RegTech Insights for NEDs

How Technology can help Commercially Overcome Regulatory Challenges

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Risk & Regulatory Consulting

TEAM BLOCKCHAIN

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Vedanvi is a boutique Fintech advisory business with core roots and expertise in Risk and Compliance. Prior a focus on the Fintech sector, Vedanvi has teams with experience in working on helping some of the world's financial services firms manage large scale regulatory change projects.
We at Vedanvi are dedicated to helping launch, grow and evolve a Fintech business with a view to transforming financial services firms.

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Team Blockchain has been established to help organisations review the impact that Blockchain is likely to have on their day to day activities, by helping them identify ways to reduce costs, improve security and drive profit margins.
The team members of TeamBlockchain have a wide range of practical business experience and many have worked for leading global consulting partners, sharing a desire to offer independent advice and help solve real business challenges for the organisation they work in.

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Regulation is becoming more complex and noncompliance is a real threat, despite the organisation's every effort to stay on the right side of the regulator's fence. CEOs and the wider Boardroom are therefore spending a lot more time on regulatory matters or engaging with regulators.

As Boards spend more time on regulation, they are correspondingly spending less time on growing the business. According to FORBES 2016 Global CEO Outlook (a survey 1,300 CEOs across the globe), 85% of respondents raised concerns that regulations was expected to inhibit growth. According to Bain & Company research, regulatory compliance can cost between 15% and 20% of operating expenses. When factoring in management time and other indirect costs, the overall cost of compliance is something that the Boardroom cannot ignore.

Organisations first must stay on top of regulatory change – keeping a watchful eye amidst fears that they might miss something, resulting in an inadvertent compliance breach. Once, identified, they must assess the applicability of the new regulation to their business.

If applicable, they must then follow a complex project to implement and embed the regulatory change. Once implemented, the challenge is of ensuring that every level of organisation complies on a regular basis. The organisation also must find innovative ways to ensure they collect relevant information and information to ensure they can evidence compliance to their Board and the regulator

Technology developments are growing at an ever-increasing rate and it is essential that organisations exploit these new capabilities to keep pace with regulatory and compliance issues. It is no longer sufficient to respond to compliance requirements and regulations simply by allocating more headcount. Organisations need to instead use technologies such as Artificial Intelligence, Biometrics, Blockchain and Robo-Processing to automate their compliance capabilities. Recent studies suggest that effective use of technology could result in as much as 50% cost saving in managing compliance.

In this whitepaper, we take a closer look at the regulatory challenges that organisations face and then present some technological solutions that could help to make sense of regulatory change, reduce cost of compliance, provide greater assurance to the Board of compliance in the organisation, and monitor internal as well as customer compliance. The use of technology in compliance, so called "Regtech" is a relatively new field, and we put forward exploratory ideas that we hope to develop further through one-on-one dialogue with C suite executives.

Introduction

The financial services sector is still feeling the seismic effects caused by the financial crisis. Regulatory onslaught to prevent the next crisis has ravaged the financial sector with no end in sight of the regulatory change that firms are having to ensure. Surely, the regulatory pressure will ease off at some point, but it's hard to tell when that time will come.

In the meantime, firms are expanding much effort to keep abreast of regulatory changes announced, implement the change and once embedded, keep on top of compliance on a day to day basis. Taking the widespread implication of compliance, it's hard to measure how much it costs, given there are direct costs and indirect costs, such as customer remediation, regulatory fines and reputational damage.

In 2014 (and annual feature), Aon carried out the Global Risk Management survey, gathering input from 1,418 respondents at public and private companies of all sizes across the globe to identify top risks they face. Regulatory and legislative changes was the third highest ranked risks perceived by leaders of these firms.

However, the ranking dropped from second to third in 2014, as firms gradually adjust to a spate of robust and legislative changes. According to AON, organisations are looking at this risk as an opportunity to create a competitive advantage over peers that do not manage this process effectively.

The Problem – Regulatory Change is a Challenge in the Boardroom and Hampers Growth

Like the CEOs surveyed by AON and FORTUNE Insights, are you also feeling overwhelmed with regulation and the risk of noncompliance and regulatory censure it exposes your firm to? Based on conversation we have with other Board members and with a watchful eye in this space, we distil key challenges that firms seem to be facing.

