**Regulatory Technology (RegTech)**

**What is RegTech?**

RegTech takes the latest in greatest in technological innovations, such as data science techniques, artificial intelligence (AI) and automation, blockchain and more, to easily adapt to the regulatory requirements while being cost-effective and secure.  These technology solutions will allow companies to automate processes like monitoring data and reporting to regulatory bodies. All the reporting can be done in real-time using data analytics. Especially given the number of headlines in the news about data breaches, hacks, and regulatory fines and violations, regulatory bodies are closely monitoring large financial organizations. This is especially the case for major financial organizations that deal with trading, payments, and money transfers, which need to monitor all activities and report daily to the regulatory bodies. RegTech fills the current gap in the financial sector by ensuring compliance by automating these tedious and error-prone manual reporting processes by bringing technology, regulation, and financial services together.

**Characteristics that define RegTech Solutions**

Agility is one of RegTech’s main competitive factors. RegTech solutions aim to enhance speed, minimize risk, and reduce the overall cost of regulatory compliance. Most RegTech solutions are cloud-based, which allows for data to be stored securely and managed remotely. That, in turn, reduces costs, produces quicker results, and affords organizations flexibility and reliability.

**Why is RegTech Crucial?**

Over the last decade, the financial services industry has seen a significant uptick in regulatory requirements, which is impacting businesses globally, and becomes very complex with the array of global and regional requirements that exist, and how large organizations with global clients need to juggle all of these. The key element across these regulations has been that financial institutions need to ensure that they are operating their business in a prudent and controlled manner. Furthermore, RegTech allows Financial Institutions to Take Control, Be in Control, and Demonstrate Control of regulation through better defined, documented, and auditable digital operations. This will allow firms to break down regulatory siloes and manage requirements holistically.

Let’s look at a few aspects that RegTech can help financial institutions in:

*Identity Management*

RegTech technology can be used in Know Your Customer (KYC) processing. By combining AI, cloud storage and data analytics, data can be sourced from a few verified sources. This reduces the operational cost, while at the same time helps in fraud detection and identifies any errors present in information. Strong identity authentication is required for organizations operating in the EU that deal with financial services, such as digital payments and remittance services. RegTech-powered identity management software will be able to identify the end-user, therefore, reducing the risk of ID fraud. RegTech brings digitalization to the KYC process, while also bringing cost- and time-reduction while verifying data and highlighting errors to reduce terrorist and money-launderer threats.

*Fraud Prevention*

RegTech allows organizations to scan and monitor multiple transactions and check the validity of such transactions. This whole process is carried out in real-time, therefore, all illicit and illegal transactions can be easily identified, and the right action can be taken immediately. RegTech provides benefits to all involved parties of a transaction.  Organizations adopting RegTech solutions can adapt and reduce their operational costs, as well as reduce the risk of non-compliance fines and increase efficiency and speed, delivering a better customer experience.

*Regulatory Reporting*

With many organizations operating globally, companies have greater exposure to risk and need to verify who they are doing business with. RegTech provides transparency to all parties by providing verification about ownership and control. If there are any inconsistencies in the data, RegTech scans various datasets to find out the error-prone information and fill in the missing data.

*Market Surveillance*

RegTech allows firms to identify fraudulent or criminal activities by constantly monitoring money transfers, emails, trading data. The technology uses data analytics to identify certain patterns to find such nefarious behavior. The challenge is to reduce the number of false alarms and to report the correct information at the right time. The same technology can be used to assess the performance of the employees and various business units.

