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How can Fintech facilitate fund distribution?

March 2016



Executive summary

Fintech is more than a buzz word. It is a game changer in the operating model of asset managers, distribution intermediaries, and service providers. New investor behaviors are the driver of change. The investment management ecosystem has to further increase efficiency and provide a better customer experience. Luxembourg asset servicing firms have a major opportunity to help asset managers and distribution intermediaries to succeed in the change.

Industries are permanently evolving, but incremental changes are hardly noticed. Sometimes however, industrial sectors undergo radical changes, where the process of incremental evolution is significantly disrupted by outside technological, demographic, regulatory, or economic forces.

In this ALFI report produced by Deloitte Luxembourg, we seek to describe the impact of Fintech on the distribution model of the asset management industry and the strategies to be adopted by incumbent actors.

Today the Fintech surge is starting to reshape the financial sector on a global scale with a flourish of new actors attracting significant attention from markets, customers, and investors. This Fintech movement is also gaining momentum in Luxembourg. Several driving forces can be identified:

- New technologies have emerged: Blockchain, artificial intelligence, machine learning techniques, digital investment platforms, peer-to-peer (P2P) lending
- The new generation of investors desires more proximity with asset managers, a better ability to compare their investments with peer groups, to invest in a socially responsible way, and they are willing to use online investment platforms

- Big Data and analytics make sense of data and can produce descriptive and predictive analytics on investor behaviors, performance measurement, market intelligence, or risk metrics
- Regulation in the historical ecosystem is still evolving and regulation of the fast evolving Fintech solutions is uncertain
- Regtech emerges as a technology-based solution creating efficiency and automation in non-subjective compliance tasks

Successful asset management companies will adapt product management and marketing strategies to the mentality of this new generation of investors using Fintech to make use of a wide set of available data sources, including external sources such as social media. Client profiling will be supported by data analytics. Key features of online platforms will be education, risk and performance metrics, account management functionalities, wealth reports vs. investment goals, and market insight. These enhanced digital platforms will stimulate direct-to-consumer (D2C) distribution channels in both retail and the institutional investor segments.

Luxembourg's investment management service providers can use Fintech and Regtech innovation to offer white-label solutions to their asset management clients and their intermediaries by:

- applying data analytics to the vast amounts of available data in order to improve investor segmentation, provide market intelligence, and facilitate D2C connectivity,
- optimizing processes in areas such as cash processing, settlement, reconciliation or tax management,
- offering one-stop-shop management services for investment funds.

In the long-term, Blockchain technology may completely redefine the landscape of the investment management industry. Indeed, Blockchain has the potential to make trading and post-trading processes much more efficient, improve transparency and audit trails, and eliminate intermediaries. Nevertheless, for the moment Blockchain remains an unproven technology coupled with an uncertain regulatory framework. We can anticipate a transitional hybrid phase prior to the Blockchain disruption where the current actors of the investment management ecosystem, including Luxembourg service providers, will have opportunities to offer their clients an enhanced and mainly digital asset servicing value proposition based on already established technologies such as automation and digitalization.

Already today, in some jurisdictions, robo-advice platforms are targeting mass affluent clients with their new goal-based investment strategies and lower cost fee structure. Based on Big Data and advanced analytics, robo-advice will become more personalized and specific over time, going beyond current portfolio allocation and investment products. Winning investment management firms will incorporate robo-advice capabilities within their existing and fast evolving advisory and D2C offerings to create hybrid models (science and human-based) that can help increase value for clients across the wealth spectrum. Building on the advantages of Luxembourg, mainly the fund and wealth management industries, the proximity of the ecosystem actors and one of Europe's leading ICT infrastructure, local actors should consider shifting evermore into the digital investment management market.

As a conclusion, the asset management industry has a once-in-a-generation opportunity to reimagine and modernize its distribution model to address market and operational challenges—for future and current investors.

Luxembourg's investment management service providers can use Fintech and Regtech innovation to offer white-label solutions to their asset management clients and their intermediaries

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1. Fintech is reshaping financial services

1.1. Worldwide investment in Fintech is growing exponentially

Fintech is an umbrella term for financial technology that describes an emerging financial services sector in the 21st century. Originally, Fintech dominated the technology applied to the back-end of established financial institutions. Since the end of the 2000s, the scope of Fintech has widened, covering any technological innovation in the financial sector, including financial literacy and education, retail banking, investment, and crypto-currencies.

The Fintech landscape is growing rapidly, and attracting significant attention from almost every market, geographically and industrially.

Investments into Fintech companies have slightly more than tripled to US\$12 billion from 2013 to 2014 (see figure 1), outpacing the overall growth in venture capital investments by 140 percent¹. Interestingly, despite this growing trend, only a limited portion of this figure is first round investments into early stage companies, representing 11 percent of total investments (although this figure is experiencing a year on year growth of 48 percent). An example is the P2P lending platform, Lending Club, founded in 2006 which raised US\$865 million on the NYSE, making it one of the largest US tech IPOs of 2014. Growth in

EU is showing continuing promise. For example, total investments in the UK reached US\$623 million, while Germany narrowly topped the US\$80 million mark (the US continues to hold the largest share with over US\$9 billion)¹

While growing in terms of investment, the number of areas it covers is also expanding. The key areas in which Fintech operates are depicted in figure 2. In terms of size, the cluster that contains the majority of Fintech is the lending and the payments sphere, with around 270 companies in each. Personal finance and equity trading take the third and fourth spot (with around 130 companies)².

Due to their lower fixed costs, improved customer experience, and efficiency improvements, Fintech companies are threatening the banking and investment sphere. Although many will never attain the size or reach of mature global players, some will thrive and grab substantial market share. A real threat arise when these Fintech startups partner with established non-financial services brands; the likes of Apple, Google, Amazon, and Facebook provide e-wallets, apps enabling P2P money transfers, and mobile point-of-sale solutions. As a result, asset managers need to pay attention to Fintech and act now.

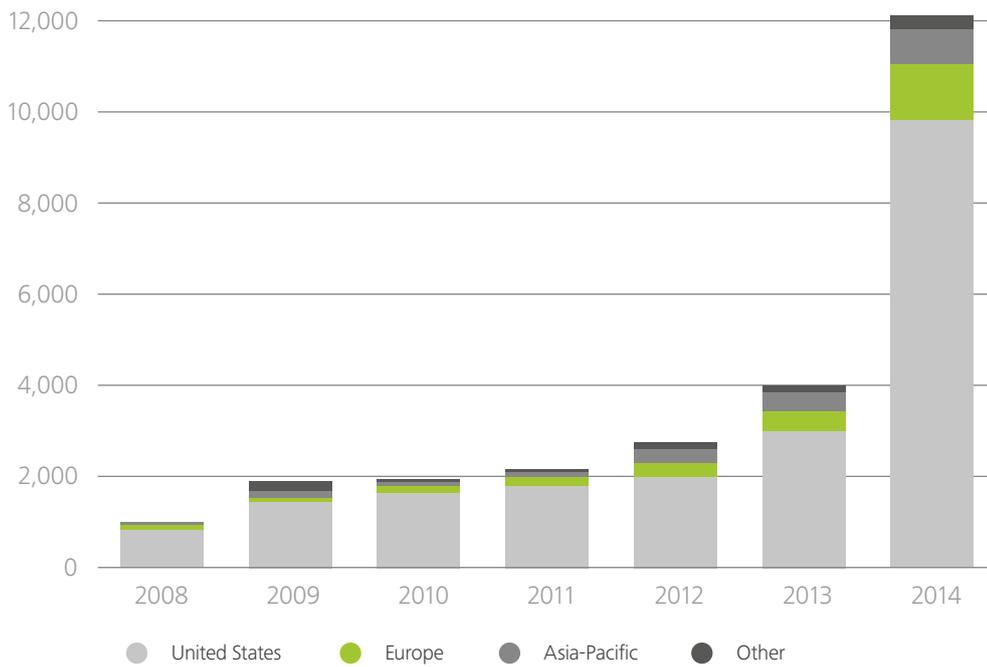
Investments into Fintech companies have slightly more than tripled to US\$12 billion from 2013 to 2014, outpacing the overall growth in venture capital investments by 140 percent

1 Team analysis, 2015

2 Venture Scanner, 2015

Figure 1: Fintech financing around the World has increased dramatically since 2012

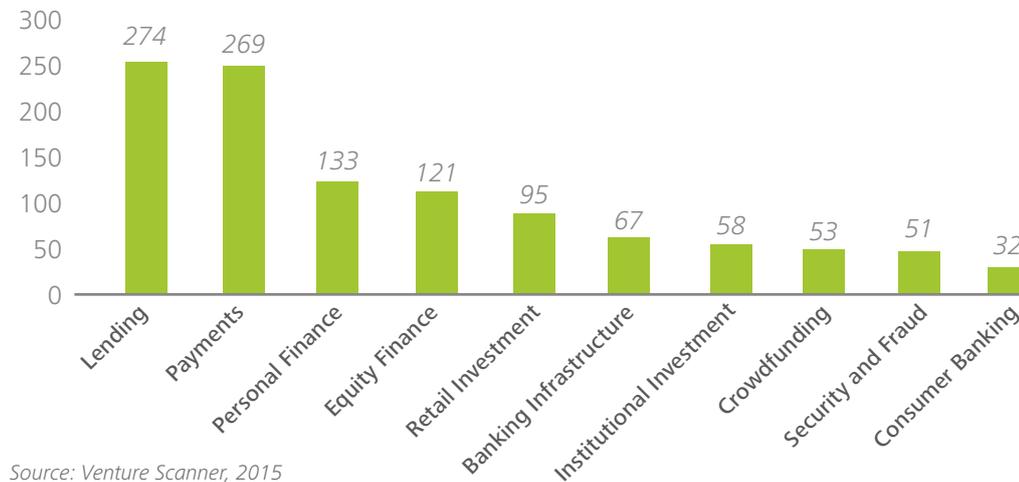
Investment in Million USD



Source: Accenture and CB insights, 2015

Figure 2: Lending and payment companies are the leading Fintech sectors

Cluster size in number of firms



Source: Venture Scanner, 2015

1.2. The Fintech landscape in Luxembourg is healthy and has room to grow

During the last years, Luxembourg has lived the development of a highly dynamic Fintech sector with more than 150 Fintech companies in Luxembourg³, providing IT infrastructure or IT services as well as software or technology-based business services. Big players as Amazon Payments, PayPal, Rakuten, and Yapital of the German retail giant Otto have established their quarters in Luxembourg, along with a flourish of startups (non-exhaustive and in alphabetical order):

- **Birdee** is an investment management company offering an online discretionary portfolio service for Mass Affluent investors. Through a combination of algorithms, it lets investors choose a portfolio, created by its experts, that best meets their expectations and risk profiles, and that is constantly optimized in order to provide the best return.
- **Coinplus** provides storage and payment solutions for the digital currency Bitcoin, allowing individuals and businesses to create a wallet and start using bitcoins instantly.
- **Digicash** is a bank account-linked mobile payment system that allows payments in shops, bill payment at home, and e-commerce purchases via the mobile phone. The Digicash product is provided by banks to their customers/payers, and merchant acquiring is handled by Digicash Payments S.A.
- **EMP Corp** is a payment company that provides solutions to process payments for all kinds of merchants and e-merchants based on e-wallet and e-money.
- **uComply** is an Anti-Money Laundering software specialist helping clients throughout Europe, the Middle East, and Africa (EMEA) region comply with the Financial Action Task Force's (FATF) 40 recommendations to prevent money laundering, including local regulations and laws. In addition to preventing legal and financial loss, Global Compliance can help to prevent reputational risk by assisting with Bribery Act regulation.
- **Globitex** is working on launching the first EU-regulated globally accessible Bitcoin exchange.
- **KYC3** provides solutions for compliance, counterparty risk management, and competitive intelligence.
- **Loomion** produces secure Corporate Governance solutions for digital information exchange, making Board communication and meetings efficient and secure.
- **MANGOPAY** offers online payment solutions for websites dedicated to crowdfunding, market places, and collaborative consumption.
- **Neurodecision** offers a compliant, user-friendly, and scientific customer risk-profiler for Financial Advisers.
- **Nexvia** offers easily accessible, free financial calculation tools for private individuals interested in buying, selling, or renting a property. The tools are designed to facilitate decision making in real estate (property) investments.
- **Oxford Biochronometrics** uses a Human Recognition Technology analyzing hundreds of behavioral data points to determine whether a user is a human or an automated program designed to commit fraud, protecting digital networks, communities, individuals, and other online assets.
- **PayCash** provides an electronic payment platform including a Mobile Payment Solution, an E-Money Solution, and a Crypto Currency Solution to implement virtual currencies into the existing payment infrastructure, and a Voucher and Loyalty Solution to provide targeted and valuable offerings to customers.
- **Scorechain** launched a Bitcoin compliance solution that provides analysis and market data, as well as tracks activity and identity—today for Bitcoin transaction and later for digital or smart contacts.
- **SESAMm** develops and commercializes stock market forecasting tools based on social media and other textual data sources. The company provides financial indicators created by using Big Data methods and allowing new approaches for trading strategies.

- **SnapSwap** will hold payment accounts and provide services to individuals, companies, and financial institutions within the European Union and worldwide. The company can process payment instruments on distributed payment networks, allowing faster, less expensive, and more accessible payments.
- **Suricate Solutions** provides IT security and electronic payments products and services to emerging markets, with a strong focus on Africa.

