



GET ON BOARD

CORPORATE GOVERNANCE IN THE DIGITAL AGE

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EXECUTIVE SUMMARY

Effective corporate governance lies at the heart of long-term, sustainable company growth. However, recent years have witnessed corporate governance requirements becoming increasingly onerous, with regulators across the world placing greater emphasis on the impact businesses have on stakeholders beyond their immediate shareholders, including their employees, customers, suppliers, and society at large.

While companies are increasingly establishing (or bolstering) boards of directors to oversee and implement corporate governance matters, many organisations continue to be plagued by scandals, which have wiped billions of dollars off company market capitalisations and led to the complete collapse of several firms. In the end, it's the company stakeholders who suffer.

At its core, sound corporate governance is built on a number of key pillars, including (1) responsibility delegation, (2) rigorous policies, and (3) transparent disclosures, along with both upwards and downwards (4) communication and (5) monitoring. With regulators imposing increasingly stringent governance requirements on companies, both listed and unlisted, a growing number of companies are establishing their own boards and / or increasing the size of their boards. Given such trends, we forecast the number of board members globally to grow by ~60% from 36 million in 2018 to 58 million in 2024.

Despite its importance, most companies rely on archaic and outdated processes to manage their corporate governance responsibilities, leading to operational mishaps, abuses of power, and chaotic disclosures. We believe a comprehensive digital transformation process across all key governance pillars can significantly minimise these risks; through the implementation of appropriate technological solutions, relevant policies and protocols can be rapidly developed and communicated,

automatically refined, and continuously monitored, allowing companies to swiftly identify and address any corporate governance shortfalls.

In addition, we also see ample scope for boards to utilise technology in order to streamline their day-to-day operations, particularly with respect to digitalising board meetings. In fact, we estimate that companies worldwide currently spend ~USD 5 billion p.a. on the preparation and distribution of paper-based board packs alone.

While board processes have undoubtedly evolved over the years in response to the arrival of new technologies (including e-mails, online networks, and collaboration tools), these mass market solutions still fail to fully address the specific needs of boards, particularly with respect to supporting their key responsibilities and providing institutional-grade data governance.

Recognising this gap in the market, several firms have developed board portal solutions, providing a tailored digital platform to streamline board operations, along with a robust data governance. While still in its infancy, board portals will ultimately become mainstream collaboration and workflow solution tools for boards worldwide, and we forecast global spend to surge from USD 1.1 billion in 2018 to USD 10.9 billion in 2024. For companies that use them, we believe such solutions can provide meaningful enhancements to board productivity, reduce operating costs, and help minimise regulatory fines and penalties.

Corporate governance is key to the survival and long-term sustainability of every organisation, and its digitalisation should be treated as a core priority. For companies that are still reliant on archaic governance protocols, it's time to get on board.

SECTION 1

CORPORATE GOVERNANCE

OVERVIEW

Corporate governance refers to the establishment and implementation of different policies, protocols, and mechanisms that enable a company to execute its strategy and grow shareholder value in a stable manner.

In more recent years, we have witnessed a growing emphasis on corporate sustainability and the impact of a business on its various stakeholders. Environmental, social, and corporate governance (“ESG”) considerations affect not just shareholders, but employees and local communities.

In order to represent shareholders in supervising the actions of managers and the operations of a company (and to protect and balance stakeholders’ interests), many companies establish their own board of directors. However, despite a recognition of boards’ roles and a long history of corporate governance (which has largely been underpinned by increasingly stringent regulatory requirements), companies across the globe continue to be plagued by governance-related scandals (see Figure 1).

FIGURE 1: SELECT CORPORATE GOVERNANCE SCANDALS

	COMPANY	DATE	SCANDAL	RESULT
FINANCE		2009	Confession by the chairman on the manipulation of company financial accounts, inflating assets by over USD 1 billion	Satyam’s shares fell to ~INR 11, a ~98% decline from its high in 2008, and its auditor, PwC was fined USD 6 million by the SEC
		2001	Accounting fraud, with many assets and profits discovered to be fraudulent and misleading, and auditor pressed to ignore irregularities	Enron filed for bankruptcy, with shareholders losing ~USD 11 billion, and its auditor, Arthur Andersen, surrendered its licenses to practise
ETHICS		2017	Company-wide gender and race discrimination / harassment against employees, largely caused by a “bro culture” within the firm	Uber agreed to pay over USD 10 million to settle a class-action lawsuit, while its CEO, Travis Kalanick, resigned
		2016	Attempt by CEO, Jes Staley, to unmask a whistle-blower who raised concerns on recruitment decisions	Barclays was fined USD 15 million in the US, and CEO, Jes Staley, was personally fined GBP 642,000 in the UK
		2015	Manipulation to cars’ software to lower emissions under tests to meet output standards, but found to be ~40x emission whilst driving	Volkswagen’s share price dropped by ~20% on the first trading day after the scandal, and its CEO, Martin Winterkorn, resigned
		2010	The largest oil spill in history (regarded as one of the largest environmental disasters), driven partly by a lack of safety standards	BP paid ~USD 19 billion in fines, and was subject to four years of government monitoring of its safety and ethical protocols
DATA		2018	Unconsented access to personal information of users (and their social network), for user profiling and directed political campaigns	Facebook’s market capitalisation dropped by over USD 36 billion, and its CEO, Mark Zuckerberg, testified in front of the US Congress
		2017	Cybersecurity breach, with over 140 million customers’ personal data accessed by criminals, despite early warnings by security researchers	Equifax’s share price dropped by ~14% on first trading day after the announcement, and its CEO, Richard Smith, stepped down

Source: various press, Quinlan & Associates analysis

In one of the most high-profile cases ever reported, the senior management team of Enron was found to have used accounting loopholes to misrepresent the company's financial situation, misled the board of directors, and pressured their auditor to turn a blind eye on accounting issues. As the scandal unfolded, Enron's share price plummeted from a high of over USD 90 in 2000 to under USD 1 by the end of 2001.

More recently, Uber was accused of firm-wide discriminatory behaviour, including sexist comments, unfair compensation, and sexual harassment, driven by a "bro culture" within the firm. In 2018, Uber agreed to pay USD 10 million to settle lawsuits, of which USD 1.9 million would be distributed to victims of sexual harassment.

In corporate governance scandals relating to data, Cambridge Analytica was allowed access to Facebook users' data without consent, affecting over 50 million users. Facebook saw its market capitalisation drop by over USD 36 billion on the first trading day after the scandal

was announced, and its CEO, Mark Zuckerberg, was required to testify in front of the US Congress.

Most recently, serious conflicts of interest have been found at WeWork, although there appear to be no legal breaches. Red-flagged incidences of poor governance included paying the CEO, Adam Neumann, USD 5.9 million to use the "We" trademark, spending over USD 60 million on the CEO's private jet, lending millions to the CEO with his WeWork shares as collateral, and the CEO's wife, Rebekah, being placed in charge of succession planning. Employees were also rumoured to have been denied bonuses and salary raises. Investors subsequently balked and one of the most highly anticipated IPOs for 2019 was pulled as a result.

Despite not being a corporate, the European Union ("EU") was also found to suffer from poor "corporate" governance standards, with reports that over EUR 4 billion (USD 4.3 billion) of funds were misspent in 2018, reflecting poor controls on how funds are invested.¹

DESPITE A RECOGNITION OF BOARDS' ROLES AND A LONG HISTORY OF CORPORATE GOVERNANCE, COMPANIES ACROSS THE GLOBE CONTINUE TO BE PLAGUED BY GOVERNANCE-RELATED SCANDALS

