



**The brave new world of talent management**

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**Smart Nation in the making**

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**Launch of the BRC Guide and the ASEAN CG Scorecard 2015**

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## Introducing the new SID Business Future Series (BFS) for directors

The first two in this series seek to help directors stay apace with the relentless demands of the digital age.

### BFS 1 Disruptive Technologies for Directors

**What:** A 6-hour course on the major disruptive technologies that are transforming businesses and redefining industries. Particular focus will be paid on the cloud, Internet of Things (IoT), data analytics, mobility and social media, and the role of digital directors. The session will be conducted with hands-on demonstrations, case studies, and discussions in the setting of an innovation centre.

**Whom:** Suitable for board members and C-suites who want to accelerate their knowledge to become digital directors

**When:** Tuesday, 4 October 2016  
9.00 am to 3.00 pm (lunch included)

**Where:** Accenture Internet of Things Centre of Excellence, Marina Bay Financial Centre

**Who:** **Adam Burden**, Global Lead for Advanced Technology & Architecture, Accenture  
**Sam Liew**, Managing Director, ASEAN Technology Lead, Accenture  
**Daniel Gunawan**, Managing Director, Advanced Technology and Architecture, ASEAN, Accenture  
**Willie Cheng**, Chairman, SID  
**Tan Yen Yen**, Regional Vice President, Asia Pacific (South), SAS

**Cost:** SID members \$600 (includes GST)  
Non-members \$850 (includes GST)

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### BFS 2 Cyber Security for Directors

**What:** A 4-hour course on the impact and complexity of cyber security. Participants will be briefed on the latest cyberthreat landscape and its future, and participate hands-on in dealing with cyberattacks through a war game. They will also view demonstrations of how cyberthreats can be managed, and discuss the implications and actions for the board.

**Whom:** Suitable for board members and C-suites who want to stay ahead of developments in the cyber security space

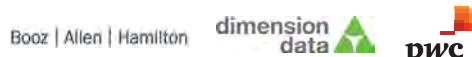
**When:** Friday, 14 October 2016  
9.00 am to 2.00 pm (lunch included)

**Where:** Dimension Data, Aperia Tower 1

**Who:** **Guido Crucq**, General Manager, Security Business Unit, Dimension Data Asia Pacific  
**Matthew Gyde**, Global General Manager, Security Solutions, Dimension Data  
**Vincent Loy**, Partner, Financial Crime & Cyber Leader, PwC  
**Mike McConnell**, Senior Executive Advisor, Booz Allen & Hamilton and former U.S. Director of National Intelligence  
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**Cost:** SID members \$450 (includes GST)  
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For further information, please go to [www.sid.org.sg](http://www.sid.org.sg).  
Please register early as places are limited due to venue limitations.

# Disrupt or be disrupted



By **WILLIE CHENG**  
Chairman, SID



## DIRECTIONS

It is fair to say that digital is the defining trend of our times.

When the first wave of the information technology (IT) revolution hit the world in the 1970s, I was just entering the workforce. As luck would have it, I entered the nascent IT industry and saw the seismic changes wrought by IT. Initially, IT automated business processes that resulted in improved productivity. Then, IT began to enable re-engineered business processes and strategies that resulted in improved business outcomes. The arrival of the internet in the 1990s launched an unprecedented level of connectivity that has radically changed the way companies conduct business, and the way the world communicates.

While “change is the only constant” has long been the catchphrase in modern business, the IT industry has been singularly defined by accelerating change – exemplified by Moore’s Law on the exponential growth of computing power. To this day, the debate continues within the IT industry about how much longer Moore’s Law will hold. The evidence suggests that it is not done yet.

This exponential growth of technology now leads a new wave of opportunities and threats that businesses have dubbed “digital disruption”: when new digital technologies and innovative business models disproportionately affect the value proposition of existing goods and services.

The new mantra is “disrupt or be disrupted”. Examples abound of disruptor and disrupted

companies. Few industries have been spared from digital disruption. The most striking example has been the emergence of the sharing economy – a hybrid market model that is based on peer-to-peer sharing of goods and services coordinated through online services.

As directors, we have an important stewardship responsibility to ensure the long term success – or at least, the long term survival – of our companies. It is incumbent on us to be fully aware and well-informed of not just the digital forces at play in our respective industries, but also the attendant opportunities and threats.

In this bumper issue, we have engaged a diverse group of experts to explore several facets of the digital phenomenon: the top disruptive technologies and trends; the digitalisation (not digitisation) of companies and industries; the impact of digital on the role of directors, the CFO and the workforce; and Singapore’s Smart Nation vision.

The dark side of digital disruption is embodied by the ubiquitous cyber-threats that we are, unfortunately, becoming more familiar with. Given the importance of this subject, we will make cybersecurity the central theme of our next issue.

It is apropos to note here that the theme of SID’s flagship Directors’ Conference on 5 September is “Digital Disruption” where we will canvass both the bright and dark side of technology. We hope to see you there. ■



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# DISRUPTIVE TECHNOLOGIES

10 game changers that are shaping the future of humanity

We are now in the age of the Fourth Industrial Revolution, with digital disruption pounding on our doors. What are these disruptive technologies that are changing the way we live and work in exponential ways?

By

**P. RAMAKRISHNA**

Deputy CEO, CIO Academy Asia





# THE DIGITAL REVOLUTION

The modern world as we know it resulted from the First and Second Industrial Revolutions of the late 18<sup>th</sup> to mid-20<sup>th</sup> century. The massive and widespread mechanisation and industrialisation influenced almost every aspect of daily life. It led to an unprecedented sustained economic growth and a consistent rise in the standard of living across the world.

Then the Information Technology revolution came, with the arrival of computer chips and semiconductor wafers in the 1970s. The adoption of personal computers, Internet and mobile telephony completely changed the way humans communicate and conduct their business.

The use of electronics and IT in this Third Industrial Revolution automated production, and created a knowledge-based high-tech global economy where manufacturing and the service sector operate efficiently. Individuals can explore their personalised needs, and goods and service are delivered and transacted in a way where the costs for both the producers and buyers are continually lowered.

The digital revolution is however entering a more intensive phase, what is known as the Fourth Industrial Revolution. In the last few years, “third platform technologies” (as called by research firm IDC) such as cloud computing, mobile hardware, social media and big data are changing society and disrupting the heart of businesses and industries in every which way.

These disruptive technologies share several common characteristics:

- They create breakthroughs that drive accelerated rates of change. Social media, for example, has compressed the time when news is disseminated to the public to be instantaneous, and increase the reach to an audience that is global.
- They can change the way the world work, live and play. Driverless cars, for example, will convert drivers into passengers, giving them more personal time, while making the roads safer with less CO<sup>2</sup> emissions.
- The combinations of these technologies can multiply impact. For example, wearable technologies rely on wireless and Internet of Things technologies. Coupled with AI, it can deliver even more sophisticated usage of wearables.
- Companies that embrace these technologies first can disrupt their competitors, and even their industries. Amazon Web Services sits at the top of the cloud computing platform because it saw the opportunity and went in first to build a hyper scale infrastructure.
- It is not always the technologies but their application in a company’s and an industry’s specific context and markets that creates the competitive edge. For example, creating an app that allows the booking of taxis from different transport companies was always possible on the mobile internet but only happened with the entry of Grab.

What are the most promising of these disruptive technologies?

The list can be long, but here are 10 megatrends that are changing and reshaping our future.

## 1 SOCIAL MEDIA



### WHAT IS IT?

Computer-mediated tools that allow people or companies to create, share, or exchange information including pictures and videos in virtual communities and networks. Examples are Facebook, Twitter, LinkedIn and Reddit.

### HOW IS IT DISRUPTIVE?

The power of social media lies in its virality – when users reshare content posted (by another user) to their social network. As a result, such content – good or bad – can gain large global audiences in a very short period of time. This requires companies to know and manage what is being communicated related to it in social media.

### WHO IS IN IT AND WHERE IS IT GOING?

Most companies use social media to engage with customers and other stakeholders for marketing research, sales promotions and relationship development. Social media monitoring tools allow marketers to search, track and analyse conversations on the web.

With trends showing that more Internet users are spending more time each day on social networking sites, the viral power of social media will only increase.

## 2 MOBILE INTERNET



### WHAT IS IT?

The use of browser-based internet services from handheld mobile devices such as smartphones and tablets, through a mobile or other wireless network.

### HOW IS IT DISRUPTIVE?

Traditionally, the World Wide Web was accessed via fixed-line services on personal computers (PCs). Webpage views from mobile phones now outnumber views from PCs in 48 countries. Mobile devices have a huge appeal for the millennials, the always “on” generation. This has made mobile-first an approach for businesses that want to reach this segment of users.

### WHO IS IN IT AND WHERE IS IT GOING?

Everybody is in it, from commercial companies, to nonprofit organisations and governments, all re-purposing and recreating content initially meant for PCs to be easily accessible on tablets and smartphones.

More than content, mobile commerce (or e-commerce in the consumer’s hand which can be conducted anywhere through wireless technology) is expected to be worth US\$142 billion in 2016, climbing to US\$252 billion by 2020 (according to Forrester Research).

## 3 CLOUD COMPUTING



### WHAT IS IT?

Use of largely shared computer hardware and software resources to deliver services over the Internet or intranet instead of providing these services locally through dedicated computer resources.

### HOW IS IT DISRUPTIVE?

By providing shared processing and data to users (via computer and mobile devices), cloud computing effectively enables companies and individuals to enjoy ubiquitous on-demand computer processing, on a pay-for-use basis (similar to a utility). Potential productivity gains of 15 to 20 per cent in computing resources can be expected. Companies can also be more agile, more efficient, and scale easily as volume grows.

### WHO IS IN IT AND WHERE IS IT GOING?

Most technology companies are into cloud computing. The biggest player by far is Amazon Web Services, followed by Rackspace, Oracle, NTT, Fujitsu, Alibaba and HP. Increasingly, the hybrid cloud (as opposed to private and public clouds) is being adopted by corporations. Billions of dollars a year are being invested in cloud R&D. Some experts estimate that 85 per cent of new software being built today is for cloud computing. Market Research Media forecasts that cloud computing will be a US\$270 billion market by 2020.

## 4 INTERNET OF THINGS (IOT)



### WHAT IS IT?

Networks of low-cost sensors and actuators embedded in physical objects (devices, vehicles, buildings, etc) enabling these objects to collect and exchange data.

### HOW IS IT DISRUPTIVE?

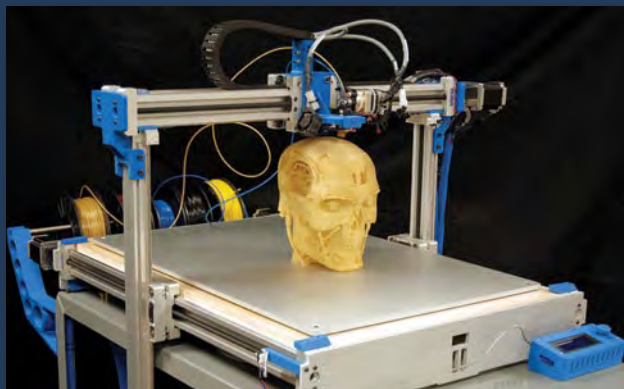
By allowing physical objects to be sensed and controlled remotely across existing network infrastructure, the IoT is integrating the physical world into computer-based systems. Machine-to-machine communications are more efficient and faster than man-to-machine communications. IoT allows organisations to manage assets and optimise their performance remotely and automatically.

### WHO IS IN IT AND WHERE IS IT GOING?

IoT is being implemented in manufacturing, healthcare, mining and other industries. The advanced connectivity of devices, systems and services will enable advanced applications like the smart grid, smart homes, intelligent transportation and smart cities. Large-scale deployment is in progress in Songdo in South Korea, Santander in Spain, Guangzhou in China, and New York Waterways in the U.S. Experts estimate that by 2020, the IoT will consist of almost 50 billion objects and market worth US\$1.7 trillion.



## 5 3D PRINTING



### WHAT IS IT?

Additive manufacturing techniques that create three-dimensional (3D) objects by printing layers of material based on digital blueprints.

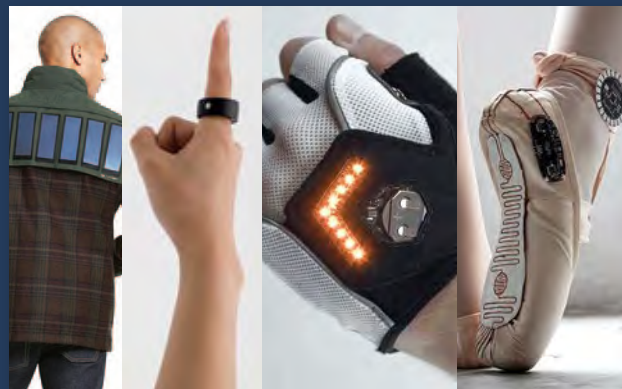
### HOW IS IT DISRUPTIVE?

3D printing skips many of the steps and reduces material waste compared to traditional manufacturing processes. Since it enables on-demand production, it will have implications for supply chains and the stocking of spare parts, a major cost for manufacturers. Consumers' use of 3D printing can save 35 to 60 per cent in costs per printed product while enabling a high level of customisation.

### WHO IS IN IT AND WHERE IS IT GOING?

3D printers have been used to print consumer items from shoes to food, industrial tools and molds, and even living tissues and organs. The rapidly declining cost of 3D printers have made them appealing for self-manufacturing personal products. For manufacturing companies, moving 3D from rapid prototyping into the assembly line could lead to a revolution in the US\$11 trillion global manufacturing landscape by favouring small creative companies over traditional manufacturers with complex infrastructure.

## 6 WEARABLES



### WHAT IS IT?

Clothing and accessories that incorporate computing and wireless technology with practical functions and features. Examples are the Apple Watch, Fitbit Flex and Google Glass.

### HOW IS IT DISRUPTIVE?

Wearables appeal to consumers owing to their cool factor and the applications that improve lifestyle, health, work and safety. In professional sports, wearables monitor and provide real-time feedback to athletes. For the healthcare industry, the increased automation of health metrics collection (e.g. heart rates, blood pressure, blood sugar, sleep, etc.) can improve the effectiveness of treatment for patients.

### WHO IS IN IT AND WHERE IS IT GOING?

Once the stuff of science fiction, wearables have become a reality but are still in the "toddler phase". Almost all phone and medical gadget manufacturers – from Apple to Google and GE – and others are into wearables. Julius Baer forecasts the wearables market to be worth US\$900 billion by 2020. It expects that the larger share of this would be in the consumer lifestyle segment which will move from the current focus on single-use fitness and healthcare monitoring to multifunctional smart watches, glasses and even smart clothing and jewellery.

## 7 RENEWABLE ENERGY



### WHAT IS IT?

Energy collected from renewable sources such as the sun, wind and water.

### HOW IS IT DISRUPTIVE?

The power of renewable energy lies in the fact that the sources are freely and widely available, and the energy is clean (meaning it is produced with little CO<sup>2</sup> emissions, thus minimising impact to the environment). Renewable energy holds the promise of an endless source of power for the modern world without stripping resources from the earth.

### WHO IS IN IT AND WHERE IS IT GOING?

Renewable energy provides energy in four key areas today: electricity, air and water heating/cooling, transportation, and rural (off-grid) energy services. Unfortunately, renewable energy's higher production costs compared to fossil fuels results in its use mainly in rural areas, or are driven by environmental consciousness and government support. However, it is getting cheaper due to technological improvements, mass production and competition. The International Energy Agency expects that renewable energy will account for over 26 per cent of global power generation by 2020.

## 8 ARTIFICIAL INTELLIGENCE (AI)



### WHAT IS IT?

It is the science of making computers do things that normally require human intelligence such as visual perception, speech recognition and making decisions.

### HOW IS IT DISRUPTIVE?

AI will lead to the outsourcing of human functions and capabilities to machines, such as: understanding and learning (e.g. IBM's Watson); decision-making (e.g. digital subject matter experts available 24/7); manual labour (when problem solving dexterity is combined with robotics); and hazardous duty (e.g. combat drones with AI controls).

### WHO IS IN IT AND WHERE IS IT GOING?

AI is helping to reshape every service industry, including transportation (e.g. Google robocars), medicine (diagnostic and prescriptive programmes), gambling (bookmaking models), and personal assistant services. The technology giants such as Apple, Facebook, Tesla, IBM and Microsoft, and even companies such as Shell are spending billions of dollars in developing AI systems and applications. The independent publication, MedGadget estimates that by 2020 the global AI market will reach US\$40b.

## 9 ADVANCED ROBOTICS



### WHAT IS IT?

Increasingly capable robots or robotic tools with enhanced senses, dexterity and intelligence used to automate tasks or augment humans.

### HOW IS IT DISRUPTIVE?

Although robots have been used in manufacturing for decades, more advanced robotics coupled with AI is making it practical to substitute machines for human labour in increasing applications in manufacturing and service industries, in the home, and in the military.

With an ageing and declining workforce in advanced economies, robotics promises a world with limited need for physical labour in which robot workers and robotic human augmentation could lead to massive increases in productivity and even extend human lives.

### WHO IS IN IT AND WHERE IS IT GOING?

The automotive sector accounts for nearly 40 per cent of robotics market, followed by healthcare, defense and aerospace. Toyota and Honda are inventing the next generation of robots. Allied Market Research forecasts the global robotics technology market to reach US\$82 billion by 2020.

## 10 AUTONOMOUS VEHICLES



### WHAT IS IT?

Vehicles that can sense their environment and navigate and operate with reduced, or no, human intervention.

### HOW IS IT DISRUPTIVE?

Driverless cars can reduce accidents and deaths, as well fuel as fuel consumption. There will be improved safety, time savings, productivity increases, lower fuel consumption and CO<sup>2</sup> emissions.

Drones (also known as unmanned aerial vehicles) can perform missions that are “dull, dirty and dangerous” such as parcel delivery, surveillance and bombing.

### WHO IS IN IT AND WHERE IS IT GOING?

Driverless cars started with Google, now all major car manufacturers are into it. BI Intelligence estimates that there could be 10 million self-driving cars on the road by 2020. Amazon and DHL experimented with making deliveries via drones while the U.S. military uses drones in war zones. Global market research and consulting company, MarketsAndMarkets estimates that the drones market will be worth US\$14.9 billion by 2020, with the military accounting for the lion share of it. ■



# To digital and beyond



By **ROBERT CHEW**  
Council member, SID

**With the amazing advances science has made in the areas of digital technology and artificial intelligence (AI), the future that was foretold 30 years ago by William “Neuromancer” Gibson, looks to already be here.**

John Chambers, executive chairman of Cisco too gave a similar, albeit more ominous prediction on the impact of rise of digitisation can have on businesses: “If you’re a leader in today’s world... you have to focus on the fact that this is the biggest technology transition ever. This digital era will dwarf what has occurred in the information era and the value of the Internet today. As leaders, if you don’t transform and use this technology differently ... you’re going to get disrupted. And it will be a brutal disruption, where the majority of companies will not exist in a meaningful way 10 to 15 years from now.”

As those words were spoken, the game of Go was “disrupted”.

Over a week in March 2016, Google DeepMind’s AlphaGo computer programme played a five-game Go against Lee Sedol, the legendary South Korean 9-dan Go player and 18-time Go world champion. To everyone’s surprise, AlphaGo won four of the five games. Commentators noted that AlphaGo played many unprecedented, creative, and even “beautiful” moves.

No doubt this was not the first time a human was “pawnd” by a computer at a board game (the first was when IBM’s Deep Blue beat Garry Kasparov in 1997).



**INNOVATION**

But the victory was historic because Go is considered to be magnitudes more complex than chess. In a game of chess, the average branching factor is 35, where Go has an average branching factor of 250. It was therefore unthinkable that a computer programme could beat a world champion in Go “so soon”; it was “prophesised” that this would not happen before 2025. Well, it just did. Ten years earlier.

