



CHALLENGE TO CHANGE THE IMPACT OF TECHNOLOGY

“With each new technology; first we do things differently, then we do different things”
David Smith, Futurist



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INTRODUCTION

“Challenge to change” is a 3 part white paper series that explores the future growth drivers of the global Insurance industry. Looking into the economy, regulatory landscape, technological innovation, business process and workforce and talent issues, and many other areas, the papers entitled “Embracing Change”, “The Impact of Technology” and “The Future of Insurance” examine the drivers, opportunities and challenges of an incredibly rich and evolving sector. The “Challenge to Change” series is for multiple insurance sectors - from Life to Property and Casualty, Large Commercial to Long Term Care - across multiple delivery channels and operations types. It is designed to be an important discussion tool to facilitate strategic thinking about how to create new business opportunities and respond to challenges positively.

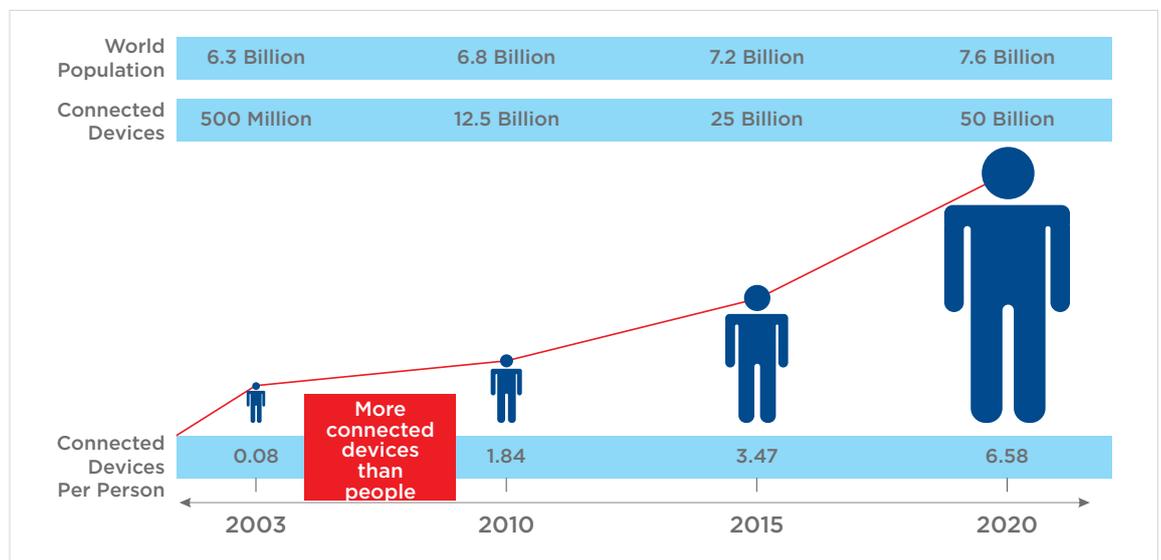
This paper looks at “The Impact of Technology.” There can be little doubt that accelerating systemic change is impacting the insurance industry’s wider operating environment. Whilst technology as a whole could be considered as one major contributing factor or amplifier of these trends, the emergence and proliferation of various technologies presents insurers with a wealth of options to reshape their business models and add value to their services.

THE EVOLVING INTERNET

The internet is becoming a key platform for transacting business in the global insurance industry. It has significantly reduced the gap between the insurance providers and the customers by offering a flexible and user-friendly interface. It also provides a principal medium for companies to showcase their products and reach a large clientele rapidly, thereby helping boost opportunities in the global insurance industry. Reducing administration and marketing costs of companies by eliminating the need to employ sales agents is also beneficialⁱ. However, within a few years, such limited utility will fail to provide a comparative advantage as the nature, scope and use of the internet, widens. By 2016 there will be 10 billion mobile Internet devices in use globally by a forecast population of 7.3 billionⁱⁱ. Growth in mobile devices is expected to drive global mobile data traffic by 13 times by 2017ⁱⁱⁱ. Indeed, there will be so much traffic generated between 2015 and 2016 by smartphones, tablets, and laptops that the amount of internet data movement added for that year alone will be three times the size of the entire mobile internet in 2012. A year later, in 2017, the Asia-Pacific region is projected to generate the most mobile data traffic with 5.3 Exabytes per month, with Western Europe and North America generating 1.4 and 2.1 Exabytes per month respectively^{iv}. For those without a robust internet presence, including accessible mobile sites, growth will be extremely hard to generate.

The emerging Internet of Things (IoT) links people, objects, processes, data, and the built environment. This flood of data and connectedness will transform business models and processes, generate new propositions and help transform the insurance industry from a reactive, remedy based industry to a proactive, preventative model. This proliferation of information could be of enormous benefit to insurers in managing risk, claims and market opportunities. Cisco suggests the opportunities arising out of the IoT could amount to \$14.4 trillion of Value at Stake for companies and industries over the next 10 years (2013-2022). On the other hand managing this vast volume of new information in a timely, secure and compliant manner could become a nightmare^v.

By 2016 there will be 10 billion mobile Internet devices in use by 7.3 billion people



i Source: PR Web, January 2012 http://www.prweb.com/releases/auto_health_insurance/life_non_life_insurance/prweb9128564.htm
 ii Source: Pew Internet, March 2012 <http://pewinternet.org/Reports/2012/Future-of-Apps-and-Web/Overview.aspx>
 iii Source: ZdNet, 2013 <http://www.zdnet.com/cisco-mobile-internet-data-traffic-to-grow-13-fold-by-2017-7000010931/>
 iv Source: E27, 2013 <http://e27.co/by-2017-mobile-internet-connections-will-exceed-worlds-population/>
 v Source (for picture) Cisco, 2011 via <http://www.futuristspeaker.com/wp-content/uploads/Internet-of-Things-1.jpg>

LOCAL IMPACTS OF TECHNOLOGY

Global business processor Xchanging^{vi} believes technological modernisation could lead to an additional 20 percent of business into London alone and the '...potential value that could be unlocked from an existing £36 billion base, with an additional £30 million annual spend over five years (2012 to 2017) , could result in an additional £7 billion flowing annually through London.'