Furthermore, several incubators and are attracting new companies (Luxfuturelab, Nyuko, Technoport, among others). They all benefit from the specificities of Luxembourg, (close proximity to clients, world-class IT infrastructure, government support, public research and innovation, talent pools both in finance and technology) to develop their business.

During the last years, Luxembourg has lived the development of a highly dynamic Fintech sector



2. Re-wired investor and technology: the Fintech drivers

Financial services and insurance have long been the largest spenders in terms of IT investments, first automating key transaction processes like electronic transfer of funds, securities trading and clearing, and interbank settlement—with SWIFT as the most notable example of early automation. More recently, the front office related innovations contribute to the shift from traditional retail and call center activities to fully online processes by which virtually every aspect of retail and home banking is digitized, and developing online banking solutions to boost convenience and service delivery efficiency. On the other hand, many middle and back office processes at banks and financial service providers still mainly rely on people and paper, keeping space for efficiency improvements. Thus there is considerable potential to increase efficiency and effectiveness by increasing the levels of automation in organizations of the financial sector. Financial firms can have much smaller operational units run complex value-adding tasks such as transaction processing, post trade activities, or regulatory and client reporting. This trend of conversion of manual information and processes into digitally enabled data and capabilities will continue to shape the sector.

Recently, new IT technologies are leaving their home nest at universities and research centers and are being applied in the financial services industry. The following section provides a short introduction into a few relevant IT technologies that will almost certainly have an impact on the asset management industry.

2.1. New generation of investors will redefine the rules of the game

A new generation of investors⁴ has emerged. Generation X and Millennials are characterized by new thinking patterns, standards, and expectations which are substantially different from previous generations. Even an increasing number of Baby Boomers are being influenced by their younger peers. Therefore, today's financial service providers need to clearly identify and profile each generation individually.

This new generation of investors thinks differently about advice compared to previous generations and expects to interact with their advisors in a different way. In a recent Deloitte study, 9 new “mentalities” and six potential implications for asset managers^{5,6} (see figure 4) have been identified. For instance, investors no longer want to be treated as part of a segment but instead as unique individuals (“Just me”) with specific goals and preferences. They expect to receive advice tailored to their unique circumstances.

Likewise, they want to stay in control of their financial lives and understand the advice they receive to make important decisions themselves. They are reluctant to buy discretionary services and they are increasingly comfortable conducting their own research. Due to this, asset management firms and their advisors should shift to holistic, goal-based advice and measure performance based on achieving clients’ goals within agreed timeframes rather than beating market benchmarks. As a consequence, robo-advice, which will be described later in this paper, is expected to continue to gain market share over the next years within this client segment.

The new investors are more skeptical of traditional advice than previous generations of investors (see figure 3). They believe in the wisdom of their peers. As a result, they are likely to seek opinions and views from multiple sources of advice simultaneously, including but not restricted to experts and financial advisors and often starting with people like their friends and colleagues.

⁴ Baby Boom generation (born between 1946 and 1964); Generation X (born between 1965 and 1980); Millennials (born between 1981 and 1997)

⁵ Deloitte, 10 disruptive trends in wealth management, 2015

⁶ Wealth management trends are also applicable to asset management

Figure 3: There are a variety of reasons why many investors are turning away from traditional advisors

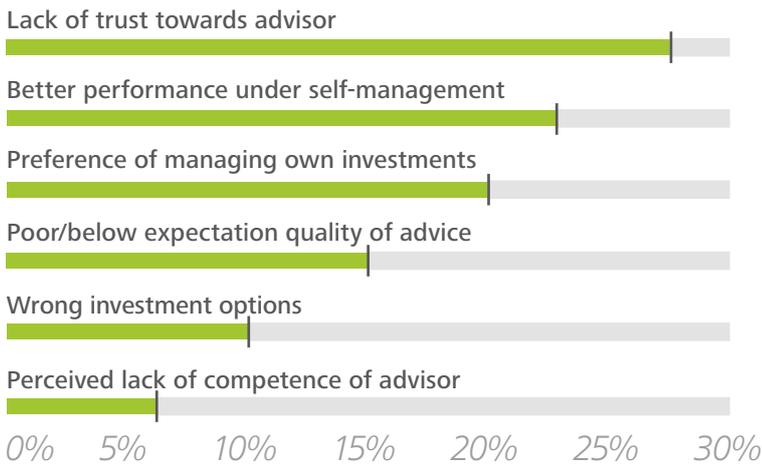


Figure 4: The 10 mentalities of the Re-Wired Investor are here to stay

Mentalities of the Re-Wired Investor

-  Just me
-  Stay in control
-  Do it yourself
-  Anywhere, anytime
-  Digital & Personal
-  Wisdom of my tribe
-  Skeptical of authority
-  Risk defied as downside
-  Not a Second Class Investor

Implications to IM firms

-  *Tailor-made*
Investment advice and products perceived to be tailored to individuals one at a time
-  *Multi-channel*
Access to multiple channels and several advisory models at the same time
-  *Multiple sources of advice*
Not just from one advisor, but from other advisors, peers, experts, social media
-  *Rich digital front end*
Expectations formed interacting with non-FIs; must be simple, intuitive, self-directed
-  *Risk Management as Hedging*
Downside protection and hedging more diversification
-  *Democratization of Investments*
Access to same high yields assets & strategies once available only to wealthier investors

Today's investors also seek to align their investment portfolio with their ideals, for example by screening socially non-responsible investments. This type of educated investor is concerned with global warming and moves money out of oil and gas companies and into clean-energy industries, like solar and wind.

As social responsibility is an increasing concern for Millennials, the investment portfolios of asset management firms will need to be further adapted to socially responsible investment products. Research showed that Millennials are willing to accept lower returns in exchange for greater social and environmental impact. They have come to view risk through a different lens: they perceive risk as downside, rather than volatility. As a result, advisors have to emphasize capital markets and hedging strategies that seek downside protection more than traditional portfolio allocations that seek to manage risk through diversification.

As Millennials expectations are shaped by their social interactions and consumer experience with non-financial digital firms (Google, Facebook, and Amazon) as well as smartphones and other digital devices, they expect to be able to access advice anywhere and at any time, through multiple channels and devices as part of a cohesive and rich digital experience. As a result, today's digital brand management goes way beyond traditional marketing strategies.

Lastly, the new generation of investors feels entitled to an equivalent service, investment products, and strategies available to Ultra High Net Worth (UHNW) or institutional investors. Asset management firms are invited to think through new ways to give their retail investors of this category access to alternative investments and asset classes beyond traditional fixed income and equities, as well as active strategies. This will also require asset managers and their service providers to improve online client experience and service level.

2.2. Most relevant Fintech macro trends for investment management

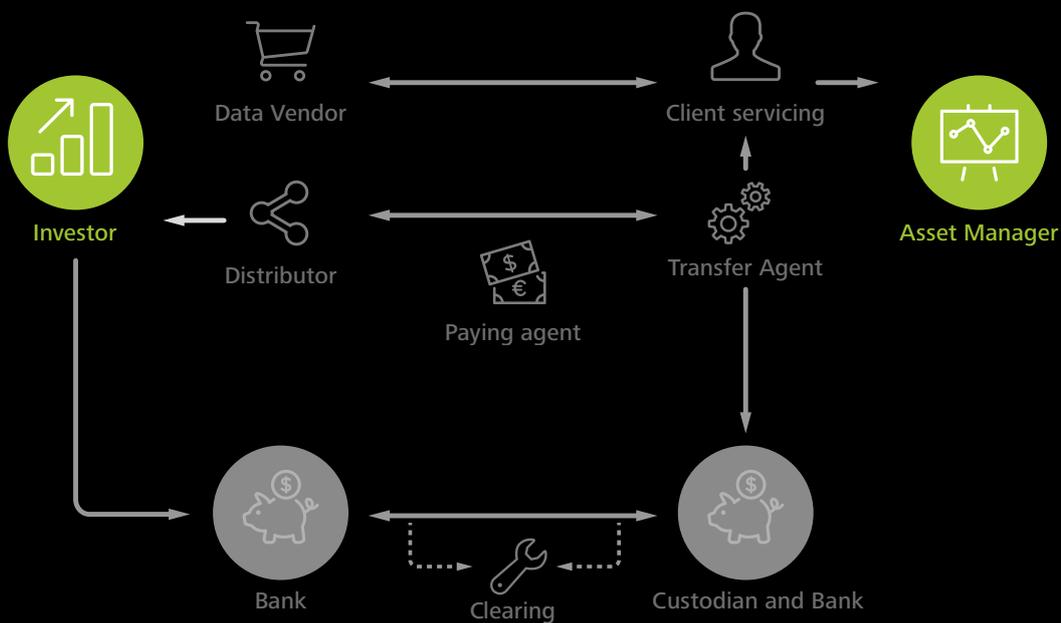
Blockchain is disruptive and will transit along the current ecosystem

The Blockchain concept has generated an important amount of interest within the financial industry. Currently, Blockchain is most known for being the technology underpinning cryptocurrencies, of which Bitcoin is the first and still most popular. This form of digital money relies on distributed networks and shared transaction ledgers to combine the core ideas of cryptography with a monetary system to create a secure, (pseudo-)anonymous, traceable, and potentially stable virtual currency. Beyond their mathematical backing, cryptocurrencies also generally strive to break down the barriers created by the centralization and concentration of traditional currencies using a distributed network to allow for P2P transactions without the need for third parties.

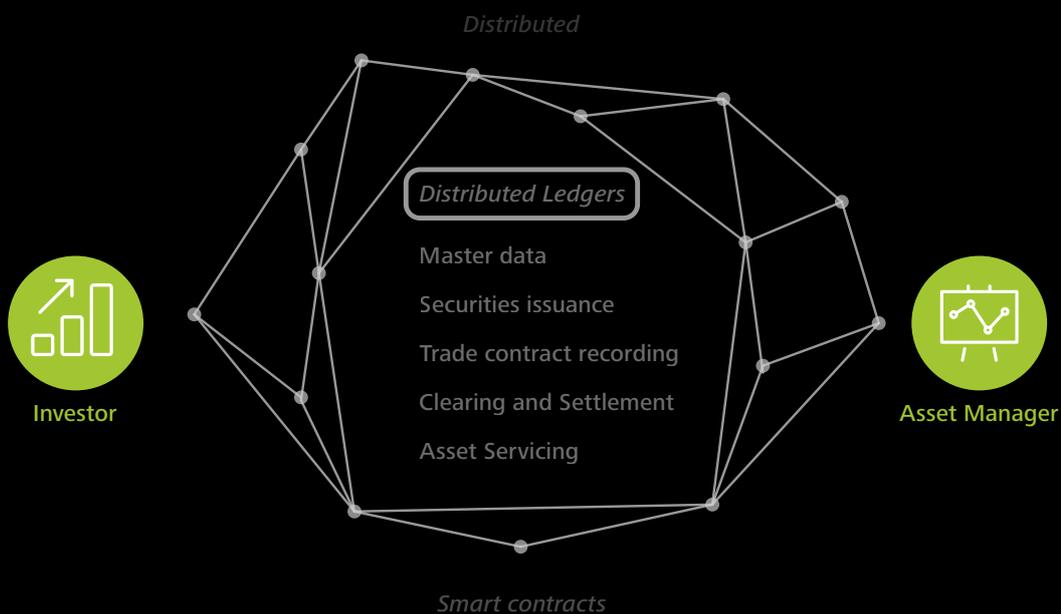
Blockchain also offers a new approach to data management and sharing, offering the opportunity to improve efficiency afflicting the financial services industry. In this new architecture, all participants work from common datasets, in near real-time, and supporting operations are either streamlined or made redundant. Faster interbank clearing and settlement, lower transaction costs, reduced counterparty risk, and increased transparency are only a few examples of the possible benefits of such technology. Blockchain technology can change the financial industry, including much of the fund industry, by facilitating disintermediation through greater transparency and tracking of transactions and assets records, which will certainly be the basis for further innovation and transformation.

Figure 5: Blockchain distribution will dramatically increase processing speed in relation to the traditional model

Traditional Fund Distribution model
(1 - 4 days processing)



... versus blockchain distribution model
(3 - 6 seconds processing)





Many of the current actors in the fund industry are anticipating disruption: transfer agency, custody, fund accounting, distribution and distribution support, clearing and settlement houses, payment system providers (including new entrants), and stock exchanges. Any registered user with the right permission can update and access data on the distributed ledger, with all users directly and independently able to see who has changed what, when, and by how much (see figure 5). With this technology, an asset manager may, in a yet unwritten future, work directly with clients or retailers by offering investment services via a digital “smart” contract, allowing them to manage the distribution supply chain at a fraction of the cost.

We anticipate a transition phase where historical actors will use Blockchain to reshape the investment management operating model. As this technology is coming and will make fundamental changes to the asset management industry, financial institutions and Fintech startups should cooperate to shape together the change of core processes, systems, and infrastructure of the banking industry. We will treat this coexistence of Blockchain and the current ecosystem in Section IV of this document.

Machine Learning or the introduction of Artificial Intelligence in portfolio management

For decades, machine-based artificial intelligence techniques have been the core elements of algorithmic trading and computational finance in general. Further developments in machine learning will help traders automatically select and implement the optimal algorithmic strategy, allowing them to increase their capacity to analyze high volumes of data in real time. This new technology will enable companies to manage their algorithms dynamically with the objective to enhance the operation of trading desks in any market condition.