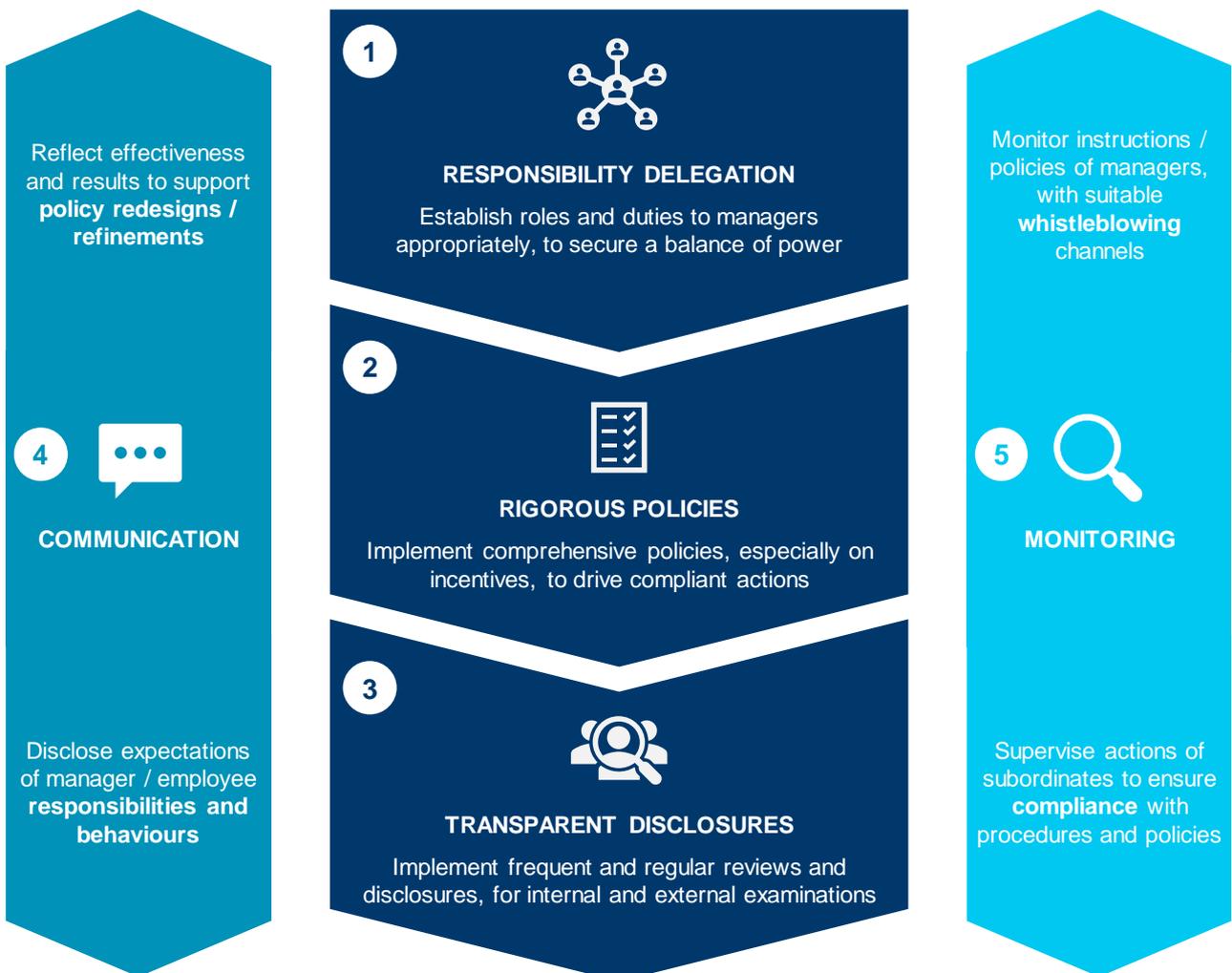
¹ Reuters, 'Billions of euros of EU funds misspent last year: auditors', 8 October 2019, available at: <https://www.reuters.com/article/us-eu-budget-auditors/billions-of-euros-of-eu-funds-misspent-last-year-auditors-idUSKBN1WM2B0>

CORPORATE GOVERNANCE SYSTEMS

Corporate governance consists of a comprehensive set of protocols and mechanisms across the company, including (1) responsibility delegation, (2) rigorous policies, and (3) transparent disclosures. These

protocols need to be supported by both upwards and downwards (4) communication and (5) monitoring (see Figure 2). A breakdown in any of these protocols can lead to dire consequences for the overall effectiveness of an organisation’s corporate governance.

FIGURE 2: CORPORATE GOVERNANCE PROTOCOLS



Source: Quinlan & Associates

1. RESPONSIBILITY DELEGATION

Responsibilities and, more specifically, authority, needs to be delegated appropriately across both managers and employees, to ensure there is a proper balance of power across an organisation.

If authority is concentrated on a group of managers, this provides an environment for potential abuse of power. Conversely, if managers do not have sufficient authority, it may hinder their effectiveness in overseeing employee behaviour.

2. RIGOROUS POLICIES

Company policies need to be designed and implemented to ensure employees are driven to act in the best interests of the company and its stakeholders. This is particularly relevant for policies and mechanisms concerning remuneration and promotion. Metrics and / or KPIs need to be designed to not only incorporate quantitative results, but also evaluate the means by which outcomes are achieved.

If firm policies are not designed properly, employees may be incentivised to act for their own well-being, instead of the firm's or other stakeholders' best interests.

3. TRANSPARENT DISCLOSURES

Disclosures need to be timely, comprehensive, accurate, and regular. Only through transparent reporting can the company be properly monitored, both internally and externally.

This allows any shortfalls within the system to be identified and swiftly addressed. In addition to scheduled disclosures, companies should announce any unexpected events that may significantly affect operations, along with associated mitigating actions, to enable stakeholders to properly evaluate any potential impacts.

Poor disclosure policies may result in lengthy cover-ups, often exacerbating smaller problems that could have been easily and quickly addressed.

4. COMMUNICATION

Communication channels, in both directions, need to be established. This includes expectations to be communicated downwards to ensure employees understand what is expected of them, coupled with appropriate upward feedback channels to provide recommendations on changes in any policies.

Inadequate communication may result in outdated understanding and policies, meaning that employees would not act as expected by the company.

5. MONITORING

While managers are expected to monitor downwards as they oversee subordinates, employees should also be empowered to monitor upwards. This is typically enabled via appropriate whistleblowing channels.

A lack of monitoring mechanisms delays the speed at which problems are uncovered, and also hinders the process of disclosure.

BOARDS OF DIRECTORS

A company's board of directors has an obligation to establish appropriate corporate governance controls. Three of their key responsibilities include:

1. Establishing an appropriate management structure;
2. Fostering a suitable company culture; and
3. Managing the interests of shareholders and other relevant stakeholders.

These responsibilities correspond to the previously described corporate governance protocols, being: (1) responsibility delegation, (2) rigorous policies, and (3) transparent disclosures. In short, the company's management structure dictates responsibility delegation, as reporting lines and authorities

are assigned accordingly. Rigorous policies are put in place to foster a culture that echoes the company's values, driving employees to act in the best interests of the company. Finally, transparent disclosures facilitate the management of stakeholder interests and help with addressing any queries.

To further enhance corporate governance standards and address previous failings, regulators across the world have been imposing more stringent requirements on boards. In fact, 84% of OECD countries have refined company law or securities law since 2015, and nearly 50% have augmented national corporate governance laws since 2017.² Some key pillars of these regulatory changes include: (1) board requirement, (2) diversity & inclusion, (3) ESG, (4) performance evaluation, and (5) data governance (see Figure 3).

FIGURE 3: PILLARS OF REGULATORY CHANGES

PILLAR	DESCRIPTION	COUNTRY	EXAMPLE REGULATION
Board Requirement	Appointment of board of directors of certain size for both public and private companies		India requires at least three directors for public companies and at least two directors for private companies
Diversity & Inclusion	Obligations to satisfy specified level of diversification in board composition		Norway mandates listed companies to reserve at least 40% of their board roles for women
ESG	Prioritisation of sustainable societal benefits over shareholders' wealth		Singapore requires disclosures on integration of ESG factors into a company's overall processes
Performance Evaluation	Requirements regarding evaluation and disclosure of board performance		Hong Kong requires boards to evaluate and disclose their own performance and operational efficiency
Data Governance	Protocols for data management, with regard to protection, security, and privacy		The UK calls for implementation of firm-wide cybersecurity mechanisms on all technology systems

 **Board Composition**

Source: Quinlan & Associates

² OECD, 'Corporate Governance Factbook 2019', 11 June 2019, available at: <https://www.oecd.org/corporate/Corporate-Governance-Factbook.pdf>

Regulators in India and Norway have been particularly vocal about the composition of company boards. For example, Indian regulators place a minimum requirement on the size of a company's board (even for private companies), while regulators in Norway have taken this a step further by imposing demands around board diversity with respect to gender composition. The underlying aim of these requirements is to ensure that boards have adequate human capital with comprehensive expertise and experience in order to properly carry out their responsibilities.

In more recent years, a number of regulators, including in Singapore, are prioritising corporate sustainability over shareholder wealth creation. Such an approach is challenging more traditional *Shareholder Theory*, which states that a company's only responsibility is to its shareholders, with no social responsibility to the public. In August 2019, Business Roundtable, an association of chief executive officers of America's leading companies, released a statement signed by 181 CEOs committed to 'lead their companies for the benefit of all stakeholders – customers, employees, suppliers, communities...and shareholders', effectively shunning the notion of shareholder primacy.³

With an ongoing global drive to emphasise ESG concerns and raise transparency, regulators are also expecting boards to self-reflect upon their operational efficiency and disclose their performance to stakeholders, which can be seen in the case of Hong Kong. Data governance is also becoming an increasingly

important issue in response to a growing number of data scandals and cybersecurity breaches that have occurred as companies digitalise their operations. For example, companies in the UK are now required to implement appropriate data governance protocols to enhance data security and privacy.