In March 2001, futurist Ray Kurzweil published an essay arguing that humans found it hard to comprehend their own future. It was clear from history, he argued, that technological change is exponential and people find this pace of change almost impossible to grasp. When it comes to forecasting, we think in straight lines.

Many things that society now takes for granted would have seemed like science fiction just a few decades ago. Today, we trawl through billions of pages, images and videos on the web; mobile devices have become ubiquitous; billions of connected smart sensors monitor in real time everything from the state of the planet to our heartbeats, sleep and steps; and drones and satellites the size of shoeboxes roam the skies. It was merely 20 years ago that M1 first launched its mobile phone service.

Indeed the rate of technological change is unprecedented. Kurzweil suggests that society will approach the “singularity”, when the impact of technology is so profound that human life as we know it will be irreversibly transformed.

This transformation will be more disruptive than the digital disruption we envisage.

An area that will help demonstrate the extent of the disruption is AI.

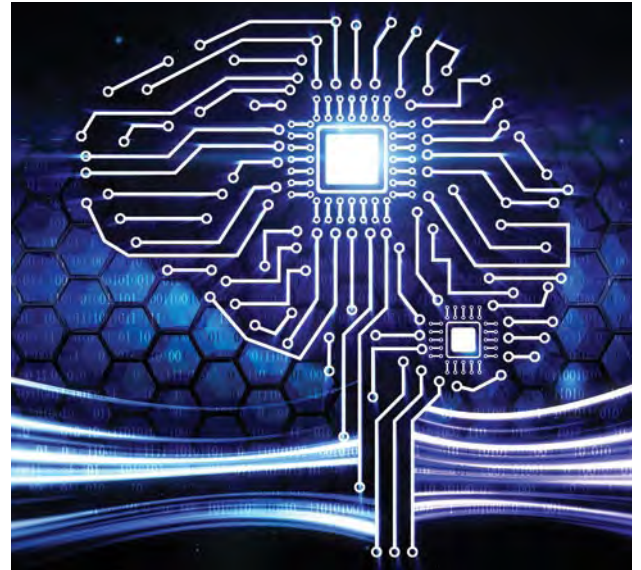
Many would have made light of AI as just a silly science-fiction concept that only has its place in Hollywood movies. But of late, it has been on the lips – and top of the agenda – of some really important people.

Big names like Elon Musk (the founder of SpaceX and Tesla, who famously phoned PM Lee about the carbon surcharge on a Telsa sedan in Singapore), Steve Wozniak (the co-founder of Apple), Dennis Hassabis (the founder of Google DeepMind) and Steve Hawking (renowned English theoretical physicist) all signed an open letter calling for research on the societal impacts of AI.

The letter affirmed that society can reap great potential benefits from AI, but warrants concrete research on how to prevent certain potential "pitfalls". While AI has the potential to eradicate disease and poverty, researchers must not create something that cannot be controlled. That is how disruptive AI can become.

Without over dramatising the effects of AI, let us take comfort in that we are already living in a world with AI, one way or another. AI is in use very effectively in specific narrowly scoped areas, such as industrial robots in automotive factory lines, automation used in the picking and packing at Amazon.com, IBM Watson in cancer diagnostics and care protocol recommendations, Siri and Google Now on iPhone and Android phones and the good old email spam filter.

These applications of AI are referred to as Artificial Narrow Intelligence. The sorts of threats that Musk and co. are concerned about are those that can come from developments in Artificial General Intelligence (i.e. can perform any



intellectual task a human can) and Artificial Super Intelligence (can outperform the best human brains in practically every field). The Google DeepMind's AlphaGo computer programme is an application of Artificial General Intelligence.

Scrambling to respond to the success of Google DeepMind's AlphaGo, South Korea announced on 17 March 2016 that it would invest US\$863 million in AI research over the next five years. It includes the founding of a public-private research centre with participation from Korean conglomerates, such as Samsung, LG Electronics and Hyundai Motor and the technology firm Naver.

Question is, does Singapore need to scramble too?

Perhaps not, since most of us do not run companies operating in the fiercely competitive technology sector. However, we do aim to be a Smart Nation and it bodes well to know in a September 2015 World Economic Forum survey, nearly half of the respondents expect the first AI machine to be on the board of directors of a business by 2025.

In the meantime, take your first step in building the future for your businesses by joining in the "Digital Disruption" conversation at this year's SID Directors' Conference. ■

# The digital journey: evolution or revolution?



By **STEPHEN RAJ**  
Conference committee member, SID

**SID**  
SINGAPORE  
INSTITUTE OF  
DIRECTORS

**BOARDROOM**  
**MATTERS**

**Digital is fast becoming the major driving force of modern business. While some see new digital technologies as creating fresh forms of thinking, planning and execution that are urgently needed if a business is to survive in the new millennium, others see the same technologies as an evolutionary morphing of businesses.**

However, one thing is clear: board-level appreciation and commitment to this game-changing movement are critical in today's business landscape.

## Getting pragmatic

Most directors and executives have long understood the value of technology. For decades, they have used information technology to improve company performance and extend the reach of products or services. The more progressive companies have sought to re-engineer business processes and realign organisational structures in conjunction with the adoption and implementation of new technologies so as to reach new heights of performance and growth.

So, in a sense, it is easy to dismiss the current buzz around "digital disruption" as merely a resurgence of the "dot-com wave" that, in the late 90s, locked the business world in a state of trance, and eventually led many to corporate disasters.

The difference this time, in my view, is that the emergence of disruptive technologies such as cloud computing, social media, mobile, data analytics, artificial intelligence, and robotics are

coming together in ways that are fundamentally transforming businesses.

The bewilderingly fast-paced development of these technologies – and their almost frantic integration into the systems and structures of the millennial company – is creating an unprecedented level of access to constantly changing information that is sourced from, and richly delivered to customers and other parties through, a multitude of systems and devices with simplified transactional capabilities. In turn, this is creating new revenue generation opportunities in direct and indirect ways, making obsolete the old ways of doing business.

The ripples spread further. The digital revolution is causing many to question the age-old philosophy of "focusing on your core competence". When a company's core competence becomes commoditised, it needs to look for new and more effective ways to serve its existing customers – or find new customers. In other words, the company needs to also change its business model.

## Evolution or revolution

In this context, companies and their boards have tended to take one of two approaches in their digital journeys: evolution or revolution.

Evolution capitalises on technology to improve an existing product or service in a way that delivers a differentiated experience or outcome. An example is Adidas's new intelligent soccer ball





that is connected to a smartphone that tells the footballer everything he needs to know about how to improve his kick. It's also a great soccer ball!

Digital evolution is also fundamentally changing the way internal processes work. For example, to remedy earlier problems, one Asian conglomerate uses drones with analytics intelligence to monitor, analyse and report on the quality of its crops.

Revolution, on the other hand, creates new markets and opportunities that did not exist previously. Uber and Airbnb are prime examples: they have created new markets for cab services and hospitality, both underpinned by technology. In the process, they created a new economic form – the “sharing economy”.

However, revolutions very rarely work well in an established business, because the investment is usually highly speculative. Indeed, growth for these new businesses is often measured in the early years in terms of numbers of participants, and not revenue or profit.

To ease the move towards revolution, many companies collaborate with others. For example, Roche, which aspires beyond traditional pharmaceuticals, has partnered with providers like Qualcomm to grow their diagnostics business in the connected health arena.

Operating within a digital network with ecosystem partners is becoming an increasingly

important driver of major revolutions. In a gutsy move that goes beyond just protecting its own brand and assets, General Motors has invested US\$500 million in Lyft, a ride sharing, digital network of riders and drivers.

### Evolution and revolution

For many established companies, the board should challenge management to craft a strategy for both evolution and revolution.

An evolutionary approach is useful to ensure incremental growth in the established business where major decisions tend to be top-down. Here, the board needs to encourage management to drive innovation and innovative processes as far down the company as it can, without destabilising the existing business.

At the same time, it is important the company preempts its own digital disruption. There is no reason why the same technology breakthroughs that set the foundation for innovative startups cannot be adopted by the old guard. However, the revolutionary aspects of digital transformation usually require non-traditional work approaches. Specifically, it needs a very different type of workforce mix that is driven by new performance metrics and an appetite for longer term returns.

For this reason, some companies use a separate corporate vehicle, or a separate organisational unit that is free of traditional operating restraints, to pursue digitally disruptive initiatives.

The point is: the pace of change in market dynamics and technology use will only get faster. In a digital economy, the need to constantly learn and to re-steer and re-invent is no longer a business school concept. Rather, it is now a fundamental survival trait. ■

*Boardroom Matters is a weekly column by SID for The Business Times and its online financial portal, BT Invest, where this article was first and recently published.*

# DIGITAL TRANSFORMATION

## Reimagining businesses in the digital economy

The digital economy is providing unparalleled opportunities for value creation and risks to businesses. Underlying the major technology trends is the critical importance of people who have to evolve, adapt and drive the change empowered by technology. And the board has to be stewards of a new mindset of prioritising digital transformation to successfully compete in the digital economy.

By **ALLISON KENNEDY**

Managing Director for ASEAN within Accenture Strategy







We are in the midst of a major technology revolution, specifically a digital revolution, which is dominating every sector of the economy.

This global digital economy accounted for 22 per cent of the world's economy in 2015. And it is rapidly growing. Accenture forecasts those numbers to increase to 25 per cent by 2020, up from 15 per cent in 2005.

### Digital culture shock

With digital pervading everything, it brings with it ubiquitous and unprecedented amounts of change. There are new technologies and solutions, more data than ever before, legacy and new systems to tie together, an upsurge in collaboration (inside and outside the enterprise), new alliances, new startups...new everything.

Meanwhile, out in the marketplace, digital customers are also maturing. Their dramatically transformed expectations of service, speed and personalisation are just the start.

The rise of the millennial generation brings with it not just a new type of customer, but also a new kind of employee with very different outlooks and aspirations. This "born digital" generation or "digital native" demands a world fashioned to its needs and new expectations about how work should be organised. Pervasive collaboration technologies are reconfiguring long-established norms of employment. The push toward freelance and portfolio careers is reshaping the workforce.

Getting past the digital culture shock that so many businesses find themselves in today sounds daunting. But fortunately there are trailblazers who have established thriving digital cultures, as well as early adopters in other industries showing the way ahead.



### Disrupting industries

Digital-born natives like Amazon, Facebook, and Google have changed the rules of the game for all high-tech companies. Using digital platforms, global scale and evolving ecosystems, they are bypassing competitive barriers like proprietary devices and licensed-based software and storming established markets with new offerings.

Having prefigured the accelerating trend for "as a service" consumption by 10 years, they are now using this model to scale their offerings at breakneck speed, leveraging customer insights from their engaging digital platforms to fuel continuous innovation and micro-responsiveness. As a result, they are transforming how consumers and enterprise buyers view broader technology purchases – and helping to drive "as a service" centrestage as the imperative business model for the high-tech industry.

It is a trend that is playing out throughout the industry. Particularly among B2B customers, there is increasingly an assumption that the technology products they buy will be available "as a service". It is not just customers who are demanding this. Investor expectations have changed too, with valuation methodologies recalibrated to recognise and reward "everything as a service" (EaaS), business models.

The Internet of Things (IoT) has also shown promise and leaders are pointing the way ahead. In the manufacturing sector, we are seeing companies like Caterpillar and GE put sensors into their machines to transmit data back on how those products are being used – data that can be used for insight-driven preventive maintenance, for instance.

The IoT's power is not restricted to enhancing service for existing customers. It also turns the economics of supply and demand upside down. Instead of having a handful of big customers, companies are now realising how the IoT creates a connected marketplace in which thousands of customers are suddenly within reach. As this happens, we are seeing ecosystems spring up that create entirely new business opportunities for industry players and newcomers.

Philips Health, the medical equipment maker and high-tech innovator, has worked with three cloud partners to build Philips HealthSuite, a platform-based business model to support an entire ecosystem of interconnected patients, providers, and partners. Philips' vision is to improve the quality and cost of patient care. It also provides the company with new paths to growth across thousands of new customers.

### **Driving growth and profitability**

The financial services industry has long been the biggest spender on IT. Banks will spend more than US\$360 billion worldwide in 2016, more than any other sector, according to Gartner.

However, the role of technology in the financial sector is fundamentally changing. In the past, technology was largely an enabler. It made back-office processes more efficient as machines replaced clerks. It had little bearing on the relationship with the customer.

Digital has changed that. Technology has become an intrinsic part of the business strategy at financial services firms. Digital not only means new banking channels, it also offers a unique opportunity for banks to drive growth and profitability.

Digital technologies open up new revenue streams by enabling banks to serve customers they could

not cost-effectively serve before. Mobile banking allows banks to expand their reach to populations living in areas where it would not be profitable to build branches. Cognitive computing can let banks offer cost-efficient, personalised financial advice to customers who want special treatment but are not wealthy enough to afford high-end private banking services.

Digital can also help banks improve customer engagement by offering new services, including non-financial services. For instance, Commonwealth Bank has launched a mobile application to help customers buy homes. The app covers all homes in Australia and allows house hunters to find out the last sale price and what the property is likely to cost now.

Finally, by further automating manual, paper-based processes, and increasing self-service options for customers, digital can drive significant cost reductions while improving customer service. JPMorgan Chase estimates that the cost of servicing fully digital bank accounts is 70 per cent lower per household than traditional accounts.

### **Riding volatility**

Digital presents an opportunity to disrupt the oil and gas industry, not only by driving the next wave of cost efficiency, but also by securing operational agility to better manage volatility and position for growth.

Leading oil and gas companies are using digital technologies such as data, analytics and artificial intelligence to create new business models and enhance channels to market to engage customers and drive revenue; improve operations to increase agility and better manage volatility; and enhance the back office to realise productivity gains.

Healthcare, one of the largest and most complex industries in the world, is also set to be

revolutionised by large technology companies, venture capitalists and telecommunications leaders. Accenture Strategy analysis reveals that 85 per cent of technology companies and 77 per cent of venture capitalists surveyed consider disrupting healthcare to be a top strategic priority. Accenture estimates that digital health funding will double in the next three years, growing to US\$6.5 billion by 2017. If that is not convincing enough, consumers increasingly prefer non-clinical providers for their online healthcare needs – such as general health information, telehealth services, and exercise and healthy eating advice. In a world where consumers speak the loudest, the “techcare” trend is definitely here.

Technology and telecommunications companies are taking different approaches – partnering with healthcare providers, building cloud-based healthcare data transmission platforms or working on remote monitoring solutions and the capabilities built by technology companies look set to address these top health challenges: access to healthcare, cost control and transparency, disease management, health labour shortage, hospital administration and back office, population health and wellness.

Winners in the digital age do much more than tick off a checklist of technology capabilities. They know their success hinges on people. The ability to understand changing customer needs and behaviours is, of course, vital. But the real deciding factor in the era of intelligence will be a company’s ability to evolve its corporate culture to not only take advantage of emerging technologies, but also, critically, embrace the new business strategies that those technologies drive.

### People first

Businesses no longer just serve customers; they collaborate with them. They no longer just compete with rivals; they partner with

them. They are no longer limited by industry boundaries; they ignore them.

The connecting tissue for all this may be digital, but the defining factor is people. And it is much, much more than a means of improving business today. Digital’s power is to drive fundamental change in the status quo – whether that’s the industries that companies operate in, the markets they serve or the talent they employ.

However, it is increasingly clear that technology, on its own, will not be enough to propel organisations toward their new strategic objectives. Winners will create corporate cultures where technology empowers people to evolve, adapt, and drive change. In other words, the mantra for success is: “People First”.

### Technology vision 2016

Digital is now firmly embedded in every business. But even with technology as an integral part of the organisation and its strategy, it is people who will underpin success in a world that continues to reinvent itself at an unprecedented rate.

The speed of change is such that Accenture annually updates its view of how technology impacts business. Accenture’s *Technology Vision 2016* highlights five emerging technology trends shaping the new landscape (see box).

Although each trend starts with technology, the theme of “People First” flows through every one of them. Tomorrow’s leaders are taking these trends on board and executing strategies to secure their clear digital advantage.

We are increasingly seeing success awarded to companies that can challenge existing business and operating model assumptions, and adapt to the new, fast-changing marketplace with transformative new business models.



## Technology Vision 2016 Trends: Reinventing the world again and again



### Trend 1: Intelligent automation

Intelligent automation is the launching pad for new growth and innovation. Powered by artificial intelligence (AI), the next wave of solutions will gather unprecedented amounts of data from disparate systems and – by weaving systems, data, and people together – create solutions that fundamentally change the organisation, as well as what it does and how it does it.



### Trend 2: Liquid workforce

Companies are investing in the tools and technologies they need to keep pace with constant change in the digital era. But there is typically a critical factor that is falling behind: the workforce. Companies need more than the right technology; they need to harness that technology to enable the right people to do the right things in an adaptable, change-ready, and responsive liquid workforce.



### Trend 3: Platform economy

The next wave of disruptive innovation will arise from the technology-enabled, platform-driven ecosystems now taking shape across industries. Having strategically harnessed technology to produce digital businesses, leaders are now creating the adaptable, scalable, and interconnected platform economy that underpins success in an ecosystem-based digital economy.



### Trend 4: Predictable disruption

Every business now understands the transformational power of digital. What few, though, have grasped is quite how dramatic and ongoing the changes arising from new platform-based ecosystems will be. It is not just business models that will be turned on their heads. As these ecosystems produce powerful, predictable disruption, whole industries and economic segments will be utterly redefined and reinvented.



### Trend 5: Digital trust

Pervasive new technologies raise potent new digital risk issues. Without trust, businesses cannot share and use the data that underpins their operations. That is why the most advanced security systems today go well beyond establishing perimeter security and incorporate a powerful commitment to the highest ethical standards for data.

## Overcoming culture shock

Historically, boards have dealt with issues like executive compensation and succession planning, financial results, legal risks, potential acquisitions and business development.

For many companies, digital transformation has not been on the agenda aside from the occasional CIO briefing. But this is now a key issue, and the reality is that boards are now more obliged than ever to be stewards of a new mindset. Businesses need to prioritise digital transformation to circumvent the competition and delve into new profitable businesses.

As businesses move forward on their digital journeys, here are some priority actions that are essential for boards to help manage disruption and drive growth:

1. Sense and interpret disruption. Look beyond your own industry.
2. Experiment to develop and launch new ideas, faster. Seek to solve specific customer problems.
3. Fully understand and leverage data. Turn your data into useful information. Find new ways to monetise it.
4. Build and maintain a high digital quotient team. Assemble talent with the right competencies.
5. Partner and invest for all non-core activities. This could be in the form of new networks, partnerships and alliances.
6. Organise for speed.
7. Design a delightful customer experience. Regardless of current market position, the customer value proposition is key. ■

# THE DIGITALISATION OF INDUSTRIES

The digital transformation of companies is taking place, to a lesser or greater extent, across all industries.

**W**hile businesses have had the benefit of technology for a long time, the new wave of technology-driven changes is different. In a sense, the use of technology has moved from an era of digitisation to digitalisation.

Digitisation refers to the process by which analog information is converted into a digital format. To be sure, such conversion allows for automation and greater efficiency in business processes.

## DISRUPTED INDUSTRIES

Ranking based on the extent of potential competitive disruption within five years as a result of digital technologies and business models:

1. Technology
2. Media & Entertainment
3. Retail
4. Financial Services
5. Telecommunications
6. Education
7. Hospitality & Travel
8. Consumer Packaged Goods / Manufacturing
9. Healthcare
10. Utilities
11. Oil & Gas
12. Pharmaceuticals

Source: *Digital Vortex: How digital disruption is redefining industries* (2015), Global Centre for Digital Business Transformation, an IMD and Cisco initiative.