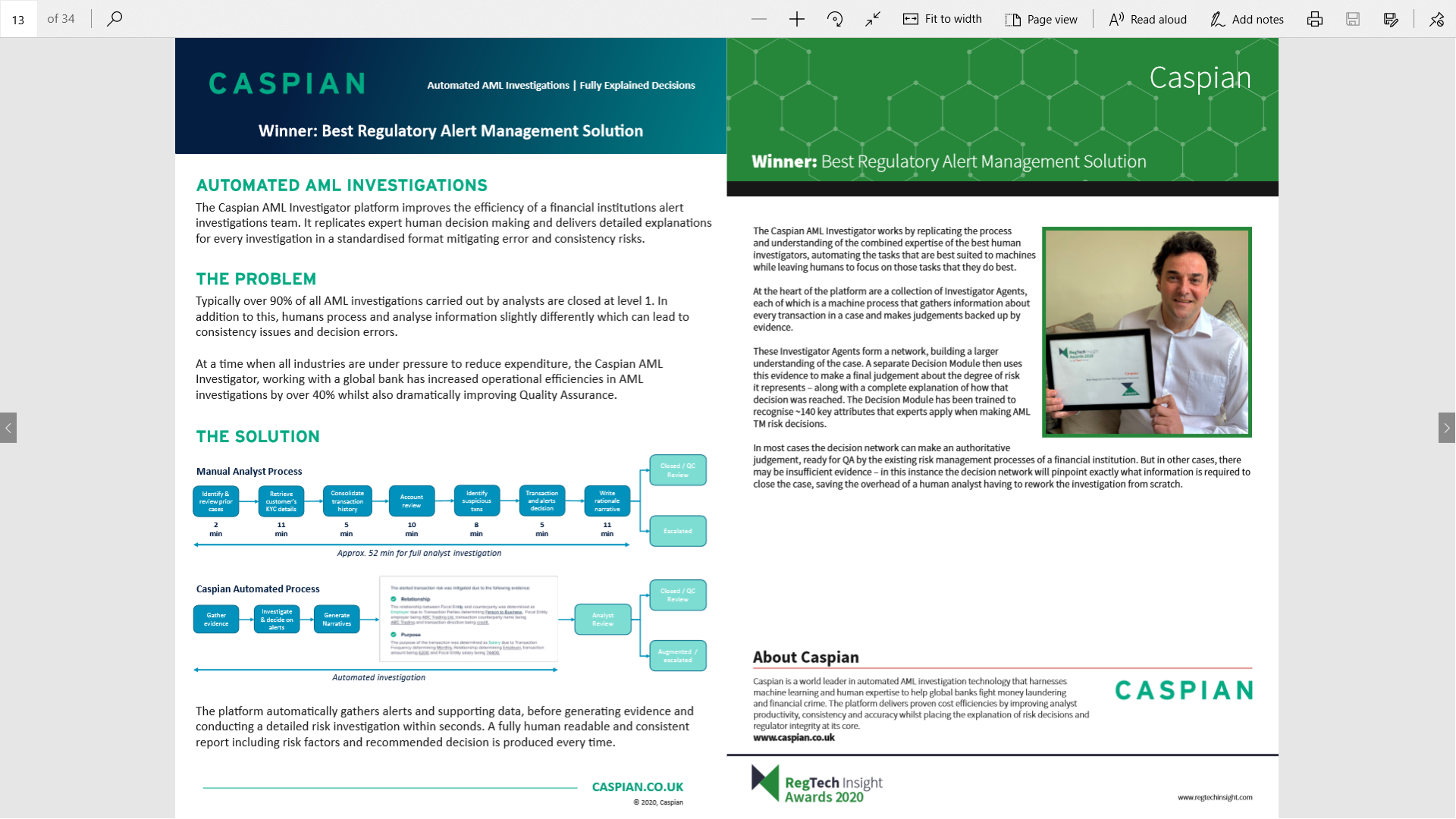
*Fewer fines from regulatory bodies*

Financial institutions need to adhere to the strict reporting of their activities. Heavy fines are imposed on financial institutions for not following the rules and regulations. Therefore, RegTech automates the compliance reporting procedure and safeguards the organization from cybersecurity breaches and inadequate financial reporting.

**The Road Ahead**

Some of the most complex RegTech solutions can be used for forecasting, scenario analysis, modelling and to complete required ‘stress tests’ that could further be developed to produce faster and more detailed results. Furthermore, data analytics would also be used in a predictive context for targeted risk analysis with respect to individuals and broadly for internal modelling to be used to develop strategy and report to regulators. Overall, the stage seems set for RegTech to be embraced by global financial institutions – the sooner, the better!

**Caspian**



For the last 4 years the RegTech companies presented their company’s services to compete for RegTech Insight Award. The RegTech Insight Awards celebrate providers of leading RegTech solutions, services, and consultancy. These awards are uniquely designed to recognize both start-up and established providers who are creatively finding solutions to help with regulatory challenges and span a wide range of regulatory requirements.