GROWTH IN BOARD MEMBERS

In an effort to better manage more stringent corporate governance requirements, we believe companies will start to appoint more board members in coming years. Notwithstanding growing regulatory pressures, larger board sizes are more likely to reflect a more fundamental operational need of many companies; in today's society, boards are now expected to understand and assess increasingly complex business issues, including complicated financial transactions, new technologies, regulatory changes, cybersecurity risks, sophisticated remuneration and succession plans, and corporate social capital.

Given such forces at play, we forecast the number of board members globally to grow by over 60% from 2018 to 2024, from 36 million to 58 million (see Figure 4). We also project the total proportion of global organisations with a board to rise from ~8.4% in 2018 to ~10.9% in 2024. While this may seem like a somewhat trivial increase, it takes into account a sizeable number of micro companies, especially one-man shops, that have little (if any) corporate governance obligations (and hence do not need a board).

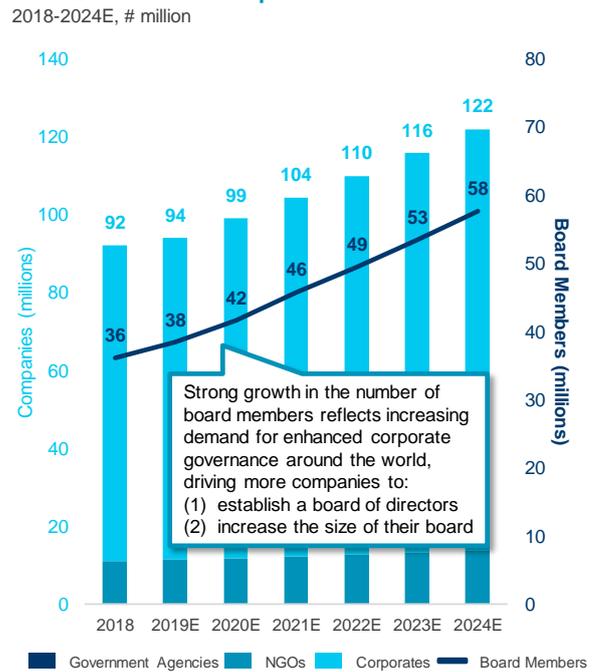
³ Business Roundtable, 'Business Roundtable Redefines the Purpose of a Corporation of Promote 'An Economy That Serves All Americans'', 19 August 2019, available at: <https://www.businessroundtable.org/business-roundtable-redefines-the-purpose-of-a-corporation-to-promote-an-economy-that-serves-all-americans>

FIGURE 4: GLOBAL NUMBER OF ORGANISATIONS AND BOARD MEMBERS

Market Data and Assumptions

		Company Type	No. of Orgs.	w/ Board	Board Size	BoD Members
		(# Employees)	#	%	Average	Total
Listed Companies	Nano/Micro Cap		30,000	100%	7	210,000
	Small/Mid/Large Cap		23,000	100%	12	276,000
Unlisted Companies	Micro (<10)		73,500,000	3%	2	4,410,000
	SMEs (10-250)		7,400,000	30%	5	11,100,000
	Large (>250)		185,000	100%	9	1,665,000
NGOs	Small (<10)		10,000,000	20%	5	10,000,000
	Medium (10-250)		1,000,000	100%	7	7,000,000
	Large (>250)		110,000	100%	12	1,320,000
	Gov. Org.		4,000	100%	15	60,000
TOTAL			92.3m			36.0m

Global Number of Companies and Board Members



Note that due to the small number of governmental organisations, the datapoint is barely visible in the graph; Nano/Micro Cap refers to listed companies with a market capitalisation of <USD 300 million, and Small/Mid/Large Cap refers to those with a market capitalisation of >USD 300 million

Source: World Federation of Exchanges, International Monetary Fund, World Bank, The Global Journal, national statistic bureaus, Quinlan & Associates estimates

With growing regulatory scrutiny of corporate governance by regulators across the world, coupled with the operational challenges associated with operating increasingly digitalised and complex businesses (as well as

larger boards of directors), there is ample scope to further digitalise board operations and corporate governance processes. In fact, we believe such a move is fast becoming an operational imperative.

SECTION 2

DIGITALISING CORPORATE GOVERNANCE

DIGITALISATION OF CORPORATE GOVERNANCE PROTOCOLS

Despite the obvious importance of corporate governance, many companies still use outdated systems and archaic processes to conduct their operations. We believe this gives rise to a number of problems for boards across all aspects of corporate governance.

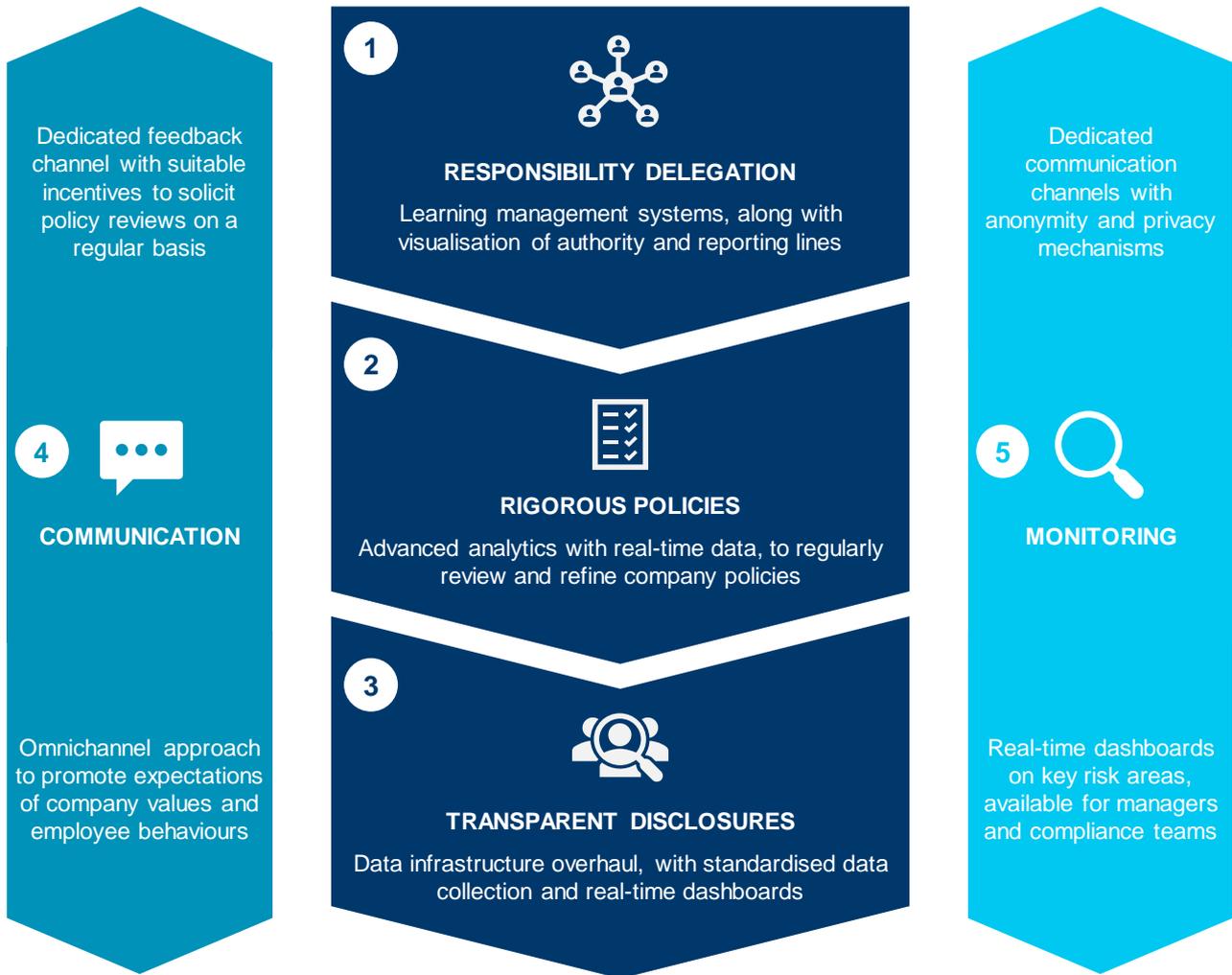
First and foremost, individual authorities may overlap, with complex reporting lines complicating the understanding of responsibilities and obligations among a company's employees. Secondly, many company policies typically stagnate once they are developed, with minimal reviews / updates due to the fact that they are labour-intensive and time-consuming. Thirdly, disclosures and

reporting often require the manual collection and compilation of information, introducing opportunities for errors, manipulation, and cover-ups. Fourthly, a lack of official, standardised communication channels hinders a company's ability to refine their governance protocols and effectively convey these expectations to their employees. Finally, inadequate monitoring mechanisms significantly limit the opportunity to uncover any problems at an early stage, limiting otherwise swift and easy corrective actions.