Digitalisation, on the other hand, refers to a scope of transformation that goes beyond simply substituting analog for digital and improving on the efficiency of processing. It is about the use of technologies to optimise business outcomes, create new revenue and alter business models.

The availability of powerful and disruptive technologies have upped the speed, scale and innovativeness with which such transformation can be achieved, so much so that startups can overturn incumbents and reshape markets faster than before.

Digitalisation is sweeping every industry. However, it has not affected all sectors of business in the same way, nor to the same degree. The box, "Digital disruption by industry" provides IMD-Cisco's ranking of industries by their potential to be disrupted by technology.

In the ensuing pages, we provide views by industry observers and practitioners on how the digitalisation wave is impacting a sampling of industries and sectors of the economy: healthcare, airlines, hospitality, social sector, audit profession, and infocomm manpower.

For those who wish to hear from the diverse players of four specific industries discuss their opportunities and challenges, the SID Directors' Conference 2016 has breakout panels on digital disruption in banking, hospitality, retail, and public transport (Ed – see page 76).



## DIGITALISATION OF HEALTHCARE

# Digitally empowering patients and clinicians

Empowering people to fight chronic diseases and lead healthier lifestyles. Augmenting manpower on hospital and clinic floors. Providing individuals with personalised healthcare and treatment options. These are but some of many signs that point to the readiness of the healthcare industry for digital disruption.

By  
**NG CHUN KIAM**

Sam is a high-flying, jet-setting business executive with high blood pressure and Type 2 Diabetes. He struggles to take his medication regularly, much less keep tabs on his blood sugar levels. Finding time for follow up visits to the specialist is an almost impossible feat. This procrastination and de-prioritising is a recipe for disaster, especially for silent killers like diabetes.

What if Sam can wear a patch that will track his symptoms (without the need to prick for blood), treat those symptoms (by injecting required dosage of medication in to his blood stream), collect vital signs and feed the information directly to his doctor and/or health coach who will then be able to recommend treatment options or health advice, with help from a network of specialists and health analytic systems, via virtual video consultation? Following which, Sam can be “examined” by his doctor via augmented reality where ultrasound or robotic hands can be directed to areas that need to be looked at. This VR mechanism works by simulating the sense of touch through tactile feedback, transmitting it to

the doctor electronically. Well-trained caregivers can assist Sam on site during the remote physical examination when the need calls for it.

## Not the stuff of dreams

Is this scenario all but a pipe dream?

Not entirely.

But first, let us go through the reality.

Singapore, like most developed countries, is ageing. And with that, comes the economic and social burden borne out of chronic diseases, which unlike acute ones are longer-term and will require continual monitoring and medication to prevent, or slow down their deterioration.

At the same time, the nation’s existing healthcare system is facing some constraints trying to shoulder these new strains. For one thing, we cannot simply add on more staff. And neither can we increase the workload of our already resource-tight clinical and administrative workforce.



Finally, at the end of the day, any solution to lighten the load cannot deprive our patients of the human touch and engagement that are indispensable for healthcare.

This is where technology can help.

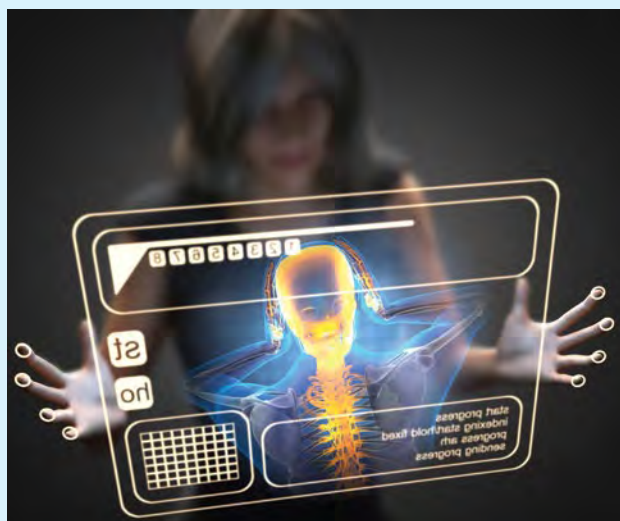
Today, what used to be the stuff of sci-fi movies and at mere research stage has become innovation that can be applied on patients. There are non-invasive wearables, artificial intelligence, big data analytics and virtual reality for healthcare. New haptic or kinesthetic communication will soon be able to recreate the sense of touch by applying forces, vibrations, or motions to the user. Already, patient social networks, secure messaging and real-time video-communications have been around for years.

### Taking the man out of manpower

Deriving a correct diagnosis and appropriate treatment plan is central to a doctor's role as a professional. However, to do that can be a cumbersome affair and not an astute use of the doctor's time and talent. To top that, the patient may not necessarily be able to objectively describe his conditions during a consultation, and turn-around of diagnostic tests can take days or more.

Where wearable technology can come into play here is in extracting the vital statistics in a less laborious way. With sensors embedded in them, patients' physical activities, heartbeat patterns, for instance, can be measured in a continual (and less intrusive) manner, and as a result detect trends. Advanced consumer diagnostics technology, still at the stringent regulatory approval stage, will one day allow medical-grade consumer devices that provide fast and accurate diagnosis easily.

Interoperable electronic medical records with defined inputs, together with objective consumer generated data (from smart sensors and advanced diagnostic kits), social media feeds, and the



individual's genomic data (in the medium term), will present a treasure trove of digitised information about a person's holistic disease disposition, lifestyle, medical records and even thinking pattern. This can shed a great deal of light on his health, habits and preferences.

Today, much medical knowledge and literature are being digitised. Artificial intelligence and natural language processing will make possible the interpretation of knowledge through machine learning that mimics human reasoning. Coupling a patient's data with such vast and ever expanding medical knowledge, will allow a set of possible diagnosis and treatment plans to be generated and personalised to each individual. Specialists can then exercise their professional judgment to validate the diagnosis and treatment plans.

For less complex ailments, primary care doctors or well-trained nurses, upon validating the derived diagnosis, could then decide whether a consultation is necessary, or will an online prescription that can be dispensed in a retail pharmacy suffices.

### Tele-presence: the new personal "touch"

The need for the human touch is critical in medical practice. The reassuring voice, presence and oft-times physical touch of a clinician in itself is therapeutic for the patients.

Video consultation augmented with virtual reality will make the medical consultation personal and “real”; even when the patient and the attending doctor could be thousand miles apart. Other care team members, friends and family members will also be able to join in the virtual reality session.

With maturation of haptic technology, the clinician can remotely examine and sense the patient. And in turn the patient having experienced that “personal touch” can appreciate the virtual interconnectedness in spite of the physical remoteness.

Care team across geographical boundaries can be assembled to provide tele-presence care. Barring regulatory hurdles, the potential for effective clinical manpower collaboration and load balancing will disrupt the supply-side clinical manpower dynamics while offering flexible work-arrangement for the clinician workforce.

### Round-the-clock healthy

We consult our doctors when we do not feel well. However we know that our senses may not detect health issues early enough for timely intervention. While we subscribe to the “prevention is better than cure” adage, we are cognizant of the struggle in maintaining a healthy lifestyle.



What we need is a 24/7 health coach that will shake us out of our destructive stupor and keep us in line.

Apart from tracking of basic vitals such as blood pressure, activity steps and sleep patterns through wearables, there are numerous other innovative technologies that track the other parameters of health. Proteus produces an ingestible sensor and tiny silicon chip that is integrated with a medicine to track compliance. Predilytics uses publicly available data that includes consumer, demographic, financial and clinical sources to create a fuller picture of the patient.

The advancement of sensors and digital trail left behind in social media, online purchasing and payment and so on, provides a trove of data in understanding the attitude and outlook, and health risk profile of each person – from his lifestyle, diets, exercises to social interactions, and medical conditions. This way, health education programmes, disease management and health screenings can be designed to more effectively resonate with the individual, and campaigning messages can be customised and targeted to the right persons and at the right time and place.

These nonstop health coaches will nudge individuals towards a healthier lifestyle in a hyper personalised yet un-oppressive manner that tugs at the core of each individual’s immediate life aspirations – be at the daughter’s weddings, play with the grandchildren and so on.

While the trade-off to embracing these technologies is a sacrifice of one’s privacy, one can seek solace that every person will be given a choice on what data they want shared and how personal and personalised they want their digital health coach to be.

*Ng Chun Kiam is the Director, Population Health Enablement, Telehealth Programme Office for Ministry of Health Holdings. The views in this article are his own.*



## DIGITAL DISRUPTION OF THE AIRLINE AND TRAVEL INDUSTRY

# Soaring through waves of change

Arguably the hardest of them all, the airline and travel industry has survived disruption after disruption to learn that distribution can be commoditised but information need not be.

By  
**VIJAY SETHI AND NEERJA SETHI**

Division of Information Technology and Operations Management, Nanyang Business School

The airline and travel industry is an early example of one which has been driven to transform many times over. And it owes its grit to four waves of change which are also applicable, albeit more slowly, to other industries.

## Wave 1: Enter the OTAs

The first disruption occurred when online travel agencies (OTAs) came into the picture. Companies like Expedia and Travelocity became the new intermediaries that established a new channel between consumers and the airlines.

While the traditional travel agencies (TAs) were inevitably threatened, no one realised the extent OTAs were shifting the balance of power in the industry. The OTAs did this simply by making airfares become completely visible to consumers. Now customers could compare prices among the airlines – something they could not have done with the TAs. From then on, industry competition effectively turned into a price war.

In other words, OTAs single-handedly commoditised the airlines.

## Wave 2: Airline websites

The airlines responded by launching their own websites. However, the individual airline websites, though well-intentioned, were not able to compete with marketplaces such as OTAs, which offered multiple booking options and comparisons.

More significantly, the airlines now needed to manage an online channel in addition to their traditional TA channel. This led to channel conflict – how does a company manage multiple channels such that they can co-exist? The airlines face issues such as multi-channel pricing (for example, should airlines price online lower than what was offered to the TAs?). In markets such as India, the preferential treatment given to OTAs proved to be a mistake as the TAs felt slighted and many responded with boycotts of the airlines.

On top having to balance interests on all ends, airlines had to deal with operational challenges of running a website, accepting multi-currency payments and so on.



### Wave 3: Consortiums

Soon enough, the airline industry thought of something else to beat the trade at its own game: they banded together.

By forming consortiums, airlines compete more effectively with OTAs by offering multiple airline bookings – in other words, they became marketplaces themselves. Airline-owned consortia sites were the result.

The birth of Orbitz in the United States and Zuji in the Asia-Pacific marked the beginning of this third wave, typified by industry-players working hand in glove to develop comprehensive marketplaces.

### Wave 4: Aggregators

The next change in the airline industry, however, was driven by a very different dynamic.

All of a sudden, travellers who previously had only a TA to help with their booking were now spoilt for choice – from third party OTAs to airline websites, they all offered the best bang for anyone's buck! While the scenario seems to be a dream for most, the paradox of choice proves to be too much for some to bear. Just how does one choose among so many competing options to find the best deal?

Enter meta-travel sites, or aggregators as they are commonly called. These sites are one-stop shops, displaying prices and inventory across multiple sites. They are designed to address and solve the very problem of “too many choices”. They provide convenience and simplify the user booking process. Overnight, aggregators such as Skyscanner are the new kids to watch.

The irony here is the aggregators are much like the very technology the airlines had at the start of their digital journey: Computerised Reservation

Systems (CRS). Still used by the TA for customer bookings, the airlines were motivated to adopt new technologies to make CRS redundant due to the high fees they were charged. The only difference is the aggregators are online and Internet based.

### Wave 5?

Yes, aggregators are everywhere these days, but the question is, are they here to stay?

To address this piece of the transformation story, the fundamental capabilities of an aggregator needs to be examined. It will not take long to realise that they are essentially search engines that trawl travel sites to aggregate data. If such is the case, is it not easy to imagine an entrant to come into this industry because its core expertise is search?

Well, five years ago, Google acquired ITA Software, the company that provided the back-end search engine for all the aggregator sites. The US Department of Justice approved the buyout but it required that Google must continue to license the ITA software to other websites for at least five years. That time limit is about up. What happens now?

Will TAs now really go out of business? Search for travel today, and choices still abound. But look closer and you will see that these new-age TAs are different. They are offering packages, thematic travel options, and more. In other words, unlike the TAs of old who were in the business of “distributing” airline inventory, these new TAs are “creating” inventory.

Perhaps, there is a lesson here: In this day and age where distribution is commoditised, but information is not, then the only way to succeed is to leverage unique knowledge to create new products and services.

## DIGITALISATION OF THE HOSPITALITY INDUSTRY

# The customer is the destination, innovation is the means

Other than tracking the customer's journey and "mass-personalising" it to his preference, technology in hospitality can help improve operations and even transform the business model.

By

**NG TIONG GEE**

Senior Vice President, Innovation & Technology, Resorts World Sentosa

It is a typical Sunday morning. John is reading his *Sunday Times* when he receives a WhatsApp message on his phone. The resort that John and his family stayed at last month is offering him an irresistible family package comprising access to the water park for all members, dining vouchers at the resort's Japanese restaurant, discounts at the Victoria's Secret store, and so on. Delighted, John accepts the offer while he cannot help but wonder how the resort found out what he and his family like for a staycation.

Not so unwittingly, John was the target of a mass personalisation programme devised by the resort. Like the other guests, John was being "deciphered" through the way he spends, the places he visits frequent enough and all the other quirks the resort and staff managed to pick up about his vacation and consumption behaviours.

At work here are data analytics, harnessed by businesses, like the resort, to calibrate promotions, rewards and campaigns that best suit the customer. Individuals that fit the targeted

profiles of the campaigns are identified and the system automatically offers the tailored offerings to them.

Gone are the days when customer loyalty was rewarded primarily by points.

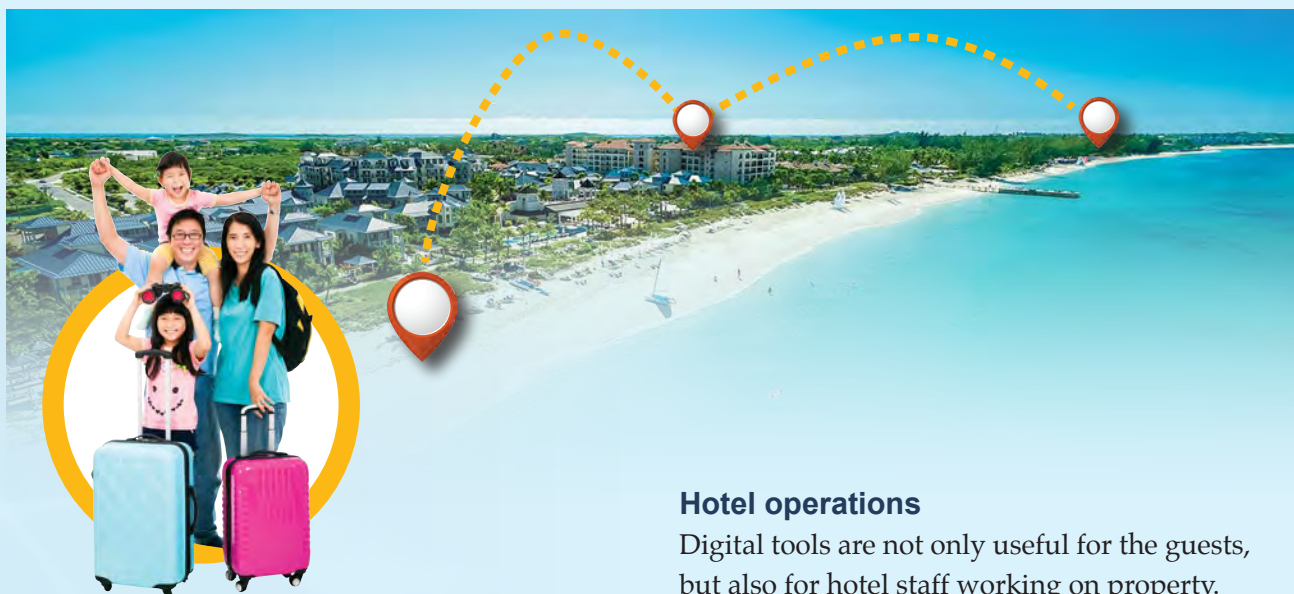
With digital disruption, those in the hospitality industry are going one step further to offer "just for you" experiences to customers based on their personal preferences.

## The customer and his journey

If any thing, John's example underscores the need to put the customer and his journey at the heart of the digital transformation the hospitality industry is currently undergoing.

A good place to begin is to ensure that every channel the customer interacts with the organisation is seamless and connected. For instance, a customer can start on his desktop, book tickets on his mobile, and collect his tickets at the kiosks onsite. Many companies have multi-channel platforms;





alas they are all operating in silos. A good omni-channel strategy ensures that all customer touchpoints are seamlessly connected, with its look and feel as intuitive as possible, so the customer needs not relearn any interaction.

Consider it a given that customers of today are digitally literate; hoteliers have to ensure customer experiences in their establishments are digitally powered and led. A simple example is providing complimentary WiFi access at broadband speed – almost a mandatory modern-day convenience. In addition, within a hotel room, the control of temperature, the TV, lighting, even access into the room, can potentially be done through an app downloaded on the guest's mobile device.

Perhaps worth capturing for the hoteliers is the corporate traveller. While it is challenging for hotels to personalise individual travel at scale, it can be less complex to personalise an experience for the corporate traveller. A group of travellers from the same organisation are likely to have common interests and needs, which primes travel agencies and hotels to individualise their MICE experiences. The use of computer systems can also help with ensuring that the corporate travellers comply with their company policies and restrictions.

### Hotel operations

Digital tools are not only useful for the guests, but also for hotel staff working on property. There are opportunities to help staff be more productive and examples include mobile alerts to staff members when rooms are ready for cleaning after guests check out, dynamic scheduling by the system to adjust to changing staff availability and environmental needs, and real-time communication of issues to all affected parties as they unfold.

### New business models

Perhaps the greatest impact of digitalisation is in the creation of new business models in hospitality such as the “sharing economy”, best exemplified by Airbnb. The sharing economy is a hybrid market model of peer-to-peer-based sharing of access to goods and services that is coordinated through a community-based online platform such as Airbnb. It is made possible through the brilliant scale use of mobility, social networks, big data and high speed internet.

Today, Airbnb offers the largest number of lodgings even though it does not own any of those rooms. Its valuation of more than US\$25 billion dwarfs that of many other hotel giants such as Marriott. If anything, Airbnb is a reminder that the customer is key, and that it is the innovative application of technology to traditional processes that will truly disrupt the industry.



## DIGITALISATION OF THE SOCIAL SECTOR

# Enabling the disabled

The potential of technology for social good has not gone unnoticed by the sector. The good news is, opportunities are presenting themselves and will benefit persons with disabilities very significantly.

By  
**CHONG YOKE SIN**

Historically, the uptake of technology has been in the commercial and public sector. However, the social or nonprofit sector is increasingly recognising the power of technology to foster innovation and solve society's more pressing problems.

Four clusters of technologies have been of relevance and high impact in the social sector in general. They are environmental, health, robotics and infocomm technologies (see box, "Technologies for the social sector").

## Persons with disabilities

I would like to focus this article on the use of technologies to benefit an important constituency of need in the social sector: persons with disabilities (PWDs), those persons with physical, vision, hearing or intellectual impairment.

In Singapore, PWDs form some four per cent of the population. They are supported by about 186 organisations including special schools and voluntary welfare organisations. Among these are SG Enable and the Society for the Physically Disabled which have jointly set up an assistive technology resource centre.

To be sure, mainstream technology products such as driverless cars, health monitoring devices and mobile devices are of equal, if not greater, utility and value to the PWDs. They are also generally known as assistive technologies for the PWDs.

