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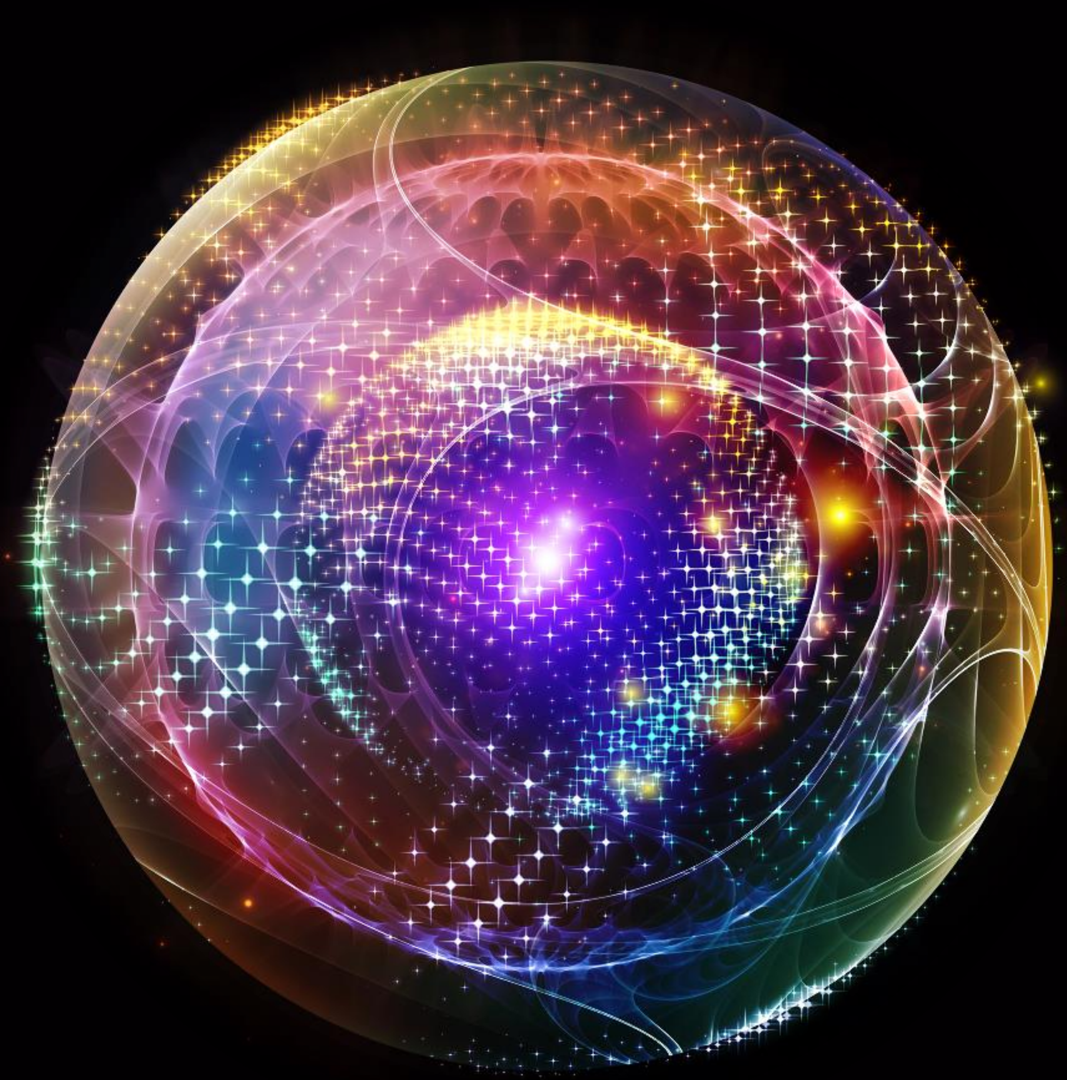
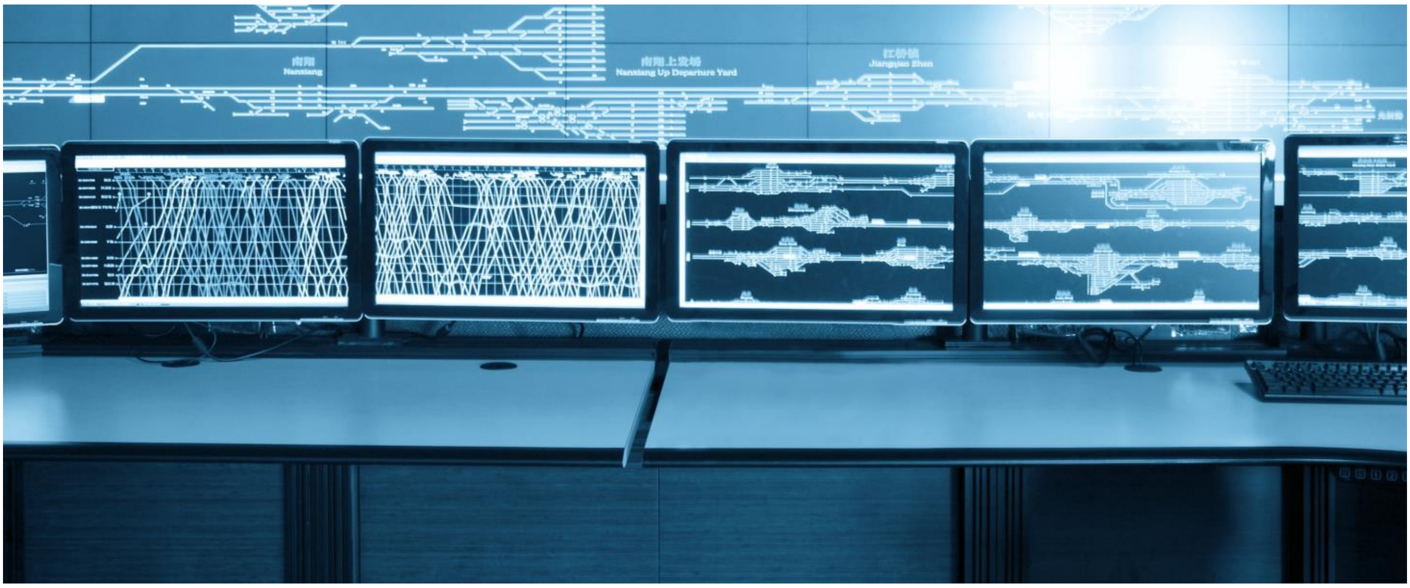