Given the out-dated state of corporate governance protocols at many companies, we believe the implementation of even basic technological solutions would greatly enhance the efficiency of corporate governance (see Figure 5).

GIVEN THE OUT-DATED STATE OF CORPORATE GOVERNANCE PROTOCOLS, THE IMPLEMENTATION OF EVEN BASIC TECHNOLOGICAL SOLUTIONS WOULD GREATLY ENHANCE THE EFFICIENCY OF CORPORATE GOVERNANCE

FIGURE 5: DIGITALISATION OF CORPORATE GOVERNANCE PROTOCOLS



Source: Quinlan & Associates

1. RESPONSIBILITY DELEGATION

Learning management systems provide a number of functions that record the expertise, experience, and ongoing development progress of managers and employees. If used appropriately with A.I. capabilities, the data can be used to evaluate the level of authority and

specific responsibilities that can be placed on managers and their subordinates.

Visualisation of individual authorities and reporting lines can also help simplify management structures, given supervisory gaps can be clearly identified, allowing for reporting structures to be redesigned accordingly.

2. RIGOROUS POLICIES

Advanced analytics, coupled with real-time data on employee behaviour and company performance, can help with policy redesign. This could include not only traditional elements – such as adjusting investment targets, risk appetites, performance KPIs, and employee incentive metrics – but also less noticeable aspects of employee behaviour, including working hours and annual leave (for employee morale), energy saving initiatives (for ESG initiatives), and reactions to corporate messages (to refine communication strategies).

While some of these processes may be difficult to implement, with time and expertise required to appropriately tweak the algorithms / protocols, successful incorporation could facilitate and automate company policies in an unbiased manner.

3. TRANSPARENT DISCLOSURES

Timely and accurate data for reviews and disclosures is critical for the operations of any company. Undergoing a data infrastructure overhaul – especially for companies with archaic and convoluted data architecture – to standardise all data collection and cleansing processes would greatly enhance a company's ability to understand ongoing situations.

Furthermore, real-time dashboards can be developed for ongoing reviews, with snapshots to be taken at pre-determined intervals for reporting and auditing purposes.

4. COMMUNICATIONS

A dedicated feedback channel needs to be established, with appropriate incentives to encourage employees to provide feedback on corporate governance policies. Feedback can be collected via well-designed, multiple-choice questionnaires to collect anonymised results for simple evaluation (relative to open-ended questions).

Multiple channels, including intranet, company social media pages, and collaboration platforms, can be leveraged by the company to promote its values and expectations around employee behaviours. Updates on company policies and protocols can also be announced in real-time, helping employees to immediately understand and comply with new corporate governance requirements.

5. MONITORING

In addition to employing a dedicated feedback channel, whistleblowing channels with proper anonymity and privacy mechanisms should be established to provide employees with the ability to upward monitor. The channel should provide functions for employees to supply any supporting documents, and compliance teams should have the authority to independently collect and retain any relevant information / data for further investigations.

Real-time dashboards – as mentioned in transparent disclosures above – can also be used by managers to identify any key risk areas. While managers should not be spending time on watching the dashboard on an ongoing basis, alerts can be sent whenever key risk metrics are breached or when employee behaviours result in a red flag.

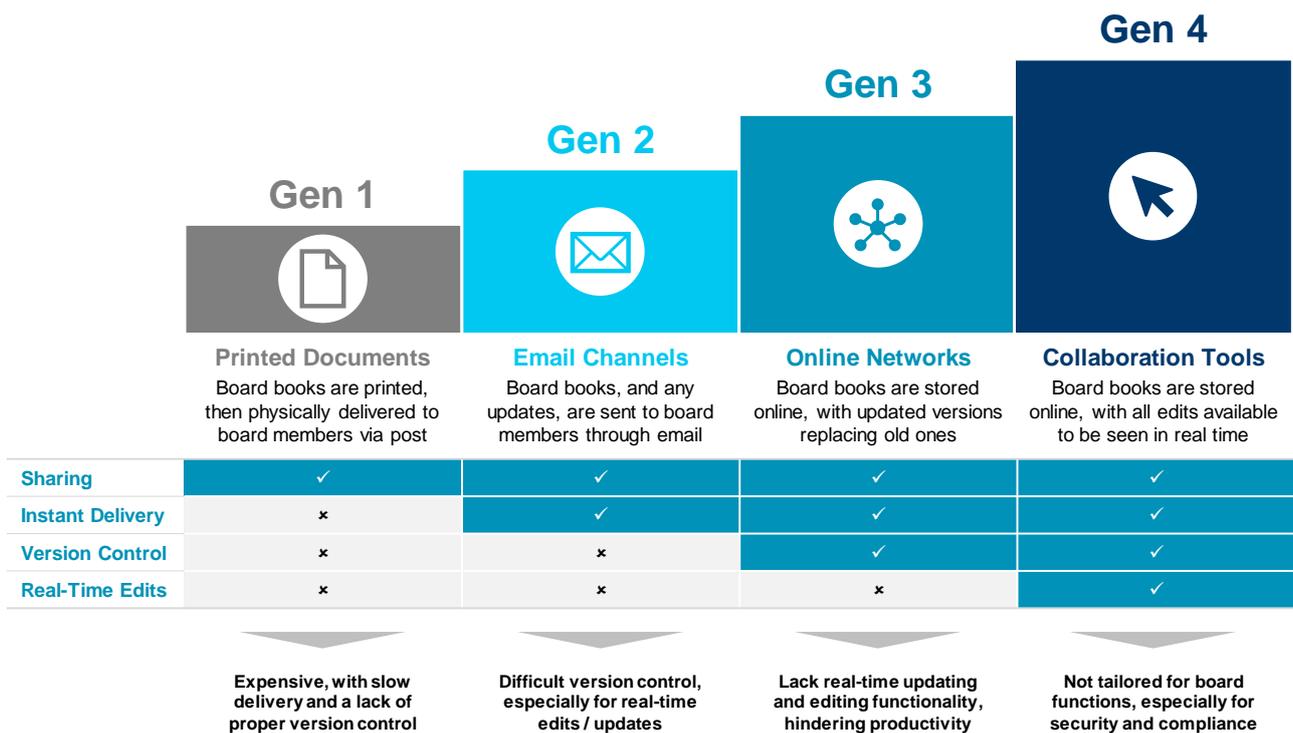
DIGITALISATION OF BOARD OPERATIONS

In addition to digitalising corporate governance protocols within a company, we believe there is significant potential for boards to digitalise their operations.

While boards do not meet frequently, their meetings include a number of critical and unique steps, including: (1) meeting

organisation; (2) board book compilation and distribution, which is critical in managing regulatory responsibilities; (3) meeting and discussions; (4) document archiving; and (5) task tracking and management. With advancements in technology, these operations, particularly the management of board books, have slowly improved over the years (see Figure 6).

FIGURE 6: DIGITALISATION OF BOARD BOOKS



Source: Quinlan & Associates analysis

The compilation and distribution of board books has historically been a resource-intensive and time-consuming process, with pages printed and physically delivered to board members (i.e. Gen 1). This involved sizeable printing costs (given multiple copies of hundred-page documents), as well as delivery costs, especially for board members located at a distance. In addition, any changes and edits to

board books could not be reflected in real-time, as board books had to be reprinted and re-delivered.

As e-mails became more prominent, the creation of board books was digitised, allowing for much faster and easier distribution (i.e. Gen 2 solutions). However, edits were not reflected in real-time and version control was lacking, as

board members had to constantly monitor e-mail attachments for updated documents. With the arrival of online servers and networks such as Dropbox and Sync (i.e. Gen 3 solutions), where only a single board book file is made available (as newer versions replace older ones), version control could be addressed, but board operations were still hampered by a lack of real-time updating and editing.

More recently, collaboration tools, including Google Drive and Slack (i.e. Gen 4 solutions) have made their way into board book operations, providing functions for board members to make changes to and share updated versions of board books in real-time. In addition, some collaboration tools offer a range of tools to enhance board operations, such as voting functions to allow board members to select the date, time, and venue for meetings, facilitating meeting organisation. There are also project management applications / workflow solutions, such as Flowlu and Wrike, that enable the company and / or board to track the

progress of tasks assigned to individual board members. However, many of these tools are not tailored for board functions, especially with respect to data security and regulatory compliance.