For example, Rebellion Research and Lucena employ a machine learning-based system to make predictions about the performance of stocks and other asset classes using fundamental, technical, and proprietary data feeds. Further services cover hedge finding, portfolio optimization, event analysis, and back testing. As an example, Lucena also offers—for success-based compensation—model portfolio trades based on proprietary trading algorithms.

In general, the adoption of machine learning methods is still quite low in the sector, although 40 percent of respondents to a survey by MATLAB⁷, were interested to learn more about challenges, potential implications, and risks.



Emerging collaborative trading and digital investments will complement the human advisory model

Seen as one of the most significant shifts in trading, social trading has the potential to open opportunities for individual—including personal—traders and non-experts interested in capital markets. The name derives from the fact that social trading harnesses burgeoning social platforms such as Facebook, Twitter, and LinkedIn. Social trading is based on large transparent networks of individual traders allowing real-time information sharing between members of other trader techniques, strategies, trades, performance statistics, open and past positions, and market sentiment. This provides members' complete information to assess the credibility of the contributors followed via the online network. Social trading empowers individual experienced and less experienced investors to use each other's skills to trade smarter together by offering the opportunity of copying the network's top traders; a concept called cooperative trading. These platforms can also offer the interaction of financial newcomers with the insight of other more experienced traders into the stock exchange and capital markets. Social trading offers a low-cost apprenticeship in investing that can be taken at the individual's own pace and tastes. Recently, a number of social trading platforms have grown in popularity: eToro, ZuluTrade, Zecco.com, Currensee, FXStat, IBFXConnect, and Covestor.

Social trading may enhance the education of investors, since they are complementary to digital education initiatives like <http://www.understandinginvesting.org>, developed by ALFI, which responds to the need of many investors to deepen their knowledge of funds and capital investments in order to help them to understand investment products and set up the right investment strategy.

More specifically for the asset management industry, four main types of digital investments have recently emerged. Direct-channel providers deliver advice over the web, phone, and email, and leave the investment management or product purchase up to the client who has access to all sorts of investment metrics. Online investment management providers offer innovative and low-cost services through the web and mobile channels. Traditional registered investment advisors are looking to build out their analytics and transactional capabilities in an effort to enhance their service offering and to improve their customer experience. Multichannel service enablers are online extensions of established wealth management practices that help further marketing and client engagement.

We anticipate a transition phase where historical actors will use Blockchain to reshape the investment management operating model

Peer-to-peer lending as an alternative asset class, myth, or reality?

P2P lending is a method of debt financing that enables consumers (both individual and corporate) to borrow and lend money via an online platform such as Lending Club or Prosper, without the use of an official financial institution as an intermediary. Loan types can range from debt consolidation, house financing, small business loans, to bridge financing. These P2P platforms have been means for investors to exploit the disintermediation of the banking sector, and even represent a new asset class for investment funds. As an example, Synthesis-P2P offers investors access to both public and private loan programs of Lending Club and is the first fund of its type to be established in the EU.

Both borrowers and lenders can benefit from this new lending system. Borrowers have access to lower interest rates relative to other alternatives, have no hidden fees, and typically the application is simple and fast. P2P lending has substantial room to grow, considering online lenders have only captured a small share of the overall personal loan market (less than 2 percent of the annual US\$870 billion of revenues which are generated by lending every year in the US). Nevertheless the potential to disrupt financial institutions is important, especially as both Lending Club and Prosper alone have seen a 5 year CAGR of 151 percent and 177 percent, respectively, reaching a combined loan origination of around US\$1 billion.

Equity crowdfunding can be considered the riskiest form of P2P lending, where, instead of an income, investors receive a stake in a company, hoping that this stake will grow in value. Equity crowdfunding is more suited to sophisticated investors as the

pre-emption rights and voting rights clauses in the shareholders' agreement needs to be carefully checked. Potential investors compare online pitches and commit an amount toward a fundraising target. If the crowdfunding seeking company fails to raise the target figure, investors get their money back and can invest it elsewhere. There are already plenty of equity crowdfunding companies for startups, such as Angellist, Early Shares, Crowdcube, Fundable, Seedrs, CircleUp, and Crowdfunder.

We can observe asset managers considering P2P as an interesting alternative asset class for asset managers. High annual target yields, low volatility, short duration, and low correlation to other asset classes have generate interests in such vehicles. P2P lending will need to ensure sound risk management as these loans are exposed to high credit default risks and are not very liquid. Furthermore, a fund investing in P2P lending platforms remains heavily reliant on the platform, to perform KYC/AML/CFT credit checks on the debtor which may become under scrutiny of the 4th EU AML Directive. Due to its inherently different business model, the P2P market poses significant challenges to asset servicing providers as well. As an example, fund depositaries will need to adapt their processes and control framework in line with the new regime under AIFMD and forthcoming UCITS V which increased the role and responsibility of the depositary in terms of cash monitoring, recordkeeping, and ownership verification. Luxembourg has already been elected as the domicile of different P2P lending investment funds. Service providers should get ready to on-board this asset class in order to seize this market opportunity.

Fintech further increases the need for strong cybersecurity

In terms of cybersecurity, the investment management industry faces obvious challenges. It manages a formidable amount of capital, private data, and market sensitive algorithms, but firms often face legacy issues on their IT architecture. With increased digital connectivity across the asset management value chain, security risks and points of vulnerability can go unmanaged and undetected, leaving the door open for cyber-criminal exploitation; an example is if a broker trader was compromised, in addition to the theft of sensitive customer data, they could infiltrate other parts of the value chain causing disruption and negative impact on fund values. Beyond the immediate cybersecurity and data breaches, it is quite likely that these incidents will make the headlines in the press and social media thus severely damaging the company's reputation.

The potential risk of damage to reputation of the financial institutions, business operations, distribution channels, investor and market confidence, and the consequential financial risk is significant. Therefore cyber risk management should run throughout an organization to include the active involvement of the CEO and board, similar to the way senior management and employees think about an organization's code of ethics. Now that asset managers are flying to the cyberspace, cyber risk management should be a key component of supplier risk reviews. In the era of "Bring your own device" (BYOD), teleworking,

and social digital investments, every client or even employee is a potential conduit for cyber criminals; cybersecurity education is critical. Companies should start by identifying critical assets—their "treasures"—as part of their cyber risk management plan, then prioritize threats to those assets, considering the assets and threats with business leaders. Furthermore, cybersecurity concerns are increasingly driving regulations. Therefore, it is not surprising that according to our research, cybersecurity is ranked as one of the top priorities for 2016 by investment management actors.

It is key for organizations to implement eCrime and digital fraud prevention, identity and access management, information leakage prevention, penetration testing, and data leakage avoidance. Fintech startups facilitate addressing these cybersecurity challenges by providing specialized tools to improve software quality, robustness, and security and by allowing coders to see exactly what a program has done—by running code backwards as well as forwards and by creating an exact copy of a specific issue as it occurred in production or in test environments, for subsequent offline replay and analytics. For example, ZeroDB provides an end-to-end encrypted database protocol that helps companies to use cloud services without sacrificing control, security, or privacy. Users can run queries over encrypted databases without exposing any decrypted data to the server.

The risk of damage to reputation...
and the consequential financial risk is
significant...cyber risk management
should run throughout an organization
to include the active involvement of the
CEO and board

2.3. Data, data, and more data...but how to make sense of it?

As volumes of consumer data continue to grow exponentially—in 2012, 2.8 zettabytes⁸ of data were created, and this figure is expected to grow to 40 zettabytes by 2020⁹—new technologies have emerged to help process and make sense of it. As a result, Big Data is in the process of revolutionizing entire industries (e.g. retail, consumer goods, and healthcare). With leading investment management firms now investing in building more advanced analytics and data management capabilities¹⁰, the industry is going through the same kind of transformation.

While most investment management firms currently use fairly simple analytics based on management information systems (MIS) and reporting systems to deliver key business insights around client segments, investor behavior, advisor books, product penetration, and training program effectiveness, we expect to see firms develop more descriptive and predictive analytics that combine internal and external, as well as structured and unstructured data (product reviews, commentaries, blogs, social media content, mobile devices, and Internet-of-Things data) to create more complete and insightful client profiles. This enhanced insight will allow firms to assess existing or potential new clients' propensity to purchase various products

and services, their lifetime value, investment style, and risk tolerance. Analytics will also drive product development, identify risks and opportunities in the market, and support marketing in different geographic areas. Our research shows that using analytics to maximize the alignment of wholesalers' territory, without adding resources, can increase fund sales up to 7 percent. Over time, the asset management industry will likely also develop its own brand of algorithmic analytics that supports investment decisions in real time (see figure 6).

To date, the industry has identified only some of the benefits that these new analytical capabilities could unleash. Nearly all core investment management processes, from prospecting and sales to advice and portfolio construction, and from risk management to supervision, could be deeply affected and made significantly more efficient and effective. Lastly, some firms put analytics directly at the retail investors' fingertips, allowing them to create their own empirical research and test their own hypotheses. All stakeholders, including advisors and their management teams, clients, and regulators, could benefit. Not all asset management firms will invest sufficiently to develop these new capabilities, but those that do could create a potential competitive advantage for themselves.

8 One zettabyte is approximately equal to a thousand exabytes or a billion terabytes

9 Deloitte, Big Data—The Next Big Thing in Consumer Engagement, 2014

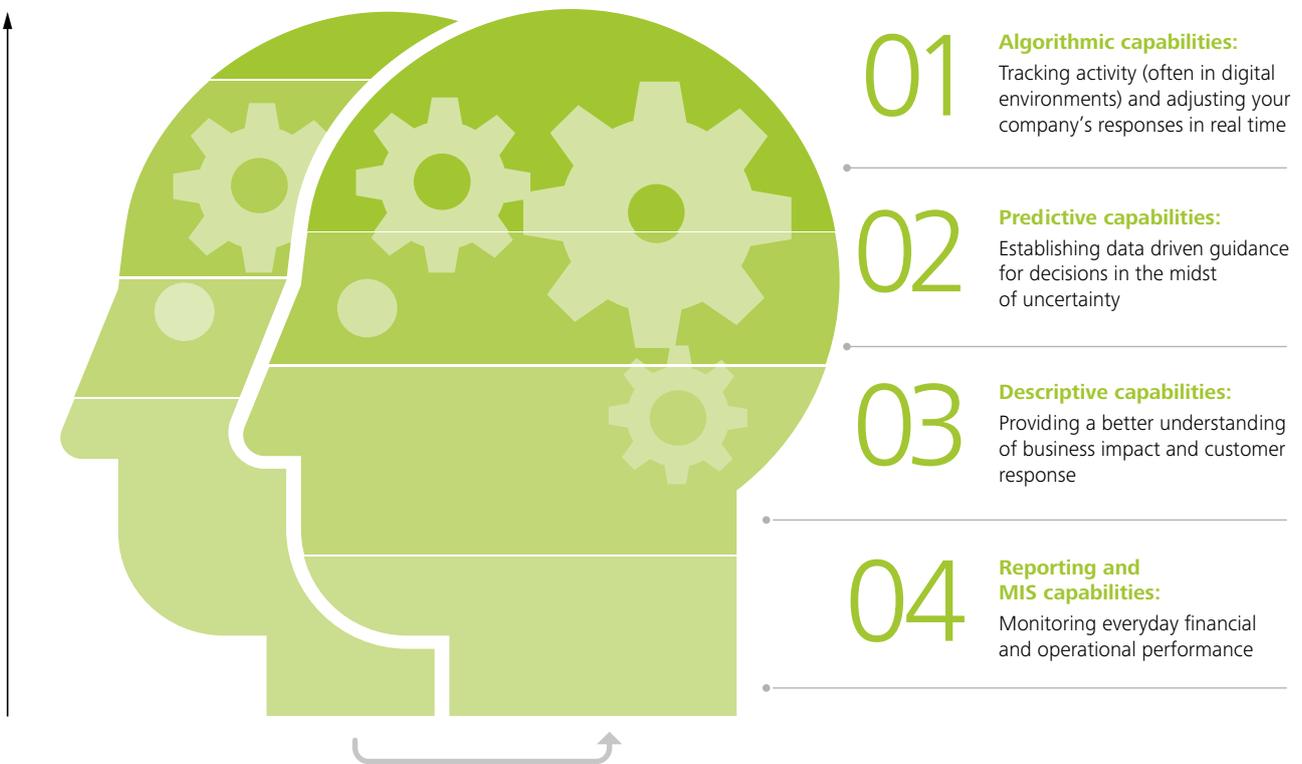
10 Bloomberg, UBS Turns to Artificial Intelligence to Advise Clients, 2014. For instance, UBS recently held an innovation competition in which over 80 vendors demonstrated their methods for extracting meaningful insights from client data.

Figure 6: Algorithmic capabilities are becoming more important

Illustrative

Our perspective: Shifting mix of analytical capabilities in asset management industry

Four types of analytical capabilities



Over time, the asset management industry will likely also develop its own brand of algorithmic analytics that supports investment decisions in real time

3. Fintech and Regulation – a cat and mouse game?

Increasing regulation has put financial institutions under more pressure than ever before. New laws, regulations, compliance guidelines, and directives are imposing stringent requirements to organizations. Our research shows that global financial institutions have paid US\$260 billion in fines since 2009 as they failed to meet these regulations. Beyond significant material damage to the firm in the form of multi-billion dollar fines, potential criminal prosecution may also be faced.