One of the winners in 2020 was company “Caspian”, who specializes in Automated Anti Laundering Money (AML) Investigations. They won the sector for Best Regulatory Alert Management Solution. **Money laundering** is the illegal process of concealing the origins of money obtained illegally by passing it through a complex sequence of banking transfers or commercial transactions. The overall scheme of this process returns the "clean" money to the launderer in an obscure and indirect way.Money laundering is the oxygen that fuels crime and corruption. About 6.7% of global GDP, worth US$5.8tn, is due to criminal activity, including drugs, arms, and human trafficking, international terrorism, and illegal environmental destruction. Three quarters of these funds are then laundered through the international financial system.

The company had been founded in 2002, and originally was providing measuring, improving, and predicting workforce behavior patterns that drive risk, efficiency, and service. However, company changed direction of the services in 2016 aiming AML. The company is privately owned and still quite small in size, around 50 employees. The founder, Chris Brannigan, is trained neuroscientist and performance simulation expert with vast experience in Banking and Technology Strategy.

Caspian helps banks protect themselves from money launderers by using machine learning and artificial intelligence to detect and investigate transactions and commercial entities at scale.

Caspian specializes in the automated investigation of high volume, complex AML risk alerts for financial services firms. Their technology analyses alerts and provides **fully explained** risk judgements in seconds. With human readable, regulator friendly solutions, it will revolutionize workforce productivity, accuracy, and efficiencies.

Caspian is thriving due to unusual approach to detect AML, which makes them quite unique. There are not that many companies with the same products.

Here is a part of the interview of Financial Crime News Magazine with a founder, Chris Brannigan in September 2019 that gives a great highlight what company is offering and how they came up with their approach.

**“Financial Crime News (FCN): What can you tell us about your company and your products & services?**

**Chris Brannigan (CB):** At Caspian, our area of expertise is in the automated investigation of high volume, complex risk alerts for financial service firms with a fully explained human readable decision. So, we are **not** in the business of generating alerts for suspicious behaviors in KYC, transaction monitoring or due diligence, many other machine learning companies do that already. Once the alert has been generated and a well-qualified human analyst must perform an investigation, that is where Caspian technology is applied. We have developed a unique Financial Investigation Platform (FIP) that combines machine learning with human intelligence to fully automate or significantly augment high-volume risk investigations and judgements. As alerts are generated, they are fed into Caspian FIP. The system performs an expert investigation on the alert to pull in relevant data, generate key evidence, make an overall risk decision, and output a human readable explanation that provides a logic and rationale for the decision. Where Caspian FIP is unable to make a full determination or requires further information, then it will present the investigation it has generated to a human Analyst and it will provide guidance to the Analyst to assist their work in completing an expert level investigation. Where FIP can make a fully determined decision and supporting rationale, then these completed investigations are either presented to human Analysts for a ‘quick review’ and / or are sampled by human QA in the normal risk process.

Our proven investigative technologies provide banks with substantial increases in speed, accuracy, consistency, and transparency across domains such as Anti-Money Laundering Transaction Monitoring, Customer Due Diligence and Entity Risk.

Ongoing decision assurance is also a key area of focus for banks and we achieve this by utilizing our tools and processes. These continuously test and improve the machine decisions beyond human regulatory standards.

**2. FCN: How did you come up with the idea and what drives you?**

**CB:** I am a founder of Caspian and met my co-founder while we were both undertaking PhD’s in cognitive neuroscience. This was in the 1990’s when we called AI, ‘Parallel Distributed Processing (PDP)’ and even the concept of ‘back-propagation’ was pretty new and exciting to geeks like me. I was particularly taken by the research of Anders Ericsson into elite performance across sports, medicine, and business and into how the acquisition of expertise could be codified and measured within a scaffolding framework. The driving force behind Caspian has been the idea that software, analytics, and cognitive models can be usefully combined to precisely diagnose, measure, and enhance human performance.

When we founded Caspian several years later, we focused more specifically on improving the quality of human decision making in high risk, high consequence environments. Imagine flight simulators for the workforce and you will get the general picture. Our main work was in Defense for organizations like NATO, MoD and DoD but we also extended this approach into domains with somewhat less fatal consequences including pharmaceuticals, management consulting, banking, and construction. We would immerse human trainees into the environments and task scenarios that they would experience in the military theatre, and then capture how they managed to achieve objectives as the scenario unfolded. We would build a detailed cognitive model of how expert practitioners thought and acted within these scenarios and embed this into the simulator. The system would then precisely measure and diagnose trainee performance against the models for expert practitioners.