Because boards meet infrequently, many companies do not view the digitalisation of board operations as a priority, despite the existence of digital solutions. Taking the preparation of board packs as an example, many boards, especially those from smaller companies, still use paper-based board packs for their meetings. This includes printing on paper (and reprinting if there are any errors), manually processing the material, and delivering the finished packs to board members. Given the number of board members worldwide, and the frequency in which board meetings are conducted, we estimate the global aggregate cost of printing, processing, and delivering board packs currently stands at USD 5 billion p.a. (see Figure 7).

FIGURE 7: WASTAGE ON PAPER-BASED BOARD PACKS



Source: Quinlan & Associates estimates

We see ample scope for companies to further digitalise the operations of their boards in parallel with the governance protocols discussed above, in order for corporate governance to undergo digital transformation in

an effective and synchronised manner. When one lags behind the other, it introduces the potential for miscommunication, manipulation, and error.

THE RISE OF BOARD PORTALS

While we recognise growing number of boards are turning to digital solutions to enhance their operations, many of the collaboration and

workflow tools being used are designed for mass market use and, as a result, do not specifically support the core functions of company boards (see Figure 8).

FIGURE 8: SHORTFALLS OF EXISTING SOLUTIONS

		Gen 1	Gen 2	Gen 3	Gen 4	
		Paper Prints	Email Channels	Online Storage	Collaboration Tools	
Board Book	Board Book Creation	✓	✓	✓	✓	
	File Digitalisation	✗	✓	✓	✓	
	Remote & 24/7 Access	✗	✗	✓	✓	
	Realtime Updates	✗	✗	✗	✓	
	Realtime Collaboration	✗	✗	✗	✓	
Meeting Management	Pre-Meeting	Meeting Organisation	✗	✗	✗	-
		Board Minutes	✗	✗	✗	✗
	During Meeting	Proposal Voting	✗	✗	✗	✗
		Decision Documentation	✗	✗	✗	✗
		Committee Channels	✗	✗	✗	-
	Post-Meeting	Document Archives	✗	✗	✗	-
		Task Management	✗	✗	✗	-
Board System	Document Organisation	✗	✗	✗	✗	
	Reliable Security	✗	✗	✗	-	

✓ Available
 - Dependent
 ✗ Unavailable

Source: Quinlan & Associates analysis

The shortfalls of existing digital solutions are particularly telling during actual board meetings – they typically do not support the production of board minutes, processes of proposal voting, and the documentation of board decisions. Furthermore, with the growing importance of data governance (especially in light of regulations such as Europe’s GDPR), many

boards are scrutinising existing collaboration platforms for their cybersecurity policies and protocols. It is not surprising to see that boards are typically unsatisfied with the existing data governance mechanisms of modern collaboration tools, given the lack of institutional-grade security and privacy.

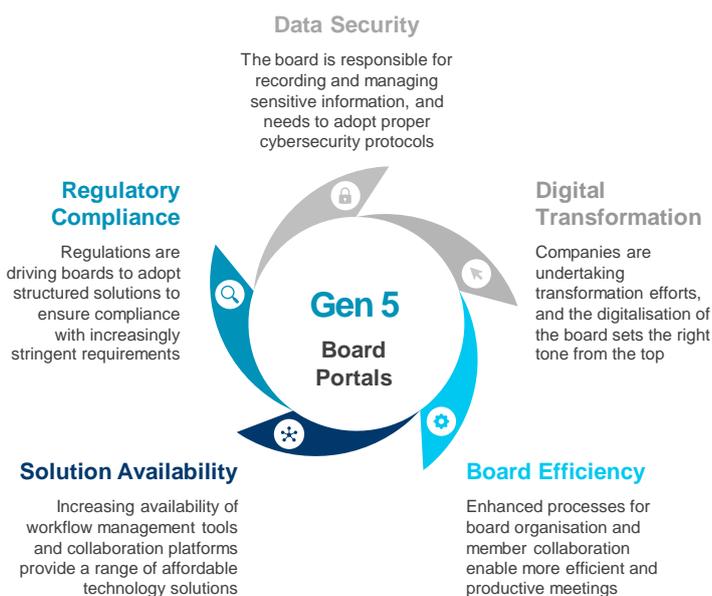
Recognising the limitations of mass market collaboration and workflow solution tools, a number of players in recent years have developed board portals (i.e. Gen 5 solutions), designed to provide a tailored digital platform to enhance boards' operations, along with a robust data governance framework. At their core, board portals are designed to help

facilitate meetings, compile board packs, and provide secure access to – and collaborative functions for – board-related files. These solutions typically come with robust data infrastructure and cybersecurity mechanisms, to protect the integrity of confidential data (see Figure 9).

FIGURE 9: BOARD PORTALS – “GEN 5” SOLUTIONS

Gen 5 Board Portals

Adoption Drivers



Sample Board Portal Solution Providers

Provider	Description	2018 Revenue
Diligent	Diligent is the largest player in the market, with ~50% of the Fortune 1000 as clients	USD 253m
BoardVantage	Acquired by Nasdaq in 2016, BoardVantage has ~4,000 clients, with ~130,000 users	~USD 50m*
Admincontrol	Admincontrol has over 4,000 active portals with over 68,000 users, and was acquired by Visma	~USD 16m
convene	Azeus Convene is a top-tier provider with clients in more than 80 countries including Fortune 500 and FTSE1000 clients	~USD 10m

Source: company financial reports, Quinlan & Associates analysis and estimates

Diligent is currently the largest board portal provider in the world, generating USD 253 million in revenues in 2018 and boasting a client base that includes more than 50% of Fortune 1,000 companies. At roughly one-fifth of its size (in terms of revenue), BoardVantage is the second largest global provider in the industry, generating ~USD 50 million in revenues in 2018 from a client base of ~4,000 organisations. Both Diligent and BoardVantage were acquired in 2016, by Insight Venture Partners and Nasdaq respectively.

Understanding the growing need to further digitalise their operations, company boards, especially those of listed firms in North America (where most of the board portal providers are headquartered), have been rapidly implementing board portal solutions to help streamline their operations and meet increasingly stringent corporate governance requirements, particularly with respect to data security and privacy. We estimate global spend on board portals stood at ~USD 1.1 billion in 2018.

Given the growing international regulatory drive to enhance corporate governance standards (particularly with respect to minimum board requirements, diversity & inclusion, ESG responsibilities, company disclosures, and data governance), we are likely to see rapid growth in the adoption of board portal solutions as a matter of global best-practice, especially as boards grow in their size and complexity (including employing a growing number of corporate administrators to manage larger boards), particularly among listed firms.

We also believe much of the growth in board portal adoption is likely to come from currently

underpenetrated markets (especially Asia Pacific, where we estimate current board portal utilisation at <5%) and organisations, including medium-to-large unlisted companies (e.g. pre-IPO companies), governments (who have large and complex organisational structures), and NGOs (where transparency and disclosure requirements are relatively high). Taking these factors into account, we forecast total worldwide spend on board portal solutions to grow at a CAGR of 45% from 2018-24 to USD 10.9 billion, with global penetration rates rising from ~7% to ~44% over the same period (see Figure 10).

FIGURE 10: BOARD PORTAL MARKET SIZE

Market Sizing Assumptions

2018

	BoD Members	Board Admin.	Portal Penetration	Portal Users
Low Potential Market				
Micro Company	4,410,000	0	0%	0
Small NGOs	10,000,000	0	0%	0
Low potential due to budget constraints and simple board operations (due to small board size)				
High Potential Market				
Listed: Nano/Micro cap	210,000	30,000	20%	48,000
Listed: Small - Large cap	276,000	23,000	40%	119,600
Unlisted: SMEs	11,100,000	2,224,000	5%	666,200
Unlisted: Large Corp.	1,665,000	185,000	25%	462,500
Medium NGOs	7,000,000	0	5%	350,000
Large NGOs	1,320,000	111,000	10%	143,100
Gov. Org.	60,000	8,000	1%	680
TOTAL	21.6m	2.6m		1.8m

Market Sizing Assumptions

2024

	BoD Members*	Board Admin.**	Portal Penetration	Portal Users
High Potential Market				
Listed: Nano/Micro cap	355,000	79,000	95%	412,300
Listed: Small - Large cap	434,000	62,000	95%	471,200
Unlisted: SMEs	21,620,000	4,160,000	40%	10,312,000
Unlisted: Large Corp.	2,470,000	247,000	80%	2,173,600
Medium NGOs	8,730,000	0	35%	3,055,500
Large NGOs	1,660,000	139,000	70%	1,259,300
Gov. Org.	60,000	8,000	30%	20,400
TOTAL	35.3m	4.7m		17.8m

We project a sharp rise in penetration rates over the next 6 years

Board Portal Market Size

2018-2024E, USD billion*



*An average subscription price of USD 50 per user per month is used, estimated based on the five leading vendors in 2018

**The projection includes (1) an additional board administrator for all listed companies starting 2019 (to support board operations), (2) two additional BoD members for listed companies starting 2021 (due to increasing board responsibilities), and (3) an additional BoD member for unlisted companies starting 2021 (due to increasing board responsibilities)

Source: International Monetary Fund, World Bank, national statistic bureaus, company financial reports, Quinlan & Associates estimates

It is important to note that pricing will remain a key consideration for the future adoption of board portal solutions, especially in developing markets and among smaller-sized companies and NGOs, who are considerably more price

sensitive. At present, the largest four players in the industry currently charge ~USD 10,000+ p.a. for the use of their portals, with Diligent and BoardVantage also charging one-off implementation fees (see Figure 11).

