

Thought Starter

Adapt or Die, the Impending Digital Tsunami.

Tony Hartley, Mark Perry & friends

Let us start this **thought starter** with an admission – we are not writers, academics or technology experts but are industry practitioners who have invested a significant portion of our careers, creating and running businesses that transgress many different areas of the financial services industry. Our motivation in penning our '**thought starter**' pieces, are to bring attention and stimulate debate on topics that we feel are not being adequately covered in media and industry discussion forums.

The documents in themselves are not intended to provide conclusive recommendations on directions the reader should consider but to alert the reader to opportunities and issues they may not have considered.

BACKGROUND

As we approach what should have been the anniversary of the Australian Financial Services Industry reforms (FOFA), it is apparent that Government and Industry has been focused on addressing two critical issues:

1. Minimising the likelihood of past product and advice failures being repeated; and
2. Ensuring client's best interests are being met.

Incorporated in the debate leading up to and post the reform announcements have been many sub-topics including:

- > What regulatory reform should look like, whether it was/is warranted and consequently how best to deal with that which was enacted (FOFA);
- > Whether true professional standing is an ideal that can be attained when many of its advice providers operate under conflicted models (eg. value chain subsidisation by parent companies) and are non-degree qualified;
- > Whether advice being provided by Industry Funds, Accountants etc. should be encompassed within the same bounds as that provided by Advisers; and
- > Whether License issuers (APRA and ASIC) have done sufficient to protect consumer's interests in terms of screening and monitoring of those being granted licenses to operate (Product providers, Research Houses, AFSLs etc.).

Non-FOFA related but equally deserving, have been peripheral topics such as:

- > Probable future skill shortages arising from an aging adviser base¹ and less than replacement workforce development;
- > Retirement funding pressures arising from increased life expectancies and inadequate retirement savings and safeguards;
- > Asset class bubbles and their consequent impacts on household wealth and social security dependence;
- > What the most appropriate approach to portfolio construction is given diminishing contribution periods (ie. as a % of the portfolio duration) and sequencing risk; and
- > Effects that may be felt from local and global social friction resulting from burgeoning wealth divides.

At PHAROS we expect that these topics will lead to evolutionary changes, much as occurred following previous reforms (SIS Act 1993, MI Act 1998, FSR Act 2001 etc.); product/service innovations (eg. Mastertrusts, Wraps, SMSFs etc.); and competitor entries & exits.

This is not to say these topics are not immensely important and deserving of airtime and headspace but we believe the Financial Services Industry and specifically the advice side of the Industry, is confronting several significant challenges that will cause revolutionary change and will impact the way financial services advice is delivered, the types of advice that will need to be delivered and the manner in which such advice will be paid for. Many can navigate evolutionary change, few can navigate revolutionary.

To bastardise a Wayne Gretzky quote – we believe the Industry is ‘skating to where the puck is, not to where it is going be.’ Simply put, the industry is consumed in matters that will give rise to evolutionary change and are not acknowledging that around it, revolutionary changes are occurring in the areas of digital transformation and technology development and/or take-up. Changes that will likely, in the fullness of time, prove to be game changing to many and/or all of our current dominant industries – including Financial Services. Like others, it is easy to foresee this revolution being on a scale equal to, or in excess of the industrial revolution of C18th – C19th.

Melodramatic? We don't think so! One only has to look at the impact the internet, coupled with technology take-up and technology advancements has had and is having, on some other industries:

- > Consider the music industry – once we went into a shop like Brashes and bought a record, tape or CD. Today we download from iTunes, Pandora and Spotify and brick'n'mortar firms like Brashes don't exist. Even 'ownership' of the music is slowing due to streaming.
- > We now buy books from Amazon, downloading to our Ereaders while brick'n'mortar firms like Borders have gone bust.
- > Of the brick'n'mortar movie rental businesses that do exist, many are struggling in the face of online options like Telstra, Netflix, YouTube etc. not to mention the cable options.
- > While brick'n'mortar travel agencies have put up a valiant fight against pure online counterparts, the number of bookings through b&m agencies for overseas travel has diminished from 71% in 2007 to 47% in 2014, with domestic holiday bookings down to 8%².
- > Even solid technology firms that may have considered themselves leading edge like RIM (Blackberry) and Nokia, have suffered as they missed the changing digital landscape.

- > It doesn't end there – firms like Skype are impacting fixed line telcos; LinkedIn and Seek are impacting traditional recruiting firms; Uber is set to challenge the taxi industry; Airbnb and its' peers the hotel industry etc.; Digital killed Kodak as firms like Instagram seemingly came from nowhere; and the rise of 3D printing could impact manufacturing like the PC and the internet did to printing.
- > In financial services we need only look to Thomas Peterffy's launch of his machine-based stock trading engine in 1987 and see the impact these 'algo-trading' engines have had on stockbroker numbers – over 75% of US trades are currently performed by them. Similarly ATM's decimated bank teller numbers (in the US Teller No's down 13.2% between 2007–2013³) and Point-of-sale cash withdrawals are likely to further their decline. Into the future it is foreseeable that cryptocurrencies like Bitcoin will pose a threat to payments processors (Banks), tax collectors (Governments) and foreign currency traders.