Superannuation
Still a Rich Opportunity for Cyber Criminals?

2020 Edition



Over the past decade, cybercrime has affected financial institutions and their consumers with increasing sophistication, frequency and impact. In the superannuation sector, large account balances, low member engagement and low cyber maturity has made the industry an attractive outlier for cyber criminals, leading to a growing cybercrime challenge for the industry.

In this second instalment focused on the super industry, we look back on our prior observations and compare this to recent events in the sector, how the cyber criminals have upped their game, steps that industry has been taking and what the future looks like.

We had previously observed the steady increase in cyber incidents our response teams were investigating, where the criminal focus had been a client in the wealth sector. The frequency and nature of these responses has changed. Initially, incidents tended to be isolated to individual members, but today these cyber-events are now impacting multiple fund members, with common characteristics. Through our Cyber Intelligence Centre in Sydney, we have observed organised crime groups sharing and trading of trade craft specific to targeting superannuation funds. As the awareness spreads, we have observed the trading of credentials referencing specific wealth balances as cyber criminals seek to maximise value at each stage of the dark web supply chain.

Through our incident response role, Deloitte identified a number of similarities between events that would be explained by the sharing of trade craft, and/or a consortium working in collaboration. Our investigations also identified the likelihood that Australians were involved, given the accent observed in reviewing contact centre recordings where staff were manipulated or coerced to make a fraudulent payment.