FIGURE 11: BOARD PORTAL PRICING

Vendor	Approximate Annual Cost (USD)*		
	Per Board Member	Setup Fees (One-time)	Starting Price
 Diligent	1,200	3,500	12,000-15,000
 BoardVantage	1,200	1,500	9,000-12,000
 BRAINLOOP	1,100	-	11,000
 BoardEffect	900	-	9,000
 convene	500	1,200	5,000-6,000
 Praxonomy	468	-	2,340

*Subscription is charged on an annual basis. Approximate annual costs are based on pricing published by the vendors on the UK Government's G Cloud (Digital Marketplace) for the UK Public Sector's procurement. It is a common practice that software vendors offer substantial discounts to government bodies, ranging from 40-50% off from their standard list prices. Therefore, above rates are computed by multiplying G Cloud's pricing by two. Daedal Research and market intelligence further support our estimates. Source: company websites, Daedal Research, Quinlan & Associates

We believe current pricing schedules being quoted by industry incumbents are prohibitive except for all but the largest companies. This is likely to open the door for new board portal providers to fill a competitive white space further down the client curve, where budgets are a major consideration for the adoption of

new technology solutions. However, given the vast size of the potential addressable user-base (estimated at nearly 40 million board members in 2024), any challenger solutions will need to be widely marketed (in order to drive industry visibility) and very user-friendly (in order to support rapid user adoption).

SECTION 3

CASE STUDY – PRAXONOMY

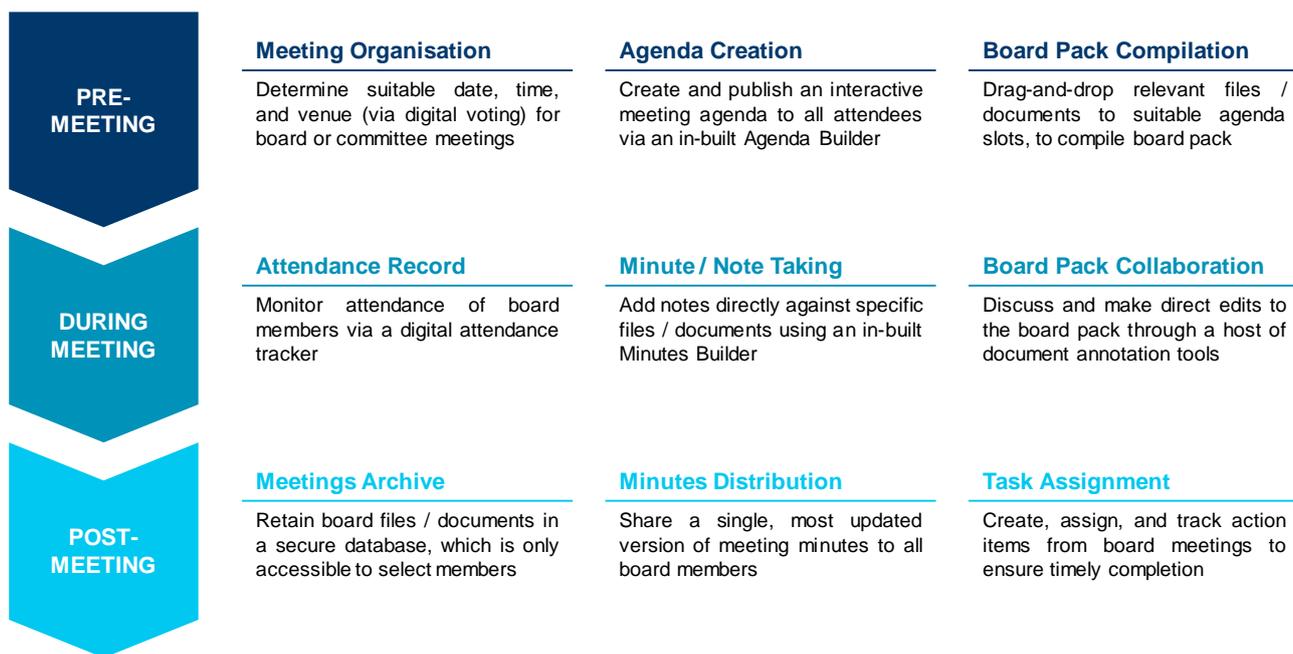
OVERVIEW

Headquartered in Hong Kong, Praxonomy provides a web-based portal to empower boards by enabling them to work smarter. The company offers a cloud-based SaaS board portal that is designed to be simple, affordable, and secure, to support the operations of boards of directors.

PORTAL FUNCTIONS

To help facilitate board meetings, the Praxonomy board portal offers a set of comprehensive functions to support pre-meeting, in-meeting, and post-meeting responsibilities of board members. (see Figure 12). These functions are designed to digitalise and streamline many of the current manual and inefficient processes that boards have today.

FIGURE 12: PRAXONOMY BOARD PORTAL FUNCTIONS

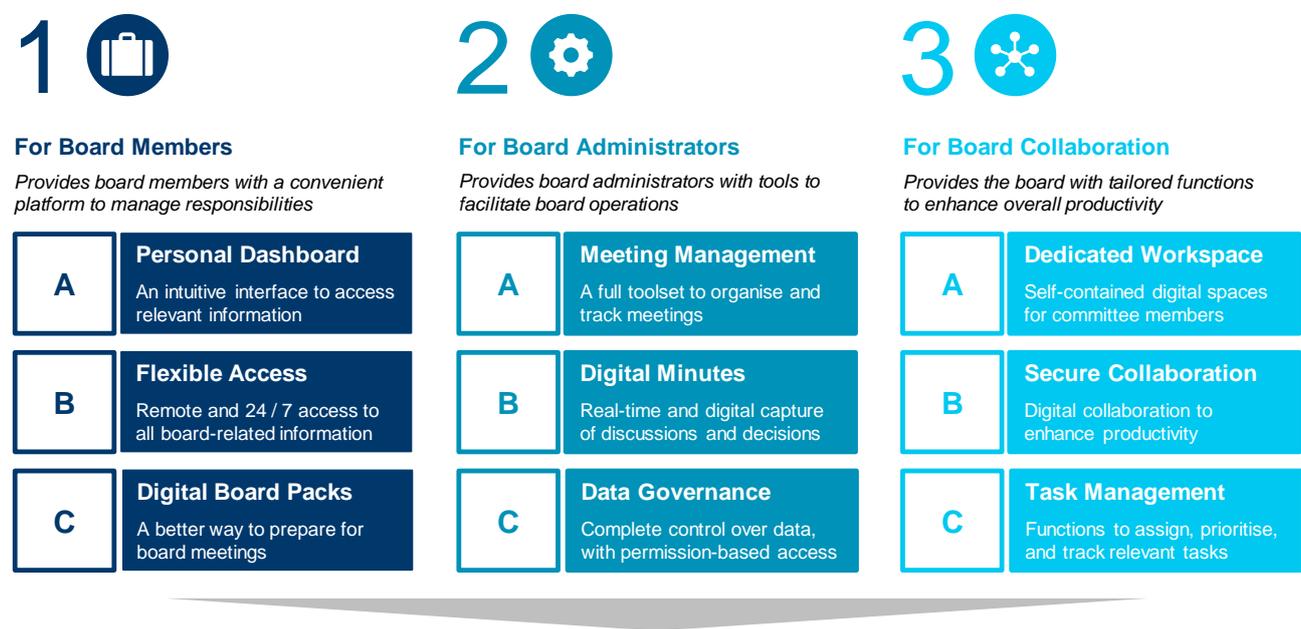


Source: Praxonomy, Quinlan & Associates analysis

By targeting the three different protagonists typically involved in board operations (i.e. individual board members, board

administrators, and the board as a whole), Praxonomy delivers a number of distinct benefits to each group (see Figure 13).