1. Regulatory Change Fatigue

Regulators are still getting their heads around how to prevent the next financial crisis. More regulation and enhanced supervisions is their response strategy. Daily, regulators across the globe publish new regulation, regulatory guidance, consultation papers, statements, Dear CEO letters, etc. Thomson Reuters found that in 2015-16 an average of 200 international regulatory publications, changes and announcements were captured by them on a daily basis. The good news is that most firms expect this volume to come down, however, 200 items to track daily is by no means a walk in the park. Besides, many of these publications will make complex pronouncements, taking significant amount of time to analyse.

Compliance professionals in organisations are spending up to 10 hours a week just trying to keep abreast of such regulatory developments. This is not considering the time they spend understanding how the regulatory change applies to their firm, and how best to implement it.

Every piece of regulatory change announcement will involve some form of change to policies and procedures or a complete review and change of client terms and conditions. Before being implemented, Boards or Committees need to approve it. The Board must wade through a huge volume of paper to make an informed decision whether approve the regulatory change proposal.

When approved, the compliance professionals will need to realign Board and Committee reports, and ensure they implement new systems and controls to monitor the compliance of such new introduced regulation.

It's not surprising that not only the firms, but regulators themselves are looking for new ways to ensure firms do the right thing. They are starting to explore how they can make compliance effective rather than introduce new regulation.

2. Costs of Compliance Mount

Regulatory compliance is undoubtedly expensive. The strange thing is that no one seems to be able to measure the exact cost of compliance, but rather feel this on the Profit and Loss statement and on their balance sheet in different ways:

Direct Costs

- **More expensive resource:** Compliance is resource intensive and needs people to understand compliance, implement regulatory change, design frameworks, systems and controls for compliance, monitor compliance and report on it. With a shortage of skilled compliance resources, salaries are driven up.
- **Implementation Costs:** Every new piece of regulatory change brings with it a one-off implementation cost. This cost will result from an investment in project managing the change programme, training staff, consultants, investing in infrastructure, including IT and documentation, and reshaping business processes. According to a 2009 study by Europe Economics, once off direct costs ranged from 2.41% to 2.74% of operating expenses for certain new regulations introduced in banking and asset management.
- **Ongoing Compliance Costs:** Once in situ, the new regulation must be complied with on a day to day basis. This involves the recruitment of new people, training them and putting new systems, processes and controls in place to oversee compliance. Reporting takes up additional resource and infrastructure. Europa Economics estimates direct ongoing cost of compliance ranging between 0.43% and 1.41% of operating expenses.

These may well be outdated figures, and may only account for the minimum cost of compliance. The costs will also largely depend on the size of the firm, its global presence, its risk appetite to regulatory risks and many other factors.

Indirect Costs

Apart from direct costs, there are also many indirect costs that need to be factored into the cost of compliance. We explore just a few, merely scratching the surface of this complex subject:

- **Management time** – Regulatory change and ongoing compliance ties up management time as they pour through papers to approve implementation decisions, monitor compliance, and engage with regulator. If there is an investigation or review, the regulator then ties up executives in tense regulatory dialogue and implementation of remediation. Management can be tied up for months, if not years, to address regulatory change of ongoing compliance breaches. If executives are not working on strategy to grow the firm, then this is a potential opportunity cost that can be huge.
- **Reputational Damage** – Lack of compliance with internal policies and procedures resulted in one of the biggest oil spills in history caused by BP. It's estimated that the Gulf of Mexico oil spill cost the company a hefty $61.6 billion. As a financial services firm, reputation is everything. If this is lost, it can be a huge cost to the balance sheet as well as the Profit and Loss statement. Customers, partners, investors and suppliers don't like to deal with a firm that is fined by the regulator. The organisation loses its competitiveness and company value starts to decline as the market loses confidence.
- **Customer Redress** – A compliance breach often results in a customer not being treated fairly in some way. They may lose money as a result and must be compensated. The payment protection insurance scandal is widely reported, and according to the regulator, the Financial Conduct Authority's figures, banks paid more than £3.6 billion just in 2016.

It's often challenging for the Chief Risk or Compliance Officer to seek budget increases for compliance because it is a cost centre rather than a profit centre.

Getting compliance right can be very healthy for the balance sheet and profit and loss statement. Most organisations don't see effective compliance as something that can bring a return on investment. It's seen as a cost and therefore there is huge inertia in the organisation to get compliance right.