3.1. Regulation of the current ecosystem evolves whereas Fintech regulation is uncertain

Investment management firms have always had to manage activities that are inherently fraught with risk, from running adequate KYC/AML/CFT processes for on-boarding clients to applying suitability standards, to investment decisions and performing due diligence on portfolio managers; from processing trades and other transactions to extending credit to clients, to cite just a few. However, fulfilling compliance requirements and stopping fraud is a difficult and resource-intensive task for today's financial organizations. These institutions process billions of transactions and communications daily, producing ever-increasing volumes of information. Outdated analytics software is incapable of managing these amounts of data and furthermore is unable to recognize irregularities in data that is scattered across multiple data types.

The regulatory environment of the investment management industry has changed rapidly since the 2008 crisis, considerably increasing the regulatory burden on asset management firms. Regulations such as Alternative Investment Fund Manager (AIFM), the fifth Undertakings for Collective Investments in Transferable Securities Directive (UCITS V), Packaged Retail Investment Product (PRIIPS), Markets in Financial Instruments Directive (MiFID), Fourth Anti-Money Laundering Directive (AMLD IV), Capital Requirements Directive and Capital Requirements Regulation (CRD and CRR), European Market Infrastructure Regulation (EMIR) or the Second Market Abuse Directive (MAD

II) are just a few examples of the systemic shift in terms of compliance and risk, capital and liquidity requirements, governance and supervision, conduct and customer, systemic risk management, and trading and market integrity to which investment management actors are still subject.

Fintech is continuously evolving and changing the operating model of the industry. It is still uncertain how the future digital industry will be treated by the likes of the EU Commission, ESMA, EIOPA, or even global regulators such as the G20. This is where we see regulatory requirements consolidating in the next years:

- **Consumer Protection:** Much of the regulatory focus is—and will likely continue to be—centered on consumer protection issues. The concept of putting the customer first and acting in their best interest is a common theme in the guidance issued by regulators. As an example, the main impact of the MiFID II directive, foreseen to enter into application at the beginning of 2018, is the enhancement of customer protection and information. It will establish common minimal standards for fund distribution across the EU, and strongly restrict inducements for independent advisors. We can anticipate that digital investments will be subject to a review of consumer protection regulation.
- **Financial Products:** There is also growing concern around a variety of fund products that may be subject to further market, credit, liquidity, interest rate, or operational risk regulations. Products that raise regulatory concern include variable annuities, retail alternative investments, non-traded real estate investment products, and other structured products. The European AIFM and UCITS regimes are still the predominant product-related regulatory frameworks, whereas Capital Markets Union (CMU) will aim at further promoting long term investment solutions for retail clients. As distribution is becoming more and more Fintech oriented, one can foresee a regulatory shift in this area.



- **Smart Contracts:** Blockchain and ledger technology in general will enable recordkeeping and ownership verification of portfolio transactions or capital movements. Smart contracts will be a key element in this disruption and will drive compliance efficiency, cost reduction, and increase in stakeholder accountability. Governments and regulators should be at the forefront of smart contracts regulation in order to stimulate innovation based on ledger technology.
- **Cybersecurity and Data Confidentiality:** Attacks, both within the financial services industry and others such as retail and healthcare, have kept attention focused on this issue. Regulators want to ensure that controls, governance, and processes at investment management firms are well thought out and are offering a secure environment for investors. From a data confidentiality perspective, the forthcoming General Data Protection Regulation (GDPR) will increase regulatory requirements for companies that process the personal data of EU citizens. For Cybersecurity, the EU Commission drafted the Network and Information Security Directive (NIS), which aims at increasing cybersecurity capabilities, cooperation among the Member States, and ensuring a strong risk management framework, including for actors in the financial sector.
- **Payment Services:** In the current disrupting payment environment, regulation is beside customer behavioral change and technological innovation, one of the key drivers. PSD 2 will have an especially important impact on how the market operates and the shift of the traditional payments operating model. New entrants in the payment landscape, mainly Fintech and other payment initiating institutions (Payment Initiation Service Providers [PISP]) and account consolidation services (Account Information Service Providers [AISP]) will be subject to transparency provisions, liability increases, and the forcing of banks to open their interfaces to these new actors. Payment intermediaries are also waiting for regulators' reaction to disintermediation of payments via P2P platforms. If we compare this to the music industry, P2P has turned out to be a touchy innovation in terms of regulatory intervention where sanction regimes for the providers and end users (e.g. Hadopi law in France, implemented in 2009 and revoked in 2013) are walking side-by-side with innovation.

3.2. Move over Fintech, here comes Regtech

As these growing levels of regulation become increasingly challenging, regulatory expectations are having significant operational impacts on investment management firms; there is a growing need for people-, process-, and technology-based regulatory solutions. In this context, Fintech companies tackle the data and reporting challenges that the industry faces through the development of new, innovative, and agile solutions; the concept of Regtech has emerged. While the term is new, the association of regulation and technology to address regulatory challenges is not. The proposition of Regtech principally articulates around four features: agility, speed, integration, and analytics. A further defining feature of Regtech is that the solutions tend to be cloud-based, providing the following key advantages:

- Cost – you pay for what you use
- Flexibility – customized control over data, access to and sharing of data
- Performance/Scalability – ability to easily add or remove service features
- Security – data encrypted during transmission and while at rest

While the growth of Regtech is promising, it will not solve all compliance challenges, due to the importance of subjectivity and the numerous other factors that must be considered in managing these risks. Areas where Regtech is having an impact include heavily quant-based obligations, information-based obligations, and risk identification and management tools including regulatory watch and screening, legislation/regulation gap analysis, compliance universe, health check, management information, transaction reporting, regulatory reporting, activity monitoring, training, risk data warehouses, or case management.

In the short term, Regtech will help investment management firms to automate the more mundane compliance tasks and reduce operational risk and costs associated with meeting compliance and reporting obligations. In the longer term it will empower compliance functions to make informed risk choices based on data-backed insight about the compliance risks they face and how they mitigate and manage those risks.

For asset management and especially asset servicing firms¹¹, Regtech is the area around Fintech where we can anticipate the most investments in the near future. Compliance officers will need technological support to anticipate regulatory change, identify impacts, monitor regulatory readiness, and perform ongoing controls. We already see actors such as FundResc, silverfinch, Trustey, Trade Flow, Corylitics, FundApps, and even IBM positioning around various areas of the regulatory value chain, such as activity monitoring, management information, training, transaction reporting, data warehouse, health check tools, compliance universe, and gap analysis capabilities.

In this evolving environment, we already see actors of the asset management and servicing industry anticipating Regtech as a game changer to:

- Make the most of data (after having spent money managing it appropriately)
- Conduct research to understand existing organizational regulatory technology
- Ensure the leverage of existing technology investment and not discount the capabilities of powerful solutions which have been proven to overcome operational challenges
- Understand upcoming regulatory data and reporting requirements in line with the next set of regulations having an impact on their business (keeping the overall organization's technology strategy in mind)
- Consult among peers about what they are doing and what new solutions are available
- Embrace technology
- Make a plan and plot the future

11 Deloitte, Reg Tech is the New Fintech—How Agile Regulatory Technology Is Helping Firms Better Understand and Manage Their Risks, 2015

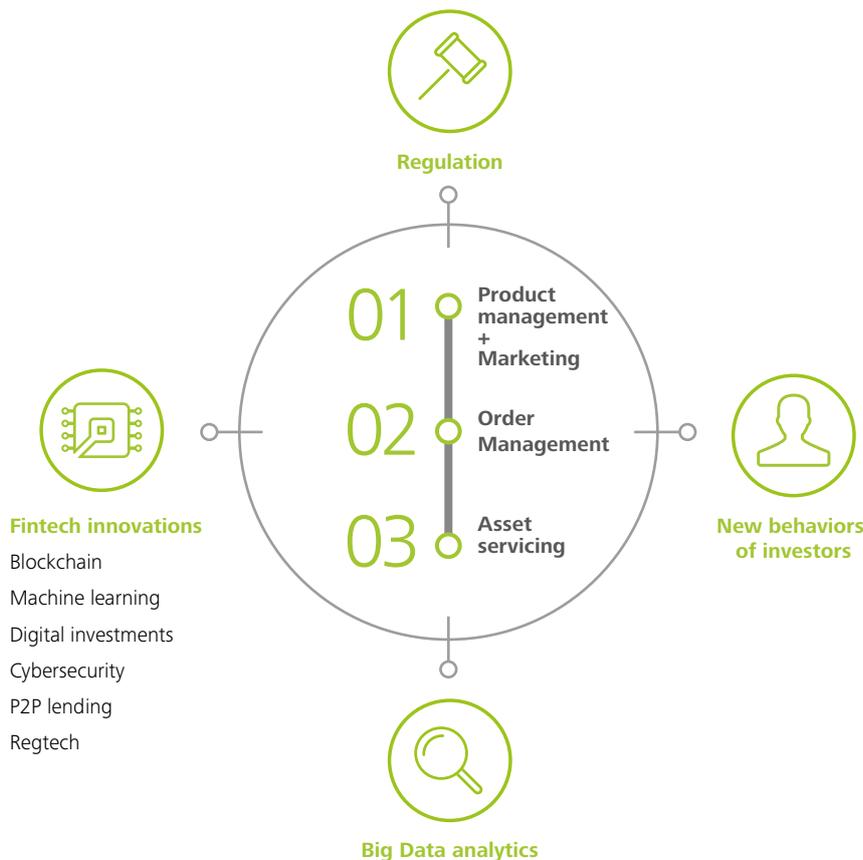
4. Fintech and fund distribution – where is the hook?

Already today, financial headlines are crowded with exciting and inspirational stories as to how Fintech companies will disrupt the financial sector. Yet, it may be difficult to discern the real impact of these news and how this will affect the fund industry in Luxembourg and Europe.

The purpose of this section is to therefore present a status on the current state of play of Fintech for the fund industry, concentrating on distribution

within the fund value chain. The previously described macro-trends will have a direct impact on the front, middle, and back end of the value chain. We decide to focus on the fund distribution related aspects in the following three sections: Product management and Marketing, Trading and Order processing, and Post-trade Servicing, representing an arbitrary split of the fund distribution value chain and are structured in a manner that breaks down the resulting impact of these trends.

Figure 7: Four mega trends are impacting the fund distribution value chain



4.1. Product Management and Marketing: the field of asset managers

Besides portfolio management, product manufacturing and marketing are the two other core functions of asset managers. Europe has around €16 trillion of assets under management (AuM). Assets are managed under discretionary mandates or investment funds; we focus on the manufacturing and marketing of investment funds. Investment funds represent approximately €8 trillion of AuM, of which include retail (households or HNWI) or institutional (insurance, pensions, banks, other). Institutional clients represent approximately 75 percent of the total AuM in Europe¹².

As introduced in the macro-trends highlighted earlier in this document, product manufacturers and distributors will have to adopt a data-driven approach. Asset managers have a major opportunity to create value out of the qualitative and quantitative information about their end investors' behavior and needs. Investors want more proximity with asset managers and are interested in new advisory and investment channels. Blockchain will present major opportunities to reduce cost and increase speed and transparency. The Blockchain disruption will most likely transit to a hybrid phase where the current actors of the investment management ecosystem will have the opportunity to re-think their processes and adopt innovation in their operating model. Regtech will also be an opportunity for actors of the industry to reduce manual low-added value tasks in regulatory compliance processes and focus on subjectivity-driven result analyzing of automated compliance reports. Luxembourg based service providers (custodians, transfer agents, fund administrators, market infrastructure platforms) have the opportunity to use investor, portfolio, and market data and become the asset manager's partner for innovation.

Big data: A buzzword becomes a response to investors needs

As the amount of available client data is growing at an ever increasing pace, it is becoming difficult to harness information quickly and accurately. New technologies can now help to make sense of this data and help facilitate investor segmentation to bring the right product to the right people. In particular data analytics, machine learning algorithms, natural language processing, and behavioral analysis provide the ability to identify customers' behaviors and trends, allowing for more precise client profiles. This ability will be instrumental in developing products tailored to their needs and preferences. Thus it will be a key source of competitive advantage for asset managers.

Looking outside the financial industry, there are exemplary demonstrations of the power of data analytics: For instance, the formidable success story of Netflix is not only based on their video streaming technology but is also driven by the development of their own TV shows based on the analysis of their customers viewing habits.

Significant and tangible uses of Big Data analytics are already becoming apparent in the investment management sphere for fund product managers and marketers. These uses include:

- Collecting opinions and trends in social media which are then used to adapt product development (as well as the corresponding marketing), for example based on natural language processing algorithms. Social Market Analytics analyzes tweets for financial market relevance and determines the so-called "sentiment signatures" for a given financial product. The power of these text analytic tools could be further enhanced by adding face recognition abilities to leverage information contained in images posted on the web.

- Analyzing data on customers' transactions to identify products that present the revenue potential for each client segment, but also to improve advice and risk profiling, and possibly predict future investment patterns. New tools enable fund managers to gain a greater understanding of how their fund distribution performance compares to that of the industry benchmarks, as well as providing access to market and macro-economic data of relevant countries.
- Using Big Data analytics to capture a much more complete description of their customers' overall finances and develop targeted offerings. As an example, KYC records are often stored as regulatory records but could be mined for deeper insight on client profiles.
- Using location data, which can be derived from the geographical position of the client's device, to offer advice, product suggestions, and marketing strategies that apply to the respective country but also to properly perform security and fraud checks.