Xchanging^{vii} states that such strategic implementation could enable London '...to be far ahead of other markets within five years.' Central to their view is an improvement in the ease and speed of access for brokers and '...exploiting quality structured data to drive straight through processing through automation.' This long sought after goal becomes increasingly prevalent as the industry conforms around standards in data, processes, hubs, service providers and technologies.

Lloyd's^{viii} suggests that '...as technology develops it presents more and more opportunities for the market to reduce costs and access more business globally.' According to Chairman John Nelson, Lloyd's will be a broker market in 2025 and he hopes '...to see a situation where brokers are extending their networks, picking up new business across the world and placing it at Lloyd's^{ix}.'

Efficient technology will be critical in optimising each stage, including broker usage. Brokers will increasingly need to adapt to this shifting environment and business models are likely to diverge as a result. Closer relationships with the client are likely, for example, by understanding client needs and wants, and how to best support that effort through both immediate and longer horizon goals.

According to Rick Miller, managing director for Aon, one of the most important emerging roles of brokers is to help manage expectations by keeping clients aware of what is going on in the marketplace^x. Given the increasing complexity of the global landscape on multiple levels, the need for brokers to engage fully with the latest technology based opportunities and solutions to be able to do this would seem pressing.

It is also increasingly likely that technological solutions will follow specific market location demands. For example. Manan Sagar, CEO of Lockton Companies (Singapore) suggests that '...the rise of the Asian MNCs and their need for sophisticated risk management will result in insurance solutions designed from an Asian perspective^{xi}.' Many core issues remain global in scope however, Matthew Josefowicz, partner and MD at Novarica (U.S), notes that tech-centric plans can be stymied by cultural inertia at large organisations. Nevertheless, he suggests that '...further out on the horizon, there is the potential for fully automated underwriting in more lines of business^{xii}.'

vi Source: Insurance Journal, February 2012 <http://www.insurancejournal.com/news/international/2012/02/07/234581.htm>
vii Source: Xchanging, 2012 <http://www.xchanging.com/media/press-releases/xchanging-unveils-technology-route-map-to-the-future>
viii Source: Lloyd's, 2012 <http://www.lloyds.com/news-and-insight/lloyds-blog/archive/adam-stafford/12/01/a-new-year-a-new-electronic-distribution-website>
ix Source: PropertyCasualty360, 2012 <http://www.propertycasualty360.com/2012/05/21/lloyds-of-london-unveils-strategy-for-future-grow>
x Source: PropertyCasualty360, 2012 <http://www.propertycasualty360.com/2012/03/15/the-brokers-role-in-helping-integrate-risk-managem>
xi Source: Global Reinsurance, 2013 <http://www.globalreinsurance.com/asia-pacific-executives-on-opportunity-regulation-and-the-future/1406128.article>
xii Source: Business Insurance, 2013 http://www.businessinsurance.com/article/20130519/NEWS04/305199977?tags=|306|76|342|335#full_story

EMERGING TECHNOLOGY

Never before in history have we seen so much new technology emerging and maturing all at once. Innovative technology is redefining every industry and will greatly transform the nature of insurance and risk pooling along the way. At the emergence of each new technology we learn to do things differently, but as we learn the technology's true potential we begin to do different things - we change the business model. We are entering fully into this stage of maturity in our understanding of many recent technologies, including mobile (tablet, smartphones, e-readers etc.) and social media and can begin to see whole new approaches to engaging with customers, managing risk and claims and even management processes.

Social

Social technology could yield a 20-25% improvement in the productivity of knowledge workers.

Dion Hinchliffe, technology strategist, notes that '...the more significant value proposition of social requires business transformation. The more profound and higher order aspects of social media (beyond a basic presence) including peer production of product development, customer care, and marketing require deeper rethinking of business processes^{xiii}.' In other words, businesses need to become social, rather than just use social technologies.

It is estimated that widespread business use of social technologies could yield \$1.3 trillion per year of new value into the economy^{xiv}. Two-thirds of that value could come from improved social collaboration within or between companies, which could translate into a 20 to 25 percent improvement in the productivity of knowledge workers. Interestingly, for professional services, 98 percent of its value could be derived from improved collaboration within or between companies. For P&C and life insurers, the respective percentages are 52 and 51^{xv}. Indeed, those with large client facing activities could stand to benefit significantly if they so choose to invest in their human resources and social processes that empower them.

Forrester Research says the sales of software to run corporate social networks will grow 61 percent a year starting in 2012 and will become a \$6.4 billion business by 2016^{xvi}. Despite this growth '...only 25 percent of businesses will routinely use social network analysis to improve performance and productivity through 2015', according to Gartner^{xvii}. We no longer see the use of social media as just a key tool for the marketing function but can readily identify today how it supports collaboration across departments and between business partners, distributors, customers and underwriters. Becoming savvy in the use of such tools will set one insurer apart from the other in its preparedness to be more collaborative and make it more attractive to young talent and impactful business partners. This collaboration will prove vital for the successful insurer of the future.

Let us consider in turn some of the technologies that are driving this change and their potential impact on how the insurance industry operates, and then what we can do about it.

xiii Source: ZdNet, October 2011 <http://www.zdnet.com/blog/hinchliffe/the-big-five-it-trends-of-the-next-half-decade-mobile-social-cloud-consumerization-and-big-data/1811>