We are not alone in observing these cyber attacks and in September 2019, the Australian Federal Police (AFP) announced that they had dismantled an online fraud syndicate allegedly siphoning millions from shares and super funds. This type of crime is focused on monetising fraudulently obtained identities whereby valid credentials are obtained and are combined with social engineering to coerce or convince wealth funds to perform unauthorised transfers of funds.

A second broader example of this growth in converged cyber-fraud is that of banks that use the SWIFT[2] network, including one example where an Asian central bank suffered a financial loss of over $80 million. In these attacks, criminals used a combination of cyber techniques and detailed domain knowledge of SWIFT to initiate payments and divert the funds to other jurisdictions, where funds were withdrawn. A large proportion of the money taken in these attacks may be unrecoverable[3].

What makes super funds an attractive prospect for cyber criminals?

AUSTRAC recently increased[1] the overall risk rating for the superannuation sector to medium and has highlighted the superannuation sector as a prime target for organised crime. AUSTRAC identified that the volume and value of funds and growing reliance on the online channel combined with weaker detection and control mechanisms made superannuation an attractive and lucrative target.

In the APRA Cyber Security Survey[4] of all financial services entities, the super industry was highlighted as having the highest frequency of material cyber incidents, with 75% of respondents having incidents that required escalation to executive management. The industry also had the lowest level of preparedness for an incident.

A number of unique characteristics explain why the industry is becoming an attractive target for cybercrime:

- **Oversized money pools.** Australia has the world's fourth-largest superannuation market[5], with assets over $2.9 trillion, and an average growth rate of 7.3% for the period 2018-19[6].
- **Low member engagement.** In general, members infrequently check their superannuation accounts or read the statement[7]. This can significantly increase the period of time between a successful fraud event (e.g. withdrawal or rollover) and the detection of that event by the member[8].
- **A complex third-party environment[9].** As a whole, the industry has a high reliance upon third-parties such as administrators, financial planners and other outsourced providers who perform services or engage with members on their behalf[10]. This increases the range of potential attack points that cyber criminals can target and commit fraud through, without the fund itself directly having visibility.
- **Digital experience.** The industry is rapidly improving the functionality of online member portals and mobile apps, so that members can interact and perform transactions from a range of devices on a 24x7 basis. This is in turn increasing the inherent risk that an attacker can access member information or initiate transactions if they have the member's log-in details[11].
- **Faster payments.** Technology adoption and regulations such as SuperStream and the New Payments Platform (NPP) are driving a transformation of the superannuation industry towards a fully interconnected environment with faster velocities on withdrawals and rollovers. These faster velocities can mean that outbound payments or rollovers are made promptly, with limited human oversight, and can reduce the time window for detection of a fraud or recovery of funds paid in error.
- **Weak detection and mitigation strategies.** AUSTRAC identified that organised crime is actively targeting funds with weak systems and controls. Once the ability to access funds without detection is confirmed (typically via a single fraudulent transaction), threat actors would step up their attack to a number of compromised identities. The elevated risk rating for the sector and the target areas from the regulator has made control weaknesses from outsourced Anti-Money Laundering / Counter-Terrorism Financing (AML/CTF) processes a focal point for third party providers.

How a cyber attack can lead to fraud in super

Deloitte often works with our clients to perform risk assessments to design controls based on real-world attack scenarios that imitate how real cybercriminals operate to compromise a fund and commit fraud.