3. Accountability & Assurance

Although the regulators have significantly strengthened supervision and enforcement, they can't be everywhere as they are limited by resource constraints. So, the regulators have turned to the leaders within the firm, holding them individually accountable. This stance is also in response to the poor corporate governance standards and unethical behaviour that contributed to the financial crisis.

Senior managers now must be approved by the regulator to hold certain significant influence functions. Approved persons have a strict regime to which they need to individually comply. The buck stops with them and if something goes wrong in the firm, they are ultimately held accountable. Not being aware of the problem is no defence. Similarly, compliance officer themselves are caught up within this regime and are held personally responsible for noncompliance within the firm.

Being held personally accountable is like a sword hanging over the heads of approved persons. You never know when the sword is going to come down on you.

How can senior managers and board members know what is going on at the very lowest level of the organisation? Imagine a call centre staff speaking to a client, trying to sell them an investment product, and breaking financial promotions rules set to protect retail investors. How can the CEO know this is going on and more importantly, be held accountable for it?

Senior managers rely on upward reporting, once they establish a top down compliance framework. The reporting goes through several layers of management and information changes shape as it goes through every layer. Therefore, senior managers may not get the full picture.

Sure, auditors carry out an annual review and compliance functions may carry out a quarterly review, however by that time if a problem has been left lurking within the system the risk may already have materialised and the firm could be facing a regulatory censure.

Regtech: The Panacea of all Solution

Like the current technology led disruption taking hold of the financial services sector, technology comes to the rescue of regulatory compliance, promising to help organisations and their regulators manage the volume and intensity of complying with ever increasing regulatory demands.

Regtech is a term that brings hope to the financial services sector. Regtech simply refers to "regulatory technology" that was created to address regulatory challenges. Even the regulator is seeing a huge benefit from Regtech, helping them regulate financial markets better and in a less resource intensive way.

In the 2015 budget, the UK Government announced that the Financial Conduct Authority (FCA) and Prudential Regulatory Authority (PRA) would be required to identify ways to support the adoption of new technologies to facilitate the delivery of regulatory requirements.

There is clearly a business case for Regtech, spurring vast amounts of technology that's now being explored to help with regulatory compliance.

Before exploring what technology is out there, it's crucial to understand the types of problems that technology is looking to solve. Broadly, these are the main areas seeing Regtech led developments:

1. Board and Regulatory reporting tools – ensuring accuracy and completeness of reports
2. Client onboarding (KYC & Due Diligence) and anti-money laundering and financial crime checks
3. Compliance monitoring, using big data compliance and artificial intelligence type technology
4. Monitor employee
5. Risk analytics & decisioning to help detect emerging risks both internally and externally
6. Compliance workflow automation
7. Third party supplier monitoring and oversight
8. Cyber security and data protection
9. Regulatory change watch – keeping abreast of regulatory announcements
10. Risk & Compliance data management
11. Transaction monitoring
12. Market abuse monitoring and prevention

Various technology solutions are being developed to address Regtech, including

1. Blockchain and distributed ledger solutions
2. Big data analytics and data mining
3. Artificial intelligence

4. Machine learning
5. Data visualisation tools
6. Software integration tools
7. Biometrics
8. Robo-Process Automation

1. Benefits brought by Regtech

Clearly, for it to be adopted, Regtech must bring tangible and lasting benefits to firms and their regulators. Here are some benefits of adopting Regtech:

1. **Reducing Cost of Compliance** – This is the key benefit that is worth striving for. Much of the cost saving will come from being able to reduce reliance on (human) resources, and replacing them through automation.
2. **Early Warning System** – With greater technology based analytics, organisations can be forewarned of either a regulatory change, a risk about to materialise or a compliance breach coming down the line. Red flags help to alert staff and management, who are empowered to act before something goes wrong.
3. **Assured Compliance** – With the right analytics, key indicators tracking and artificial intelligence, lower level compliance tasks can be automated in a predictable and repeatable way. Where judgment is required, systems would analyse data and flag up a dashboard warning, alerting compliance professionals to act. The Board will receive objective instead of subject reports, and can place reliance on data confidently to make key decisions.
4. **Consumer Benefit** – The combined benefits of Regtech will result in increased consumer confidence generated by visibly more effective regulation and higher customer service levels. Potentially lower charges passed on from the operational cost savings achieved by forward thinking financial institutions may then fuel higher levels of consumer and institutional saving & investment.