These emerging financial technologies do not only allow fund manufacturers to more accurately anticipate client needs and subsequently improve sales, but they can also be leveraged to assess the performance and needs of intermediaries. Here, the data typically collected would encompass investment product purchase history by the intermediary, the intermediary market share, country relevant statistics, and distribution patterns.

Transfer agents and market infrastructure platforms have a large amount of client data via their AML and KYC controls. These actors have a major opportunity to develop online information services through standardized tools and highly automated processes in order to assist asset managers to build data analytics on investor's behaviors. Asset managers do not always have the focus to develop such technologies. Service providers can offer white-labelled client and markets reporting tools in their standard service offering.

Transfer agents and market infrastructure platforms have ... a major opportunity to develop online information services through standardized tools and highly automated processes



Historical transactions data: a goldmine for Marketing and Market Intelligence

The EU fund passport for investment funds, firstly installed by UCITS III, has been a key driver of the cross-border fund distribution success for Luxembourg. Despite the EU passport, fund registration and marketing requirements are still not harmonized within the EU countries and still represent a challenge for fund managers. This is even more accurate for non-EU countries which are also major UCITS consumers (such as South America and Asia). Registration deadlines vary from one country to another, pre-contractual and investor information documents are subject to local regulators' marketing rules, and asset eligibility interpretation may vary between the EU and other regional regulators or tax transparency figures. Fund manufacturers need tools to tailor their product and marketing strategy to the different geographic target markets. Historical subscriptions and redemptions per distribution channel represent a goldmine of information to derive trends and adapt asset managers' distribution strategies. Despite D2C trends, asset managers are still heavily relying on distributors and intermediaries, such as banks, independent advisors, and fund distribution platforms, to sell their funds. This results in multiple data sources to produce market intelligence analytics based on historical transactions data. Leading transfer agents are seizing the opportunity to leverage their historical subscription and redemption data in order to offer digital market intelligence tools to their clients. Fintech plays an important role in this relation by enabling the possibility to enhance transaction data bases in order to compile user friendly and digital market intelligence reports, which provide the asset managers and distributors tailored information about their clients' investment patterns per type of client, fund strategies, legal structure, tax distribution figures, and geographical area of investment. Such solutions require a representative sample of subscription and redemption data.

13 EFAMA, 2014

In the US, service providers such as Broadridge can provide market insights of an impressive equivalent amount of US\$9 trillion of mutual funds and ETF transaction data. Case studies show that asset management clients have been able to increase their AuM thanks to an informed product and distribution strategy facilitated by the Fintech solution. Luxembourg transfer agents and market infrastructures should catch the momentum and consider joining forces to create an industry standard market intelligence database, a prerequisite to produce the most complete market intelligence reports for asset managers and intermediaries. If we anticipate a step by step adoption of Blockchain (see section 4.2), transfer agents and fund platforms have a unique momentum to shift their added value services from operational trading/clearing/settlement activities to providing asset managers with market intelligence reports.

Disintermediation: D2C growth for retail and online platforms for institutional investors

As described above, fund distribution still counts a numerous amount of intermediaries between the end investor and the asset manager. New client generations want to engage more with the asset manager, and Fintech innovation offers multiple opportunities to increase asset managers' client proximity. Disintermediation could become a trend in the evolving asset management industry. To properly discern the impact of direct-to-consumer (D2C) distribution channels, we focus on the two traditional investor segments:

- Retail investors, buying funds either directly or via intermediaries, such as retail banks or financial advisers
- Institutional investors, where products are consumed directly by financial institutions or wrapped into other products (insurance product or pension fund). This segment covers almost 75 percent of the market of which insurance companies cover roughly 40 percent, pension funds 33 percent, and other institutions the remaining assets¹³.

Growing D2C interest from retail investors

For retail investors, new technologies offer a unique chance to change the overall customer experience and meet the needs and expectations of the new client generations. We can anticipate an increased change from fund-performance-based advice to goal-based advice (e.g. investing in the objective to buy a car)—this shift is mainly materialized by the advent of robo-advisors. Chapter 5 is dedicated to this paradigm shift.

While today the D2C channel represents a very marginal proportion of sales (our research estimated it around 1.5 percent of European fund assets¹⁴), the channel is becoming increasingly appealing. Indeed, there are examples in recent years, where asset management houses have been able to attract significant assets through D2C online platforms.

In Europe, the UK's D2C channel is one of the largest, stimulated by the implementation of RDR (Retail Distribution Review) that resulted in a sharp increase of execution-only clients. There, D2C online platforms are led by Hargreaves Lansdown with a market share of almost 34 percent¹⁵, followed by Barclays Stockbrokers and Fidelity Personal Investor. Until today, D2C platforms have not yet captured their potential share of the market but changes to tax, savings, and pension legislation may very well influence the end investors' interest in digital propositions and accelerate the D2C growth in the years to come. MiFID II will have an EU-wide similar effect to RDR in the UK and increase the number of execution-only clients that further enhances D2C opportunities.

Intermediaries such as fund online platforms and banks have also moved in the direction of D2C solutions, offering their end clients not only the possibility to buy funds from multiple asset managers (open architecture) but also online reporting about portfolio allocation, investment return, and status vs. investment goal. Even large universal banks are creating online platforms for their clients containing account information, market intelligence, and online trading capabilities.

Asset managers do not always have the focus to develop such technologies. Service providers can offer white-labelled client and markets reporting tools in their standard service offering

14 Team Analysis, 2015

15 Ignites Europe, 2014

Having in mind the needs of the new generations in terms of social interactions, information and educational material, and attachment to ethical or social causes, D2C platforms should have various features:

- D2C trading aggregation platform to facilitate any transactions and connect users to dynamic product information data and news
- Education platform to facilitate learning and bring participants together to share insights over time
- High level of security and user friendliness of the platform (e.g. simple registration)
- Account maintenance directly by the client (e.g. update personal details)
- Social platform to facilitate interactions within the community and to foster trust-based relationships as participants can realize more potential by working together

Transfer agents, market infrastructure platforms, and fund administrators have a large amount of clients, markets, and portfolio data. Fintech offers these actors the opportunity to develop enhanced D2C platforms for their asset management clients in a white labelling mode. We already see asset servicing actors responding to their clients' need for secure messaging, document repositories, paperless statements, and market insight.

Institutional investors need online platforms to improve their client service

Customer experience improvement is not limited to retail investors, as a growing number of robo-advisor platforms are beginning to also offer their services to institutional clients.

B2B robo-advisors offer similar types of platforms to institutional intermediaries in order to attract and serve clients more efficiently. As an illustration, SigFig, first active in the B2C area, now has aggressively targeted the B2B segment. Their aim is to power financial institution with a SigFig-like white label robo-advisor platform that will include seamless online on-boarding of clients, risk assessment surveys, and automated portfolio management. The B2B model for robo-advisors is promising as it requires significantly less client acquisition than D2C models.

Institutional clients also crave innovative solutions to foster close relationships with asset managers, ensuring the sourcing of appropriate assets. New investment strategies and more complex portfolios require transparent data and advanced risk analytics from asset managers. For instance, insurers, according to a State Street Insurance Survey, "need real, prime data on the composition of the portfolio—how much is in cash, how much is settled, and what the current portfolio looks like. They want tools that allow them to view or model different scenarios and perform 'what-if' types of analysis. Most importantly, they want it online now, not when a report is produced."

Asset managers can play an important role in helping their institutional clients keep a leading edge by providing sophisticated and powerful models required to evaluate the asset/liability management implications of the proposed investment strategies and to help fulfil regulatory as well as internal requirements.

New investment strategies and more complex portfolios require transparent data and advanced risk analytics

Intermediaries and institutional investors expect efficient document management tools, customizable reporting and simulation tools (e.g. scenario modelling for portfolios), as well as data tools to support the multi-asset class products required by sophisticated investors. As for the D2C space, Central Administrators and Custodians have an opportunity to use their client and portfolio data available in their warehouses to add an analytics layer and offer their B2B intermediaries technical solutions to asset managers and institutional investors on a white label mode.

In light of the numerous regulatory reporting requirements, regulations like Solvency II, PRIIPs, IDD, MiFID II, to name the most stringent ones, bring new challenges to institutional fund investors forcing them to rethink and adapt their business practices.

The difficulty of market players to adapt is well illustrated by the recent decision taken by a Danish pension fund for “pharmaconomists” to outsource 100 percent of its asset management to a leading US manager. According to the pension fund, “in addition to providing a stable high yield for its members and reduce costs, the deal would help them to meet the increased reporting requirements laid upon them by the authorities.”

These operational impacts, taking roots from regulatory evolution, call for technology based solutions. In this context, Regtech companies tackle the data and reporting challenges that the industry faces through the development of new, innovative, and agile solutions. Some Regtech organizations have already developed solutions based on above-mentioned principles—to name a few:

- **Silverfinch** creates connectivity between asset managers and insurers through a fund data utility in a secure and controlled environment. It supports insurers in their Solvency II obligations by providing fundamental look-through data to drive regulatory reporting and a single centralized source for Pillar 3 reporting and Pillar 1 asset data requirements—access to timely data at source.
- **AQmetrics** offers an innovative modular solution for Risk Management, Data Management, Analytics, and Reporting through a holistic software solution that meets existing, evolving, and emerging financial regulations. The software currently covers financial regulatory risk management and compliance regulations such as AIFMD and UCITS risk management, EMIR reporting, AML, KYC, and name screening.

It is key for the Luxembourg based funds service providers to develop Regtech capabilities in order to help institutional investors to comply with new regulations. In addition, these providers also have the scale, processes, and technology to offer Business Process Outsourcing (BPO) solutions to institutional investors. Managed services offered by asset servicing providers are more and more popular and offer institutional investors and asset managers the opportunity to outsource operational, finance, and technology infrastructure processes.



4.2. Fintech is a game changer for asset servicers

In the previous section, we have mentioned the opportunities for Luxembourg based asset servicers to deliver Fintech solutions for their clients related to investor segmentation, market intelligence, and disintermediation. Now the focus will move to the middle and back end of the value chain and explore opportunities for the service providers to shift to a Fintech driven operating model, giving their clients the opportunity to focus on their core activity: creating, managing, and selling funds

Trade processing: Innovation has not started with Blockchain

Within the trading and order processing value chain, several processes will be impacted by disruptive technologies. Automation processes are looking to drastically overhaul AML processes and order aggregation and processing, with the aim of increasing transparency, speed and reducing costs.

Digital passports make order processing more efficient and less risky

A digital passport is an online-based vault that allows investors to store all the information that is required to make financial transactions, ranging from payments to account openings. A project was recently launched in the UK to test the digital passport for retail investment products, in which 50 companies including BlackRock, Invesco Perpetual, and Schrodgers participated.

Dependent upon its success, implementation could expand to Europe or even globally, would be applicable to banks, insurers and asset managers, and allow identification across all financial services firms.

In an ideal world where every actor could immediately identify via a digital passport, both retail and institutional investors could benefit from faster account opening and transaction times. The overall aim of the digital passport is to increase transparency in the market, enabling transfer agents to more easily assess the following information about their investors:

- Compliance with regulation, e.g. AML/KYC checks
- Eligibility checks, e.g. client acceptance, investment restriction, compliance with local sales and marketing rules
- Suitability and appropriateness checks, e.g. information on investors

With this information being available immediately, and the aforementioned checks performed ex-ante, order processing would not only become less costly due to fewer mistakes related to “mis-selling”, and fewer



non-eligible transactions booked in the fund, but would also speed up the order identification process (e.g. investor/distributor/intermediary) and lowers overall risks for the transfer agent (TA)¹⁶.

A clear application of the digital passport could be within the centralization of orders by intermediaries via a single omnibus account. As the demand for funds and the number of investors is rising, the industry has seen an increasing importance of intermediaries, such as platforms, custodians, or iCSDs, who collect orders, centralize them, and then open an account at the transfer agent. This consolidation of orders makes it difficult to identify and assess the ultimate investor/distributor. The transfer agent is only able to check the consolidated position of the intermediary, not the position of each investor. This translates into a settlement risk of the transaction and the possibility of redeeming shares that are not actually owned by the investor. Here an excellent use for a digital passport could exist, in order to substantially mitigate settlement risk; intermediaries could open an account at the transfer agent faster and offer information about every individual investor behind the single account via a digital passport. Following the example of the UK, Luxembourg could also launch an industry initiative to test digital passports in the asset management industry.

Firstly, we will describe the Fintech innovations that will facilitate these managed services.

Online KYC registries create economies of scale

New technologies have emerged in the recent years to make the on-boarding process of clients easier. For instance, certain utility providers (including Thompson Reuters, Swift particularly for Luxembourg) have recently launched mutual online KYC registries. Such models entail collecting all customer information in a single space that can in turn be mutualised between financial institutions. Other KYC utilities have also come online, such as Trunomi in the UK that propose a mobile app for customers to maintain KYC-compliant identification documents from their mobile devices. Regulators also allow new methods of on-boarding clients: the Swiss Financial Market Supervisory Authority (FINMA) facilitates video and online identification. Then other tools based on machine learning techniques and behavioral analysis can help in the decision process to accept/reject/escalate new account opening requests by proposing real-time verification models and risk scoring. Such tools (for instance proposed by Feedzai) can be extended to AML processes further down the line: for instance payment and transaction fraud detection – here also new technologies could be used to analyse investor's transaction patterns, identify risks and score transaction to help you decide whether to raise an alarm or not.