FIGURE 13: ANTICIPATED BENEFITS



A DIGITAL PORTAL TO EMPOWER BOARDS BY HELPING THEM WORK SMARTER

Source: Praxonomy, Quinlan & Associates analysis

SIMPLE

Praxonomy prides itself on providing a highly intuitive portal, enabling board members to start using their solution quickly and easily (see Figure 14).

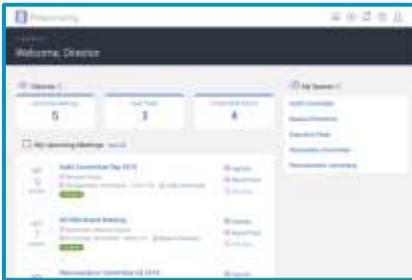
Praxonomy states that company boards can start using the board portal within 1 hour after subscription, given it is designed to be easy-to-use and flexible. We were able to trial the portal

and found we were able to use it without any formal training.

Furthermore, Praxonomy provides an onboarding programme to educate members on how to fully leverage the functions offered and 24/7 support via phone calls, e-mails, and online chats. The portal also provides a comprehensive library of self-support services, including quick-start guides, “how-to” videos, and a knowledge base.

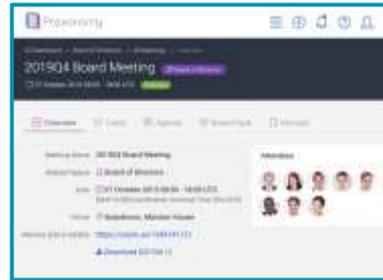
FIGURE 14: USER INTERFACE

Home Screen



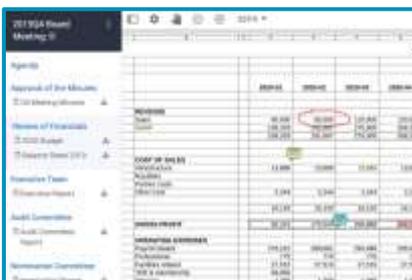
The home screen provides an overview of upcoming meetings and access to different functions

Board Meeting Page



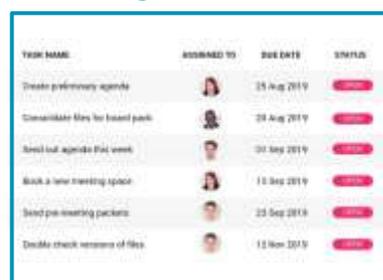
Each board meeting has a dedicated page, enabling easy access to relevant files and information

Board Pack Viewer



Board packs allow annotations by board members privately and together as a team

Task Management



Tasks can be assigned, examined, and tracked on the task overview dashboard

Source: Praxonomy, Quinlan & Associates analysis

AFFORDABLE

We found Praxonomy prices its board portal competitively relative to incumbent solutions, with an annual fee of USD 468 per board member, compared to north of USD 1,000 for

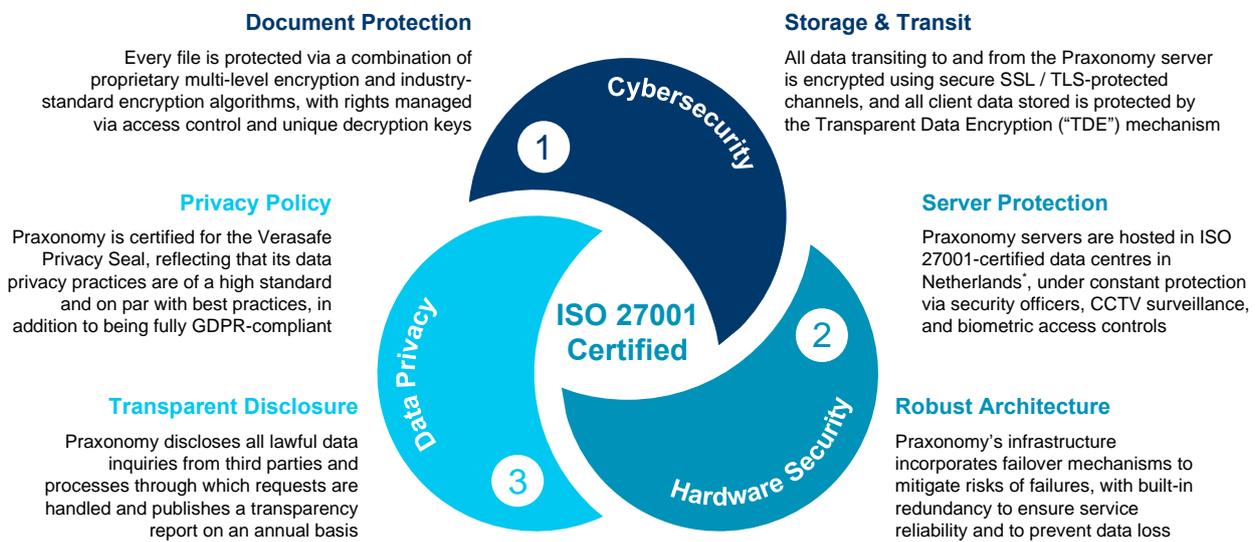
some industry leaders. As Praxonomy charges on a per user basis (unlike a number of incumbent providers who charge at an enterprise-level, regardless of board size) the solution enables flexible scaling, both upwards and downwards.

SECURE

Understanding that data governance is one of the biggest challenges facing boards of

directors, Praxonomy’s solution was developed with privacy and security in mind, with the company being both Verasafe Privacy Seal- and ISO 27001-certified (see Figure 15).

FIGURE 15: DATA PRIVACY AND SECURITY



Source: Praxonomy, Quinlan & Associates analysis

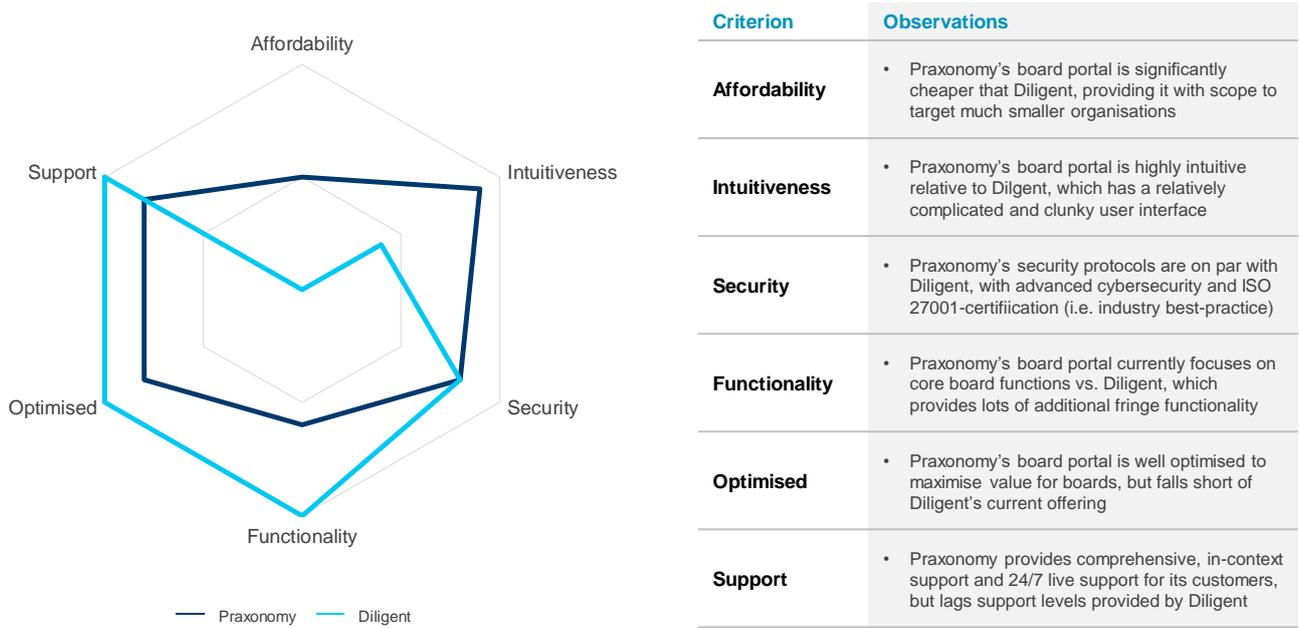
COMPETITOR BENCHMARKING

We compared Praxonomy’s board portal against the leading industry incumbent, Diligent, to understand how it fared across a number of key dimensions (see Figure 16).