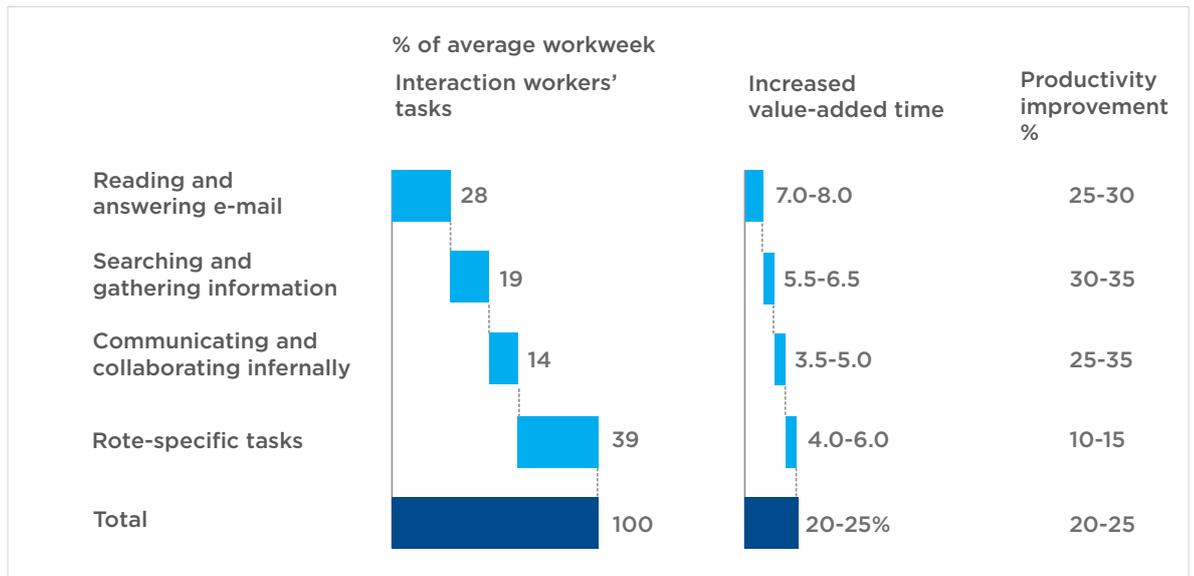
xiv Source: McKinsey Global Institute pdf, July 2012, 'The Social Economy: Unlocking value and productivity through social technologies.'

xv Source: McKinsey, 2012 <http://www.flickr.com/photos/66209849@N05/8077208431/in/photostream/lightbox/>

xvi Source: USA Today, May 2012 <http://www.usatoday.com/money/economy/story/2012-05-14/social-media-economy-companies/55029088/1>

xvii Source: Computing, February 2010 <http://www.computing.co.uk/ctg/news/1840835/social-networking-replace-email-2014>

Improved communication and collaboration through social technologies could raise the productivity of interaction workers by 20 to 25 percent



Source: International Data Corporation (IDC); McKinsey Global Institute analysis^{xviii}

“The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.”

Alvin Toffler, Author, Futurist

Exploding Mobile Marketplace

Mobile ‘...will remake insurance business models by 2020.’

Growth in mobile devices is expected to drive smartphone traffic to 50 times the size it is in 2012 by 2016. Mobile network capacity will need to increase 20 to 25 times to handle the growing load. Chinese telecom equipment manufacturer, Huawei, predicted that their traffic levels would rise 500-fold in the decade leading up to 2020^{xix}.

Forrester^{xx} believes that mobile ‘...will remake insurance business models by 2020,’ through a combination of increased customer engagement with policyholders, new sales opportunities, Big Data, the underwriting potential of smart devices, use as sales tools for brokers, agents and advisors, and new distribution opportunities. M-Commerce would appear to be one particularly fruitful area, with more than \$10 billion spent on non-digital goods via mobile phones in 2012, and \$31 billion forecast by 2016. China’s M-Commerce market alone could triple in size by 2018 to \$123.8bn, the second largest globally after the US^{xxi}. ‘Digital insurance teams need to scan the mobile landscape for innovations that can create better consumer or agent experiences, increase efficiency, and reduce costs,’ says Forrester.

xviii Source (picture): McKinsey, 2012 http://www.mckinsey.com/insights/high_tech_telecoms_internet/the_social_economy

xix Source: Futurist Speaker, 2011 <http://www.futuristspeaker.com/2011/02/embracing-our-inner-cyborg/>

xx Source: Insurance Networking, 2012 <http://www.insurancenetworking.com/news/Forresters-mobile-apps-customer-experience-31120-1.html>

xxi Source: Euromonitor, 2014 <http://blog.euromonitor.com/2014/01/chinas-m-commerce-market-to-triple-by-2018.html>

Big Data

It is estimated that over 35 million zetabytes of data will be generated by 2020, a 35 fold increase over 2012 levels^{xxii}. The growth of internet connected devices and sensors, projected to reach 50 billion by 2020, will have a huge impact on availability of real-time information^{xxiii}. 99 percent of physical objects in the world are still unconnected^{xxiv}. Big Data brings with it the possibility of increasing ROI on rapidly assembled datasets and may also be able to address business problems that existing techniques have been unable to solve. McKinsey^{xxv} identifies five broad ways in which Big Data can create value.

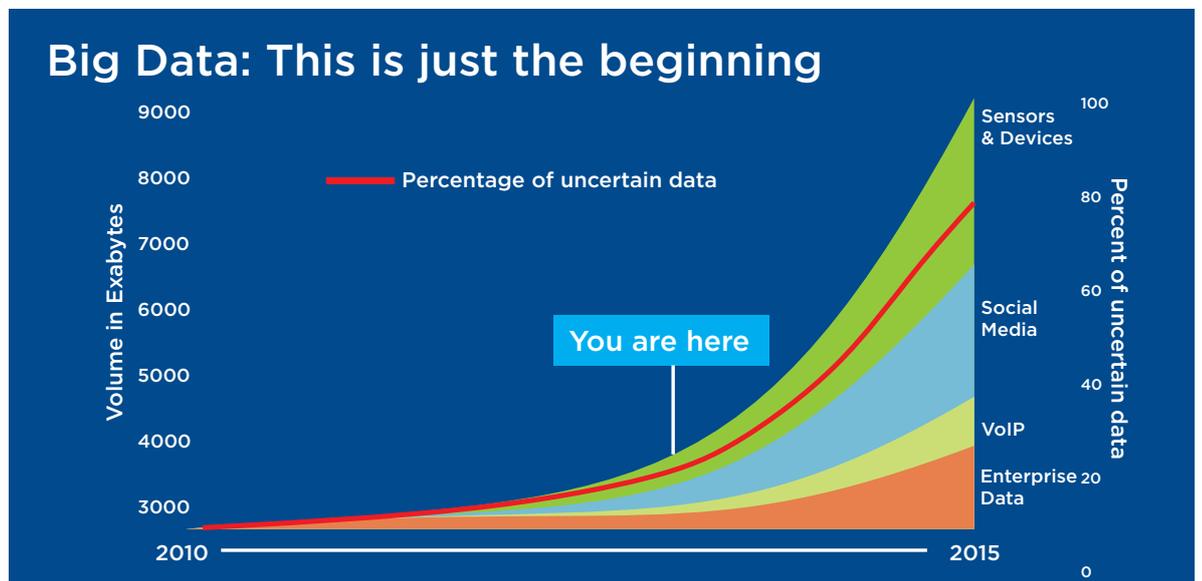
1. By making information transparent and usable at a much higher frequency.
2. Allowing collection of accurate and detailed performance information on everything.
3. Allowing ever-narrower segmentation of customers.
4. Sophisticated analytics can substantially improve decision-making.
5. Using information to improve the development of the next generation of products and services.