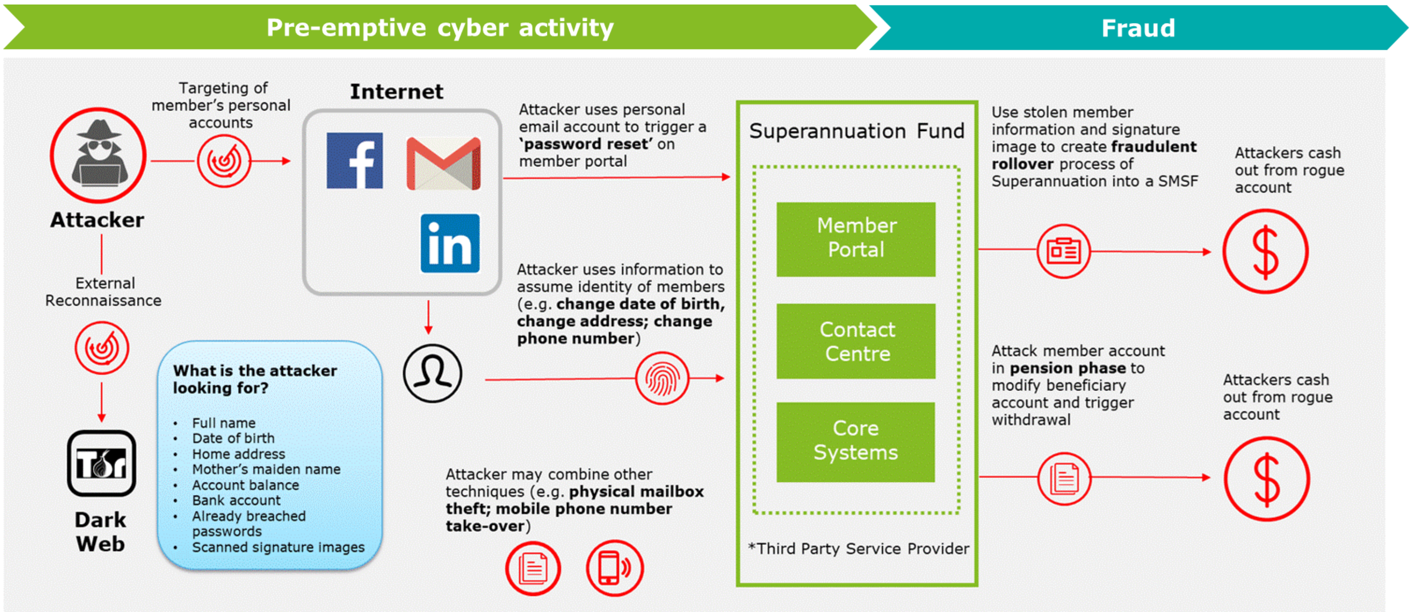
The updated diagram illustrates a common attack scenario, which demonstrates the two main phases of cyber activity followed by the actual financial crime.

In general, the aim in the cyber stage is to acquire enough personal information and access on behalf of a member to then overcome the controls that govern a rollover or withdrawal process.

Learning from typologies and real events are a critical component to identifying, mitigating and managing your organisation's risks.

Implementing layered controls that map to the stages of attack will defend your members' funds from the converging nature of financial crime and cyber risks to prevent and detect issues before they arise.

In particular, a significant proportion of the total malicious activity occurs externally to the fund – which increases the importance of combining external perspective with internal events to identify fraud.


Pre-emptive cyber activity
Fraud
Attacker
Targeting of member's personal accounts
Internet
External Reconnaissance
Dark Web
What is the attacker looking for?
• Full name
• Date of birth
• Home address
• Mother's maiden name
• Account balance
• Bank account
• Already breached passwords
• Scanned signature images
Attacker uses personal email account to trigger a 'password reset' on member portal
Attacker uses information to assume identity of members (e.g. change date of birth, change address; change phone number)
Attacker may combine other techniques (e.g. physical mailbox theft; mobile phone number take-over)
Superannuation Fund
Member Portal
Contact Centre
Core Systems
*Third Party Service Provider
Use stolen member information and signature image to create fraudulent rollover process of Superannuation into a SMSF
Attackers cash out from rogue account
Attack member account in pension phase to modify beneficiary account and trigger withdrawal
Attackers cash out from rogue account