Superficially it is easy to argue that our industry is vastly different to music, travel, books etc. BUT and we know this will sound like heresy, BUT much of the financial services offer is intangible, standardisable and consequently – digitisable. And so to think our industry and what some of us do in our industry,

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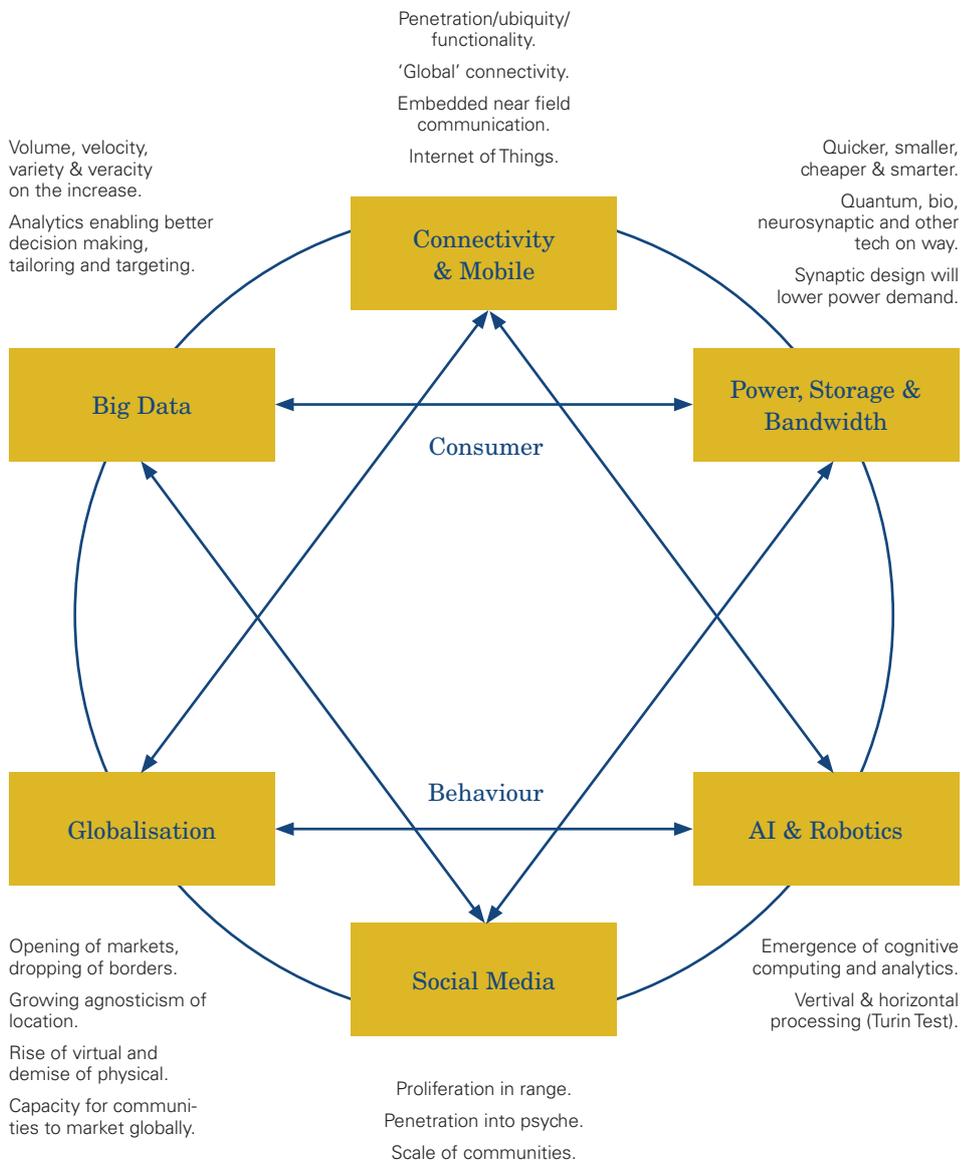
will be immune from the digital threat is naïve. For those cursing before we've begun – what isn't immediately digitisable is 'selling' and 'relationships.' We say the latter only having recently watched Spike Jonze's movie 'Her' which may cause us to rethink whether relationships will be.

Let's dive a bit deeper...

At a macro level, we are witnessing a conflux of a number of emergent and maturing technologies that will drive revolutionary change. Putting this another way, most industries – including financial services are confronting a veritable 'Perfect Storm' which like the book and

the 1991 storm cell on which it was based, will have multiple fronts – all hitting concurrently.

The 'fronts' we are particularly interested in and will consider include: AI and Robotics; Social Media; Globalisation; Connectivity & Mobile; Power and Storage; and Big Data. So whilst we'll focus on these fronts it needs to be said, the change that's coming is 'technology enabled but it will be consumer led!' Consumer behavioural change is set to rock our traditional 'delegated' advice model and the way we do business – to its core.