In many cases, the special needs of the PWDs are being specially fitted into these mainstream technology products and services. When this occurs, they are called adaptive technologies.

For example, major software and hardware manufacturers such as Apple, Dell, Google, IBM and Microsoft ensure accessibility in their products, incorporating features such as magnification, talkback, captioning, large text, and text-to-speech.

Extending existing applications to meet the needs of the PWDs is even being adopted in the new disruptive tools of the sharing economy. Thus Uber, the ridesharing service, has launched uberASSIST, a special app which allows wheelchair users a means to hail and communicate with specially trained drivers who can best help them. In a similar vein to Airbnb, a new app, Accomable

## Technologies for the social sector



### Environmental technologies

Clean energy (wind power, solar power, hydro power) can deliver green and clean energy as well as clean water to more remote places on an affordable and accessible basis.



### Health technologies

While many health innovations and treatments are too expensive and inaccessible to the poor in developing countries, new forms of philanthropy are directing research toward making them relevant and affordable (for example, the Gates Foundation's Global Health Program). Many nonprofits are also developing low-cost, easily deployed healthcare solutions.



### Robotics

These are of two types: rehabilitation robotics and assistive robotics. Both help restore the disabled and the aged to an optimal level of physical, mental, and social well-being.



### Infocomm technologies

Infocomm technologies are being used many ways: automation of a nonprofit's back office; use of social media and the internet to fundraise, market, transact, match, and generally engage with donors, volunteers and other stakeholders; and use of mobile phones to communicate and to provide web connectivity for the rural poor.

Adapted from Robert Chew, "Rebooting Technology for Society" in the book, *The World That Changes The World*

provides an efficient one-stop shop for accessible accommodation for travelers with disabilities.

Yet another app, Jaga-Me was launched to provide a go-to platform for on-demand home-care by retired or off-work professionals.

### Internet of Things

A major opportunity to support the PWDs lies with the proliferation of Internet of Things (IoT) devices which are connected to the internet and able to interact with each other. Examples of IoT applications being assessed at the ATRC are:

- Microsoft Cities Unlocked project to enable independent travelling by the visually impaired. In this case, a GPS tracker, gyroscope, compass and bone conduction headset are paired with a smartphone app to give directions to the user.
- Jacoti hearing aid that does away with the traditional hearing aid, and instead uses the

ordinary earphone of the smartphone and a smartphone app to amplify or cancel noise out for focused hearing enhancement.

- Nanyang Polytechnic scheme that allows a PWDs person to tap a card at the bus stop to alert an oncoming bus so that the driver can stop and lower the ramp upon arrival.

Singapore's Smart Nation vision relies on the extensive use of IoT to enhance the lives of all citizens, able and otherwise. Smart living trials are ongoing at the Jurong Lakeside district where homes and residents are enabled for better living. The potential is limitless to bring the power of technology to the PWDs through adoption, innovation and imagination.

*Chong Yoke Sin is the CEO of Integrated Health Information Systems and a board member of SG Enable.*



## DIGITALISATION OF THE AUDIT PROFESSION

# Auditing in the age of the machines

Don't write off the traditionally staid audit profession in responding to the changes disruptive technologies bring.

By  
LYON POH AND LING SU MIN

It is without doubt that the digitalisation we are seeing today is accelerating and transforming the way businesses are run in an unprecedented way.

However, digital disruption has also resulted in an increased reliance of businesses on the likes of cloud computing and block-chain. And there is also an uptake of new operating platforms – e commerce, sharing economy – in a bid to keep up with the times.

## Impact on audit risks

The risks associated with electronic transactions and such operating models have to be critically assessed. After all, risk is what auditors focus on, and as risks of their clients' businesses change, so must the focus of their assessment. The auditors' ability to apply traditional concepts of going concern and impairment where applicable, in recognition of the realities of such new operating models and form judgments, would be critical.

One of the underpinning themes of the digital age, is the nature and extent of external change (i.e. technology, demographics, climate, regulatory,

amongst many others), and the impact of these changes on an organisation's financial performance. The potential impact of the inter-connectivity of these changes and the risks they represent, has largely been ignored by existing audit techniques.

To this end, KPMG's member firms formed alliances with the McLaren Technology Group and IBM's Watson cognitive computing technology to explore utilising advanced analytics and machine learning techniques to accommodate current and future state changes, along with associated risks, to assess an organisation's financial flexibility in dealing with external change. Our objective is for it to provide companies with a potential indicator of future financial performance.

## Remodelling audit firms

While parts of the traditional audit business will evolve (for example, the routine aspects of sighting documents), the demand for independent, trusted third parties to provide assurance on the facts and figures will still remain relevant, if not thrive.



More so than ever, it is such times when an auditor's ability to use advanced tools to interpret data correlations, along with the sensible application of such interpretation to an auditee's specific circumstance, will be important, should it desire to be differentiated from the rest.

Suffice to say, to suggest the demise of the auditor in the digital age will be premature, if not foolhardy.

As with any rise and ebb of technological trends, one thing remains unwavering: the auditor has to upgrade continually, expanding skills sets to be as inter and multi-disciplinary as possible, so as to complement team members that may only be trained in traditional disciplines.

Because technology gives rise to borderless audits (i.e. audit teams do not need to be located in the same country as the auditee), the audit team will need to have the flexibility to morph in terms of its structure (whether team composition, structure or geographical locations of the members) and towards a digitised workforce, relinquishing the more routine audit work to machines. Audit teams with senior personnel need to be tapped for the judgment and experience in the interpretation and use of said data instead.

Another probable change is in the support functions of an audit firm as well as resource management systems. These are likely to get an overhaul, where the composition of team members, billings and administrative matters can be resolved with minimal human intervention. The way that audit firms manage institutional knowledge will also change as better ways to collate and manage data are continually sought.

### Driving innovation

In time, auditors will not only respond to their clients' innovation but also help drive innovation. One example is in the recently launched KPMG Digital Village which provides a collaborative



ecosystem where corporates, innovators and investors can co-innovate and bring new solutions to the market, combining the scale and resources of corporates with the agility of start-ups to drive tangible and strategic outcomes.

The choice of timing of the investment of one's energies and resources to such innovation is key, keeping in mind that audit remains both a jurisdictional and regulated industry. The continued development and use of new technology in audits and by auditors will largely be dependent on the acceptance of the outcomes of such tools as audit evidence by audit regulators.

For the purpose-filled visionaries amongst us, perhaps the completion of any audit at the push of one button may not be too far-fetched a dream.

After all, before the advent of these new-fangled technologies, computer-assisted audit techniques (CAATs) and data-mining were already commonly deployed in audits. It is time the audit profession shows the rest it is not as staid as it is made out to be and blaze the innovation trail once more.

*Lyon Poh is the Head, Digital and Innovation and Ling Su Min is Audit Partner at KPMG in Singapore. The views and opinions are those of the author and do not necessarily represent the views and opinions of KPMG in Singapore.*

## DIGITALISATION OF INFOCOMM MANPOWER



# The infocomm workforce capability crisis

Even as digitalisation is disrupting businesses and industries, the supply and development of infocomm professionals – the people who are key to the digital transformation of organisations – is also being disrupted.

By

**LIM SWEE CHEANG**

Vice Dean, School of Continuing and Lifelong Education,  
National University of Singapore

Singapore infocomm manpower is in a desperate situation today with shortages reported in almost every business domain. Many government agencies and businesses are struggling to find Singaporeans to field sensitive infocomm jobs.

According to the Infocomm Development Authority of Singapore (IDA), there are about 150,000 infocomm professionals in Singapore. This group needs to continually master new skills and sharpen their competencies to keep up with new demands created by disruptive technologies and cybersecurity.

In addition, another 30,000 infocomm professionals are required by 2020 to propel Singapore to deliver its Smart Nation vision.

## How did we get here?

The cause of today's problems can be traced back to the early 1990s when many Singapore companies and government agencies followed the international trend of outsourcing software development overseas to India and other third world countries. They did it for cost savings and other "strategic reasons" such as "focusing on our core competencies".

Such disruption continued through the 2000s. Many business leaders then held the view that infocomm manpower could be easily obtained more cheaply by setting up software factories overseas, or simply importing cheaper infocomm professionals from these countries with the support of generous work permits from the government.

Employers cut local infocomm training budgets as foreign talents with the requisite skills could be easily imported. Local infocomm professionals were given fewer opportunities to develop their new practical skills or to take on large scale assignments.

As a result, local infocomm manpower development took a dive, infocomm salaries became less competitive compared to other professions, and infocomm was not as "sexy" in the minds of many pre-higher-learning students.

While we have created a free market in infocomm professionals and driven down their costs, we are now finding the need to resuscitate the supply and development of infocomm manpower.



## Dealing with the manpower crisis

The same disruptive thinking that the infocomm industry advocates for its clients in the other industries need to be applied to its manpower. The infocomm education ecosystem in Singapore needs to be transformed.

A key player in this ecosystem is the government. In this respect, policies are already being changed to meet the new needs.

The recent tightened intake of foreign workers including infocomm workers has created a higher demand for local infocomm professionals. The movements advanced by Smart Nation, ground-breaking digital business and tech startups have successfully promoted infocomm as a cool and hip profession. Infocomm education is in higher demand again, attracting high quality applicants for the institutes of higher learning.

However, more must be done quickly, not least being changing mindsets, reducing bureaucracy, and improving productivity in manpower development.

While government agencies such as IDA and the Singapore Workforce Development Agency have successfully contributed directly or indirectly to the infocomm manpower development through various schemes, many have become more bureaucratic over time. While they are understandably concerned with grant efficiency and governance, the KPIs, rules, structures, schemes, procedures, controls and reports which are added to fulfill higher expectations of measureable outcomes, are not helping to solve the manpower crisis for the industry.

The rigidity of many government funding schemes with their complex requirements demand significant time and resources from all the parties on document submission, satisfying

terms and conditions, struggling with “quality control” barriers, managing micro change requests, and worrying about picking auditing process. In other words, a much greater focus now is on “doing things right” and less on “doing the right things” – which should be to deliver training to develop the needed manpower on a speedily and competitive manner. The result is that it can take months to get through the paperwork to roll out a new programme. Worse, many innovative proposals to help the industry may be rejected or experience long delay as they do not fit into existing schemes or crossing agency internal boundaries. An adaptive and agile approach is badly needed to transform the current agencies’ mindsets, policies and processes in order to deliver a cheaper, better and faster manpower development ecosystem.

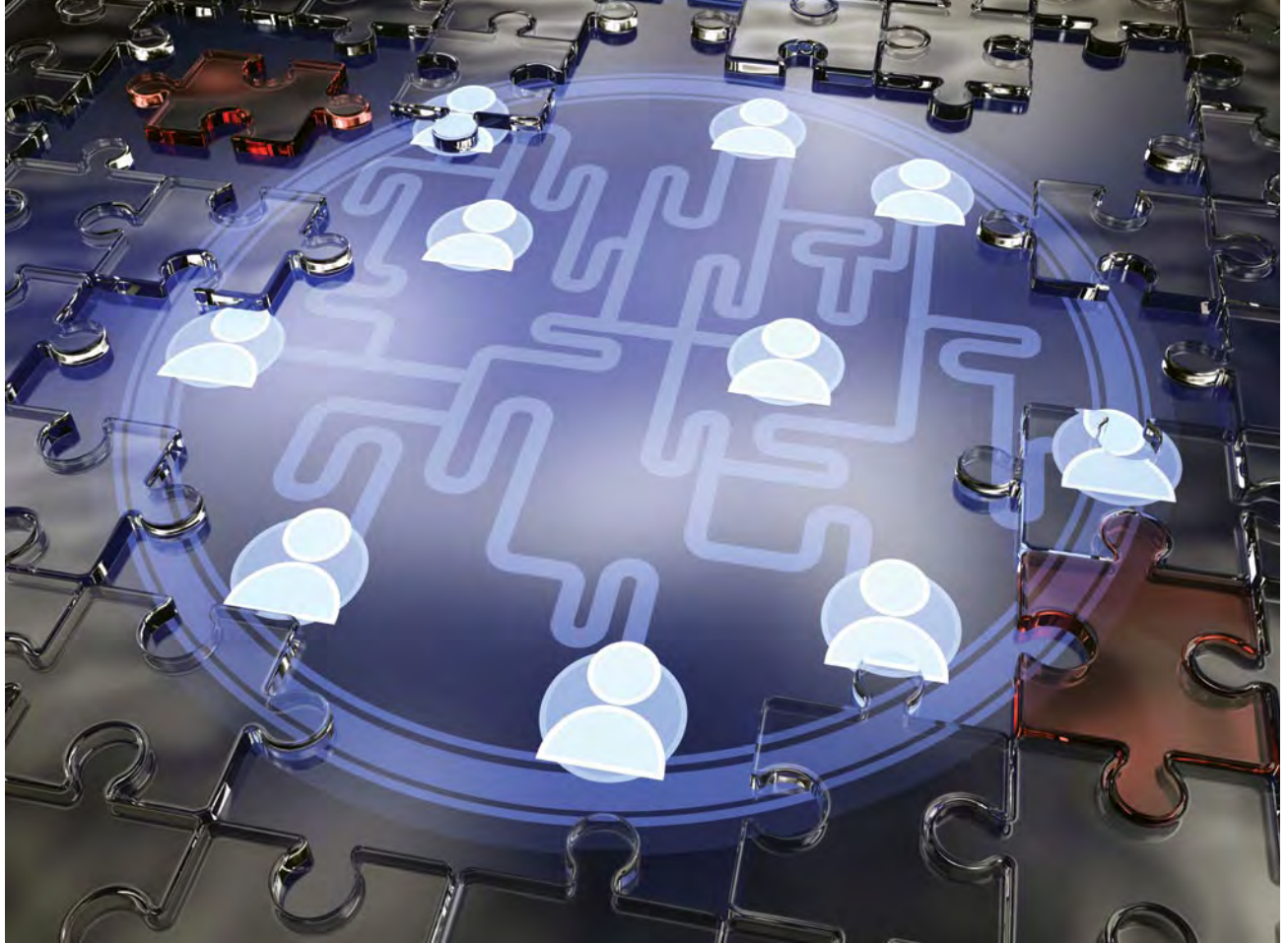
Educators in the ecosystem should also apply the same disruptive technologies to learning and education. A prime example is the adaptive use of massive open online courses to provide blended flip-classroom and participatory training for infocomm professionals and their industry partners in the business community.

Employers should realise the greater importance of having good, not just cheap, infocomm professionals by looking to their long term retention and development.

The government has set aside S\$120 million to partner with the private sector such as Google, Singtel, NCS, Dimension Data, Quann and UOB to develop skills in emerging infocomm job roles such as data analytics and cybersecurity in a combination of structured and on-the-job training.

Hopefully, all these will go a long way to disrupt the status quo and help to grow a strong “Singapore core” in the infocomm sector. ■





## The brave new world of talent management

Technology, globalisation and demographic shifts are rapidly and significantly changing the nature of work, and the requirements of the workforce itself. To compete in this new world of work, boards need to ensure the organisation develops new approaches to managing talent that integrate more closely its human resource strategies with its workplace and business strategies.

By

**SEAH GEK CHOO**

Deloitte Singapore Centre for Corporate Governance Co-Leader & Talent Partner

**W**hile digital technologies are shaking up traditional businesses, their impact is equally felt in the workplace.

Information technology and robotics are already starting to replace humans in many jobs. Some studies suggest they may take over about 80 per cent of current jobs in the next 20 years, which would be the greatest transformation of labour since the Industrial Revolution of the 19<sup>th</sup> century.

Alongside this jobs takeover, new types of careers are also emerging. Today, some of the most in-demand jobs – cyber security specialists,

chief innovation officers, data scientists, big data architects, social media managers, and cloud service specialists – are virtually unheard of just five years ago.

### **Workplace disruption**

Technology is also transforming the way people work. Mobile technologies have freed employees from the need to commute for work; in many instances creating a win for both workers and their employers. Workers appreciate the flexibility of working when and from where they desire; organisations benefit from a more engaged and productive workforce, and with fewer people

coming into a physical space, companies are able to reduce their real estate footprints.

In many jurisdictions, demographic shifts are creating the most diverse workforce in history. At present, there are four active generations in the workforce – with a fifth soon to enter it – and each has its own expectations and priorities. With work environment potentially getting more complex, organisations need to come up with strategies and tactics to manage their workplaces, making sure they are coherent and cohesive.

### **Leadership development and succession**

These days, as executive tenures are becoming shorter, organisations cannot afford to have their business plans and longer-term strategic aspirations disrupted by someone unexpectedly vacating a position. Many boards now view leadership development as both an ongoing process and one that extends below the c-suite and into middle management.

Coupled with globalisation and shifting demographics, technology is also rapidly altering the mix of skills and attributes needed to lead this emergent workforce. Succeeding today requires leaders that shepherd organisations very differently from their predecessors.

For these reasons, many boards expect CEOs to begin working with the board to plan their succession the day they step into their roles. Leaders need to develop successors whose skills fit the new world. They need more agility, greater collaboration, and a higher focus on developing talent capabilities. Some boards expect their leaders to not only help identify, develop and mentor in-house candidates to succeed them, but to also continuously monitor the outside competition so they also know the best external candidates.

In order to carry out their responsibility for managing CEO succession, boards that have

not yet done so should also adjust their scope to ensure that they have a line of sight to middle management and regularly assess the strength of the organisation's leadership bench and its leadership pipeline.

### **HR transformation**

In most organisations, many human resource (HR) functions remain rooted in doing the same things in the same way that they have done for decades.

Despite technology transforming much of the workplace, it is still slow in impacting HR functions of many organisations. Technology would automate many traditional HR activities, such as performance management and other core HR activities and make them self-serve, allowing HR to shift its focus from administering personnel to providing insights to management.

Using data analytics, HR functions could broaden their understanding of the business strategy to better prepare leaders, better understand where the organisation will find the workforce of the future, and more clearly identify the risks to that workforce, in particular retention risk. Developing a mobile and social strategy for the HR function would also enable it to work differently and more efficiently while at the same time, help build the organisation's brand both internally and externally.

Management needs to maintain an outside-in perspective of what may disrupt the business, its medium to long-term strategy, and its workforce. HR functions should play a leading role in helping CEOs and management understand how to solve business problems through innovative talent strategies including how jobs are being designed, the type of jobs the organisation will need in the future, and where those jobs will be located and performed. ■



# Smart Nation in the making

Smart Nation is a national effort to co-create a future of better living for all Singaporeans through tech-enabled solutions. The vision of a Smart Nation aims to rally the collective efforts of people, businesses and government to work together to support better living, create more opportunities, and support stronger communities by harnessing infocomm technologies, in particular, sensor technologies, data analytics, and high speed networks.

Since the announcement of Smart Nation in 2014, there has been much progress. The foundation of connectivity through high-speed networks is being laid. The young are being exposed to and involved in technology. Infocomm manpower is being developed. Trials and initiatives are being undertaken to pilot applications and develop a startup ecosystem.

By **KHOONG HOCK YUN**

Assistant CEO and Chief Data Officer,  
Infocomm Development Authority of Singapore





## From kampongs to a connected global city

Singapore celebrated our Golden Jubilee just under a year ago.

A significant milestone for an island with a dearth in natural resources. Not only did we build a safe, comfortable home for residents with very little to start with, we have carved out a reputation as a thriving trade hub and global economic powerhouse.

What of the next 50 years?

Already, we are riddled with the stark realisation that as a developed nation, we have to balance our need for rapid urbanisation with a society that is ageing fast. And at the back of our minds is this nagging reminder we have to do all that with finite land, water, energy and human resources.