Users of services enabled by personal-location data could capture \$600 billion in consumer surplus alone thanks to Big Data. The opportunities are so significant that the EIU suggests that ‘...for those who can master it, “Big Data” will become a business of its own^{xxvi}.’ The successful company of the future will be the one that embraces Big Data and all the associated challenges (including, perhaps most pertinently, data security and privacy). In fact, 64 percent of organisations invested or planned to invest in Big Data last year, 19 percent will do so this year, and an additional 15 percent next year^{xxvii}.

“Big Data will replace the need for 80% of all doctors”
Vinod Khosla, 2013, Co-founder of Sun Microsystems and VC at Kleiner Perkins

However, in Asia-Pacific 58 percent of executives reported to the EIU that ‘...they were making only limited progress in using technology to analyze large quantities of data^{xxviii}.’ 40 percent in the region did not know if their company had a Big Data strategy in place and 36 percent cited trouble encouraging business silos to share data. Against this backdrop is a demand for analytical talent that in the U.S. alone could exceed supply by 50 to 60 percent by 2018. The United States faces a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts to analyse Big Data and make decisions based on their findings^{xxix}.

To attract smart analytical talent will require more than a boosted salary and benefits package. It will require an organisation to have a vision and intent around the use of Big Data that inspires talent to want to engage with them.



xxii Source: Forbes, June 2012 <http://www.forbes.com/sites/reuvencohen/2012/06/22/a-unstructured-future-for-cloud-computing>
 xxiii Source: PwC, 2012 http://www.pwc.com/en_GX/gx/insurance/pdf/insurance-2020-turning-change-into-opportunity.pdf
 xxiv Source: Cisco, 2013 http://www.cisco.com/web/about/ac79/docs/innov/loE_Economy_Insights.pdf
 xxv Source: McKinsey, May 2011 http://www.mckinsey.com/insights/mgi/research/technology_and_innovation/big_data_the_next_frontier_for_innovation
 xxvi Source: Economist Intelligence Unit 2012 http://www.managementthinking.eiu.com/sites/default/files/downloads/EIU_Agent%20of%20change_WEB_FINAL.pdf
 xxvii Source: Gartner, 2013 <http://www.gartner.com/newsroom/id/2593815>
 xxviii Source: Wall Street Journal, citing EIU, 2013 <http://blogs.wsj.com/cfo/2013/11/29/asia-pacific-companies-slow-to-embrace-big-data/>
 xxix Source: McKinsey, 2011 http://www.mckinsey.com/insights/business_technology/big_data_the_next_frontier_for_innovation
 xxx Source (picture): IBM, 2013 <http://www.sec.gov/Archives/edgar/data/51143/000110465913015636/g61551bii004.gif>

Cloud and Beyond

Big Data immediately gives rise to great problems for many a corporates' network infrastructure. By 2020, 40 percent of all the digital information in the world – not just that owned by corporations – will be stored in the cloud at one time or another during its lifecycle^{xxxii}. The benefits of the cloud have been well documented alongside an acknowledgment that most corporate networks cannot handle the volume and variety of contemporary, let alone future, data in an efficient and economical way. This has led Forrester^{xxxiii}, amongst others, to speculate '...that a central IT department will be a thing of the past by 2020.' The biggest critique of cloud architecture, has for years centred on the notion of security and data privacy.

However, Jeff Kaplan, a recognised expert in cloud computing, suggests that '...properly designed and administered multi-tenant services can also be even more secure than traditional on-premises product or past ASP arrangements, because the vendor maintains full control of access to its system^{xxxiii}.' KPMG suggest that business process redesign must occur in tandem with cloud adoption if organisations hope to achieve the full potential of their cloud investments^{xxxiv}. Cloud computing and multi-tenanted service can provide a fast growth, secure environments in which insurers can take on new capabilities with increased certainty. The successful use of these services will rely on a strategic approach across all departments to the take-on of cloud services and a strength of procurement and project management engagement with these players that has hitherto been lacking.

Modelling and Analytics

More and more data is available to insurers - from existing sources, newer sources (e.g. social media), and those that are largely still conceptual (e.g. from machine-to-machine communications), These include^{xxxv}, insurance business systems, social media embedded sensors (e.g. vehicle telematics, buildings controls, street furniture), insurance company portals, mobile Apps, location intelligence and complementary insurance info (e.g. FICO scores and business formation data).

As a result, '...the use of predictive analytics in insurance is becoming increasingly widespread as companies realize how the power of insight can impact business growth, risk management, and loss control^{xxxvi}.' Indeed, P&C insurers say data capture and transformation into useful information has become a critical differentiator of performance within the marketplace^{xxxvii}.

Predictive analytics will allow significantly more accurate and personalised pricing of risk in the underwriting process, enabling whole new business models. This has already been achieved for specific crop plantings in identified fields on a certain date, where the occurrence of specified weather conditions triggers payments without the need for claims at all. Prediction is already working in a real time manner in helping insurers develop Apps that help drivers avoid dangerous driving scenarios thereby repositioning the insurer as a proactive risk avoidance partner - surely a valued position in the customers mind.