2. Focusing on Compelling Regulatory Technology

The growth of new technology in Regtech is staggering. There are more and more solutions appearing every day. However, certain technologies hold greater promise than others. In our view, these are the hottest technologies that we believe will be the driving force of Regtech in the near future:

a. Biometrics & Identity Management

The traditional mechanism to perform Know Your Customer (KYC) checks remains paper based – For example, banks still insist on a physical meeting at a branch and paper copies of documents for both personal account and business account applications are required. Even the banks who claim to have digitized the application process have often just created a web-based application form, which then generates an appointment to go into a branch. There are several ways of confirming applicant identities, such as -

Facial Recognition – Most people now have smart phones with built-in cameras (usually with video and live streaming inbuilt). In addition to providing an immediate facial record of an applicant, it is possible to stamp the image with both a timestamp (to verify it's not an old photograph that has been submitted) and use the phone's geolocation to confirm where the application is being made. This approach is now being implemented in the motor insurance industry to provide immediate insurance cover. The applicant takes a 'selfie' next to their driving licence and the vehicle that they wish to be insured to drive – facial recognition can be used as a record of who the applicant is, the driving licence is read by the system which then verifies identity with UK DVLA when linked with the driving licence. Automatic Number Plate Recognition (ANPR) is used to verify the vehicle's details. Finally, the geolocation of the phone is used to verify where the application is being made.

Fingerprints – Such capabilities are built into many phones and can be used as part of identity verification.

Signatures – The way in which a signature is written contains many more features than one would realise and there are signature capture providers who have developed robust capabilities to verify signatures.

Other biometrics – voice and Iris recognition are being increasingly used. A simple example of voice recognition is that being adopted by call centres handling complaints and insurance claims – the intonation used, pitch of voice, etc. can be used to verify identity and to determine stress levels, likelihood of lying, etc. Iris recognition is now used at airports to expedite passenger checking at immigration.

Several benefits can be realised through biometric identity management, such as:

Risk Reduction

- By reducing fraudulent applications, thereby preventing KYC and Anti-Money laundering (AML) breaches.
- The ability to cross-link multi-facets (e.g. face + driving licence photo + geolocation of phone) reduces 'post-event' insurance claims (e.g. taking out an insurance policy after an event).

Improved customer service

- Accelerated onboarding – no more paper shuffling – "zero touch" application & processing
- Linking with adjacent technology – e.g. blockchain, chatbots and secure identity management to improve the overall customer experience.

Cost reduction

- By removing manual checking and introducing biometric-based automated processing, the cost of KYC, AML and due diligence can be substantially reduced.

b. Big Data Analytics with Artificial Intelligence

The flood of information within financial institutions and their regulators is rising inexorably and technology has been continuously evolving to turn the acquisition and analysis of data into a business advantage that institutions can benefit from in many ways.

Sophisticated "big data" and "cognitive" (aka artificial intelligence or "AI") analytical systems built on cost-effective cloud computing services are available to help store, process and make sense of the growing mountains of data; ultimately enabling C-Suite executives to identify risks and make well informed, incisive decisions.

Some examples of key technology players are:

- Apache Hadoop Open Source framework for handling big data sets in a distributed network
- Microsoft Azure Data Lake and Cognitive Services
- Amazon Web Services (AWS) Analytics
- IBM Cloud and Analytics, including Watson AI

"IBM Cloud is cognitive at the core" stated IBM Chairman and CEO Ginni Rometty and IBM have decided to strategically 'bet the company' on Cloud, AI and Blockchain (Forbes, March 23rd, see reference 7).

Cloud services such as IBM Cloud, Microsoft Azure, and Amazon AWS are "elastic" meaning that they will scale up and down on demand and institutions only need to pay for what they use. Capacity to manage seasonal spikes in data volume, such as the financial year end, can therefore be managed automatically. Likewise, corporate acquisitions that involve large migrations of data from legacy systems can be easily managed at a capacity level too.