Finding breadcrumbs of information. The first stage involves cyber-criminals conducting online reconnaissance across both the indexed internet and the dark web to find 'breadcrumbs' of information from external data sources about members. A common goal is to identify stolen username and password combinations (note - thanks to major breaches over the past 5 years there are more than 5 billion combinations now available online), which can often be tried against other websites that the individual uses, such as the super member portal or personal email account. This technique is made more effective because passwords are widely reused between websites – the average individual has more than 100 online accounts protected by 5 passwords or less (and 23% of individuals use the same password for all their accounts). The attackers may also combine this activity with relatively simple information gathering techniques to find information (e.g. date-of-birth) from open sources such as social networks like Facebook. Cyber criminals utilise dark web tools and services to automate the steps needed to determine if stolen credentials are valid. The value of each stolen credential is directly correlated to the platforms it has access to – and in some cases the account balances are a metric for determine the identify value.

Personal email account takeover. Attackers will also employ techniques like 'phishing' to attempt takeover of the personal email account of a member. In our experience, this technique is a particularly effective staging point because these email accounts often yield a wide variety of 'useful' information to conduct fraud, such as high-quality copies of signatures (from scanned documents in the Sent Items folder), Tax File Numbers, date of birth, full names, and previously signed superannuation forms[12].

Compromising the member portal. The average personal email account is now associated with more than 100 other online accounts. This means that if the member uses their personal email account for their super member account registration, then attackers with access to the account can then trigger the password reset process on a member portal and capture the reset email, enabling them to log-in as the user.

Mobile phone hijacking. A number of super funds have adopted multi-factor authentication which relies upon a text message being sent to the member at the point of log-in, or to authorise higher risk transactions. Unfortunately, this has triggered a corresponding growth in mobile phone number theft, whereby the attackers can use relatively simple personal information to maliciously port the members mobile phone number (within about 15 minutes) to a prepaid SIM for long enough to be able to access the portal.

Changing member contact details or age. In some instances, attackers will have enough information (and scanned signature images from the personal email account) to be able to submit malicious update requests on behalf of the member. This may include attempts to update the member's address, email address, phone number, or even to 'correct' the member's date-of-birth so that they are above the preservation age. This can also be combined with physical mailbox theft to 'capture' notification letters that would otherwise alert the member of the change.

Executing payment fraud. Once attackers have access to sufficient information about a member, cyber criminals can then directly attempt fraud using the documents, information and keys collected. Common fraud scenarios might include submitting false information to trigger a SMSF rollover. Another observed scenario is a fraudulent request submitted to amend the preservation age (to move an account in the pension phase) and transfer funds into a bank account that is controlled by the criminals[13].

Detection can be slow. Distinguishing normal withdrawals and rollovers from malicious activity is extremely challenging for superannuation funds. It is common that the first red flag is the point at which the member checks their account or receives a letter in the mail to advise them of the transaction. Additionally, superannuation funds that outsource operational matters to third-party service providers may have a lack of clear arrangements regarding fraud monitoring and reporting requirements, making the detection of criminal activity increasingly difficult[14].

Why passwords are a 'failing' control..

59%
of individuals have five or fewer passwords, yet have an average of over 120 online accounts

23%
of individuals always use the same password for all websites.

There are over
5 billion
username and password combinations exposed by data breaches.

56%
of employees reuse passwords across personal and corporate accounts.

Personal email accounts are a key 'staging post' for attacking a member's super account

Typically contain a **rich source of information:**

- **Identification documents**
- **Personal information**
- Contracts containing high-quality **scanned signatures**.

Can be used to **intercept password reset emails for portals and other accounts:**

The average personal email address is registered with over **130** other online accounts.

Convergence of cyber monitoring and forensic analysis

An inherent challenge to joining the dots to identify that a cyber-enabled fraud event is occurring is the current siloed nature of data in organisations.

For example, if a cyber-criminal posing as a fund member happens to a) trigger a password reset on the member portal; b) ports their mobile phone number to a new carrier; c) logs into the member portal from a new location using a new device; d) updates their beneficiary account for withdrawals and e) requests a withdrawal – the super fund needs to have visibility and insight across a range of data sets and the capability to successfully join the dots to identify that a fraud could be occurring (and in time to take action).