How long do we still have to wait for an efficient order processing model?

For those Millennials readers who never used a fax machine in their lives, this may come as a shock: A substantial proportion of fund orders are still being transmitted by fax and processed manually. EFAMA estimates that at the end of 2014, 17.4 percent of the 6 million fund orders in Luxembourg and Ireland were still processed manually. Fund processing improvement initiatives exist in Europe since the early 2000s.

Technological solutions to automate order placement, confirmation, fund transfer, and reconciliation exist; for an example, Luxembourg-based Numen Europe have developed very advanced technologies that not only recognize the characters of the faxed instructions, but merge them, analyze their meaning, and control their content in order to conclude with an ordered instruction that can be directly interfaced with the transfer agent system.

Furthermore, to facilitate clearing processes that are commonly performed either directly via the transfer agent, or via an intermediary, additional digital trading platforms could be put in place. Taking an example from post-trade servicing, T2S, a network aiming to improve interactions between CSDs and other participants requiring settlement services, could be built on. If all players involved in the clearing could connect via a digital trading platform, it would optimize the entire distribution value chain in terms of speed and costs¹⁷.

Luxembourg market infrastructure providers like Clearstream Banking, Allfunds, or Fundsquare offer a suite of Fintech enriched services supporting the order management needs of fund houses and intermediaries. They provide a gateway to global funds solutions ranging from order routing, centralized delivery versus payment (DVP) settlement, safekeeping and asset servicing to collateral management. This allows customers to benefit from a streamlined process regardless of the variety of markets and investment funds involved. The infrastructure provides a single entry point and standardized process for all fund transactions—from mutual funds to exchange-traded funds (ETFs) and hedge funds—and one fully-integrated set of reports and connectivity media. The scope of the service now includes virtually every fund from most fund jurisdictions.

Luxembourg transfer agents and market infrastructure platforms shall continue their ongoing effort to create an industry standard in terms of automated fund order management, similarly to NSCC in the US. Blockchain and its distribution ledger technology offer quick settlement at low cost with transparent and auditable trails. In longer terms, Blockchain could disintermediate order management and create a direct relationship between the end investor and the asset manager. In short- and mid-term, Blockchain represents an opportunity for order management providers and transfer agents in Luxembourg to review their operating model and create an efficient fund order management model which would benefit the entire industry. It is although difficult to imagine that there will be a universal fund order management Blockchain model. Natural R&D patterns would lead to think that we will see the co-existence of different order management models using various Blockchain facilitated models.

Post-trade and asset servicing are not only about Blockchain

Blockchain can provide new possibilities in terms of client data archiving (e.g. recordkeeping of transactions and investment preferences), especially within asset servicing. This data, stored within shared ledger technologies, will enable asset managers to correctly profile their investors and propose products based on their previous transactions.

In addition to order management described above, Blockchain could disrupt the fund asset servicing model. If stretched to the maximum, Blockchain could automate AML/KYC/CFT trade confirmation, register maintenance, corporate actions processing, and reconciliation processes, performed by a smart contract associated to the fund. This technology is remarkably disruptive for the existing ecosystem and may take a considerable amount of time before it becomes the standard. We expect a transition via a hybrid model where transfer agents continue to be a part of the fund subscription process. The investor would initiate the transaction by sending a subscription request to a smart contract interacting with the custody bank, then AML/KYC/CFT checks and verifications would be performed automatically by the smart contract. The Net Asset Value would be computed based on the existing records via algorithms

and sent back to the smart contract which, after performing automatic quality checks, issues new fund shares and sends the information to the custodian bank. Finally, the investor's bank and the fund's bank perform the settlement of the transaction via the transfer agent.

Transfer agents and order management platforms should seize this Blockchain transition opportunity to offer their asset management clients and their distribution intermediaries a new way of thinking about fund servicing while still being part of the ecosystem. Cost reductions and timing efficiencies via automated processes, and reduced settlement time and increased transparency via the record ledger offered by Blockchain will certainly capture the attention of executive decision makers. Transfer agents are welcome to participate in the development of Blockchain proof of concepts in this area. Industry initiatives actively followed by the ALFI Fintech working group are already emerging.

Why use precious technology and labor to perform reconciliation?

Cash/trade reconciliations are an issue on both the assets (portfolio transaction) and liabilities (capital movements) sides of fund operations. These processes are to ensure that all securities and cash orders are matching incoming and outgoing cash movements, and are also used to ensure that from a portfolio side, the securities records between the fund administration and custodian correspond. Regarding capital, the correspondence of records must be ensured between transfer agents and central administrators. Despite industry focus, those processes are still labor-intensive and carried out in legacy reconciliation systems. Certain Fintech companies (e.g. Duco) provide solutions to improve such processes by providing web-hosted services. These solutions enable an easy set-up by the asset servicer, easy access to the servicers' IT, automated data upload capabilities, data access directly on the desktop browser, exceptions investigation, and natural rule language-based data filtering and aggregation.

Luxembourg asset servicing must continue to innovate in parallel with Blockchain

As mentioned above, we expect a transition phase in asset servicing before the Blockchain disruption. In the meantime and after the successful implementation and achieved synergies between TARGET2 and T2S, there is room for even further integration and process improvements (specifically in the areas of payments, securities settlement, and collateral). Asset servicing firms have developed Fintech capabilities in terms of payments and various back office automation. Besides disruptive Fintech like Blockchain, we also see global asset servicers partner with modernizers (e.g. analytics, big data) and enablers (e.g. back office automators, Regtech)¹⁸.

Luxembourg has a key role to play in this direction as the world's number two fund domicile. Over 200 transfer agents, fund administrators, and custodians are located in Luxembourg, in which asset servicing is the core activity. In order to appropriately position in the disruptive ledger model, our local actors must join forces with modernizers and enablers¹⁹ to locally drive the change in asset servicing rather than wait for actors to implement global solutions offered by large actors head offices. Our market players need to continue their efforts in innovation in order to enhance ongoing cost savings, automatic detection of anomalies in the operational processes, streamline exceptions processing, increase STP, and facilitate regulatory compliance.

17, 18 ECB/Eurosystem, Eurosystem's vision for the future of Europe's financial market infrastructure, 2016
19 ING – Fintech Banking, 2015

Managed services: Pack your fund services capabilities in a box!

We have described in this document the major opportunities for central administrators, custodians and specialized service providers to position in different Fintech solutions for clients and their intermediaries.

Local asset servicing actors are already positioning on various innovation aspects listed above. Online KYC, order aggregation capabilities, asset servicing, reconciliation, settlement and collateral management are the most visible areas where asset servicing actors are positioning. As described above, Fintech plays a key role in these aspects.

We propose to go one step further in the utilization of Fintech solutions to create one-stop-shop managed services in white label mode, allowing investment management firms of any size to access state of the art solutions. If we focus on fund distribution aspects, the main opportunity resides in Fund Servicing Support managed services.

Clients, markets and products data is spread across fund administrators, transfer agents, custodians, depositaries and asset manager or intermediaries' middle offices. Fintech offers the opportunities to mutualise data and create automated and user friendly interfaces between these actors and a one-stop-shop fund distribution support service. These interfaces are the gateway to a fully-fledged fund servicing support managed service.

Asset servicing actors can leverage these interfaces to build solutions for very manual intensive processes. Such niche processes could be; fund set-up and liquidation services, fund distribution support, operational tax services, audit trail, KYC and AML and Regtech. One of the key benefits of such Fintech driven managed service would reside in the simplified and unified data exchange with the managed service platform.

Fund set-up and liquidation

Fund set-up and liquidation include processes include the preparation of the fund's mandatory materials (prospectus and articles of incorporation), review of the agreements to be concluded with the main Luxembourg services providers (custodian bank and central administration agent), assistance and coordination regarding the authorization process of the fund with the CSSF until receipt of a visa stamped issue document, incorporation of the Fund (excluding registration, notary, and publication fees), and ongoing regulatory support in the structuring phase and launch phase. In order to offer these services, the managed services platform must be able to:

- evaluate and realize illiquid assets
- continue the hedging of assets and share classes
- distribute portfolio assets in kind
- distribute portfolio in kind to another fund in exchange of new shares of the fund
- collect bids and sell illiquid assets on the secondary market
- perform statutory filings and reporting (FATCA, AIFMD, CSSF)
- file Aberdeen and Double Tax Treaty reclaims
- participate in class action claims
- manage foreign litigations in order to recover value following forgery, cherry-picking, or assets misappropriation
- settle on claw-back claims
- manage and realize private equity and real estate assets
- perform fraud investigations, asset recovery, and provisional liquidator engagements
- prepare and file VAT returns

Fund distribution support

A fully-fledged fund distribution support requires the ability of the managed services platform to provide market intelligence, tax and regulatory watch and hotline support, fund registration support, pan-European tax figures calculation and certification, risk metrics (e.g. Solvency II lookthrough), regulatory reporting (e.g. AIFM reporting), share class hedging, and client reporting. In order to offer these services, Fintech is required to automate market and regulatory watch, create intelligent repositories, manage data flows, and create scalable processes and automated data quality controls.

Operational Tax

Pan European tax regimes are not yet harmonized. Luxembourg fund distribution requires extended knowledge and tax watch on domestic withholding tax, taxation of interests, taxation of REIT's, local market practice, access to tax treaties, taxation of ADR's, transactions taxes, procedural information, taxation of dividends, taxation of capital gains, and tax agency. Luxembourg investment funds are distributed in over 50 countries in the world, and tax watch at the local level is key to offer a managed services platform. To focus on core services such as being the single point of contact for the asset manager, assure quality, and follow tax regulation, Fintech is key to automate labor intensive reconciliation and data validation.

KYC/AML/CFT

Fintech innovation in online KYC offers major opportunities to automate processes and include this activity in the managed services fund servicing platform. Technology is the enabler for collecting, screening, evaluating, and monitoring KYC and AML data. Without this enabler, it will become a real challenge for the managed services platform to perform more added value services and client support around KYC and AML.

Regtech

As mentioned in Section III of this document, Regtech is the new trend to automate burdensome, repetitive, and low-added value regulatory processes to help asset managers comply with regulatory requirements. The managed services platform can position on Regtech capabilities such as risk management figures, synthetic risk and reward indicators for pre-contractual documents, transparency reporting (e.g. Solvency II lookthrough, VAG, FTK, KSA), product-related regulatory reporting such as the AIFM reporting and transactions reporting (e.g. MiFID TAF reporting, EMIR, SFTR, MAD/MAR), and regulatory health check tools case management tools, and risk data warehouses. A fully comprehensive Regtech enabled reporting framework could provide Luxembourg with a competitive advantage over other countries.

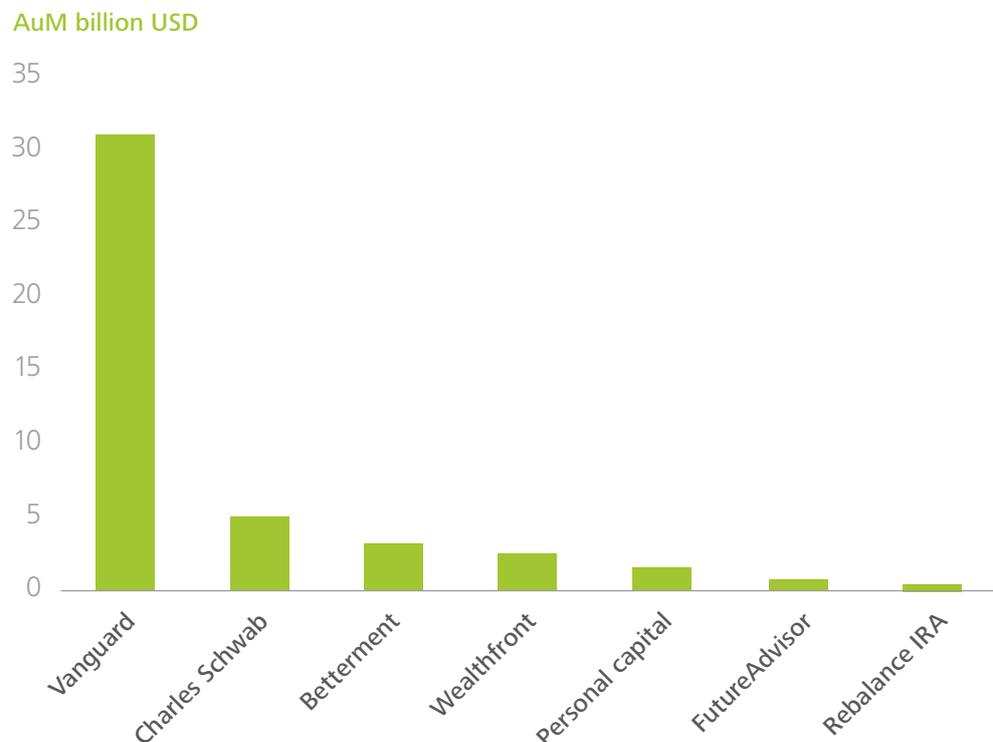
5. Robo-advisors will change the face of distribution

Over the past few years, a new form of advice has emerged with a new breed of asset management firms starting to gather retail assets away from incumbent players. They provide automated, algorithm-based portfolio management advice to the client without human financial planners or advisors. Some firms have also pioneered tools and methodologies that generate real-time trade and investment recommendations tailored to individual investors' history and preferences. This phenomenon clearly emphasizes the shift from human-based, person-to-person advice to science based, model-driven advice. They have been coined the term "robo-advisors." Clients can access robo-advice through rich, digital user interfaces for very low fees (on average 20 bps and sometimes even free²⁰) and allow distribution of funds directly to retail clients.