Of course, big data also brings big data quality issues. This is a particularly acute problem for most financial institutions that must manage large books of business with policy data maintained potentially over the lifetime of their customers and the fluctuating corporate history of the institution itself. Effective cleaning and data quality management tools are therefore an essential feature of cloud data services in order to provide a foundation for reliable data based decision making.

Technology providers are offering specialised business services built on their data platforms including services to automatically monitor compliance risk and abuse at market, firm and individual level. **"Cognitive Compliance"** involves applying the ever more powerful advances in AI and machine learning algorithms directly to compliance.

Two such areas of focus are regulatory change and the enforcement of compliance controls.

AI technology such as IBM Watson uses natural language processing (available in many languages) to automatically read the flow of new regulatory announcements and then apply cognitive processing to identify the potential new obligations within the text and then match and identify the controls needed within your firm to address those obligations. It acts in a support capacity to compliance staff, making suggestions that they need to review and sense check before putting them into force. The purpose is to both streamline the compliance department and make it increasingly proactive.

IBM also offer tools to support compliance staff in monitoring the day to day regulated activity happening on their business systems and thus "safeguarding their firm's reputation." IBM Surveillance Insight aims to intelligently process unstructured data from all forms of communication such as email, voice, chat etc. and combine that with structured trading transaction data to detect unusual activity that may be in breach of compliance rules. This activity can be continuously monitored at an individual staff level and alerted very quickly back to compliance staff to investigate the situation and take any necessary action.

Cognitive services do not work off the shelf though and tend to require investment from the institutions using them. They can deliver remarkable results but only once they have been fed with a large 'corpus' of relevant knowledge gathered by human experts in the field. Institutions may therefore differentiate themselves in the future through the quality of teaching of their own AI systems.

c. Blockchain

Blockchain brings the potential to significantly and incrementally reduce the burden and cost of compliance reporting for regulated firms while dramatically improving the effectiveness of compliance monitoring across the industry.

First emerging in 2008 in the wake of the financial crisis, blockchain technology provides the secure, immutable, ledger of all transactions. The first global deployment is that which underpins the Bitcoin network. Bitcoin is "digital cash" implemented on a global peer to peer network with no central intermediaries that can be hacked or held to ransom (such as banks and clearing houses). From 2015, corporate and government minds realised that Bitcoin represented battle-hardened proof of the

benefits of a global scale network that operates with no vulnerable intermediaries. The key blockchain principle of decentralisation with built-in network trust can be applied to many other uses besides digital cash, incentivised by potentially massive operational cost savings.

The consequence has been an explosion in R&D, VC investment, proofs of concept and corporate collaboration. The original principles of blockchain are now being rapidly engineered to suit the demanding requirements of global regulated markets and financial grade projects that formed in 2016 are now approaching market readiness in 2017. Executives are recommended to take a close look at the following blockchain inspired coalitions:

- Hyperledger Fabric: 100+ corporations including IBM, American Express, DTCC, JP Morgan, Intel
- R3 Corda: 70+ financial institutions including Barclays, HSBC, UBS, RBS, Bank of America
- Enterprise Ethereum Alliance: 30+ corporations including Microsoft, Santander, BNY Mellon
- B3I – Blockchain Insurance Industry Initiative – a consortia of 15 major insurers/reinsurers, including Munich Re, Swiss Re, Zurich, SCOR and XL-Catlin

d. Compliance and AML Monitoring

Currently, regulated institutions process large quantities of information within their own data silos to generate compliance returns for submission to the regulator at regular intervals. Following the blockchain approach, the key transaction data needed for compliance monitoring can be automatically written by all parties to a secure, decentralised industry risk & compliance ledger that the regulator is permitted "read-only" access to. The ledger must conform to business data, security and data protection standards agreed with the regulator.

The burden of compliance can then shift from the financial institutions towards the regulators who can deploy new analytical tools with cognitive processing services designed to closely monitor the industry compliance data stream to spot trends and raise early warnings of issues and discrepancies.

This is undoubtedly the approach being pursued by the R3 financial consortium. CEO David Rutter has been courting regulators around the globe:

> *"Ultimately, our goal is to have the regulators involved from the start, right from the design through the experiment and the pilot, and the prototyping."* (CoinDesk, March 22nd, see reference 9)

Building on the regulatory perspective, R3 recently announced[1] that the Illinois Department of Financial and Professional Regulation had joined the consortia.