In this example, there will often be 'clues' in the cyber data that can be a leading indicator – for example an organised crime group may use the same IP address to access multiple accounts on the member portal.

Hence, a further step in the journey of mitigating the converged risk involves combining cyber and transactional data sets across the business to look for unusual patterns that may indicate a progressive multi-stage attack is occurring to assist decisions around payments. This combined dataset is essential to determine the overall financial impact, and to inform effective customer experience management efforts. In addition to member benefits, an increase in detection and prevention capabilities will also positively contribute to fund obligations such as detection of money laundering and proceeds of crime, and terrorism financing.

So what analytics capabilities should be considered?

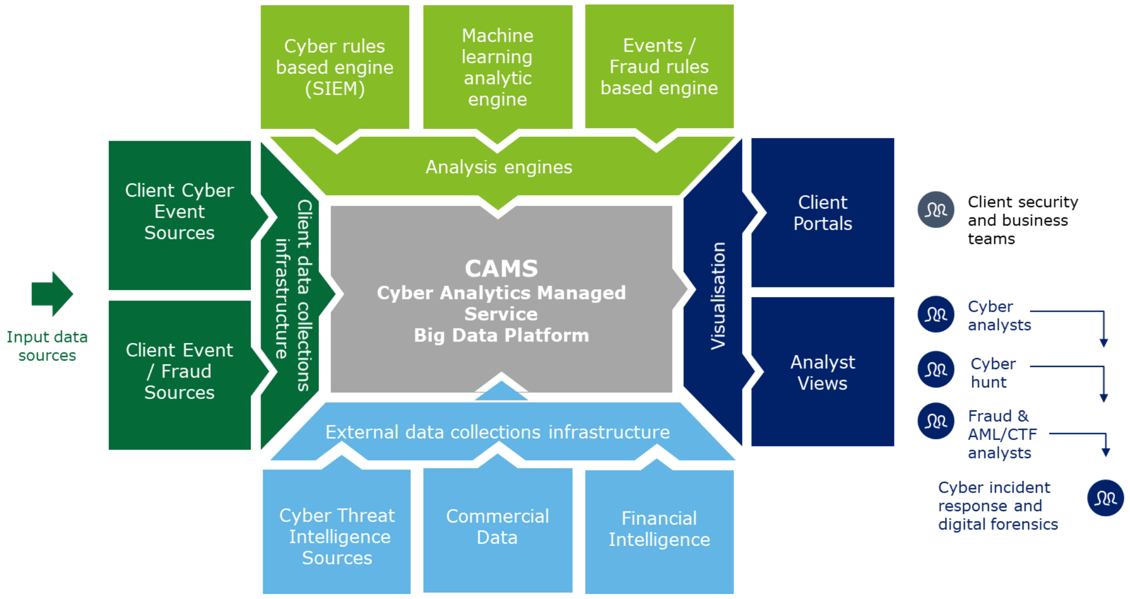
Deloitte employs a wide range of analytic techniques for the quantification of overall transaction risk using a converged range of data sources, and to provide a landscape view that will facilitate the proactive management of cyber risks.

There are four steps to this process:

1. **Authentication Analysis:** Suspicious markers on customer log-on events will allow for the identification of at-risk accounts with risk exposure.
2. **Analytic Testing Procedures:** Typologies are developed to identify known patterns of behaviour highly correlated to fraudulent redemption events.
3. **Transaction Risk Scoring:** Transactions are scored based on features of the redemption to identify likely fraudulent redemptions outside of what had been self-reported.
4. **Customer Behaviour Analysis:** Transactions are then put in the context of a customer's typical behaviour to further inform the quantification of likely customer financial impact.

Deloitte has developed a Cyber Analytics Managed Service (CAMS) to combat cyber enabled fraud in super and provide deep insights into member behaviours that can help identify transactions that are worthy of further investigation. The heart of this system is a big data platform enabled with machine learning to detect both known and unknown events attributable to fraudulent or suspect behaviours.