In developing these training solutions, we would produce very granular models of expert performance in a range of scenarios, using increasingly sophisticated algorithms. The old PDP algorithms evolved into the more muscular Deep Neural Networks and data from front end workforce systems became accessible and abundant (slightly skipping over IT and data issues). We found that the environment simulator was now not required. We could embed these solutions into the actual work environment and operational systems.

By happy coincidence, at this point we were working for a large Bank, deploying simulators to improve human decision-making performance in areas of Financial Crime such as Sanctions Screening Investigations. We found that this new environment of Financial Crime shared many of the attributes that we recognized from the military domain – complex tasks, high risk, high consequence, deep audit, traceability and large numbers of humans in the process, with expertise relatively hidden in the heads of geographically dispersed individuals.

From the success of simulators in Sanctions Investigations we moved into the area of AML Transaction Monitoring and applying the approach to directly automate and augment the L1/L2 investigations. We have now built this into a container-based platform, that can be deployed at scale to banks’ private cloud and are applying the same technology to other AML problems including KYC and EDD.

3. **FCN: What is it that makes your company different from others?**

**CB:** Our technology and approach is different. Strangely, for a tech company in this space, we don’t start from the machine learning and the raw data. We have a heritage in neuroscience. We started by building a model of how expert investigators think and act. The system that we have developed replicates that.

We have spent 24 months working with banking partners and Financial Crime experts observing, capturing, and testing how expert investigators gather evidence, judge, and evaluate evidence, make risk decisions, and then explain those decisions. The resulting cognitive map is a detailed blueprint from which we have developed algorithms that can ingest bank financial data and automatically perform a complex end to end investigation. The machine performs the wide range of cognitive tasks that an expert investigator would perform. Within this framework the machine is able to make a risk determination and then to explain how and why it made that decision, while pulling through the accompanying evidence to audit that rationale against the standard of the expert consensus. No black box.

We compliment this with unsupervised machine learning approaches that work directly on the data to find anomalies that experts don’t know.

This is live in a banking environment, investigating complex alerts, generating evidence, making risk decision recommendations supported by explanations that are validated against the standard of the best human experts.

Looking at the overall market, there are not many companies that focus on automation of end to end investigation. It is not an easy problem to solve. For Caspian, generating models to automate and augment expert decision making has been in our DNA for the past fifteen years. Our expertise and R&D are wholly configured to that goal.

**4. FCN: What barriers do you see to the adoption of AI in Financial Crime and Compliance?**

**CB:** There are many challenges to successfully implementing new technology within large, complex organizations. These are germane to any enterprise software and it is up to vendors to minimize these issues for Banks. If we consider barriers that are specific to the AI use case, then our focus is immediately drawn to the area of risk and, to model-risk management.

The ‘black-box’ problem is well known to machine learning practitioners and is a major challenge for banks that wish to exploit the benefits of AI in areas of complex decision making. At Caspian, over the past three years we have cognitively mapped how expert investigators gather evidence, make risk judgements, and then explain decisions. We have developed AI technology that can make decisions and then explain how it reached that decision, within that expert investigation framework. Every decision can then be fully explained and mapped back to the decision, logic, and evidence that a consensus of expert investigators would have taken.

The black-box problem is the first challenge to overcome in FCC. However, AI practitioners are only just beginning to appreciate the exacting standards of evidence and proof required to deploy in the high-risk, high-consequence environment of FCC investigation. Every decision generated by a machine must be traceable and reproducible through the entire cycle of training a model through to its deployment in production. This is a non-trivial problem for AI solutions that are inherently probabilistic in nature. Furthermore, to solve anything more than the most basic FCC task requires an AI solution comprising multiple models chained together within a workflow. This requires mathematical innovation, but it additionally complicates the ability to deliver required traceability and reproducibility of results.  
Then there is validation of the performance of the AI solution. Most banks and AI vendors are not experienced in validating the performance of an integrated AI architecture that features multiple models acting in concert. Unfortunately, looking to regulators for guidance does not offer any immediate respite. Then, just when Banks make progress on complex model risk management, there is the cold realization that these systems require sophisticated levels of ongoing model maintenance as they must deliver to an ever-changing FCC environment.