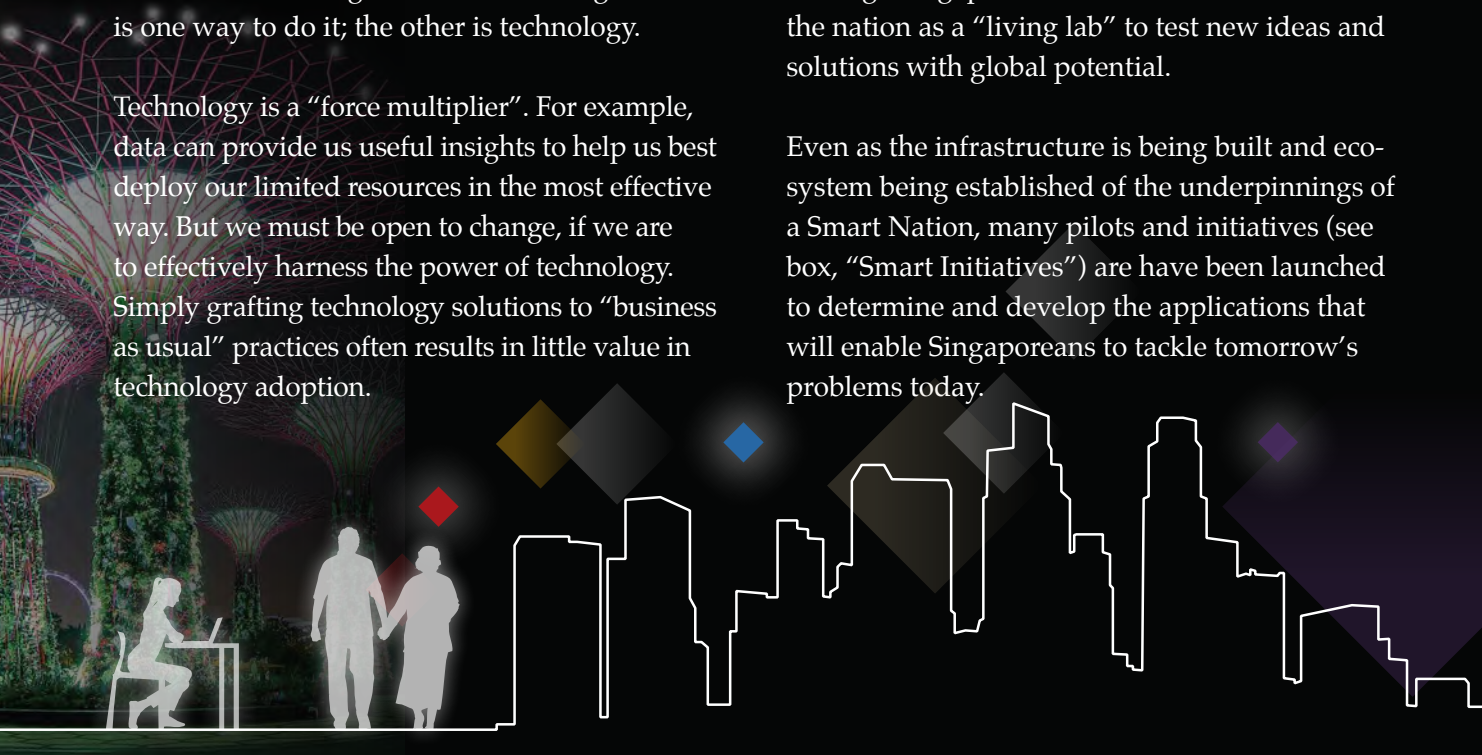
How do we do things “smarter”? Good governance is one way to do it; the other is technology.

Technology is a “force multiplier”. For example, data can provide us useful insights to help us best deploy our limited resources in the most effective way. But we must be open to change, if we are to effectively harness the power of technology. Simply grafting technology solutions to “business as usual” practices often results in little value in technology adoption.

Technology is not merely machinery. Instead its forms today are more “invisible” and require a different set of skills altogether to comprehend and mine. Think the Internet of Things (IoT), big data, and high speed communications – elements that businesses in healthcare, energy or transportation are increasingly leveraging to transform themselves and their industries.

Singapore aims to leverage such disruptive technologies to turn the country into the world’s first “Smart Nation”. We are adopting a holistic approach that will see government bodies, universities, tech start-ups, R&D institutes and investment capital firms all working together to achieve this vision of a connected country, with more efficient and effective public services. We are also encouraging technology builders and entrepreneurs from around the world to leverage Singapore’s smart infrastructure and use the nation as a “living lab” to test new ideas and solutions with global potential.

Even as the infrastructure is being built and ecosystem being established of the underpinnings of a Smart Nation, many pilots and initiatives (see box, “Smart Initiatives”) are have been launched to determine and develop the applications that will enable Singaporeans to tackle tomorrow’s problems today.

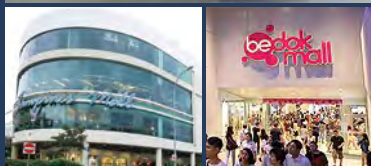


## Smart initiatives

### Urban logistics: Surmounting logistical challenges in a clever way

IDA's Urban Logistics initiative aims to help significantly reduce the delivery turnaround time to our retail malls, improving the effectiveness of our logistic players, increasing the number of deliveries per day that they can make, while reducing congestion at the loading/unloading bays, and the need for more delivery vehicles and drivers.

The initiative reorganises the delivery process, requiring new innovation and technology developments, new business models, review of existing regulations, and collaborative participation of SMEs (from retailers to logistic players).



### Urban living: Delivering better services at lower cost

HDB's pilot Smart Enabled Homes initiative will test an appropriate ICT infrastructure to allow future residents of HDB flats to enjoy more convenience and energy savings with smart devices and applications in the comfort of their home

This includes elderly monitoring systems that can provide real-time updates on their well-being and alert working family members of any incidents at home that may require immediate attention.

At the same time, HDB is test-bedding other smart technologies in Punggol Northshore District, including smart car parks, smart street lighting and a smart pneumatic waste conveyance system. Over at Jurong Lake District, over 1,000 data sensors are being deployed to create a "live environment and living lab" for Smart Nation projects, including smart queue monitoring.



### Startup eco-system: Catalysing innovation

An accelerator programme run by Infocomm Investments Pte Ltd (an IDA subsidiary) with industry partners, is helping more than 65 promising tech start-ups by providing them with intensive mentoring from a network of successful entrepreneurs, domain specialists and investors.

Separately, IDA Labs allows individuals and companies to come together to generate new ideas, develop partnerships and collaborate to create new solutions and test-proof of concepts. There are currently three labs located at IDA's headquarters in Mapletree Business City, the National Design Centre, as well as the Jurong Regional Library.

In addition, IDA is working with corporates and institutes of higher learning by engaging them with the community to collect more research data which can be used to support future schemes and programmes.

One such programme is the S\$40 million scheme to catalyse the establishment of corporate ventures by large local enterprises such as CapitaLand, DeClout, Wilmar International and YCH Group.



## Building the infrastructure

Connectivity is a key piece in the shaping Singapore as a Smart Nation.

The deployment of the Nationwide Broadband Network (NBN), which started August 2009, has propelled Singapore closer to its vision of becoming a connected nation. By the end of 2015, more than three quarters of households are equipped with fibre coverage, with three quarters of them subscribed on the NBN today.

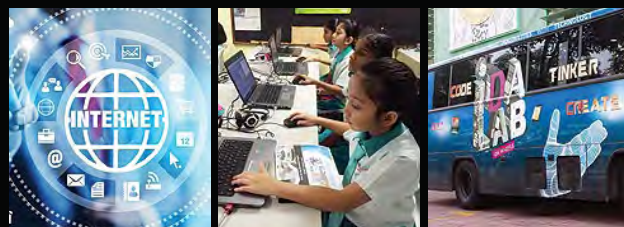
Complementing the wired network is the availability of free wireless hotspots across Singapore as well as 3G and 4G networks for the delivery of mobile data services, under the Wireless@SG programme.

With a strong foundation laid, the next phase of infrastructure building will include technology development and innovation in wireless networks, starting with Heterogeneous Networks (HetNet) Trials. The vision of HetNet is to bring about the best experience in fast and seamless connectivity, regardless of the type of wireless network available. IDA is working with operators to deploy and test HetNet technologies and coverage in areas such as high-rise residential flats, shopping malls, train station platforms and even inside buses.

Beyond the technology infrastructure, we need as a nation to build the talent pool.

It is critical that our people – young or old, budding or experienced – are able to make use of these emergent disruptive technologies to co-create solutions to improve the lives of their fellow citizens, communities and society at large.

One way of doing this is to get the people interested and vested in technology. Exposing our



youths (those on the brink of entering the work force) to programming is a start. Since 2014, IDA has been championing the Code@SG movement. So far, it has reached out to over 90,000 students through initiatives such as Code for Fun Enrichment Programme, Code for Charity, and the National Infocomm Competition.

There is also IDA Lab on Wheels – roving buses to schools that house engaging and experiential technologies. Lab on Wheels exposes students to the possibilities that can be created with technology through fun activities, such as coding a game and programming robots.

It is also critical to accelerate professional development and enable continuous skills upgrading. In April 2016, IDA announced that it has set aside S\$120 million for manpower development. To this end, it has launched Tech Skills Accelerator (TeSA), which aims to help fresh and mid-career ICT professionals to develop core and sector-specific ICT skills. IDA will bring together key employers and industry partners to enhance employability, by identifying in-demand skills and through structured programmes delivered by training partners.

Swiftly and surely, smart technology is changing the way we think, work and live. Through Smart Nation, we can collectively bring this vision to fruition and the course sharpen our economic advantage, support communities and enhance the lives of Singaporeans for generations to come. ■





# DIGITAL DIRECTORS, GET ON BOARD

Digital transformation needs top leadership – including at the board level – to drive it successfully within and out of organisations. And it needs them now.

By **AUDREY TAN**

Managing Director, Russell Reynolds Associates

**T**he demand for digital leaders continues to accelerate both at the board and executive level, and for good reasons.

A recent study by global strategy firm Capgemini Consulting and MIT Sloan School of Management revealed large companies that have made major investments in technology-enabled initiatives see an increase in revenues, while organisations that prioritise digital – in both technology use for the business, and leadership – achieve higher profitability and market capitalisations, on top of the increased revenues.

With major opportunities waiting to be tapped, solid leadership from the top needs to be in place for any digital strategy to be implemented effectively throughout the business.

## Start from the top

A good place to start will be the boardroom.

According to Russell Reynolds Associates' *Digital Directors in Singapore's top 50 Companies* analysis, a digital director is defined as someone who plays a significant operating role in a digital company – (i.e. an organisation with a primary business function based on web-based, social, mobile/device, cloud/SAAS or big data platform); or someone who has a primary digital operating role with a traditional company or someone who has two or more NED roles at digital companies.

Typically, boards are classified into “highly digital” (with at least two digital directors), “partially digital” (at least one) or “non-digital” (no digital directors).

Unfortunately, digital directors still do not represent a meaningful population of board members at Singapore top 50 companies: only 14 of 473 analysed board seats are occupied by digital directors, and most directors have been appointed since 2012. Only one among Singapore's top 50 is considered a highly digital board.

## Watered down effect

Russell Reynolds' global study on digital directors also found that a significantly disproportionate share of them are concentrated in the U.S. The absence of deep digital talent pools, like Silicon Valley, has contributed to the slower adoption rates for both Europe and Asia. Further, in Asia, many of the largest companies are state owned or controlled. Even the companies that are not government controlled are, for the most part, still addressing the role of the independent director, and a board dominated by independent directors is a prerequisite for being able to think about board composition in a strategic way.

## Digging deep into digital

Russell Reynolds went beyond quantitative analysis and demographics of digital directors, and conducted in-depth roundtable discussions with a range of CEOs, boards and digital directors to assess the impact of digital transformation and digital corporate governance.

What emerged are some best practices in digital corporate governance that directors could adopt (see box).

## Digital corporate governance

### Vision and Strategy

- We understand what is going on in the market, know how to ask the right questions, and have a mechanism to stay abreast of emerging technologies and trends
- We actively incorporate digital opportunities and risks into strategy and committee discussions
- We have mapped the key digital opportunities and underlying risks across our business
- We have a plan for addressing each opportunity and risk
- We have explored the options of embracing outside advisors and forming a digital steering committee

### Leadership Team

- Our succession planning incorporates digital expertise at all levels, including the CEO, and prioritises the development of digital skills in rising leaders
- We have a framework to assess the digital competency and expertise
- We have a programme to identify, recruit, onboard, mentor and develop digital talent in the organisation
- Our leaders actively support digital transformation within their areas of ownership and collaborate effectively as a group across the business to drive organisation-wide digital transformation

### Organisation and Culture

- We have a roadmap of how our organisational structure should evolve to support of digital strategy in different phases of transformation
- We have set a tone to push exploration and collaboration in support of digital transformation

### Complex and Capital Intensive Technology Projects

- We have appropriate procedures and policies in place to manage the cost and risk associated with complex technology projects

### Risk Management

- We understand how our brand and reputation exist in the digital ecosystem and have policies and procedures in place to manage this proactively, and react appropriately to adverse events

The tide of digital director appointments will continue to rise.

As digital directors are appointed, the following tips will prove to be useful for them to follow, especially since digital directors, compared to their “offline” counterparts, are still fledgling:

- **Be a director first, a digital one second**  
Remember that the responsibility of a board member is still to contribute broadly to the business so continue asking the right questions and avoid getting pigeonholed as “the digital one”.
- **Learn the business...and the board dynamic**  
Build relationships via a network of executive and board partnerships. Through these interactions, understand how the chairman or CEO likes directors to contribute within the boardroom and out. While at it, recognise any gaps you may have and where there are, do

something about them by seeking mentorships and swapping trainings. Sooner or later, you will find your sweet spot, where and how you will add value.

- **Bring digital expertise**  
Invest the time to get the board up to speed: jointly and severally. Pick your battles, find early wins and stay fresh. Do not forget you were brought in for your digital expertise. Finally, leverage the community by building and maintaining relationships with other digital directors.

Digital transformation is here and here to stay and given the potential and scope it can gather for a company, digital cannot be the responsibility of a single individual. The time is now for digital to be strongly and prominently represented on boards, for the sake of progress and good corporate governance too. ■

# CFOs should get digitally ready



By **SOH GIM TEIK**  
Vice-chairman, SID



**COUNTING BEANS**

**Even as digital is revolutionising their businesses, many chief financial officers (CFOs) still seem lackadaisical about it.**

EY's 2015 *Partnering for Performance* global study revealed only half of CFOs surveyed consider the shift to digital to be of high priority for their organisations in the next three years, and only 49 per cent believe that they have a major contribution to make in their organisation's shift to digital.

A more recent Accenture report, *CFO Reality Check* showed that 24 per cent of CFOs fear that disruption will destroy their company but most are not doing anything to stop it.

Should CFOs care about digital disruption?

The answer is clearly a "yes". If digital business is dramatically altering the business and business models in virtually every industry, it must also change the CFO's role and skill sets, as well as the processes and supporting technology within the CFO's domain.

## **Evolving roles**

Traditionally, CFOs and their teams have been focusing on accounting and reporting, finance and tax, performance reporting, and even risk management. They would work with the rest of the business to help them understand cost management and improve their business performance.

Digitalisation pushes the CFO's role beyond just driving down transaction costs to include

providing more value-adds to the business. The CFO can evolve to be a digital strategist and partner of the operating units as they explore together new revenue streams and growth areas. The CFO is in a unique position of being able to understand and advise on the implications of pricing, margins and financial impact of new, digitally-powered business models to replace products and services they have superseded.

As companies seek to acquire and incubate early-start ventures in related businesses, the CFO can also expand his role to a "digital investor". He or she can help with the valuations and analysis of the business models of digital startups.

## **New skills and competencies**

To be effective at their new evolved roles, CFOs, along with their teams, have to acquire new skills and competencies as well as move beyond Excel and ERP, in order to understand which new technologies they can leverage. Examples of such technologies are:

- **Cloud computing:** A shared computer resource that allows anyone to store, retrieve and process all their information off-site, on-demand and at any time. However, there are issues regarding cybersecurity and privacy concerns often associated with cloud computing.
- **Software-as-a-Service (SaaS):** This is an application software service provided by a third party to users of cloud computing for a subscription-based fee. This can be a tremendous boon for SMEs as previously expensive computer resources are now made affordable through the economies of scale.





- “Big Data” and data analytics. The idea is simple – with the power of today’s digital capture, storage and processing technology, so much complex and often seemingly unrelated data can be accumulated, stored and processed so that meaningful information can be extracted with data analytics applications. As a result, hitherto “hidden” value of trends, correlations and other insights can be discerned for more informed decision making.

### Processes and systems

The processes in the CFO domain itself can be transformed through digital technologies.

The core finance processes such as transaction capture and reporting can be enhanced. Cloud computing, SaaS, and Big Data provide a multitude of options to enhance, in a more cost-efficient way and with real-time information, these core functions.

To start, procurement and the supply chain can be areas put up to be transformed. Legacy ERP

systems tend to be rigid, and require costly and long implementation timeframes. A centralised and digitised procurement, accounts payable and treasury system can mitigate supply chain risks economically. When suppliers are connected into a digital network, communication between them and the company can be kept electronic. Purchases are pulled up from supplier master data file with payment and other terms, and sent in real-time through the cloud into the supplier systems. Data analytics can help with making complex decisions such as choosing among different currencies strategies.

The use of electronic invoices will reduce approval cycle time, supplier inquiry calls and invoice exceptions. The automation of accounts payable allows for savings from dynamic discounting, and better cash flow management.

The CFO, as a key member of management, has to be vigilant to digital challenges facing the business. To remain parochial, fearful and by not embracing the digital wave is no longer an option. ■

# Launch of the BRC Guide and the ASEAN CG Scorecard 2015

Risk management and good corporate governance (CG) were the focus at SID's launch of the latest CG Guidebook and ASEAN CG assessments.



**O**n 31 March 2016, some 300 directors and senior corporate executives descended upon Marina Mandarin Hotel for the launch of the *Board Risk Committee (BRC) Guide* and *2015 ASEAN Corporate Governance Scorecard*.

The *BRC Guide* is the third in a series of *Corporate Governance Guides*, produced by SID and supported by Accounting and Corporate Regulatory Authority (ACRA), Monetary Authority of Singapore (MAS) and Singapore Exchange (SGX), for boards and board committees in Singapore. KPMG provided the resources for the *BRC Guide* while a review panel comprising leading industry practitioners and professionals oversaw the production of the guide.

The *ASEAN CG Scorecard* ranks the corporate governance performance of the top 100 companies by market capitalisation in Singapore. It is jointly administered by SID and the Centre for Governance, Institutions and Organisations (CGIO) of the NUS Business School.

Commenting on the capacity crowd for the dual launch event, SID Chairman Willie Cheng joked that "Singaporeans always like to get two for the price of one". He then explained that the two launches were combined because "the *CG Scorecard* is so much about conformance, which is a key aspect of risk management".

In his guest-of-honour address, Mr Kenneth Yap, Chief Executive of ACRA, said that "there must first be risks for there to be gains" but they must be proactively managed. He cited the financial





crisis of 2007/8 as an example of widespread failure of risk management and what resulted were rules brought in to enhance risk management and corporate governance. Yet, he observed that there may not be enough attention to risk governance, with many companies having “compliance fatigue or cynicism” and taking “a checklist mentality in risk management”.



He urged all present to set the right tone at the top so as to provide effective governance and inculcate a spirit of accountability.

In his closing remarks, SGX Chief Regulatory Officer Tan Boon Gin said that risk management

is going beyond the traditional role, tools, and risks. Instead of merely avoiding risks, there should also be “greater consideration of the upside of risk management” by ensuring strategic risk taking with a defined risk appetite. He said that in an uncertain future, there is a need to embrace “black swans with fat tails”. And he spoke of the increasing emphasis on non-financial risks, such as climate change-related risks.