Awareness Technology

Context-aware computing could be the single most-significant change in enterprises' customer management relationship strategies during the next five years. Used to map the digital and physical worlds together^{xxxviii}, context-aware technologies are expected to make a \$96 billion dollar impact on annual consumer spending globally by 2015^{xxxix} and itself be worth \$120 billion by 2018^{xl}.

Microsoft Research Asia has floated the possibility of adding a new form of context-detection to devices that infers the mood state of the user. The system is able to infer a user's mood with 66 percent accuracy, or 93 percent when sufficiently familiar with an individual^{xli}.

xxxii Source: Data Informed, 2013 <http://data-informed.com/as-cloud-computing-grows-security-experts-cite-data-risks-to-manage/>
xxxiii Source: Information Week, 2013 <http://www.informationweek.com/wireless/will-it-departments-disappear-by-2020/d/d-id/1110359?>
xxxiv Source: APM Digest, 2013 <http://apmdigest.com/in-the-cloud-multi-tenant-vs-single-tenant-itsm>
xxxv Source: KPMG, retrieved 2013 <http://www.kpmg.com/global/en/topics/cloud-computing/pages/default.aspx>
xxxvi Source: Insurance Thought Leadership, 2013 <http://www.insurancethoughtleadership.com/articles/insurers-should-deploy-predictive-analytics-across-the-enterprise#axzz2qOZGTpKK>
xxxvii Source: Property Casualty 360, 2013 <http://www.propertycasualty360.com/2013/04/17/new-power-with-predictive-analytics>
xxxviii Source: Insurance Networking, 2013 <http://www.insurancenetworking.com/news/p-c-insurers-predictive-modeling-a-must-31744-1.html>
xxxix Source: Gartner, retrieved 2013 http://docs.media.bitpipe.com/io_10x/io_102267/item_485946/Gartner%20context.pdf
xl Source: Cisco, 2013 <http://newsroom.cisco.com/feature-content?type=webcontent&articleId=1157689>
xli Source: MarketsandMarkets, 2013 <http://www.marketsandmarkets.com/PressReleases/context-aware-computing.asp>
xli Source: Techworld, 2013 http://www.techworld.com.au/article/466164/next_frontier_application_context-awareness_mood/

New Video

Globally, there will be nearly 2 billion Internet video users (excluding mobile-only) by 2017, up from 1 billion in 2012^{xlii}. Business Internet video traffic is forecast to increase 5.3-fold from 2012 to 2017, by which date video could account for 58 percent of all business internet traffic, up from under a third in 2012. The utility of video is also set to expand, as Big Data and the internet of things collide.

Video is, of course, not new but a combination of the massive proliferation of video enabled devices and in the power of image and video identification and analytics, means that it will transform our business processes beyond recognition in this decade. How insurers manage the volume and analysis of this data will likely set insurers apart in their cost of operation, accuracy of claims handling and response to catastrophic events and many other areas of activity - video is undoubtedly a game changer. Future developments such as MIT's radar technology that will feed live video of what's going on behind walls^{xliii}, will also help shape future discourse.

Apps

Apps and peripheral devices will be used increasingly to monitor conditions, submit insurance claims, and collapse the time an underwriter uses to assess a situation and make a determination. Early adopters are already experimenting with such uses. Two Japanese car insurance companies have co-developed a smartphone application in an attempt to reduce the increasing number of insurance claims made by customers. Their app reportedly has a range of functions designed to warn of possible accidents and to establish culpability in the event of a crash^{xliv}.

**“By 2030 over 2 billion jobs will disappear.”
Futurist Thomas Frey, author of Communicating with the Future**

Apps are acting as medical devices, helping patients monitor their heart rate or manage their condition. The New York Times reports that ‘...doctors will soon prescribe both clinically tested Apps and more modest Apps, like those that track physical activity or remind patients to take their pills,’ and as a platform, even more sophisticated Apps could be built on their back^{xlv}.

Insurance customers who use emerging technologies such as Apps to interact with their insurance providers ‘... are significantly more satisfied than those using only their purchase channel to meet their service needs^{xlvi},’ notes J.D.Power & Associates. App use is facilitating change in the utility of mobile devices - Bring-Your-Own-Device (BYOD) to work, or anywhere for that matter, is transforming knowledge workers mobility and productivity. Concurrently, customers are looking to their service providers to deliver increasing value to them via their devices. This will only increase in velocity as devices become smarter and connect with even more digital assets and information. Having a clear Apps strategy is vital for the knowledge and information intense insurance company in the 21st century.

3D Printing

**“3D printing will be bigger than the Internet.”
Chris Anderson, Former Managing Editor, 2013, WIRED Magazine and
author of Makers: The New Industrial Revolution**

3D printing, or additive manufacturing, is an object creation technology where the shape of the objects are formed through a process of building up layers of material until all of the details are in place. Using such technology the cost of replacing a damaged or missing component will plummet. Revenues from China's 3D printing industry could reach 10 billion Yuan (\$1.6 bn) by 2016, whilst the global market could reach \$3.7 billion by 2015 - meaning China will have more than one-third of the market^{xlvii}. Beyond 2018 it is possible that we could print certain metals or replacement parts for use in the medical sector. Airbus has already even drawn up plans for 3D printed commercial planes by 2050^{xlviii}. What happens to premiums and the concept of monetary compensation when an item or even a house can be reprinted with minimal cost?

xlii Source: Cisco, 2013 <http://advanced-television.com/2013/05/29/cisco-2bn-internet-video-users-by-2017/>
xliii Source: Japan Today, 2012 <http://www.japantoday.com/category/national/view/car-insurance-companies-develop-smartphone-app-aimed-at-reducing-claims>
xliv Source: NY Times, 2012 <http://www.nytimes.com/2012/08/20/technology/coming-next-doctors-prescribing-apps-to-patients.html?pagewanted=all>
xlv Source: Answer Financial, 2011 <http://www.answerfinancial.com/insurance-center/insurance-smartphone-apps-email-online-chat-lead-to-higher-customer-satisfaction/>
xlvi TCT Magazine, 2013 <http://www.tctmagazine.com/additive-manufacturing/chinas-3d-printing-revenues-to-reach-16bn-by-2016/>
xlvii Source: Wired, July 2012 <http://www.wired.co.uk/news/archive/2012-07/12/3d-printed-plane-by-2050>
xlviii Source: Smart Planet, 2012 <http://www.smartplanet.com/blog/design-architecture/in-denmark-a-printable-house/6130>