At Caspian we have spent several years designing this capability into the foundations of our Investigative technologies. The development of this infrastructure requires a lengthy investment in R&D and testing with Banks. It is worth it. My view is that model-risk management can be turned from a major barrier into a significant enabler of AI adoption. Right now, it is not possible for a risk executive within a bank to diagnose with any confidence how their human analysts vary when making cognitive judgements on important risk questions within an investigation. A well-designed AI solution enables risk executives to precisely determine how a machine investigator makes risk judgements at an unparalleled level of granularity. For example, how the system makes a Source of Funds determination between attributes such as salary, employment expenses, dividends, and bonus and then also how this determination contributed to an overall risk decision at an alert level.

This affords a risk executive the power to deliver risk policy consistently into their investigation activities and risk judgements across the organization. This is a very powerful risk management tool. We are only just beginning to explore this new capability with Banks, and it is an exciting opportunity for AI solutions in the near future.”

**Funding**

In January 06, 2020 it had been officially confirmed that [**Nasdaq Ventures**](https://www.nasdaq.com/nasdaq-ventures), the investment arm of [**Nasdaq**](https://www.nasdaq.com/), has taken a minority stake in Caspian. This is a major step in enabling Caspian to continue rapidly investing in our world leading technology and solutions that are helping global banks to [**automate Anti Money Laundering Investigations**](https://www.caspian.co.uk/anti-money-laundering-investigator/). Here is the statement from Nasdaq Ventures regarding their decision to invest into Caspian.

“We explored the AML market extensively to identify suitable growth opportunities as it’s an area that we feel is ripe for innovation through technology. Burdened with multi-billion-dollar operational expenses. Moreover, expensive, and inconsistent processes lead to inefficiencies, and there is a shortage of qualified staff. Interviews with several Tier 1 banks helped to validate our hypothesis.

We decided that Caspian is the right innovator for us because it has a proven and validated technology solution that solves a huge pain point, dramatically increases analyst productivity, and yields meaningful cost-savings for compliance teams. To this end, we are making a minority investment in Caspian, because we believe that together, we can truly advance the industry’s approach to financial crime and improve transparency and integrity across global markets.

We have core competencies in fighting financial crime through our experience as a leading RegTech provider. That, combined with our ability to build solutions at scale for global distribution, adds value to Caspian’s solution and our investments – both from a knowhow and financial perspective – and will enable Caspian to accelerate its go-to-market strategy. Further, Caspian can take advantage of our expertise in enterprise SaaS hosting, proven delivery capabilities and world-class information security standards to help accelerate its cloud migration and SaaS journey, while continuing to focus on innovating its machine learning platform.”

2020 seems to be a year of showing the results of years of hard work for Caspian. Winning the award in RegTech sector, and, getting funded by one of the biggest investors in the world, Nasdaq Ventures, who has quite a large choice of companies to be invested in, it is a great measure of success.

As an auditor, I have seen and identified fraud in the corporations. I have to admit that Caspian’s approach is very thought through and will be successful. In Auditing there is always a question where the risk is and how could someone take advantage of that. It is never “cut and dry”. Therefore, to identify the financial crime, one has to identify behavioral patterns in criminal mind besides knowing the possible holes in the finance. Caspian achieved that with their behavioral knowledge and hard work in making that approach automated. To make a platform that is able automatically identify the risk and test it automatically **all the way to the end**, is quite impressive and, definitely, a new product on the market. Usually automation helps only in the beginning phase of the investigation. That puts Caspian in a very favorable position among AML competitors. I can see their product being used a lot with most of the financial institutions in a near future. Considering how difficult this year has been economically, it is only expected to have a rise of a crime and money laundering especially. The only downside of Caspian product is that it will put out of job many auditors.

**Resources:**

<https://en.wikipedia.org/wiki/Money_laundering>

<https://a-teaminsight.com/awards/regtech-awards/?page=winners>

<https://bankingfrontiers.com/how-regtech-is-set-to-change-the-way-we-regulate/>

<https://www.caspian.co.uk/>

<https://thefinancialcrimenews.com/spotlight-on-caspian-interview-with-ceo-chris-branigan/>

<https://www.nasdaq.com/articles/investing-in-innovation%3A-the-evolution-of-the-regtech-landscape-2020-06-04>

<https://www.linkedin.com/company/caspianuk/about/>