Following the launches, presentations of the *BRC Guide* and the *2015 ASEAN CG Scorecard* were made, and a panel convened to discuss various aspects of risk management and corporate governance.



# ASEAN CG Scorecard: Singapore top PLCs improving their scores through more detailed disclosures

**A**ssociate Professor Lawrence Loh, Director of CGIO, shared the results of the 2015 ASEAN Corporate Governance Scorecard.

The Scorecard, a joint initiative of the ASEAN Capital Markets Forum and the Asian Development Bank, seeks to assess the corporate governance of the top 100 publicly listed companies (PLCs)



in the six participating ASEAN countries of Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. (See list of the top 100 Singapore PLCs on page 50).

SID and CGIO were appointed by MAS as the Domestic Ranking Body to conduct the ranking exercise for Singapore.

The Scorecard used two levels of scoring: Level 1, which is out of 100 points and comprises components that reflect five OECD corporate governance principles, and Level 2 which is the "Bonus and Penalty" section. In theory, a company could get a maximum of 126 points.

Professor Loh shared that Singapore PLCs achieved an average total score of 78.1 points in 2015, an improvement of 10 per cent from 2014. The average score in Level 1 was 74.6 points, an 11.3 per cent increase reflecting improved efforts

in providing detailed disclosures on corporate governance practices.

True to his teaching background, Professor Loh graded how he felt Singapore PLCs generally performed in each of the five components of the scorecard:

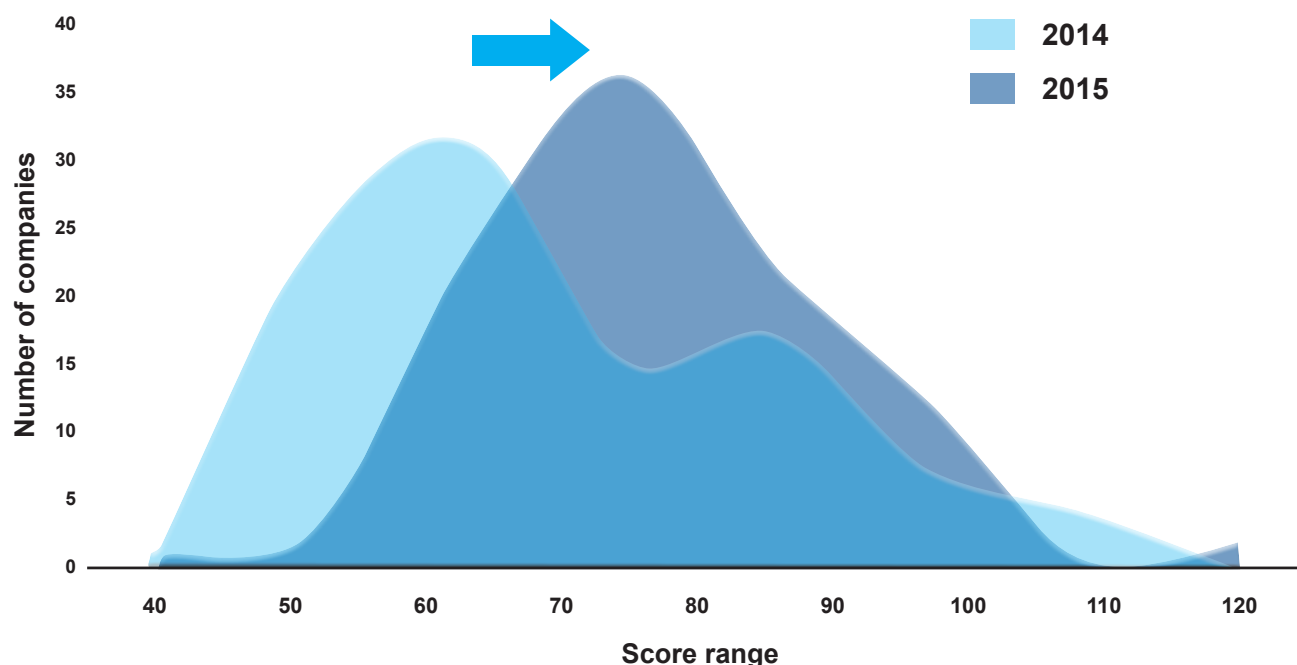
- Equitable Treatment of Shareholders ... A
- Disclosure and Transparency ..... A-
- Responsibilities of the Board..... B+
- Rights of Shareholders..... B+
- Role of Stakeholders ..... C+

Now in its fifth year, Professor Loh noted that Singapore PLCs have, as a whole, improved in recent years (see chart on "Total Score Distribution Curve"). More companies are scoring higher, across all the five categories, particularly in "Disclosure and Transparency" and "Responsibilities of the Board", in the last three years.

While Professor Loh was optimistic about the overall progress made, he cautioned on being complacent. He believes that more can be done to improve corporate governance "especially when it comes to providing comprehensive and meaningful disclosures that are relevant to helping investors make informed decisions".

Agreeing, Mr John Lim, Immediate Past Chairman of SID and the designated corporate governance expert from Singapore for the Scorecard, pointed out that Singapore had only

## Total Score Distribution Curve



eight companies in the top 50 ASEAN rankings. He noted that top PLCs in other countries have been equally, if not more, diligent in their disclosures. However, he noted that both Singtel and DBS, the top performers in Singapore, were also among the top five in ASEAN.



During the panel discussion, when asked how DBS became a top performer, its Group Chief Financial Officer, Mrs Chng Sok Hui, shared three key points. Firstly, the bank is committed to disclosure and DBS takes stock by conducting internal self-assessments against questions and indicators that it is being measured against. Secondly, DBS takes a strong view on ensuring

substance over form principle, practicing what it preaches. Thirdly, she said that the overall standard is raised when good corporate governance culture becomes ingrained as part of the organisation.

In response to Mr Lee Chong Kwee, Chairman of Jurong Port who asked how the bonus and penalty system works, Mr Lim explained that bonuses are given when companies take “the extra mile, the extra steps”. For example, DBS was recognised for its implementation of integrated reporting. Conversely, companies are penalised for clear breaches or failures in processes that have been identified, for example, long standing directors.



## Ranking of the Top 100 PLCs in Singapore\*

Ranking of the 100 largest Singapore listed companies by market capitalisation based on the ASEAN Corporate Governance Scorecard (ACGS)

ACGS 2015 Ranking	Company Name	ACGS 2014 Ranking	ACGS 2015 Ranking	Company Name	ACGS 2014 Ranking
1	Singapore Telecommunications Limited	1	51	China Minzhong Food Corporation Limited	NA
2	DBS Group Holdings Limited	3	52	Yanlord Land Group Limited	58
3	Singapore Exchange Limited	2	53	Genting Singapore PLC Limited	49
4	CapitaLand Limited	6	54	China Fishery Group Limited	55
5	Singapore Press Holdings Limited	5	55	Thai Beverage Public Company Limited	57
6	SATS Limited	12	56	Wilmar International Limited	37
7	Keppel Land Limited	7	57	Super Group Limited	74
8	Singapore Post Limited**	15	58	Yeo Hiap Seng Limited	39
9	SMRT Corporation Limited	4	59	Haw Par Corporation Limited	44
10	Keppel Telecommunications and Transportation Limited	22	60	STATS ChipPAC Limited	47
11	Singapore Airlines Limited	13	61	China Aviation Oil (Singapore) Corporation Limited	34
12	StarHub Limited	24	62	COSCO Corporation (Singapore) Limited	59
13	Singapore Technologies Engineering Limited	11	63	Far East Orchard Limited	89
14	Keppel Corporation Limited	10	64	Golden Agri-Resources Limited	60
15	Sembcorp Industries Limited	17	65	Bukit Sembawang Estates Limited	54
16	Global Logistic Properties Limited	20	66	Petra Foods Limited	43
17	Yoma Strategic Holdings Limited	18	67	Boustead Singapore Limited	66
18	Oversea-Chinese Banking Corporation Limited	9	68	Hyflux Limited	56
19	City Developments Limited	26	69	China Merchants Holdings (Pacific) Limited	91
20	Fraser and Neave Limited	21	70	Genting Hong Kong Limited	NA
21	SIA Engineering Company Limited	8	71	Rowsley Limited	95
22	Tiger Airways Holdings Limited	NA	72	Wheelock Properties (Singapore) Limited	68
23	Sembcorp Marine Limited	27	73	Pacific Century Regional Developments Limited	93
24	Neptune Orient Lines Limited	19	74	Metro Holdings Limited	51
25	ComfortDelGro Corporation Limited	31	75	SIIC Environment Holdings Limited	82
26	Biosensors International Group Limited	28	76	GuocoLand Limited	77
27	United Overseas Bank Limited	25	77	The Straits Trading Company Limited	75
28	Del Monte Pacific Limited	42	78	Silverlake Axis Limited	86
29	UOL Group Limited	29	79	Raffles Medical Group Limited	53
30	M1 Limited	32	80	Jardine Cycle and Carriage Limited	63
31	Nam Cheong Limited	73	81	GSH Corporation Limited	92
32	Yangzijiang Shipbuilding (Holdings) Limited	62	82	China Everbright Water Limited	NA
33	Noble Group Limited	41	83	Sinarmas Land Limited	70
34	Venture Corporation Limited	38	84	Oxley Holdings Limited	85
35	Indofood Agri Resources Limited	69	85	Aspial Corporation Limited	88
36	Roxy-Pacific Holdings Limited	52	86	OSIM International Limited	71
37	United Industrial Corporation Limited	50	87	China New Town Development Company Limited	64
38	OUE Limited	45	88	Ezion Holdings Limited	76
39	Hong Leong Finance Limited	36	89	GuocoLeisure Limited	79
40	ARA Asset Management Limited	23	90	Wing Tai Holdings Limited	67
41	Great Eastern Holdings Limited	30	91	Fragrance Group Limited	98
42	First Resources Limited	35	92	United Envirotech Limited	90
43	Perennial Real Estate Holdings Limited	NA	93	UOB-Kay Hian Holdings Limited	96
44	Gallant Venture Limited	78	94	Sim Lian Group Limited	83
45	Olam International Limited	16	95	Straco Corporation Limited	NA
46	Bumitama Agri Limited	33	96	Hong Fok Corporation Limited	99
47	Sarine Technologies Limited	65	97	CWT Limited	94
48	United Engineers Limited	46	98	Hotel Properties Limited	97
49	Ho Bee Land Limited	81	99	QAF Limited	NA
50	Sheng Siong Group Limited	40	100	Hotel Grand Central Limited	100

\* This is a ranking of the 100 largest Singapore PLCs by market capitalisation. The Scorecard was based on companies' disclosures on websites and annual reports with financial year-ends between 1 April 2014 and 31 March 2015.

\*\* On 19 Jan 2016, Singapore Post Limited provided an update to its shareholders on the conduct of a special audit and corporate governance review. This ranking table is based on information disclosed as of 31 Jul 2015.



# BRC Guide: New guidance for the newest kid on the board

Among the main board committees, the Board Risk Committee (BRC) is the one that may not exist as a separate committee. In fact, only a quarter of listed companies have separate BRCs.

Mr Irving Low, KPMG Head of Risk Consulting and Working Committee Lead for the development of the *BRC Guide*, observed that the majority of companies are addressing increasing risks by allocating risk governance to the Audit Committee, and renaming it the Audit and Risk Committee. However, he felt that “where the Audit Committee is also charged with risk oversight, the risk agenda items often get covered only briefly.”



In addition, he highlighted that ACs traditionally take a historical perspective by probing and analysing what has transpired in a business. In contrast, the BRC focuses on the current landscape with a forward looking view to identify, assess and monitor potential risks on the horizon. When these two responsibilities converge, the ideal result would be an organisation operating in a more fail-safe manner.

In developing the *BRC Guide*, the team found that, unlike the other board committees, there is much less guidance on how BRCs should function. There was also a lack of consistency on how risks should be governed and managed.

As a result, the approach taken in the *BRC Guide* was to provide these different risk governance



structures, terminologies, concepts and frameworks, as appropriate, accompanied by leading examples and samples of such frameworks and approaches as appropriate.

Mr Low then walked the audience through the contents of the *BRC Guide*, which include:

- Risk governance structures and the role of the BRC
- The characteristics, types and categories of risks in a company’s risk universe
- The elements of an Enterprise Risk Management framework for ensuring the adequacy and effectiveness of risk management and internal controls
- The assurance framework needed to identify deficiencies and prepare disclosures on risk management and internal controls.

## Panel: Setting the tone and direction at the top

The panel following the launches and presentations debated questions related to corporate governance and risk management posed by Mr Tham Sai Choy, Chairman of KPMG in Asia Pacific and also the Chairman of the *BRC Guide* Review Panel.

Following on Mr Kenneth Yap's speech on how "good governance is about a culture", panellists discussed what the right culture meant. Mrs Chng Sok Hui of DBS Bank highlighted that the tone from the top – Board of Directors, C-suite members – goes a long way in shaping an organisation's culture, which in turn anchors its approach

towards corporate governance. With the right culture in place, strong governance is a natural outcome, rather than something that needs to be forcefully engineered.

Ms Agnes Koh, Chief Risk Officer of SGX, shared her organisation's experience in developing a risk culture and that "it cannot be stressed enough". She emphasised that both the board and management have to work as a team to continuously analyse and identify the risks faced by organisations.

In this respect, she felt that the BRC plays an important role in "setting the tone" for the







(From left) Mr Tham Sai Choy, Chairman, KPMG in Asia Pacific and Managing Partner, KPMG in Singapore, Mrs Chng Sok Hui, Chief Financial Officer, DBS Bank, Mr Nicholas Hadow, Chairman, Investment Management Association of Singapore, Ms Agnes Koh, Chief Risk Officer, SGX, Mr John Lim, Immediate Past Chairman, SID, Mr Yap Chee Keong, Chairman/Member of Risk Committees of InterOil Corporation, Olam International and Tiger Airways Holdings

organisation to assess and manage risks. Through its communication, the development of a common risk management and actions, the BRC ensures that the risk is perceived in the right way and at the right levels.

Taking a practical approach to the issue, Mr Nicholas Hadow, Chairman of the Investment Management Association of Singapore, felt that directors should think of risks in the context of their share price. He said it would be correct thinking for companies to ask themselves: "If I don't manage this (risk), how will this affect my share price?"

Mr Hadow emphasised that it is absolutely vital for management to think of risk management, especially in an era where new kinds of investments are emerging. Investors want to be

certain that the companies of interest to them are managing risks effectively and efficiently.

There was also dialogue on cyber risks which has increasingly come under the spotlight in recent times. As Mr Yap Chee Keong, Chairman/Member of Risk Committees of InterOil Corporation, Olam International and Tiger Airways Holdings put it: "The reality faced by organisations today is that attackers will try to attack and secure data and it is not a question of 'if' but 'when' you would be attacked". Ensuring the appropriate risk strategies for both prevention and dealing with breaches becomes much more critical.

Mr Tham concluded the discussion by stating that most agree that risk governance is essential for all businesses. He hoped that the new *BRC Guide* assist companies in this respect. ■



# Of Enron, entanglement and enlightenment

Former Enron CFO Andrew Fastow says that following the rules landed him the CFO of the Year award, and in prison.

Some 200 directors and business leaders came to listen to Mr Andrew Fastow describe how he went from hero to zero at a forum on financial fraud organised by SID and Straits Interactive at Capital Tower on 31 May 2016. Many left feeling inspired and touched by his candor and humility, but also disturbed by his revelations of potential “Enrons”.

SID Executive Director Joyce Koh opened the forum by describing how a multi-billion dollar company like Enron, once the darling of Wall Street and named “American’s Most Innovative Company” for six consecutive years before its collapse in 2001, had led to the collapse of Arthur Andersen and the introduction of legislative reforms such as the Sarbanes-Oxley Act of 2002.

Mr Fastow started off his presentation with a *meā culpā*: “I am guilty and mostly to be blamed for what happened at Enron”. He admitted that he knowingly engaged in financial engineering that was designed to mislead investors by hiding debt in special purpose entities. At the same time, every single one of these transactions were knowingly approved by the auditor, the lawyers and the board of directors. “It is therefore possible to follow the rules and still commit fraud,” he said (see box on “The Loophole Industry”).

When asked by members of the audience why he did what he did knowingly, Mr Fastow explained how unethical behavior can be rationalised. These include the individual believing that what he was doing was for the benefit of the company, that it was “technically” within the rules, that “everyone else is doing it”, and that there are rewards for the acts.



Mr Andrew Fastow showing his CFO of the Year trophy and prison card

More troublingly, Mr Fastow went on to give numerous examples of how many major companies today are doing similar things that “make me blush – and I am the CFO of Enron”.

A panel of financial experts that followed Mr Fastow’s talk added their views on ethics and financial fraud, and answered questions from the audience.

Finally, Mr Kevin Shepherdson, CEO of Straits Interactive shared on the launch of the Governance, Risk Management & Compliance (GRC) Professional Course in Singapore. He emphasised that it was a first-of-its-kind GRC course with international certification by OCEG, and comes with project work and GRC software.

## The “loophole industry”

Summarised here are some of the insights regarding rules versus principles shared by Mr Andrew Fastow:

Rules are created to effect sound principles of corporate governance and accounting. It is, however, possible to follow the rules and commit fraud (through loopholes).

Loopholes are permitted assumptions and contrived structures that technically adhere to a rule but actually contravenes the purpose, or principle, of the rule.

Two key tools are available to transform how the accounts are presented:

- **Accounting assumptions**

**Example 1:** The top 100 U.S. public companies with pension assets have an average expected rate of return of 7.5 per cent on those assets, but the largest U.S. public pension fund (CalPERS) expects to earn only 2.4 per cent in FY2015.

**Example 2:** At end of 2014, most companies used US\$95 per barrel to value their oil reserves, but the price of oil at the end of 2014 was about US\$50 per barrel.

- **Structured finance**

**Example 1:** Enron can acquire a US\$1 billion pipeline using an off-balance sheet special purpose entity (SPE) to lower financing costs and improve its credit rating. How: the bank sets up the SPE by contributing US\$30 million “equity”; the bank lends US\$970 million to SPE, SPE buys the pipeline and allows Enron to use it for ten years, but conditions are such that Enron effectively retains 100 per cent of the risk and rewards of the pipeline.

**Example 2:** Many of today’s operating leases have the same characteristics of the Enron’s SPEs. There are over US\$2 trillion off-balance sheet operating leases worldwide.

These created a grey area that can be a problem (for innocent investors) or an opportunity (for those in the “loophole industry”).

The loophole industry arose from two major systemic changes in the 1980s. The first was the advent of structured finance. The second was the explosion in accounting rules, and securities and tax laws – rules which can be nonsensical, complex, vague or non-existent. An industry comprising accountants, lawyers and securities consultants arose to create financial structures that exploit this complexity, enabling companies to alter reported financials and avoid taxes, all the while “technically” complying with the rules and regulations.

Directors who are responsible for ensuring that their companies act both legally and ethically should remember that:

- When times are good, the market and the regulators may ask “Did you follow the rules?”
- But when times are bad, the market and regulators will ask “Are the numbers right?”

The two questions are very different, and if the answers to both are not “yes”, then the company and the directors could be exposed.

## Panel on “Financial fraud: Lessons learnt and to be relearnt”

### Ensuring ethical behavior

“As we all know, fraud occurs when there is a confluence of three factors: motivation, rationalisation and opportunity.”

**Mr Ng Siew Quan**  
Partner & Corporate  
Governance Leader, PWC

“Good regulation must go beyond the rules to examine if the substance of the transaction had been properly reflected in the accounts. That is the approach under ACRA’s Financial Reporting Surveillance Programme. Similarly, as directors, you must enquire and challenge management’s accounting treatment to ensure investors receive reliable financial statements.”