Danish architects Eentileen have used a computer, a printer and 820 sheets of plywood to build a 125 square meter 'printable' home in four weeks. The designers and fabricators are touting the process of mass-customising houses and responsibly producing them on site^{xlix}. The 'Print a House' method allows a house to be built by two people without heavy machinery or concrete. The concept's appeal is adaptable for different situations and locations, such as post-disaster areas. Insuring buildings and structures takes on a whole new meaning when a damaged structure or area can simply be reprinted. A 3D printed construction boom could occur in the not too distant future.

Driverless Cars

Autonomous vehicles will likely make up 75 percent of cars on the road by 2040

A bill to bring driverless cars to roads in California has been signedⁱ. Should this lead to new transportation-as-a-service models, the whole notion of car ownership could change – with renting on hourly rates becoming a viable optionⁱⁱ. The Institute of Electrical and Electronics Engineers claims that autonomous vehicles will likely make up 75 percent of cars on the road by 2040ⁱⁱⁱ. With the prospect of many traffic-related risks diminishing, vehicle insurance in its present form may no longer be mandatory in the future. 70 percent of Chinese consumers suggest they are comfortable with driverless technologyⁱⁱⁱⁱ, whilst Singapore National Development Minister Khaw Boon Wan believes driverless technology will be a reality within ten years in Singapore^{lv}.

Telematics

The global telematics insurance market could be worth €50 billion by 2020^{lv}. In the European Union (EU), eCall^{lvii}, an initiative to reduce response time of rescue services by as much as 60 percent, is still in development. From 2015, all new passenger cars and light commercial vehicles sold in the EU will need to be fitted with an in-band modem capable of automatically dialling the nearest emergency centre. It is likely that Asia-Pacific will also play an enlarged role in the global market. 'Navigation and telematics systems did not get introduced early enough due to infrastructural constraints,' notes Vivek Vaidya at Frost & Sullivan. In addition the first round of technology saw the price too great a factor. 'It's only now that infrastructure, prices and consumer acceptance have fallen into place^{lviii}.'

Ian Clark, insurance partner at Deloitte^{lviii}, argues that telematics is one tool aggregators could use as a unique selling point. Telematics systems used in Australia, South Africa and Brazil have helped prompt a reduction in road deaths and there is a global interest in telematics with 79 percent interested if rate reductions could be achieved^{lix}. By 2017, it is forecast that 75 percent of new cars in the U.S. could offer telematics for safety and security^{lx}, yet 78 percent in one Deloitte survey labelled it as intrusive^{lxi}. It appears that cultural acceptance is lagging the rate of technological possibility. This not only necessitates clear and open communication about the benefits of such technology, but also perhaps caution in introducing items ahead of their time.

Genomics

The price for sequencing will soon decrease to \$1,000 and then \$100—and eventually even lower^{lxii}. The impact on human health will be profound and the implications for insurance—in terms of life expectancy alone—will be immense. In 2010, Australian insurance company, NIB, announced plans to offer half-price genome scans from personal genomics company Navigenics to 5,000 of its customers^{lxiii}. Several legal and privacy issues will almost certainly arise, but it has been noted that '...banning insurance companies from using genetic data undermines the entire premise that insurance is based on.' If insurers cannot use this information to calculate premiums then the system is untenable, but issues surrounding the weight given to genetic data in calculating premiums could be controversial.

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- xlix Source: BBC, September 2012 <http://www.bbc.co.uk/news/technology-19726951>
l Source: The Atlantic, 2012 <http://www.theatlantic.com/technology/archive/2012/09/driverless-cars-would-reshape-automobiles-and-the-transit-system/262953/>
li Source: Global Post, 2012 <http://www.globalpost.com/dispatch/news/science/120923/driverless-cars-mid-century-our-likely-future-says-technology-associati>
lii Source: CNBC, 2013 <http://www.cnbc.com/id/101061071>
liii Source: AsiaOne, 2013 <http://news.asiaone.com/News/Latest%2BNews/Motoring/Story/A1Story20130615-430060.html>
liv Source: Machinetomachine Magazine, 2012 <http://www.machinetomachinemagazine.com/tag/telematics-insurance-policy/>
lv Source: TelematicsUpdate, 2012 <http://analysis.telematicsupdate.com/fleet-and-asset-management/future-fleet-telematics-part-ii>
lvi Source: Telematics Update, 2012 <http://analysis.telematicsupdate.com/infotainment/telematics-southeast-asia-part-i>
lvii Source: Post Online, 2012 <http://www.postonline.co.uk/post/feature/2155883/telematics-aggregators-future-motor-insurance>
lviii Source: Property Casualty 360, 2013 <http://www.propertycasualty360.com/2013/09/10/addressing-drivers-telematics-concerns-key-to-cash>
lix Source: Satellite Radio Playground, 2012 <http://satelliteradioplayground.com/2012/10/09/safety-telematics-to-reach-75-of-autos-in-u-s-by-2017/>
lx Source: Deloitte, 2013 http://www.deloitte.com/view/en_GB/uk/news/news-releases/0e658a8c1bf5e310VgnVCM2000003356f70aRCRD.htm
lxi Source: Slashdot, 2012 <http://science.slashdot.org/story/12/05/28/1849248/the-race-to-1000-human-genome-sequencing>
lxii Source: Wired, 2010 <http://www.wired.com/wiredscience/2010/02/australian-insurance-company-offers-discounted-genome-scans-to-customers-read-the-fine-print/>
lxiii Source: Gartner, 2012 <http://www.gartner.com/id=2164215>

Gaming Dynamics

70 percent of the top 2,000 public companies in the world will have at least one gamified application by 2014

Gartner^{lxiv} believes that ‘...the application of game mechanics will give P&C and life insurers a new tool to change agent behaviours, create stronger partnerships with agents and generate new sales. Insurers that fail to develop competencies will struggle to compete in this new environment.’ Some insurers have already explored the area. In September 2011, AXA^{lxv} released an online game, Pass it On, seeking to demonstrating how life products work in language or experiences that consumers intrinsically understand.