5.1. Robo-advice (2016): A small step in AuM, but a giant leap for AM

Robo-advisors are growing in popularity and have gained traction in the marketplace, but still have quite a bit of room for growth. Our research has shown that in the US, around 200 robo-advice firms manage over US\$45 billion in assets as of January 2016, with some of the large corporations like Vanguard boasting US\$31 billion and Charles Schwab more than US\$5 billion (see figure 8). New entrants like Wealthfront and Betterment manage each over US\$2.5 billion and continue to grow at a fast pace. While significant, the total AuM managed by robots represent less than 0.1 percent of the US\$33 trillion retail investable assets in the US. However, Deloitte predicts that by 2025, 10 to 14 percent of US retail AuM (US\$5-7 trillion) will be captured by robo-advisors.

Figure 8: Vanguard holds the most assets between US robo-advisors in January 2016



Robo-advisors are also now entering the European market. The UK market, due to its inherent similarities to the US²¹, is the first to see new entrants such as Nutmeg and Moneyfarm. Regarding the French market, the launch of robo-advisors is still recent and they are not mature enough in order to draw any conclusions on the pricing strategies. Other startups are still waiting for their regulatory approval and do not want to communicate about their pricing policy²². However, concerning the “early birds”, it can be observed that Yomoni, which obtained the first AMF agreement as a management company in August 2015, and Advize are to apply higher annual fees than their US counterparts (it is noteworthy that both of these French actors are offering their products in life insurance wrappers).

Regardless of whether incumbents or newcomers will win the robo-advice AuM race, it is certain that the face of distribution has already changed.

5.2. Robo-advice is shaking the traditional asset managers

“I think the robo-advisor phenomenon is a positive industry disruption that will ultimately push down fees and push out weak advisors.”²³

The emergence of robo-advice is an opportunity for traditional asset managers to re-think their business model and create a brand new user digital experience. Adding robo-advice capability fundamentally changes the way that products are sold. Not only is it a way to target new type of clients and generate new sales, it is also a way to obtain more detailed information about the clients and therefore propose more adequate services.

“I think the robo-advisor phenomenon is a positive industry disruption that will ultimately push down fees and push out weak advisors.”—
Cullen Roche – Founder of Orcam

21 Deloitte, 10 disruptive trends in Wealth management, 2015

22 Team Analysis, 2015

23 Cullen Roche – Founder of Orcam

There are a number of reasons why robo-advisor services are attractive for many investors, in particular generation X and the Millennials who should account for 50 percent of total AuM by 2030 according to our research:

1. The significantly lower fees (and in some cases zero fees) compared to traditional fees have broadened the market for advice to include the significant portion of untapped wealth in the US. More mass market customers can now afford advice that is tailored to their unique needs (figure 9).
2. On top of competitive prices, robo-advisors are building on their direct interface with clients and have developed cutting-edge technology platforms, offering a unique client experience (mostly inspired by what the digital revolution is offering to its clients in retail banking). Robo-advice plays into the common preference of a new generation of wealth (i.e. more in control, digitally savvy, anywhere/ anytime, plain and straightforward language, etc), and offers three crucial disruptors:
 - a) Goal-based investing. To meet investor needs, funds and their advisors should shift to holistic, goal-based advice and measure performance based on achieving clients' goals within agreed timeframes rather than beating market benchmarks.
 - b) Real time data and simulation displays. Once the risk and reward profile questionnaire is answered, such solutions may display, on a real-time basis, an asset allocation proposal based on the risk tolerance of the investor and on the purpose of the investment (taxable or retirement investment).

c) Automated algorithm-based portfolio allocation and investment recommendations.

3. Millennials and not-so-affluent investors are not the sole investor segments to use robo-advisors. For instance, at Charles Schwab (the second largest known robo-advisor in the US with AuM of US\$5 billion) 15 percent of investors have at least US\$1 million at the company²⁴.
4. Some firms are already investing heavily in personal surveys (demographics, risk, goals, etc.), Big Data, and advanced analytics, potentially broadening the range of advice that can be developed through algorithms and delivered digitally. In other words, robo-advice can become more personalized and specific over time, going beyond portfolio allocation and plain vanilla investment products²⁵.
5. Technology has lowered barrier to entry for new firms. Both financial and non-financial service firms can take advantage, bringing new levels of competition and innovation to the industry²⁶.

Note that a common argument against the robots is its inherent limitation in relation to human-based advice. A good example is the understanding of risk tolerance. Most robo-services determine risk perception and financial goals from a few questions upon setting up an account, an infinitely less nuanced understanding than that created through a relationship with a human advisor. With tolerance of risk changing constantly, those with large sums of money invested, whether it is their own or on behalf of others, may find the less specific robo-advice unsuitable²⁶.

As Red Adair once asserted: "If you think it's expensive to hire a professional to do the job, wait until you hire an amateur."

Robo-advice pricing guide	
Betterment	0.15 percent to 0.35 percent of assets
Charles Schwab	Free (Schwab does make money when it uses its own funds in the portfolios)
Future Advisor	0.5 percent of assets
SigFig	US\$10 per month
Vanguard	0.3 percent of assets
Wealthfront	Free for the first US\$10,000; 0.25 percent after that

5.3. Four methods of getting robo-advice capabilities²⁷

1) Develop in-house solution

One way traditional advisors can effectively respond to the robo-advice opportunity is by developing an in-house platform for both existing clients and new investors. This enables advisors to promote it as a low-cost alternative to traditional advice services and provides the flexibility to offer varying functionality to help attract new investors. However, firms should consider the costs of developing such an in-house solution, the effect these business-to-consumer capabilities have on the broader organization, and the potential risks of channel cannibalization²⁷.

Industry Example: Vanguard officially rolled out their hybrid robo-advisor service in May 2014, with an asset requirement of US\$50,000. The hybrid service combines computerized asset allocation and rebalancing with access to human advisors over the phone and via videoconferencing.

2) Partner with an existing robo-advisor

Partnering with an existing robo-advisor can enable traditional firms to react quickly and typically has lower costs and limited organizational changes. It can also deliver complementary and promptly-realized advantages through process automation, cost reduction, and the attraction of new customers. By partnering, traditional advisors tend to avoid many of the costs and risks inherent in implementing a customer solution into legacy systems. However, partnering can also come with potential risks, including impeded flexibility, a symbiotic reliance, and conflicting future objectives.

Industry Example: Betterment announced a partnership with the Institutional Wealth Services division of Fidelity in October 2014 to provide Independent Registered Investment Advisors (RIAs)

access to Betterment's online tools to help their clients set financial goals and establish ETF-based portfolios. Note that after a year-long collaboration with Betterment Institutional, Fidelity Clearing and Custody announced that it will wind down that relationship by the end of 2015 and set up its own robo-type platform for advisors. The two entities will now compete for advisors' business.

3) Acquire a robo-advisor

When acquiring a robo-advisor, firms should identify a target firm based on a growing customer base, opportunities for further growth, technology capabilities, and the potential "fit" within their organization. While this could be an accelerated route-to-market for traditional investors, acquisition has its risks. How the firm is able to effectively integrate the acquired platform within its existing infrastructure will be key.

In August 2015, FutureAdvisor was acquired by BlackRock, the largest asset manager in the world. In January 2016, Jemstep was acquired by Invesco, another one of the world's largest asset management firms. Note that Jemstep itself moved from being a consumer-facing robo-advisor to being a robo-tool for investment advisors.

4) Licence a robo-advisor

Perhaps the easiest way to get a robo-advice capability is to license a platform provider.

For instance, a new white-label robo-advisor platform, ASI Digital Advisor by Advisor Software, was introduced in February 2016. Another example is Wealthobjects, created in 2014. Typically, such platforms allow the management of model portfolios, follow goal-based portfolios, omni-channel mode of communication, and automate processes such as client on-boarding and rebalancing.

²⁴ Bloomberg, 2016

²⁵ Deloitte, Robo-Advisors – Capitalizing on a growing opportunity, 2016

²⁶ The Market Mogul, 2016

²⁷ Deloitte, Robo-Advisors – Capitalizing on a growing opportunity, 2016

5.4. No avalanche of regulations on robo-advisors (for now...)

Today, a certain amount of regulatory uncertainty surrounds robo-advisors. The key value proposition of robo-advisors (i.e. offering personalized investment advice), is an area currently heavily regulated for the equivalent human advice. One could assume that today robo-advisors should be regulated under the same regulations applicable to human advisors. This raises many questions, to name a few²⁸:

- How can the “best interests” obligation be satisfied? Can an automated tool determine whether the information provided by the client was incomplete or accurate in the same way that an advisor may be able to?
- How can the appropriate advice obligation be satisfied? Can an algorithm do this on its own or would it need to be reviewed by a human adviser?
- Who needs to meet the training requirements? The creator of the algorithm?

However, the future may hold an increased amount of regulations, specific to advice provided by robots.

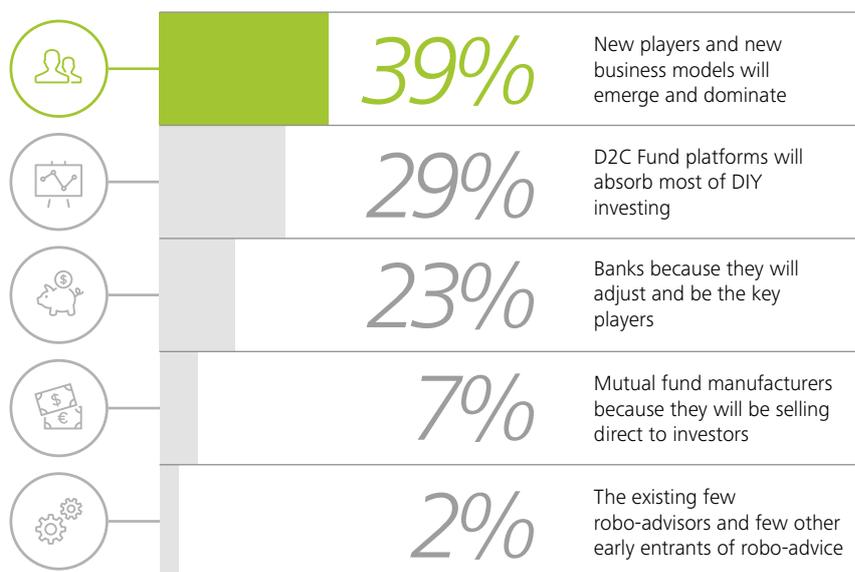
5.5. The future of robo-advice

Despite it only being the beginning, fund managers should react sooner rather than later as robo-advisors present the potential for significant market disruption. However, science-based advice will not fully displace human-based advice, nor are robo-advisors likely to disintermediate financial advisors in a major way as described in a recent study performed by Cerulli Associates (see diagram). Rather, in a not-too-distant future, science-based advice may draw in customers who could not previously afford a personal advisor or were not comfortable with human-based advice—potentially expanding the advice market.

The majority of European robo-advisors will most likely be bought out by current players in the market that are keen to stay ahead of the Fintech curve so as to not be caught off guard. Incumbents will find it quicker and simpler to acquire an existing robo-advisor than to develop one internally.

Winning advisory models will combine elements of the science and human-based advice models into a hybrid model. The balance between the two will likely vary across investor segments (figure 11) based on

Figure 10: New players will benefit the most from the growth of digital/online distribution



Source: ALFI and Cerulli Associates, 2016

investors' ability to pay for advice and the complexity of financial needs and financial background²⁹. Furthermore, investors are likely to continue to seek personal advice for needs that reach beyond investment (such as tax and estate planning) or involve emotional issues (like securing health care for elderly parents³⁰).

5.6. Does Luxembourg have opportunities in the robo-advice market?

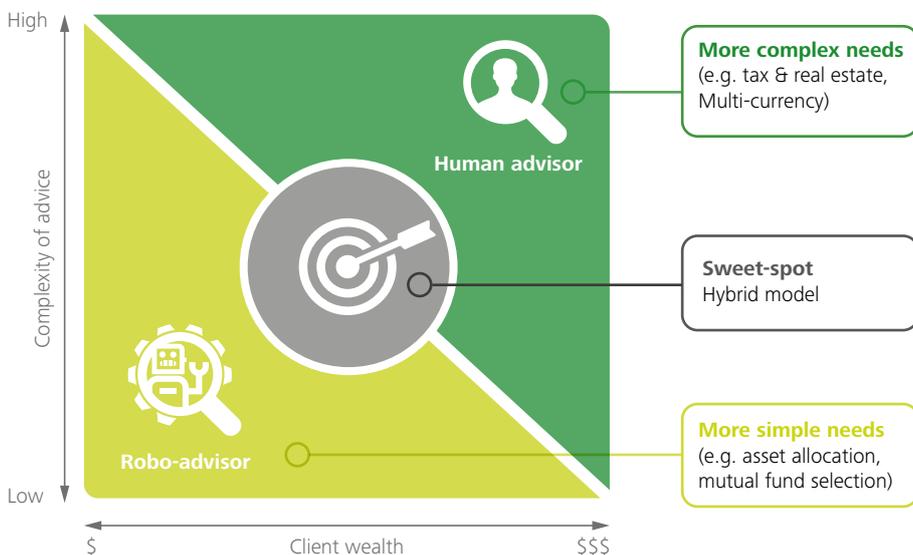
Luxembourg possesses the necessary building blocks to play a major role in the robo-advice market. Many wealth and investment management actors reside in Luxembourg. These actors have a considerable portion of their clients investing via execution only services, one of the key drivers of robo-advice. Many of these actors are not necessarily affiliated to major financial groups (providing robo-advice services on a global scale to their local entities) or do not want to acquire their own robo-advice competences. On the other hand, vast amounts of relevant data on clients, markets, and products reside with the local service providers, mainly custodians, transfer agents, and fund administrators, creating a unique opportunity to further develop market intelligence and analytical capacities. One could imagine that these service providers develop robo-advice capabilities (by any of the four means described above) and propose this

as a new white-labeled service to local and foreign investment management actors. Furthermore, these robo-advice tools could benefit from services provided by order management providers supporting cross-border distribution of funds. This would allow them to benefit from a streamlined end-to-end investment process regardless of the variety of markets, investment products, and investors involved. This infrastructure could provide a single entry point in the future and standardized process for all fund transactions—from mutual funds to exchange-traded funds and hedge funds—and one fully-integrated set of digital-based reports and connectivity media. The fact that Luxembourg boasts some of the most modern data center infrastructure in Europe, with 23 data centers in operation, further supports this strategic advantage.