**Ms Julia Tay**  
Deputy Chief Executive, ACRA

“Companies are often driven by short term objectives. However, I believe that when KPIs conflict, values should prevail, and it is therefore important for management and board to understand and agree on the value of long-term objectives for the company.”

**Mr Lee Wai Fai**  
CFO, UOB

### Making ethical choices

“Ethical choices are common in everyday life. Is it not easy to rationalise when we are faced with ethical dilemmas, especially when the accountants, lawyers and consultants agree with it?”

**Mr Lim Hock San**  
CEO, UIC

“Yes, some decisions can be hard and are not clear cut. Sometimes, assumptions have to be made to stay in business. It is very easy to look at something that looks bad in retrospect, and see it as good at that time. For example, at Enron, we were rated BBB+, although our internal workings showed that we would have been BB- if the transactions were not off-balance sheet. I was praised by a board member for engineering the ratings.”

**Mr Andrew Fastow**  
Former CFO, Enron

“If it is something that you would not be proud to tell your mother, don’t do it.”

**Mr Chaly Mah**  
CEO, Deloitte SE Asia







L to R: Mr Andrew Fastow, Mr Tan Chin Hwee, Ms Julia Tay, Mr Chaly Mah, Mr Lee Wai Fai, Mr Ng Siew Quan

## Ensuring auditor independence

"There would be a potential or perceived conflict of interest when auditors are paid by the companies directly. Would it be feasible to setup a general fund to independently appoint and pay auditors? All companies subject to statutory audit must contribute to the fund annually on reasonable basis. Public fund or tax payers' money should not be involved in any sense. Meanwhile, the audit quality monitoring system should also be overhauled."

### Mr Wang Xinbin

ED, Everbright Business Consultancy

"There has not been a market failure to suggest the need to nationalise the external audit function. Additionally, there are several lines of defence within the company that can ensure proper corporate governance of the company."

### Ms Julia Tay

Deputy Chief Executive, ACRA

"Audit independence should not be affected by who is responsible for paying audit fees. Independence is a frame of mind, the most crucial factor is the ethical behavior of the professionals."

### Mr Chaly Mah

CEO, Deloitte SE Asia

"There should be multiple players in the corporate ecosystem. The short-sellers may be extreme, but they have a role to play. They are motivated to find financial frauds. They are more focused on the cash flow while auditors are focused on the accounting rules."

### Mr Tan Chin Hwee

co-author of *Asian Financial Statement Analysis: Detecting Financial Fraud*

## Moving on

"How has your personal life changed, post-Enron?"

### Mr Daniel Ee

Vice Chairman, SID

"Despite what I went through, I would consider myself very fortunate that I have a very supportive family. My wife kept our family together. I would say that now I am much more humble, patient and understanding than I used to be."

### Mr Andrew Fastow

Former CFO, Enron

# Masterclasses for mastering directorship



By **POH MUI HOON**  
Council member, SID



**EXPANDING HORIZONS**

**These days, stakeholders are expecting a lot more out of the boards. While trying to meet with the demands for higher performance from the companies, they have to contend with age-old issues of compliance with regulations and best board practices.**

Most development courses for directors out there in the market gravitate toward getting boards up to speed on the “hard” content: what the latest standards and rules require, how to better manage risks, what the latest industry trends are, and so on.

While these are important issues, a truly effective board goes beyond the “hardware” and addresses the “software” of the business. It is only in understanding and managing the dynamics and relationships within will the right engagement process that drives organisational performance truly begin.

For one, a board typically comprises several sharp, powerful, often intense and culturally diverse individuals who only meet occasionally. Within the few times that they meet, they are required to make complex decisions under significant time pressure and often with the big picture. This challenging context makes it difficult for a board to fully leverage the sum of its parts, leaving even the most competent and talented directors feeling they cannot contribute as much as they would like to.

Second, beyond the board members interacting with each other, they have to also have the right

dynamics with the management team. It is the board’s role to both challenge and support the CEO and management team. While support and challenge are not incompatible – research shows that many boards struggle to find the right balance.

Chief of the board-management relationship dynamics is that between the chairman and the CEO. Some may think that discussions among the board, the chairman and the CEO are always about hard facts and figures. The reality, however, is they are human too and emotions can play significant during discussions and decision-making at the top.

Research also suggests that regular board evaluation correlates positively with improved board contributions in key areas, including clearer strategy, more competitive corporate performance, smoother CEO succession and improved risk oversight. This echoes what Chinese military strategist Sun Tzu proposed in the famous treatise, *The Art of War*: “If you know the enemy and know yourself, you need not fear the result of a hundred battles.” In many ways, boards need to evaluate and understand its own strengths and weaknesses in order to “win the war”.

That said, some directors still do not take board evaluations seriously and go through the board evaluation like it is a “box-ticking” exercise. Proper board evaluation is important for boards to improve board performance and there is a better way to do this.

In view of these challenges in the soft skills department, SID has launched an all-new Masterclass series for experienced directors. These short half to full-day courses are designed for directors with several years of experience and who are keen to further themselves in the “software”. Attendees are expected to already have the fundamentals of directorship to benefit from the case study approach.

Four modules will be offered under our Masterclass series this year as shown in the box.

### 2016 Masterclasses

- **MCD1 – Board-Management Interactions**  
(Conducted by Prof Jean-Francois Manzoni, INSEAD)  
**Course date: 6 May 2016**
- **MCD2 – Boardroom Dynamics**  
(Conducted by Prof Jean-Francois Manzoni, INSEAD)  
**Course date: To be confirmed**
- **MCD3 – Fair Process Leadership in the Boardroom**  
(Conducted by Prof Ludo Van Der Heyden, INSEAD)  
**Course date: 23 June 2016**
- **MCD4 – Board Evaluation**  
(Conducted by Mr Robert Gordon, Board Accord, Australia)  
**Course date: 7 September 2016**

These four masterclasses are the fruits of a partnership between SID and INSEAD and Board Accord.

Conducted by three luminaries from INSEAD and Board Accord, the masterclasses will be useful for those who wish to improve their personal effectiveness as directors. From INSEAD, the Academic Director of INSEAD's



Corporate Governance Initiative, Professor Ludo Van der Heyden and his co-director of INSEAD's International Directors Programme, Professor Jean-Francois Manzoni, will be delivering the lessons. Both had conducted several sessions for experienced directors through SID and the Stewardship Asia Centre.

From Board Accord, we have founder and director, Robert Gordon, who currently provides consulting to a diverse portfolio of boards and coaches as well as senior corporate executives and directors.

For all of us as directors, it is important to keep learning, moving and evolving so that we can remain relevant. We hope these courses can help our members become even better directors and to have a more rewarding directorship journey. ■



## Making the board-management relationship work

One of the board's important roles is to work with management for the long term success of the company. This includes hiring and managing the company's CEO. In this respect, most boards have difficulty finding the right balance between challenging and supporting a CEO.

The topic itself is a difficult one for any course leader or speaker. However, Prof Jean-Francois Manzoni, Shell Chaired Professor of Human Resources and Organisational Development and a Professor of Management Practice at INSEAD addressed it with ease, keeping more than 20 directors and C-Suite participants engaged throughout the "Board and Management Interactions" Masterclass held on 6 May 2016.



Prof Manzoni first explored why it is easy for boards to over-support or over-challenge the CEO – and why that balance is so elusive for them. The group studied the various cases of renowned

companies that had a breakdown of board-CEO relationship at the expense of their organisations.

Understanding the symptoms is important but it is understanding the psychology behind why interactions breakdown that stumps many. With his signature humour, Prof Manzoni dived deep into the psychology of top executives which can lead to breakdowns in interactions. He then focused on the how-tos of improving communication and relations between members of the board and the CEO. This led to a discussion on how boards can coach the CEO when the need arises and how such coaching can be effectively done.

To round off the day, heterogeneity in composition of board of directors was discussed. What was particularly useful to the class was the discussion around how boards should choose and manage that diversity.

All participants gave thumbs up for the great Masterclass by Prof Manzoni. Many took away significant learning points that they can apply to their board and management journeys. ■



## INSEAD Directors Forum

# Value creation through PE and CEO development

On 11 March 2016, some 40 directors from Singapore and overseas attended the INSEAD Directors Forum (IDF) which was on the theme of value creation for boards. The event held at its Asia Campus in Singapore was organised by INSEAD in partnership with SID, the Singapore INSEAD Alumni Association and the International Directors Programme (IDP) Network.

Much of the full day seminar was focused on exploring two avenues of value creation for boards: private equity and CEO development.

Professor Claudia Zeisberger, Academic Director of INSEAD's Global Private Equity Initiative presented the fundamentals of private equity and its transformational potential as a differentiator for boards. A panel comprising Ms Mary Sue Rogers of Talent2, Mr Colin Low of SIDC, and Mr Deepak Gupta of the Denita Group discussed the processes, benefits and implications of private equity for boards and managers.

Philip Anderson, Professor of Entrepreneurship at INSEAD then explored on how boards can support CEOs in strengthening their key skills and gain wisdom from experience. He engaged participants as he examined why CEOs derail, the elements of the top job that can unmask fatal flaws and problems, and why it can be difficult for CEOs to learn and grow on the job.

In addition, some 30 participants from the INSEAD-SID IDP who successfully completed the requirements for the INSEAD Certificate in Corporate Governance, a credential INSEAD is establishing in the field, received their certificates from Dean Ilian Mihov. The new IDP-Cs join the IDP Corporate Governance Alumni Network, which has over 280 international directors from 49 countries. The network holds events and recently launched IDPN Advocate and Connect Board Search to connect its members with boards looking for directors.

The forum concluded with an evening dinner at the China Club. ■





## Risk velocity: The fast and furious third dimension of risk



Today, risks are not only prevalent; they are happening faster and more furious than ever.

On 8 April 2016, 13 board risk committee (BRC) chairmen met at Four Seasons Hotel to discuss this very topic. The BRC Chairmen Conversation was hosted by PwC.

Mr Greg Unsworth, Risk Assurance Leader of PwC covered the results of its recent *Annual Global CEO survey* where more than 80 per cent of ASEAN CEOs are seeing more threats facing their businesses today than three years ago. The top three threats are exchange rate volatility, social instability and geopolitical uncertainty.



In an engaging discussion led by Mr Ng Siew Quan, Partner, PwC, three “live” cases of risk management were presented and discussed. The concept of risk velocity – the rate at which an exposure

can impact an organisation – was illustrated and debated.

The traditional measurement of risks is largely two-dimensional, looking at likelihood and impact. The measurement of risk velocity, as a third dimension, can elevate an originally lower perceived and ranked risk measure, which is based on the traditional measures of likelihood and impact, into high risks.

Thus, higher risk velocity situations and ways to mitigate its negative impacts must be addressed when managing risks. In situations where risk velocity is high or where the time to impact is short, recovery actions need to be fast. Proper processes and stakeholders need to be identified and put in place.

The BRC session left many of the BRC chairmen with much food for thought on the evolving concept of risk velocity, and whether with a risk velocity lens, their assessment of specific risks, would now be different. ■



## Launch of the first GRC Programme

The first Governance, Risk Management and Compliance (GRC) Training and Certification Programme was held from 4 to 6 May 2016. It was the first of its kind programme to help companies build and maintain robust oversight capabilities for risk management.

Conducted by Mr Kevin Shepherdson and two other senior trainers from Straits Interactive, the interactive session was well-received among local and overseas directors and C-suites attendees alike.

Throughout the three-day programme, participants learned to develop a core understanding and the necessary skills to integrate governance, risk management and compliance in one capability. The course also prepared participants for the GRC Professional (GRCP) certification exam, which is internationally recognised and backed by OCEG.

Participants rated the session very highly. Mr Daren Ganesh of PT Ponco Oilfield Supplies and Services said, "The course was quite comprehensive; a good combination of videos, the data, the slides. I enjoyed it and it helped me



to understand more about compliance and how important it is to follow through."

To help participants kickstart their own GRC capability in their organisations, a one-year licence GRC software known as GRACIAS for easy tracking and reporting was provided without charge.

Adding to the attractiveness of the GRC programme, eligible participants will receive course funding of up to S\$2,500 under IDA's Critical Infocomm Technology Resource Programme Plus (CITREP+). The course fee can be claimed under the PIC grant.

The next session of the GRC Training and Certification Programme is scheduled for 13 to 15 July 2016. ■



## Improving board risk oversight with COSO

In today's highly volatile world, it is increasingly crucial for companies to apply effective risk management strategies to avoid these threats and uncertainties. This was why the 30 directors who attended the "Improving Board Risk Oversight Effectiveness" seminar on 24 February 2016 found it particularly useful.

Mr Robert Hirth, Chairman of the Board of the Committee of Sponsoring Organisations of the Treadway Commission (COSO) presented the COSO frameworks, currently the only internationally recognised framework that integrates internal control and risk management.

According to COSO, the board of directors should provide oversight to the development and



performance of internal control, independently from management. Mr Hirth also covered the 10 principles of risk oversight, which include understanding the company's key drivers of success, assessing the risks inherent in the strategy and defining in detail the roles of the various players. ■

## Managing risks in a changing world

More than 30 turned up at the "Confronting the Hot Spots" seminar held on 23 March 2016. They were there to better understand the geopolitical risks that today's businesses face as companies globalise.

Boards and management are becoming increasingly aware of global events and the potential impact they can have on their companies and business. Mr Willis Sparks, Director of Global Macro at Eurasia Group provided an overview of current



macro-political issues and risks such as the concerns on the U.S election, oil prices, and terrorism.

Mr Greg Unsworth, Digital Business and Risk Assurance Leader for PwC Singapore shared highlights of *PwC's 19th Global CEO Survey 2016*. The report showed that global economic growth confidence has dropped 10 per cent since 2015, with two-thirds of the CEOs surveyed seeing more threats to their businesses compared to three years ago. The top three global threats identified were over-regulation, geopolitical uncertainty and exchange rate volatility.

To grow in such complicated times, companies need to innovate and transform to meet the needs of changing stakeholders' demands. Many of the CEOs also agreed that business success will no longer be defined solely by financial profits as stakeholders are now more concerned with long-term profitability and value creation. ■

## Turning difficult and unproductive board meetings around



On 10 March 2016, about 50 corporate directors and senior management listened to an engaging talk on “Dealing with Difficult Directors”.

Mr Robert Gordon, CEO of Australian-based consultancy, Board Accord, began the session by asking about the personal experiences of

participants in dealing with difficult colleagues in the board room. After a robust discussion, he declared that everyone is wired for conflict and should develop their EQ to successfully manage difficult personalities and conflicts. The good news is that conflicts can be managed, because we are built to cooperate and collaborate, and conflict resolution expertise can be learned, just like technical competencies.

Mr Gordon shared several ideas on how a board can be more harmonious and effective. These range from director selection and developing the emotional literacy of directors, to agreeing on a framework for group decision-making. His final advice was for boards to have regular externally-led reviews of themselves, as well as the CEO, to align individual and collective purpose, passion and process. ■

### Members' networking

## Treating back pain the TCM jedi way

Do you know that one can light a fluorescent tube using the human body's energy (or qi)? That was what Chief Physician Leong Weizhen demonstrated in a talk on Traditional Chinese Medicine (TCM) at a members' networking event on 12 April 2016.

Held at the premises of the Singtel Recreation Club, Ms Leong spoke about the art and science of TCM, the different types of pain and treatments available, and provided several self-help quick fixes through applying pressure on acupuncture points to relieve pain.

The highlight of the session was the demonstration with the use of a fluorescent tube. One of the

participants, Mr Michael Jones, said, "The bulb demonstration got the engineers amongst us on the edge of our seats."



The simple laying of the bare tube on the member's body lighted the tube and indicated the problem areas to treat.

Several of the attendees who came admitted to having back pains. Some said they will now go and check out an acupuncturist. ■



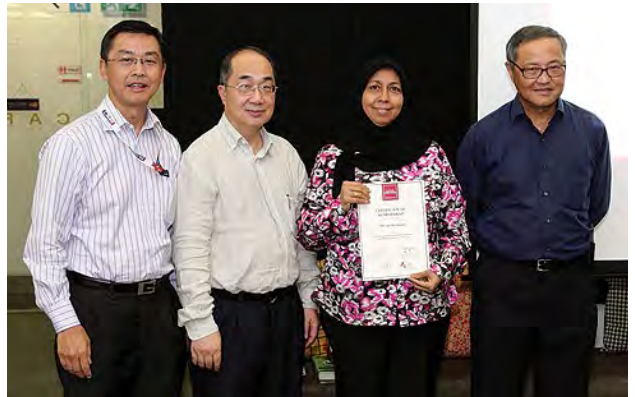
## First group of nonprofit directors graduate

12 May 2016 was a special day for the 30 participants of the seven-module NonProfit Directors (NPD) course. This final class on “Social Trends” was followed by a “graduation” dinner at a social enterprise eatery, Crossings Café, the community partner for this session.

Kicking off the module was Ms Jenny Teng, chairman of the social enterprise. She shared how the café came about and how it has provided employment, personal development and dignity for the disadvantaged in society. She explained that her determination and motivation to continue engaging with the enterprise stems from the team at the café, who never fail to help and encourage others in need.



Participants later heard from Ms Patsian Low, Head of DBS Foundation, who shared with the group on the key trends in social enterprises, social media and social innovation that are



shaping the nonprofit sector. She explained why and how participants should examine and leverage the changing social trends to further their cause.

The session ended with an engaging panel discussion with panellists including Dr Elaine Kim, Co-founder of CRIB; Dr Ng Yih Yng, Chief Medical Officer, SCDF and MHA; Ms Sumitra Pasupathy, Country Director Singapore & Malaysia, Ashoka and Ms Usha Menon, Executive Chairman of Usha Menon Management Consultancy (Asia), all sharing their perspectives of the changing social trends.

The evening ended on a high note when the participants received their course completion certificate from Mr Low Puk Yeong, Commissioner of Charities and Mr Willie Cheng, Chairman of SID. Course presenters also joined the celebration dinner and provided encouragement to the graduates to be great ambassadors of the NPD programme. ■



## SID annual golf tournament 2016



On Sunday, 8 May, the siren at 1.30 pm at the Garden Course of the Tanah Merah Country Club heralded the shot-gun start for 32 flights at the SID's 16<sup>th</sup> Annual Golf Tournament.