Praxonomy’s board portal is considerably cheaper (with an annual subscription fee of USD 468 per member, compared to Diligent’s ~USD 1,200) and simpler to use. Being ISO

27001-certified, we also found Praxonomy cybersecurity and data privacy protocols to be on par with industry best-practice. However, Praxonomy board portal lagged behind Diligent with respect to its functionality, degree of optimisation, and level of customer support, reflecting its “just in time, just enough” development philosophy that looks to address the primary – rather than secondary – pain points of most boards.

FIGURE 16: BOARD PORTAL BENCHMARKING – PRAXONOMY VS. DILIGENT



Source: Praxonomy, Quinlan & Associates analysis

It is also important to note that many existing board portals in the market provide a wide range of functionalities, which appears to be an attempt to be “all things to all people”. In particular, the integration of a plethora of different functions often results in a clunky interface and relatively poor user experience, which may be counter-productive, especially for board members, who tend to be older executives who are typically less tech-savvy. While the Praxonomy portal provides fewer functions than incumbent solutions, we see its ease-to-use and clean interface as a key competitive advantage.

SERVICE EXPANSION

In addition to enhancing the functionality of its board portal, Praxonomy plans to develop and launch a director matching platform in 2020 and a virtual data room service in 2021, for succession planning and data access & sharing purposes, respectively. These services are selected due to their complementary nature to board operations, further helping Praxonomy in achieving their mission to enable boards to be more efficient, effective, and compliant.

SECTION 4

IMPLICATIONS OF DIGITALISATION

The digitalisation of corporate governance has the potential to fundamentally overhaul many of the archaic processes that companies adopt today. By leveraging appropriate technology solutions, many otherwise manual tasks can be automatically established and refined. Coupled with automatic and ongoing monitoring and communication, corporate governance shortfalls can also be swiftly identified and addressed.

While we recognise corporate governance-related breaches and scandals can never be completely eliminated via digitalisation, a

technologically enabled governance model greatly reduces the opportunity for such incidents to occur, in turn helping to protect the interests of company stakeholders.

DIGITAL BOARDS

We believe board portals have huge potential to streamline the operations of company boards, particularly with respect to reducing (1) time wastage, (2) operating costs, and (3) fines and penalties (especially in the context of data security / privacy breaches) (see Figure 17).

FIGURE 17: COMPANY BENEFITS FROM BOARD PORTAL USAGE



Source: Quinlan & Associates estimates

1. TIME WASTAGE

With board portals able to simplify board processes across the entire value chain (from meeting organisation to task assignment and tracking), board members and company secretaries can spend more of their time and effort on value-adding activities.

Current pre-meeting, in-meeting, and post-meeting processes adopted by many of today's companies are extremely inefficient and time-consuming. For example, most boards struggle with the basic task of organising their monthly meetings, which are usually done via a combination of back-and-forth emails and / or WhatsApp chat groups. Through the use of

board portals, board members can determine suitable dates, times, and venues for board or committee meetings via digital voting tools.

Task management is also a major problem for many of today's boards, with action items typically attached to meeting minutes that often get lost in people's inboxes in a static Word document, severely diluting the awareness and ownership of individual board member's responsibilities. However, through the use of board portals, board administrators can instantly create, assign, and track action items to ensure proper ownership and timely completion of individual board member's specific tasks.

We estimate that the time wasted by board members on pre-meeting, in-meeting, and post-meeting processes can be reduced by up to two-thirds through the use of board portal solutions when compared to current archaic processes.

2. OPERATING COSTS

Through digitalising their operations, particularly with respect to board book management, there is ample scope for boards to reduce their operating costs. This not only includes the USD 5 billion p.a. that is currently wasted on paper-based board packs (discussed in Section 2), but also includes staff costs, given the reduced workload on board administrators / secretaries.

Our research indicates that boards who have migrated their activities from traditional paper-based processes to digital board portals have seen up to a 40-50% reduction in their annual operating costs. We believe this is a realistic cost reduction target for boards using more traditional board book management processes.

3. FINES & PENALTIES

Recent years have seen cybersecurity and data privacy come firmly into the global regulatory spotlight. For example, many companies in Europe have been penalised under the General Data Protection Regulation (“GDPR”) for failing to protect customer data, which resulted in data breaches and hacks. In fact, in the ~17 months since it was introduced on 25 May 2018, over EUR 53 million in fines and penalties have been handed out worldwide, with another EUR 321

million pending.⁴ Outside of GDPR, a number of companies have also been the subject of major data breaches and hacks, including the likes of Cathay Pacific, Marriott International, and British Airways. For the companies involved in such incidents, the reputational fallout has been extremely detrimental.

Files and documents managed and / or created by boards are highly sensitive and confidential, and are often key to a company’s survival, making their protection critical. And board members, who are often high-profile executives, will always be prime targets for cybersecurity hacks. For example, John Podesta, Hillary Clinton’s campaign chairman during the 2016 US elections, had his e-mail account hacked, and some e-mails were subsequently published by WikiLeaks.⁵ In another example, the CEO and co-founder of Twitter, Jack Dorsey, had his own Twitter account hacked, tweeting out offensive and racist remarks to over four million followers.⁶ These incidents point to a clear need for robust cybersecurity mechanisms for senior company executives, particularly boards of directors.

With tailored data governance protocols, board portals provide company boards with a dedicated documentation system, along with robust data protection, enabling boards to enhance data-related operations and better comply with data privacy / security regulations. By “walking the talk”, the board can also encourage employees to embrace better data governance protocols, enabling companies to better address hacks and cybersecurity breaches, potentially reducing fines and penalties by up to 25% annually.

⁴ Nathan Trust, ‘GDPR Fines and Penalties’, available at: <https://www.nathantrust.com/gdpr-fines-penalties>

⁵ The Washington Post, ‘How the Russians hacked the DNC and passed its emails to WikiLeaks’, 14 July 2018, available at: https://www.washingtonpost.com/world/national-security/how-the-russians-hacked-the-dnc-and-passed-its-emails-to-wikileaks/2018/07/13/af19a828-86c3-11e8-8553-a3ce89036c78_story.html

⁶ BBC, ‘Twitter CEO and co-founder Jack Dorsey has account hacked’, 31 August 2019, available at: <https://www.bbc.com/news/technology-49532244>

DIGITAL CORPORATE GOVERNANCE

While most companies understand the rapidly growing importance of leveraging technology in today's digital age, most of the investments (and efforts) being made by companies are, understandably, focused on revenue-generating and cost-cutting activities.

However, good corporate governance is fundamental to the survival and long-term

sustainability of every organisation. As such, the digitalisation of governance processes should be treated as an equally – if not more – important matter for company boards.

For companies that are still reliant on archaic corporate governance protocols and board processes, we believe now is the time to get on board.

CORPORATE GOVERNANCE IS FUNDAMENTAL TO
THE SURVIVAL AND LONG-TERM SUSTAINABILITY OF
EVERY ORGANISATION

SECTION 5

HOW CAN WE HELP?

Our consultants have worked with various organisations on enhancing their corporate governance processes. Our project work encompasses a number of key services, including:

1. CORPORATE GOVERNANCE EVALUATION

Review the organisation's overall corporate governance processes to identify key shortfalls and risk considerations, providing recommendations on refinement of existing protocols, including:

- Evaluate the current corporate governance structure, especially the five corporate governance pillars outlined in this report, to identify critical gaps on balancing stakeholders' interests and delivering effective governance outcomes
- Benchmark corporate governance protocols / policies against industry best practice to prioritise areas for attention and improvement
- Establish appropriate programmes and initiatives to address gaps to enhance the efficacy of corporate governance

2. DIGITALISATION OF CORPORATE GOVERNANCE

Guide the organisation through the adoption and implementation of suitable technological solutions for corporate governance, including:

- Evaluate areas with key governance gaps and identify technological solutions that can address current shortfalls
- Determine the optimal approach for adoption and implementation (i.e. buy, partner, or build), taking into account the organisation's capabilities and specific circumstances
- Develop overall execution plan, guiding the organisation through outlining workstreams, defining rollout prioritisation, and establishing project deliverables with supporting milestones
- Develop an effective, company-wide digital transformation / innovation strategy

3. ONGOING REFINEMENT

Monitor the effectiveness of new corporate governance policies and protocols, providing ongoing guidance and recommendations on further refinement of corporate governance structure, including:

- Define metrics and KPIs against which to evaluate the corporate governance policies and technological solutions implemented
- Ongoing / regular review of pre-determined metrics and KPIs to review and analyse the effectiveness of corporate governance
- Identify governance areas for further refinement and provide recommendations to guide the organisation through its complete digital transformation process



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