As outlined above, several Luxembourg based startups like Birdee, Neurodecision, Nexvia and SESAMm already today provide algorithm-based advice to retail customers, financial advisors, and fund managers.

As a consequence, Luxembourg should consider shifting more and more into the digital financial advisory market by developing robo-advice capabilities leveraging client portfolio data, market intelligence, and the local IT infrastructures and competences.

Figure 11: A hybrid model between human and robo-advisor will be the key to success



29 Deloitte, Robo-Advisors – Capitalizing on a growing opportunity, 2016
 30 Deloitte, 10 disruptive trends in Wealth management, 2015

6. Fintech opportunities for the Luxembourg asset management industry

In this report, numerous opportunities for actors from the investment management ecosystem arising from changing investors' behavior and Fintech innovation have been brought to light. The distribution and asset servicing model of the asset management industry is more than likely to be re-shaped over the course of the next few years. We have described the main macro-trends that will impact the investment management industry.

First of all, we highlighted the fact that the new generation of investors will redefine the service level expected from asset managers by imposing more interaction with the brand in order to ensure they share the asset manager's values. There is also a strong need for online and enhanced execution platforms including market insight and wealth reporting as well as social investment interaction with peers. The access to socially responsible investment and hedging capabilities will be valued over performance. All this is of course expected at low cost.

Secondly, we have highlighted the main Fintech innovation trends affecting investment management. Machine learning will enhance prediction-based portfolio management techniques. Digital investment platforms and robo-advisors will become more and more popular, especially in execution-only-driven D2C and will enable a strong investor education about products and their related risks. P2P lending is a technical innovation as such and is also on its way to become an alternative asset class. The increased digital interaction on online platforms will increase cyber risk. Big data is a reality and offers a lifetime opportunity for investment management actors to make sense of the zettabytes of information at their disposal to create added value and digital wealth reports, market intelligence, and peer comparison insights to the end investor.

Regulation in investment management is still ongoing. The historical ecosystem is subject to a systemic shift via AIFMD, UCITS V, MiFID 2, AMLD 4, CRD and CRR, and PRIIPS to name a few. While investment management actors are struggling to regulate the existing operating model, Fintech innovation introduces additional regulatory gray areas (such as new payment entrants and Blockchain). In parallel, the concept of Regtech has emerged to propose solutions

to the market to gain efficiency in non-subjective and labor intensive regulatory processes.

We have identified very practical areas where the Luxembourg market players could seize opportunities in light of Fintech innovations.

Luxembourg has a very strong investment fund and private banking sector efficiently working together for the prosperity of the market place. Transfer agents, order management platforms, central administrators, and custodians have a major role to play in the Fintech change. Luxembourg actors must actively drive the Fintech innovation locally and engage with disrupters, modernizers, and enablers in order to be ahead of developments, adapt their operating models with agility, and avoid imposed innovation from abroad.

All of these actors sit on an impressive amount of client, market, and portfolio data. With enhanced data management capabilities offered by Fintech, Big Data is no longer a buzzword for investment management but offers the possibility to assist asset managers to respond to investors' needs and further increase efficiency in operations. Luxembourg asset servicing providers have the necessary scale and technology to develop and offer white labelling services to their asset management clients and their intermediaries.

Product management and marketing are core functions of asset managers. These areas are subject to a strong need of technology for which all asset management houses do not necessarily have the scale or focus. Luxembourg asset servicing actors can play a key role in this area to give asset managers access to white labelling technology in the form of online order management capabilities, risk metrics and performance attribution online reports, investment advisory algorithms based on investment patterns and investors behavior, digital payments capabilities, and market insights reports.

The mid and back end of the investment management value chain is the core activity of transfer agents, custodians, order management platforms and fund administrators. Blockchain is the most disruptive innovation in this area. Its shared ledger and smart contracts based technology can theoretically disintermediate order management, recordkeeping, ownership verification, settlement & clearing, payments and corporate actions. However we believe

Luxembourg actors should not adopt a wait and see approach in terms of Fintech innovation but rather be at the forefront of things in order to be well positioned to anticipate and steer change rather than suffering from it

that the disruption will not happen in a “big bang” mode and that a hybrid asset servicing model will be implemented by the historical asset servicing providers to leverage the benefits of Blockchain technology to offer a cost efficient and automated asset servicing model. In the more immediate future, Luxembourg service providers have a key role to play in further developing automation of reconciliation processes, order aggregation, management and clearing industry standards or online KYC services. In order to avoid the co-existence of different order management models using different Blockchain applications, Luxembourg actors should launch a joint industry initiative to create a harmonized Luxembourg Blockchain asset servicing brand.

Luxembourg should also create a digital passports industry initiative to further enhance efficiency in investor identification. We also see considerable room for offering managed services to investment funds in a one-stop-shop model. Asset servicers can seize the opportunity to offer bundled fund services to asset managers in areas such as fund set-up & liquidation, fund distribution and registration support, operational tax management, KYC/AML/CFT and last but not least, Regtech.

Regtech is the concept of using data management and other Fintech innovation to provide efficient and cost-effective regulatory services to asset managers and their intermediaries. Regtech will never become a ‘push the button’ regulatory compliance solution but will offer the opportunity to create efficiency in labour

intensive and non-subjective regulatory readiness tasks. A few examples on where Regtech could be an opportunity for asset servicers are AIFM reporting, EMIR and transactions reporting in general, regulatory and tax watch, Solvency II lookthrough reports, regulatory healthcheck tools, case management tools or risk data warehouses. The Luxembourg ecosystem should join venture to be at the forefront of Regtech innovation. Helping asset managers to navigate the regulatory changes adopting the latest technologies will further strengthen Luxembourg’s competitive advantage in the asset management industry.

We have a dedicated focus on robo-advisory as we are convinced this algorithmic based advisory tools will be very successful in the retail area in the context of evolving and execution only driven D2C. Institutional investors also show interest in this technology as it will allow them to offer it to their execution only end clients. Luxembourg has all the necessary requirements to play an active role in this segment. A local market exists in 2nd and 3rd tier asset managers’ appetite for white label robo-advisory technology and execution only services offered by local wealth managers. The Fintech environment in Luxembourg can rely on one of Europe’s strongest IT infrastructures and the local establishment of Fintech actors.

Luxembourg actors should not adopt a wait and see approach in terms of Fintech innovation but rather be at the forefront of things in order to be well positioned to anticipate and steer change rather than suffering from it.

7. Conclusion

This ALFI Whitepaper produced by Deloitte Luxembourg provides an overview of the current impact of Fintech companies on the fund distribution segment of the investment management value chain. Within the next years, we foresee the advent of a flourish of new companies in the sector with technological solutions streamlining the current operating model and addressing the needs of a new generation of investors. In order to stay successful, incumbent firms will need to adapt to this new competition by either developing own technological solutions, cooperating with Fintech companies or absorb them in their business model. Asset servicing firms have a major opportunity to assist asset managers in this technological shift.

Luxembourg as the world's second largest investment funds domicile has a once-in-a-generation opportunity to reimagine and modernize its distribution and asset servicing model to address market and operational challenges.

Luxembourg's investment management ecosystem should join forces to explore industry initiatives in terms of enhanced online trading platforms, white label data analytics, managed services, Regtech, Blockchain or digital distribution passports.

ALFI is the appropriate forum to proof the concept of these ideas and has recently created a Fintech group where all the innovations and related opportunities for Luxembourg are discussed.

8. Glossary

ADR	American Depositary Receipt
AIFM	Alternative Investment Fund Manager
ALFI	Association of Luxembourg Fund industry
AM	Asset Management
AMF	Autorité des marchés financiers
AML	Anti-money laundering
AMLD IV	Anti-money laundering directive IV
AuM	Assets Under Management
B2C	Business to Customer
BPO	Business process outsourcing
BYOD	Bring Your Own Device
CFT	Counter Financing of Terrorism
CMU	Capital Markets Union
CRD	Credit Rate Derivatives
CRR	Capital Requirements Regulation
CSD	Central Securities Depositories
CSSF	Commission de Surveillance du Secteur Financier
D2C	Direct 2 Consumer
DVP	Delivery Versus Payment
ECB	European Central Bank
eCrime	Electronic Crime
EIOPA	European Insurance and Occupational Pensions Authority
EMEA	Europe, the Middle East and Africa
EMIR	European Market Infrastructure Regulation
ESMA	European Securities and Markets Authority
ETF	Exchange-Traded Fund
FATF	Financial Action Task Force on Money Laundering
FCA	Financial Conduct Authority
FINMA	Swiss Financial Market Supervisory Authority
FTK	(Financieel toetsingkader) Financial Assessment Framework

GDPR	General Data Protection Regulation
HNWI	High Net Worth Individuals
iCSD	International Central Securities Depository
ICT	Information and Communications Technology
IM	Investment Management
IT	Information Technology
KSA	(Kansspelautoriteit) Regulatory Authority for Gambling
KYC	Know Your Customer
MAD II	Market Abuse Directive II
MAR	Market Abuse Regulation
MiFID II	Markets in Financial Instruments Directive II
NSCC	National Securities Clearing Corporation
NYSE	New York Stock Exchange
P2P	Peer-2-Peer
PRIIPS	Packaged Retail And Insurance-Based Investment Products
RDR	Retail Distribution Review
REIT	Real Estate Investment Trust
RIA	Registered Investment Advisor
SFTR	Securities Financing Transactions Regulation
STP	Straight Through Processing
SWIFT	Society for Worldwide Interbank Financial Telecommunication
T2S	TARGET2-Securities
TA	Transfer Agent
TAF	Transactions sur Actifs Financiers
UCITS V	The Undertakings for Collective Investment in Transferable Securities V
UHNW	Ultra High Net Worth
VAG	(Versicherungsaufsichtsgesetz) Regulatory reporting for fund investments of insurers and pension funds
WM	Wealth Management

about alfi



luxembourg
fund industry

The Association of the Luxembourg Fund Industry (ALFI), the representative body for the Luxembourg investment fund community, was founded in 1988. Today it represents more than 1 300 Luxembourg-domiciled investment funds, asset management companies and a wide variety of service providers including depositary banks, fund administrators, transfer agents, distributors, law firms, consultants, tax advisers, auditors and accountants, specialist IT providers and communications agencies.

Luxembourg is the largest fund domicile in Europe and its investment fund industry is a worldwide leader in cross-border fund distribution. Luxembourg-domiciled investment structures are distributed in more than 70 countries around the globe, with a particular focus on Europe, Asia, Latin America and the Middle East.

ALFI defines its mission as to **“Lead industry efforts to make Luxembourg the most attractive international centre”**.

Its main objectives are to:

Help members capitalise on industry trends

ALFI’s many technical committees and working groups constantly review and analyse developments worldwide, as well as legal and regulatory changes in Luxembourg, the EU and beyond, to identify threats and opportunities for the Luxembourg fund industry.

Shape regulation

An up-to-date, innovative legal and fiscal environment is critical to defend and improve Luxembourg’s competitive position as a centre for the domiciliation, administration and distribution of investment funds. Strong relationships with regulatory authorities, the government and the legislative body enable ALFI to make an effective contribution to decision-making through relevant input for changes to the regulatory framework, implementation of European directives and regulation of new products or services.

Foster dedication to professional standards, integrity and quality Investor trust is essential for success in collective investment services and ALFI thus does all it can to promote high professional standards, quality products and services, and integrity. Action in this area includes organising training at all levels, defining codes of conduct, transparency and good corporate governance, and supporting initiatives to combat money laundering.

Promote the Luxembourg investment fund industry

ALFI actively promotes the Luxembourg investment fund industry, its products and its services. It represents the sector in financial and in economic missions organised by the Luxembourg government around the world and takes an active part in meetings of the global fund industry.

ALFI is an active member of the European Fund and Asset Management Association, of the European Federation for Retirement and of the International Investment Funds Association.

To keep up to date with all the news from the association and the fund industry in Luxembourg, join us on **LinkedIn** (The Luxembourg Fund Industry Group by ALFI), **Twitter** (@ALFI-funds), **Youtube**, **Vimeo** or visit our website at www.alfi.lu.



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