Held on Mother's Day, Mother Nature serendipitously smiled on the golfers; the weather held up despite initial clouds that threatened rain. The golfers finished their game on time for a short and fun-filled night of a scrumptious dinner, prize giving, and an exciting lucky draw. Individual winners received their trophies from the guest-of-honour Mr Lim Swee Say, Minister for Manpower. ■

### SID Challenge Trophy

- **Overall Winner**  
Rainer Gumpert
- **1<sup>st</sup> Runner Up**  
Vincent Loh
- **2<sup>nd</sup> Runner Up**  
Mui Chee Leong



### Sembcorp Challenge Shield

- **Best Team**
  - Chan Cheow Hoe
  - Bruce Dahlgren
  - Lian Tian Tse
  - Andrew Lim





### **SYD – So, You Want to be a Director** • 3 March 2016



### **NPD 6 – Fundraising and Outreach** • 14 April 2016



### **ASEAN Corporate Governance Scorecard Briefing Session** • 5 May 2016



### **LCD 1 – Listed Company Directors Essential** • 5 May 2016



### **BDF - Board and Director Fundamentals** • 24 May 2016





## SID's Q2 Events (April 2016 – June 2016)

DATE	TYPE	EVENT DETAILS
4 – 6 Apr 2016	PD	SID-SMU Directorship Programme Module 1: The Role of Directors
9 Apr 2016	PD	Directors Compliance Programme
12 Apr 2016	PD	LCD Module 6: Investor and Media Relations Essentials
12 Apr 2016	Socials	Relieve Your Back Pain using Traditional Chinese Medicine (TCM)
13 Apr 2016	PD	LCD Module 4: Nominating Committee Essentials
14 Apr 2016	PD	NPD Module 6: Fundraising and Outreach
21 Apr 2016	PD	LCD Module 5: Remuneration Committee Essentials
26 Apr 2016	PD	Directors Compliance Programme
4 – 6 May 2016	PD	Governance, Risk Management and Compliance Training and Certification
5 May 2016	PD	LCD Module 1: Listed Company Directors Essentials
5 May 2016	PD	ASEAN Corporate Governance Scorecard Briefing Session
6 May 2016	PD	Masterclass for Directors Module 1: Board-Management Interactions
8 May 2016	Socials	SID Golf Tournament 2016
9 – 11 May 2016	PD	SID-SMU Directorship Programme Module 3: Finance for Directors
12 May 2016	PD	NPD Module 7: Social Trends
17 May 2016	PD	Directors Financial Reporting Essentials
17 May 2016	PD	Directors Compliance Programme
19 May 2016	PD	GVG Module 5: Family Business Governance and Succession
24 May 2016	PD	Board and Director Fundamentals
26 – 27 May 2016	PD	SID-SMU Directorship Programme Module 5: Strategic CSR and Investor Relations
31 May 2016	PD	Of Enron, Entanglement and Enlightenment
9 Jun 2016	PD	Building a High Impact Board
19 – 22 Jun 2016	PD	IDP Module 1: Board Effectiveness and Dynamics
23 Jun 2016	PD	Board Chairmen's Conversation: Internet of Things
23 Jun 2016	PD	Masterclass for Directors Module 3: Fair Process Leadership in the Boardroom
24 Jun 2016	PD	Black Swans – Predicting the Unpredictable
24 Jun 2016	Event	Sponsors' Dinner
27 – 29 Jun 2016	PD	SID-SMU Directorship Programme Module 2: Assessing Strategic Performance
30 Jun 2016	Socials	Members' Networking Event: Laughter Yoga

# Captaining the seas



By **EUGENE WONG**  
Council member, SID



**AFTER HOURS**


I count boating around Singapore as a good way to get much-needed downtime and enjoy the tranquil the sea has to offer.

I have always loved the ocean. In 1986, I joined the Singapore Navy and as an officer on the Missile Corvette, I went places like Indonesia and Australia. Spending months out at sea working on a vessel and cohabitating in a small cabin space with the other officers certainly taught me how to work and live with many kinds and shaped me to be the person I am today.

Years later, I traded my tiny quarters in a fleet for a family-sized boat – a 33-foot Chaparral Signature 330 cruiser – I take out every week onto local waters. Purchased in 2008, Sirius, as it is endearingly named after my venture capital firm, is berthed at Sentosa's ONE°15 Marina, at a spot I chose







specially for its view of the open sea. To me, Sirius is a symbol of optimism and foresight, attributes I like to characterise the entrepreneurs and business owners I mentor and work with in my capacity as the firm's founder.

I take Sirius out early on Monday mornings – it is the perfect time because that is when everyone is busy regrouping for the week ahead. It is almost a routine escape from Singapore's frenetic pace of life. We anchor somewhere around the islands of Lazarus and St John's by sunrise, I put on some relaxing music, reflect and mediate.

Sometimes, my family joins me on these boat trips. Typically, it involves rolling out the kayaks for a canoeing session with my two sons, aged eight and 10. Occasional cruising around the ports turn into history lessons for my boys, as I recount stories of how Singapore, once a fishing village and a thriving entrepot turned into the international trading and economic hub it is today. On almost every National Day, I take my wife and sons out to the waters near the CBD to catch the fireworks.

Being a captain of my own boat is something I relish. While other boat owners will hire

themselves a crew, I was determined to pilot Sirius. I get an adrenaline rush just by getting to know the complex engineering that make up my boat and figuring how to chart courses and steer any rough seas. This posed challenges at first, especially when it came to berthing; the lot she currently occupies is unfortunately, not the most generous.

To boat well, I learned, means one has to read the seas well.

Mother Nature has her own plans, and as a boater, I often have to think on my feet – what to do when a storm's looming? This improved my situational awareness and as a result, business acumen. Applying lessons from the sea made me a better decision maker in the face of difficult situations at work and in the boardroom.

I plan to own a small sailboat and take my family with me in to international waters. Most Singapore-based yachters stop off of Pulau Tioman in Malaysia, sail to Nongsa in Batam or visit the tropical islands of South Thailand. Hopefully, when my sons are a little older and have more free time away from school, my family will sail the seas with me. ■



# Upcoming events

## Core Professional Development Programmes

PROGRAMME	DATE	TIME	VENUE
LCD Module 1: Listed Company Directors Essentials	12 Jul 2016	0900 – 1730	Marina Mandarin Singapore
LCD Module 2: Audit Committee Essentials	13 Jul 2016	0900 – 1230	Marina Mandarin Singapore
LCD Module 3: Risk Management Essentials	13 Jul 2016	1400 – 1730	Marina Mandarin Singapore
LCD Module 4: Nominating Committee Essentials	14 Jul 2016	0900 – 1230	Marina Mandarin Singapore
LCD Module 6: Investor and Media Relations Essentials	14 Jul 2016	1400 – 1730	Marina Mandarin Singapore
LCD Module 5: Remuneration Committee Essentials	15 Jul 2016	0900 – 1230	Marina Mandarin Singapore
Directors Financial Reporting Essentials	20 Jul 2016	0900 – 1700	Capital Tower
So, You Want to be a Director?	4 Aug 2016	1030 – 1230	Capital Tower
SID-SMU Directorship Programme Module 4: Risk and Crisis Management	11 – 12 Aug 2016	0900 – 1700	SMU Campus
SID-SMU Directorship Programme Module 6: Effective Succession Planning and Compensation Decisions	6 – 7 Sep 2016	0900 – 1700	SMU Campus
GVG Module 1: Effective Board for Growth Companies	21 Sep 2016	0900 – 1230	Marina Mandarin Singapore
GVG Module 2: Fund Raising for Growth Companies	21 Sep 2016	1400 – 1730	Marina Mandarin Singapore
GVG Module 3: The Paradox of Risk for Growth Companies	22 Sep 2016	0900 – 1230	Marina Mandarin Singapore
GVG Module 4: Improving Financial Savviness for Directors	22 Sep 2016	1400 – 1730	Marina Mandarin Singapore
GVG Module 5: Family Business Governance and Succession	23 Sep 2016	0900 – 1230	Marina Mandarin Singapore
IDP Module 2: Board Decision Making and Oversight	26 – 28 Sep 2016	0900 – 1700	Fontainebleau
Board and Director Fundamentals	28 Sep 2016	0900 – 1700	Marina Mandarin Singapore
Directors Financial Reporting Essentials	30 Sep 2016	0900 – 1700	Capital Tower
SID-SMU Directorship Programme Module 3: Finance for Directors	5 – 7 Oct 2016	0900 – 1700	SMU Campus
LCD Module 2: Audit Committee Essentials	11 Oct 2016	0900 – 1230	Marina Mandarin Singapore
LCD Module 3: Risk Management Essentials	13 Oct 2016	0900 – 1230	Marina Mandarin Singapore
NPD Module 1: The Nonprofit Environment	13 Oct 2016	1700 – 2030	SSI Training Hub
LCD Module 4: Nominating Committee Essentials	19 Oct 2016	0900 – 1230	Marina Mandarin Singapore
LCD Module 5: Remuneration Committee Essentials	25 Oct 2016	0900 – 1230	Marina Mandarin Singapore
LCD Module 6: Investor and Media Relations Essentials	27 Oct 2016	0900 – 1230	Marina Mandarin Singapore
LCD Mandarin in China	3 – 4 Nov 2016	0900 – 1700	TBA
NPD Module 2: Board & Management Relationship	10 Nov 2016	1700 – 2030	SPD

### Core Professional Development Programmes

PROGRAMME	DATE	TIME	VENUE
SID-SMU Directorship Programme Module 2: Assessing Strategic Performance: The Board Level View	14 – 16 Nov 2016	0900 – 1700	SMU Campus
Directors Financial Reporting Essentials	25 Nov 2016	0900 – 1700	Capital Tower
NPD Module 3: Board Dynamics & Evaluation	8 Dec 2016	1700 – 2030	SATA CommHealth
IDP Module 3: Director Effectiveness and Development	13 – 15 Dec 2016	0900 – 1700	INSEAD Campus

### Other Professional Development Programmes

PROGRAMME	DATE	TIME	VENUE
Remuneration Committee Chairmen's Conversation	15 Jul 2016	1100 – 1300	TBA
Cyber Security: Building Resilience	29 Jul 2016	0900 – 1100	TBA
Fraud, Bribery and Corruption: What You Didn't Know	5 Aug 2016	0900 – 1100	Marina Mandarin Singapore
Audit Committee Chairmen's Conversation	18 Aug 2016	1100 – 1300	TBA
Nominating Committee Chairmen's Conversation	20 Oct 2016	0900 – 1100	TBA
Board Risk Committee Chairmen's Conversation	8 Nov 2016	0900 – 1100	TBA
Board Chairmen's Conversation	17 Nov 2016	0900 – 1100	TBA

### Major Events

EVENT	DATE	TIME	VENUE
Corporate Governance Chinese Forum	2 Aug 2016	1000 – 1400	Marina Mandarin Singapore
Launch of Singapore Governance and Transparency Index	3 Aug 2016	0900 – 1100	Mandarin Orchard Singapore
SID Directors' Conference	5 Sep 2016	0900 – 1630	Suntec Singapore Convention & Exhibition Centre
Launch of Singapore Directorship Report 2016	18 Oct 2016	0900 – 1100	Marina Mandarin Singapore
SID Annual Corporate Roundup	16 Nov 2016	1000 – 1300	Orchard Parade Hotel
SID AGM 2016	16 Nov 2016	1330 – 1500	Orchard Parade Hotel

### Socials

EVENT	DATE	TIME	VENUE
Laughter Yoga	30 Jun 2016	1800 – 1930	Marina Mandarin Singapore

Course dates are subject to change. Please refer to [www.sid.org.sg](http://www.sid.org.sg) for the latest updates.



# SID

SINGAPORE  
INSTITUTE OF  
DIRECTORS

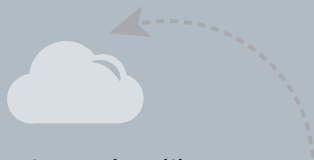
# DIGITAL DISRUPTION

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- More than 40 international and local speakers
- Three thought-leadership plenary panels on the bright and dark side of technology and its impact on the board
- Four breakout panels on digital disruption in major industries:
  - Banking
  - Hospitality
  - Public transport
  - Retail
- Three special breakout panels with demonstrations on:
  - The boardroom of the future
  - Cybersecurity
  - Smart Nation



## Plenary Panels

### Board Agenda: Digital Disruption

John Seely Brown, *Deloitte Centre for the Edge*  
Koh Boon Hwee, *Credence*  
Jacqueline Poh, *IDA*  
John Senior, *Bain & Co*  
Robert Yap, *YCH Group*



### Cyber Threats: The Dark Side of Technology

Peter Armstrong, *Willis Towers Watson*  
Bill Chang, *Singtel*  
Khoo Boon Hui, *ST Engineering*  
David Koh, *Cyber Security Agency*  
Siim Sikkut, *Govt Office of Estonia*



### Digital Den

a showcase of over 25 exhibits on the latest technologies, services and means for surviving and thriving in the digital age to learn and try while enjoying your favourite treats in a trade fair setting.

### Digital Transformation: The Bright Side of Technology

Simon Benney, *Rio Tinto*  
Scott Gibson, *Dimension Data*  
Khoong Hock Yun, *IDA*  
Bruce Liang, *MOH Holdings*  
Sumitra Pasupathy, *Ashoka*  
Julian Persaud, *Airbnb*



Monday, 5 September 2016 • 9.00 am to 4.30 pm  
Suntec Singapore Convention & Exhibition Centre

## GUEST-OF-HONOUR

Dr Yaacob Ibrahim, Minister for Communications and Information

## KEYNOTE

John Seely Brown, Chief of Confusion & Co-chair, Deloitte Centre for the Edge

## Breakout Panels

### Industry Digitalisation

#### Digital Disruption in Banking: Reimagining the Future of Financial Services with FinTech

Markus Gnirck, *Startupbootcamp*  
Sopnendu Mohanty, *MAS*  
Vince Tallent, *Fastacash*  
Jeremy Tan, *Korvac Holdings*  
Janet Young, *UOB Bank*

#### Digital Disruption in Public Transport: Taxiing to a Car-less Future

Ang Hin Kee, *National Taxi Association*  
Tony Heng, *SMRT Taxis*  
Rosina Howe-Teo, *LTA*  
Reuben Lai, *Grab*  
Lee Kwok Cheong, *SIM Global Education*

#### Disruption in Hospitality: Losing Sleep Over More and Cheaper Rooms

Simon Fiquet, *Expedia*  
Robert Hecker, *Horwath HTL*  
Allen Law, *Park Hotel Group*  
Loh Lik Peng, *Unlisted Collection*  
Clement Wong, *Be My Guest*

#### Digital Disruption in Retail: Of eCommerce, Omnichannel and Mobile

Sarah Boyd, *Guardian*  
R Dhinakaran, *Jay Gee*  
Roger Egan, *RedMart*  
Emma Heap, *Foodpanda Singapore*  
Terry O'Connor, *Courts Asia*



### Special breakouts with demonstrations

#### The Boardroom of the Future

Nathan Birtle, *Diligent*  
Lim Chin Hu, *Citibank*  
Irving Low, *KPMG*  
Scott Russell, *SAP Southeast Asia*  
Kevin Shepherdson, *Straits Interactive*

#### Cyber Attacks: How Secure Are Your Company and Data?

Matthew Gyde, *NTT Data*  
Tarun Kaura, *Symantec*  
Vincent Loy, *PwC*  
Ong Hian Leong, *GIC*  
Shade Sanford, *Booz Allen Hamilton*

#### Smart Nation: New Ways of Commerce and Working

Heng Wei Yeow, *IDA*  
Lee Chein Inn, *IDA*  
New Soon Tee, *IDA*  
Yip Shue Heng, *IDA*



For enquiries, please contact SID Secretariat at  
[conference@sid.org.sg](mailto:conference@sid.org.sg) / 6422 1188

# Welcome to the family

## February 2016

AlAli Marwan  
Anandan Ramanathan  
Baudouin- Goerlitz Katharina  
Blake Christopher  
Chan Chuen Beng  
Chan Patricia  
Chok Yean Hung  
Ho Soon Wah, Daniel  
Iyer Venkatachalam Venkiteswaran  
Khan Mohammed Muneer  
Koh Jit Kian, Philip  
Lai Mun Fook, Steve  
Li Zhi  
Lim Chen Jye, Allen  
Lim Jane  
Lo Conte Federico  
Lyle Adam  
Macdonald Ian  
McPhail Kathryn Margaret  
McPhail Robert James Field  
Melwani Ashok Bhagwandas  
Morgan Anthony John  
Ng How Kiat, Charlie  
Peh Kian Heng  
Perkins Simon  
Phua Wei Yong, Henry  
Shmulevich Mark  
Sinha Shaibal  
Soon Jeffrey  
Tan Boon Wan  
Tan Chong Liong  
Tan Peng Chin, Joseph  
Tan Teck Choy  
Tyrrell Wendy Ruth  
Werner Chris

## March 2016

Ang Yeow Lin  
Berenbaum Daniel  
Blake Michael  
Borig Klaus  
Cheung Mylinh  
Choo Boon Tiong  
Chua Chye Seng  
De Saedeleir Katrin

Desmicht Roxane  
Eng Wah Len, Andrew  
Goh Amanda  
Heng Ee Lean, Harry  
Ho Chye Hoon  
Huang Chuxin, Esther  
Jaafar Azman Hisham  
Jackman Daniel  
Jones Michael Jason  
Khan Intekhab  
Koh Lian Chye  
Lau Fook Kum, Kenny  
Lavin Frank  
Lee Frederick William  
Lim Magdelene  
Loh Pui San  
Lye Chor Mei, Kimberley  
Maneth Michelle Renee  
Mansard Marie-Helene  
Martin Ian  
Ng Kim Cheang  
Ng Sin Tong, Gary  
Ong Kelvin  
Ong Yee Ching  
Phuah Lian Heng  
Powar Kenny  
Ramalingom Venkateswaran  
Rathbone Jonathan William  
Ritenis Olavs  
Singh Veerinderjeet  
Tan Chee Hau, James  
Tan Chin Tiong  
Tan Chun Chieh, Charlie  
Tan Liat Chew, Richard  
Tan Shi Yun, Viola  
Teng Adrian  
Teo Yi-Dar  
Tham Linus  
Tong Mun Fook, Desmond  
Too Olivier  
Ungerer Frank-Uwe  
Vayding Jennifer  
Wee Yik Cheng  
Yeo Kan Kiang, Roy  
Yeoh Thiam Hock  
Yow Sook Ming

## April 2016

Ahlberg Kleiterp Noelle  
Al-Arfaj Nader A.  
Anantharaman Shekhar  
Ang Ah Nui  
Ang Kok Eng  
Aw Eng Hai  
Chan Avan  
Chan Wing Leong  
Chang Weng Leong  
Chia Hazel  
Chua Cheow Khooon, Michael  
Cool Siobhan Mary Macgroarty  
Coppel Dina  
Cuthbert-Brown Paul  
De Geus Reinier Jan Rochemondus  
Gopalan Sudhakaran  
Grant Anika  
Harrewijn Aloysius  
Hickson Ken  
Ho Sing  
Hoe Kee Leong  
Igarashi Takuya  
Iino Ichiro  
Jumat Kamil Bin  
Kadampat Nanu Nair Ajayakumar  
Karingal Ramon Villamiel  
Koh Meng Meng, Wendy  
Lee Teck Leng, Robson  
Lim Kang Song  
Loo Wen Lieh  
Manzoni Jean-Francois  
Morisaki Hirohiko  
Ng Ernest  
Ong Ling Ling  
Parikh Ameer  
Phua Lee Ming  
Puah Neo Cedric  
Quek Gim Cheng  
Shaabi Neeraj Kumar  
Shazell John Edgcombe  
Shukla Praveen Chandra  
Suckling Andrew  
Tan Chin Yeow  
Tan Peck Joo  
Tan Ron  
Teo Tong How, Daniel  
Teoh Chin Hun  
Wong Meng Choong

## SID Governing Council 2016

### CHAIRMAN

Willie Cheng

### FIRST VICE-CHAIRMAN

Daniel Ee

### SECOND VICE-CHAIRMAN

Soh Gim Teik

### TREASURER

Gerard Tan

### COUNCIL MEMBERS

Ramlee Buang	Irving Low
Robert Chew	Ng Wai King
Wilson Chew	Poh Mui Hoon
Junie Foo	Andy Tan Chye Guan
Philip Forrest	Tan Boon Gin
Kevin Kwok	Tan Yen Yen
Lee Kim Shin	Eugene Wong
Elaine Lim	Wong Su Yen





### **Nominating Committee Guide**

*Launched on 28 Aug 2015*



### **Remuneration Committee Guide**

*Launched on 15 Jan 2016*



### **Board Risk Committee Guide**

*Launched on 31 Mar 2016*



### **Board Guide:**

*To be launched on 11 Nov 2016*



### **Audit Committee Guide**

*To be launched on  
10 January 2017*



### **e-Guide to the Code**

*To be launched in  
February 2017*



# COLLECT THE SERIES!

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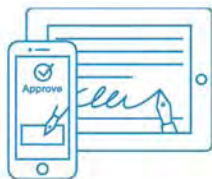


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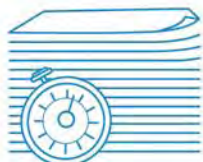
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