and partners
- Collaboration (text and video chat, document and screen sharing) with clients and partners

Our Client Relationship Management supports the full life-cycle of servicing clients and business partners from prospective, to active and through to the terminated state. Comprising the onboarding, service contracting and interaction processes, it captures and manages client/partner master data, contact information, service contracts, profiles (such as interests, constraints, ...), contact notes and relationship management tasks as well as the partner/client network. We utilize an open source framework and combine it with advanced capabilities and analytics.

To support the exchange and interactions of clients in their self-setup micro-networks, we use the open source community software "CMNTY".

For "collaboration", we are in the process of evaluating various providers and open source frameworks, taking into consideration usability, security, scalability, investment and maintenance costs.

3. ENABLING ARCHITECTURE. CONT

Platform Integration

The TEND platform includes business partners for real asset valuations and certifications, experience services and more. We integrate these partners via their service interfaces and APIs. Further we integrate investment-related data from further sources (such as banks). As a consistent ontology is applied within TEND, we build adapters which perform both:

- adaptation of the respective protocols to the REST protocol used on the TEND platform internally and
- adaptation of the partner's taxonomy and semantics to the TEND taxonomy.

When partners do not have adequate APIs or interfaces, they use the TEND Operations Workplace with restricted access, which allows them to provide or manage relevant information related to their specific services.

Analytics & Cognitive Computing

The TEND platform uses advanced analytics and machine learning techniques to provide a highly personalized, relevant offering experience and investment advisory excellence. Natural language processing, knowledge extraction and dialog engines are applied to provide a human touch in the interaction (e.g., search, chatbot) towards the user.

Therefore, the analytics and cognitive computing delivers

- 1) Hyper-personalized experiences for the clients
- 2) Insights (like asset and portfolio analytics) to our clients
- 3) Continuous improvement to our operations
- 4) Compliance support, fraud detection, reporting requirements and control processes
- 5) State of the art user interaction styles

The Hadoop platform component captures all relevant data (e.g. user interactions, transactions, market and third-party partner events, valuation changes, user requests, feedback and TEND operations activities) and applies clear ontology and taxonomy when streaming data into the TEND data lake.

Corporate Services

Corporate Services components are needed to run the TEND business and its operations.

i. For enterprise management related services (such as Accounting, Finance, Human Resources Management) we are leveraging SaaS offerings in the respective markets

ii. For common platform services (such as Content Management, Archiving, Search, Event Management, Business and Compliance Rule Management and Execution, Product Catalogue) we are leveraging available market software or open source frameworks.

4. SECURITY

We are not solely reliant on security solutions of cryptographic algorithms in the blockchain or cyber security measures in the infrastructure design and operations, but are also building an additional cross-tier, cross-threat security layer.

The TEND Information Security concept is based on a multiple factors and measures which work together:

a. Infrastructure security

The TEND Platform is hosted in a highly secure data centre in Switzerland. Access to the data centre is closely supervised and restricted. Any type of communication is encrypted.

For internet access security in the TEND DMZ (demilitarized zone), we use Ergon's Airlock Suite which is the established Swiss standard in the finance industry.

b. Cryptographic algorithms in block chain

Our solution is based on the Ethereum blockchain, which provides cryptographic algorithms to secure the assets and to establish trust on the transactions.

c. Security management, monitoring, analysis and auditing

On top of best-practice blockchain security, we employ analytical eFraud detection and prevention. Suspicious transactions will initially be blocked and will require additional and independent "challenge / response" prior to completion. In addition to our own security management and monitoring, we collaborate with external security experts and have our platform audited at least annually and upon every major technology or infrastructure change.

4. SECURITY. CONT

d. Identity and Access Management (IAM)

To manage users (internal and external) and to secure access to non-core / blockchain-based services we employ a role-based IAM system for assigning and controlling access rights to services and data. Access control enforcement is consistently applied on all tiers of the architecture (user interface, front-end API, business services and data). Applying this “hostile environment paradigm” provides the highest level of security. Even if one control has been compromised, the other tiers will remain intact and will ensure adequate information security. We enforce strong authentication, whilst still utilizing the device-specific authentication parameter (e.g., biometrics) chosen by the user. User credential (identity) propagation is based on SAML⁶ tokens which are a standard broadly adopted in the wider ecosystem to provide single sign-on integration for highest user convenience and reduced administrative efforts for TEND.

⁶ Additionally, where applicable, we will use JWT tokens.

⁷ At this point, we do not see a need for investing in a “zero-second” recovery time infrastructure configuration.

e. Operational procedures and processes

We strictly apply the “need to know” principle in our operational procedures and processes. “Privileged access for employees” to data and system components is closely controlled and monitored. Residual risk is further mitigated by encrypting data at rest and in transit.

f. Business Continuity Management

The TEND platform is built according to the twelve-factor application principles to ensure high availability and high scalability and the ability to deploy in an “always-on” disaster recovery-capable infrastructure topology⁷. Event logs which allow recovery of the system state, are, however, securely stored and backed up. Exception management, recovery procedures definition and testing is built consistently into our development and system change management processes.

5. CHANNELS

The TEND Platform implements true omni-channel, multi-channel and cross-channel concepts. Each channel utilizes the capabilities (exposed via RESTful micro-services) of the TEND Platform in a consistent manner.

TEND App

The first iteration of the TEND mobile app is built on iOS 11 / SWIFT technology and uses Apple's advanced frameworks to create a sophisticated experience, e.g.

- UI Kit as framework providing the infrastructure for the app
- Sprite Kit and Scene Kit (Apple's 2D and 3D graphical engines) are used
- Core Data is used as framework to ensure secure data persistence
- Core Graphics is used for image manipulation and texture generations for 3D landscape elements.

Once the first product iteration has been validated by our clients, we will adopt a multi-device approach using Angular 4, Three.js, etc. to enable full coverage of client devices.

Third-party API

A key principle of the TEND platform is to enable accessibility of third parties and thereby extend the TEND ecosystem. This allows the spreading of innovation and the reach of the TEND platform beyond TEND's own apps.

Third parties can access the TEND platform's RESTful services in the same manner and following the same security standards as the TEND Apps and the TEND Workplaces. However, third parties and their applications need to undergo due diligence and commit to independent security audits prior to being granted access.

Hardware Devices

Given the ongoing fraud concern in the customer sphere, TEND is exploring hardware devices and functionality to be added to its channel concept.