A forecast 70 percent of the top 2,000 global public companies will have at least one gamified application by the end of this year^{lxvi}. From \$421m in 2013, the sector could be worth \$5.5 bn by 2018^{lxvii}.

Location Intelligence and Pervasive Connectivity

Insurers are already using location based data, albeit not yet in mobile spheres. The North Carolina Department of Insurance^{lxviii} has, for example, issued a notice to homeowners that many people in the state were seeing premium adjustments as a ‘...result of corrections made by insurance companies, based on...an insured property’s exact distance from the fire department.’ Several other factors may also be mapped and enable homeowners to qualify for different rates. These sorts of enhancements to underwriting and ultimately pricing, marketing and product design have the capacity to isolate from cover, people who would today be pooled in the general risk community.

Computational Analytics and Data Mining

One future possibility is that publically-available social network data can be data-mined by insurance companies. This might enable a deeper analysis of what is ‘officially’ recorded. The Economist^{lxix} states that ‘...for bigger insurers, software is now being developed by technology firms such as Allfinanz and TCP Life Systems to sift through all the marketing data that might help them identify tomorrow’s cancer patients or accident victims.’ Several large U.S life insurers already waive medical exams for some prospective customers partly because marketing data suggest that they have healthy lifestyles. Insurers’ interest in data mining will only increase, perhaps even reaching into firms’ analysis of individuals’ grocery purchases. Privacy issues will almost certainly come to the fore, which accentuates the need for insurers to firstly perfect the technology (no beta) and secondly demonstrate and communicate the potential benefits to consumers.

Hyper-Personalisation

In the not-too-distant future it is entirely possible that many individuals will prefer to be insured based on their individual actions, and not the statistical average of a large group^{lxx}. 45 percent expect ‘distribution destruction’ to occur, where customers buy direct and even form groups to negotiate bulk purchases direct^{lxxi}, notes PwC. In practice this may encourage more individuals to seek out tailor made products and services. Advances in areas such as healthcare are also likely to entrench this trend. Personalised medicine holds the potential for customised healthcare solutions that are cognizant of individual biochemistry.

lxiv Source: Insurance Tech, 2011 <http://www.insurancetech.com/business-intelligence/axa-looks-to-gamification-ipad-to-excite/231900766>
lxv Source: Entrepreneur, 2012 <http://www.entrepreneur.com/article/223039>
lxvi Source: Technorati, 2013 <http://technorati.com/social-media/article/gamification-market-to-be-worth-55/>
lxvii Source: InsWeb, retrieved 2012 <http://www.insweb.com/home-insurance/gps-technology.html>
lxviii Source: Economist, 2012 <http://www.economist.com/node/21556263>
lxix Source: Jump The Curve, October 2008 <http://jumpthecurve.net/health-care/five-future-trends-for-the-insurance-industry/>
lxx Source: PwC, 2012 http://www.pwc.com/en_GX/gx/insurance/pdf/insurance-2020-turning-change-into-opportunity.pdf
lxxi Source: The Chronicle of Higher Education, 2013 <https://chronicle.com/article/Robots-Arent-the-Problem-/138007/?cid=cr>

New Technologies Demand New Models

'It won't be technology that defines our future. It will be our ability to mold it'^{lxxii}. In essence '...the change will be more about how technology is used to change an organisation and its interaction with customers'^{lxxiii}, says Jack Bergstrand, the former CIO of Coca-Cola.

However, many technologies allow and in some cases demand a reworked business model solution. Businesses are increasingly finding they do not have the resources – either financially or in terms of experience and talent – to turn these technological trends into strategic opportunities. MIT Sloan notes that '...in fast-changing markets, some companies are developing more flexible, adaptive strategic partnerships to leverage the resources and capabilities,' of external players and vendors. These '...partnerships break some traditional rules of business relationships by outsourcing core capabilities to partners'^{lxxiv}. Given the array of other emerging technologies that are evolving and creating new business opportunities, the foundations on which business builds its core digital infrastructure will increasingly feature trusted partnerships and outsourcing.

“When you come to the end of the innovations that business and government are willing to invest in, you still find a vast, unexplored space of innovation where the returns can be fantastic. This space is a fertile area for what I call ‘Catalytic Philanthropy.’”

Bill Gates, 2013

lxxii Source: Economist Intelligence Unit, Management Thinking, 2012 http://www.managementthinking.eiu.com/sites/default/files/downloads/EIU_Agent%20of%20change_WEB_FINAL.pdf

lxxiii Source: MIT Sloan Management Review, 2014 <http://sloanreview.mit.edu/article/rewriting-the-playbook-for-corporate-partnerships/LXXIV>

lxxiv Source: Futurist Speaker, 2012 <http://www.futuristspeaker.com/2012/05/transforming-the-future-of-the-insurance-industry/>

EVOLVING NATURE OF RISK: CONTOURS OF THE FUTURE

Many of the new technologies will reduce the risk of accident and injury. Concurrently, new areas of risk will materialise. Ultimately every new technology has unintended consequences, whether good or bad, and it will be these unintended consequences that drive the insurance industry in the future. 3D printers, for example, have already been used to print fully functioning assault rifles, whilst pharmaceutical grade drug manufacture is surely only a matter of time. As the risk landscape evolves – both from technological and natural catastrophe concepts, organisations need to build resilience against the unpredictable. This will not only involve Big Data know how and analytical capability, but also an effective and value adding horizon scanning competence.

Fewer Underwriters

'New software programs now allow underwriters to take on three times as much work as in the past, collapsing the need for new hires. As a result, industry projections show the number of people employed in the field in the U.S., will decline by 4 percent, or 4,300 jobs, by 2018^{lxxv}.'