The ledger is more than just a transaction data store; blockchain-based technologies also incorporate the concept of "smart contracts" that will enable compliance rules to be coded directly into the system triggering automatic reporting to all parties concerned. In conjunction with analytics, early warning of problems and risky patterns detected in the data can be signalled in near real-time (instead of quarterly

[1] http://siliconangle.com/blog/2017/03/17/illinois-watchdog-becomes-first-us-state-regulator-join-r3-blockchain-consortium/

cycles) to both the regulator and the institutions affected who can work together to resolve the issues very early and before they mushroom into something far more serious. Awareness of this level of monitoring will be a serious deterrent to mis-selling and money laundering.

In January 2017, Chris Skinner reported,

> *"that 98% of money laundering goes unchecked, allowing $1.6 trillion a year to be used for terrorist funding, drug dealers, sex traffickers and possibly worse."* and that a range of blockchain startups and industry collaborations are working in precisely this area (reference 10).

The ambitious vision to use blockchain to resolve improve the effectiveness of anti-money laundering and compliance breach detection looks achievable in smaller steps with minimal impact on existing systems. This is because the compliance data required for transaction monitoring is fundamentally a one-way flow of data from institutions to the regulators, therefore parallel systems can be built that do not impact core transaction systems.

Potentially, a limited coalition of financial firms can work together, with the assistance of a willing regulator, to carefully build the shared solution and prove the benefits in a controlled sandbox environment before wider rollout and adoption. It's important to recognise that in software terms blockchain is still relatively immature and it is prudent to plan with that in mind.

The principle could begin under the umbrella of a single ambitious provider brand or business network that is managing a group of disparate systems that have been acquired or evolved but never fully harmonised. Some benefits of blockchain technology can then be realised within that group by harmonising the back-office compliance process, working with the regulator and then taking the lead and associated kudos in rolling out to industry to achieve the large-scale benefits.

A further thought is to combine the idea of an industry compliance ledger, with cognitive compliance surveillance tools and the FCA Register (the publicly available record of regulated Approved Persons within the UK) to create an industry surveillance tool for the regulator. This raises the prospect of the regulator having practical tools to monitor regulated individuals on a continuous daily basis.

e. Know Your Customer

Blockchain is also set to play a key role in the transformation of Identity management, which is the core of regulated KYC processes and in this way, we can foresee how Blockchain and Biometrics will work together in the near future.

SecureKey in Toronto obtained $27M funding in late 2016 to work with a consortium of Canadian banks to implement a new way of working with Identity, known as "Self-Sovereign Identity" (SecureKey press release, March 20th, see reference 8).

This means that each customer has a single record of their personal data stored on a secure blockchain and they are in control of how their personal data is used. In practical terms, it means that once the first bank has verified the identity details of a customer through its KYC process, the customer does not need to repeat the same exercise with other banks or organisations that require KYC approval.

"Our goal for this partnership is to accelerate the pace at which we can develop a service to help consumers better manage, protect and control their digital assets and identity, and ultimately provide our customers with greater convenience and a better overall experience," said Andrew Irvine, Head of Commercial Banking and Partnerships, BMO Bank of Montreal.

3. The Technological Dilemma & Overcoming It

The C Suite are excited about the prospects of technology being able to not only bring benefits but take away at least some of the headache caused by mounting regulatory compliance burden.

There is a risk that, like a shiny new object, the tool or technology becomes the goal and once procured, organisations then go on to fit their problems into the technological solution. It's no surprise that technology implementations often fail or result in great frustration because the promised benefits are never fully realised. It's no wonder the technology providers will usually require their customers to purchase large implementation and support packages together with the technology.

Even if the technology is implemented, it doesn't end up getting used, because what the technology dictates doesn't fit with how the organisation functions on a day to day basis.

The result – expensive technology that becomes a white elephant or never really gets fully utilised.

We believe a solution is to:

1. Understand the frustrations,
2. Analyse it in more detail to understand root cause,
3. Develop an organisational solution (fit for purpose)
4. Explore whether technological solutions are appropriate to solve the problem – in addition to an organisational / system / process solution
5. Identify the best solution – either
    a. Build it
    b. Buy it
    c. Rent it

At every step of the way – explore how you can derive ROI Our proposition is to engage to identify a client's problem, develop a solution then design and procure technology – then embed.

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