The following diagram provides an illustration of our approach.


Cyber rules based engine (SIEM)
Machine learning analytic engine
Events / Fraud rules based engine
Analysis engines
Input data sources
Client Cyber Event Sources
Client Event / Fraud Sources
Client data collections infrastructure
CAMS
Cyber Analytics Managed Service
Big Data Platform
Visualisation
Client Portals
Analyst Views
Client security and business teams
Cyber analysts
Cyber hunt
Fraud & AML/CTF analysts
Cyber incident response and digital forensics
External data collections infrastructure
Cyber Threat Intelligence Sources
Commercial Data
Financial Intelligence

Raising the bar

The multi-stage nature of cyberattacks means that super funds and administrators need to consider a risk management approach that directly maps mitigation techniques to each stage of the attack scenarios – and also ensure they can join the dots between stages.

Seven key areas that organisations in the superannuation industry should consider are:

1. **Perform cyber risk assessment based on real-world scenarios.** Cyber risk assessments should be based on a set of realistic attack scenario pathways that are based on how cyber criminals actually seek to attack the fund (or the third-party landscape)[15].

2. **Threat intelligence.** External threat intelligence can help monitor both the public Internet and the dark web to identify emerging cyber threats and attack groups that are currently targeting super companies and their members. Moreover, this capability can also be used to identify compromised usernames/passwords and correlate this against the current passwords of members that use the member portal – which can be used for proactive outreach to members (e.g. to choose a stronger password).

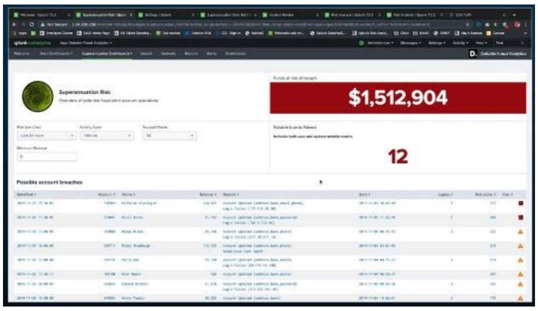
3. **Human Resilience.** A significant number of cybercrime events still involve some degree of coercion of staff, third-parties or members. Modern organisations are developing role-based cyber risk assessments and learning needs analysis to develop targeted training that is specific to the risks associated with each role and includes practical examples.

4. **Effective cyber detection.** In a significant number of cyber breaches, there is an extended period of time between the initial infiltration and the risk event. However, most organisations have millions of security log events, which presents an extreme 'needle in the haystack' scenario. Mature organisations are investing in sophisticated detection capability, which includes skilled analysts, and detection use-cases/behavioural analytics that are mapped to the specific financial crime risks.

5. **Incident and crisis response.** An increasing reality is that organisations experience malicious significant cyber events on a recurring basis. Significant events often put pressure on an organisation to make effective decisions under time pressure, and recent regulatory reform means that organisations are sometimes expected to perform outreach to thousands of impacted individuals. For these reasons, it's particularly important that the incident and breach response process is well defined and practiced to the point where there is familiarity across the whole organisation.

6. **Financial crime framework** An increased focus on enforcement by financial services regulators within Australia across the superannuation sub-sector has called for a more holistic and proactive approach required for linking cyber-related threats the risk-based approach of superannuation funds' AML/CTF Programs. Enhanced maturity and maintenance of programs will be expected to be driven by a continuous feedback loop from real events and suspicious matters relevant to the industry into organisations ML/TF risk assessments. The need for funds to demonstrate a parallel movement and maturing of their financial crime prevention efforts proportionate to the risks they face, is critical.

7. **Converged cyber & fraud capabilities.** Consolidated cyber, fraud and compliance capabilities (that all benefit from interrelated data sets) like Deloitte's Fusion platform based on our CAMS architecture, can significantly improve detection capability.



Deloitte Fusion platform, based on CAMS

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Endnotes

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