Risk Pooling v Crowdsourced Solutions

'In the future, whenever the insurance industry makes abrupt changes, or fails to react quickly enough to satisfy an emerging need, enterprising people are sure to step in and fill that need. In much the way retainer practices circumvent the need for insurance company involvement with medical practices, crowd-sourced solutions will soon arise in other areas as well.^{lxxvi} As consumers become even more comfortable with social networks, this is likely to be one avenue explored. Several scenarios could develop – from social networks helping shift the balance of trust from insurance agents and advisers to online communities, to online social networks wielding substantial purchasing power and becoming new group insurance channels. Online social networks have already become pooling mechanisms for self-insurance, which redefines the role of insurers on many levels.

Artificial Intelligence

Advances in Artificial Intelligence techniques, such as machine learning, natural language understanding and intelligent decision-making will allow insurers to advance from using technology for transaction processing to decision-making. Straightforward uses of IBM's Watson-like technology could add value to insurance operations^{lxxvii}. Claims adjusters could react instantaneously to a range of questions about company claims history and average payouts involving a certain model of car for example. Analysts predict that such vertical solutions will be implemented within three and five years.

Concurrent with data growth (predicted to grow worldwide by roughly 40 percent each year, with the majority as video) and the increased embrace of it as a key business driver, is a paucity and projected future shortage of adequate analytical human talent. As powerful as they may be, advanced business intelligence software tools alone are not a panacea. Human skills are needed to consume, effectively apply, and disseminate the results coming out of such systems^{lxxviii}.

Typically, insurance companies spend 50-70% of their IT budget on simply running the business

lxxv Source: Futurist Speaker, 2012 http://www.futuristspeaker.com/2012/05/transforming-the-future-of-the-insurance-industry/?goback=%2Egde_145854_member_118622940
lxxvi Source: Insurance Tech, 2011 http://www.insurancetech.com/architecture-infrastructure/lbms-watson-today-jeopardy-tomorrow-ins/22921867?cid=box_top2011
lxxvii Source: Slashdot, April 2012 <http://slashdot.org/topic/bi/shortage-of-b-i-talent-a-critical-hurdle-in-quest-to-leverage-big-data/>
lxxviii Source: McKinsey, 2013 'Retail banking in Asia: Actionable insights for new opportunities'

CRITICAL FUTURE SUCCESS FACTORS

Tomorrow's successful insurance model could be built on comparative advantages in any one or more, or probably a combination of a number of areas.

- Customer centric models: The need to leverage technology to achieve comparative advantages across back, middle and the front office must always be seen within the context of the customer. Helping enhance customer experience, perhaps through self service for example, should help develop the insurers' holistic view of the customer. Across financial services, customer-centric business model can improve loyalty, increase product sales by 5 to 20 percent, and lower customer attrition by three to five percentage points^{lxxix}.
- Business ecosystems: The nature and sheer volume of technological change necessitates new organisational models and new relationships. Increasingly, core priorities and processes will become key components of these relationships as the traditional boundaries of the organisation are redefined.
- Optimising the value chain: Accenture^{lxxx} believe that '...the ability to optimise and industrialise the insurance value chain will be key to high performance in industrial markets. In particular, the optimisation and professionalization of sales and distribution will lead the quest for growth. Taking sales effectiveness to the next level through the professionalization of the sales process will be decisive in capturing the high-potential growth segments in mature markets.'
- Scan the horizon: Multiple transformational processes are only in their infancy, including 3D printing and emerging market growth. Will 3D printing increasingly replace large scale manufacturing, changing the nature and demand for insurance in the manufacturing, transport and logistics sectors? Although presently expensive while in its infancy, will it eventually reduce the cost of claims as losses may be easier to replace?
- Delivery models: Alternative and unique combination of delivery models including on-premise SaaS, BPO and cloud, could help institutionalise agility and flexibility will be explored. The reduction of time spent internally on proprietary systems could enable insurers to focus on value-added core competencies^{lxxxi}. Gartner (2012) finds that typically, insurance companies spend between 50 and 70 percent of their IT budget on simply running the business and that leaves little left over for information transformation and growth initiatives focusing on customers^{lxxxii}. Partnerships with external experts can not only enhance current IT effects but enable resources to be shifted to other value enhancing tasks.

“Not only CAN anyone be an entrepreneur, but they MUST be.”
Reid Hoffman, 2013, Co-founder and Executive Chairman of LinkedIn Corporation and author of The Startup of You

lxxix Source: Accenture, 2011 <http://www.accenture.com/us-en/blogs/accenture-blog-on-insurance/Media/High-Performance-Insurer-of-the-Future.pdf>
lxxx Source: Innovation Group, 2012 <http://www.innovation-group.com/us/pressreleases?pressreleaseid=429>
lxxxi Source: IT Briefing Centre, 2012 http://www.itbriefingcenter.com/programs/gartner_innovationgroup.html

KEY QUESTIONS

1. What is our 'technological attitude' as an organisation? Does it add value to our business and enable our staff to leverage their skills and talent? Do we work for technology or it for us?
2. Does our organisation communicate with itself, and consumers, effectively? Do we have the channels open to facilitate both the effective internal transfer of knowledge and to develop meaningful conversations with clients?
3. How do technological advancements impact us? Can we utilise technologies and offer new value adding propositions, that could otherwise cannibalise our business model?
4. Is our business structure and our corporate culture open or closed? Are we prepared to partner more widely to ensure a more economical and efficient digital infrastructure and help free resources for other services?

In Our Next Paper

Innovation and the creation of new value for customers is already underway in the industry, with changing models that incorporate both an evolving set of business foundations and are aware of the evolving nature of risk. As a consequence of many of the trends discussed throughout the papers, there are many implications for how the future of personal and commercial liens will look, as well as brokers. A range of responses is available to those in the industry seeking to plan their next growth phase that are able not only to stay abreast of the latest and future changes, but to actively use them to leverage better products, better service and a better organisation.



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ACORD maintains offices in New York and London. ACORD is a member-driven organization whose members work together to improve the flow of insurance information between systems and partners. ACORD standards and services improve data quality and transparency, resulting in greater efficiency and expanded market reach.

Learn more at www.acord.org



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