FRONT 1 BIG DATA

'Water, water everywhere and not a drop to drink.' Collieridge

The technology historian George Dyson put it succinctly when he stated, "Big data is what happened when the cost of keeping information became less than the cost of throwing it away."

For the layman 'Big Data' is a term that is being used to describe the plethora of data that is being gathered across three forms: structured, semi-structured and unstructured; together with the analytical capabilities that enable that data to be 'mined.'

- > All of us are familiar with structured data and basic data mining because it is what our 'crude' CRM systems have been traditionally based upon and used ie. customer and prospect data that includes personal details, transaction histories etc. all of which can be neatly compiled into fixed fields that can be classified, grouped and sorted.
- > Unstructured data which is believed to comprise 75–90% of all data, is information that isn't predictable and can't be placed into rows and columns eg. photos, presentations, web pages, videos, pdf's, powerpoint files etc.
- > Semi-structured data is between the two, in that it comprises some elements that can be classified together with elements that can't eg. a word document might have author's name, date created etc. which is structured but the bulk of the document – the content, is unstructured. Similarly an email will have structured data – sender, recipient, subject, date and other fixed fields, together with the other unstructured content and attachments.

As a result of the growth and take-up of the internet, mobile connectivity and the proliferation of sensors and other IoT devices (more on 'Internet of Things' later), data is being gathered from an ever expanding range of sources. Estimates by IBM⁴ posit that in 2012 about 2.5 quintillion bytes of data a day were being produced (ie. 10 million or so times an average laptop's storage capacity eg. 250gb). With 2 years passed, this figure will likely have been surpassed.

The data we are creating is also causing us to leave digital footprints everywhere – often without even knowing it (passively created versus actively). These footprints can be monitored, analysed, vetted, shared, curated and used to make forecasts/predictions about purchasing behaviour, habits, preferences, what networks and relationships we have, how influential we are etc.

At a practical level, such 'footprints' allow firms to better target, customise and deliver their products/services. Reciprocally, they allow customer's the ability to access sites and services quicker, with less inputs and greater interactivity. Privacy and ownership of such 'footprints' are an issue⁵ that will be debated until regulations catch-up.

Owing to the newness of this area, opportunities abound for firms that are able to harness capabilities such as data analysis, predictive modeling, social network mapping and listening. An area that instantly springs to mind is product/service development and customisation using customer experience analytics, customer segmentation and preference targeting.

Practical evidence of the value of utilising big data analytics, can be seen in a HBR (Harvard Business Review) published study which found that companies in the top third of their industry in the use of Big data-driven decision making, are on average, 5% more productive and 6% more profitable than their competitors⁶.

Firms/Sites you should review that will get you thinking about how useful 'Big Data' will be for financial services firms:

- > The firm **Narrative Sciences** have developed a tool called Quill that they can use to analyse data and create stories from it – [HTTPS://WWW.YOUTUBE.COM/WATCH?V=VJUCCHX9Y7W](https://www.youtube.com/watch?v=VJUCCHX9Y7W)
- > **Sntmnt** is a firm that uses big data analytics to mine the crowd to identify stock discussions filtered by 'influencer' rating www.sntmnt.com .
- > **Mindjet** uses a different play on this theme, using data and the crowd to predict the likely return on a firm's innovation – www.mindjet.com.



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Collieridge



If GM had kept up with technology like the computer industry has, we would all be driving \$25 cars that got 1000 MPG.

Bill Gates, CEO of Microsoft

FRONT 2 POWER, STORAGE & BANDWIDTH

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Smaller, faster, cheaper and smarter could describe the inexorable growth in 3 of the infrastructure enablers of the tech revolution – power, storage and bandwidth. Exponential growth, not linear. In our own field we thank the creator for the ‘power of compound interest’ and so it should hardly be surprising that technologists seem to similarly pay homage to the ‘power of exponential development.’

Whilst it might be a bit of stretch to call Moore their ‘prophet,’ his observation which became ‘Moore’s Law’ was that transistors on processors would double every 18mths – in other words processing power would double every 18mths. Since the onset of commercial computers, developments have roughly tracked his ‘law.’

For those less familiar with such ‘powers’ consider the ancient Indian (not Persian) account of the inventor of chess and the reward his King gave for his invention (Nb. We’re not attesting to this account being factual).

When presented with the new innovation (chess) the King was so delighted, he gave the inventor the right to choose his prize. The inventor asked the King for wheat – 1 grain for the first square, 2 for the second and so on. Not familiar with ex the King agreed, only to subsequently be informed by his treasurer that this prize would equate to 18,446,744,073,709,551,615 grains (i.e. approx 2^{64}). One account has it that the inventor was beheaded due to his ‘fooling’ the King.

Breaking this down. There are 64 squares on the chessboard. If the King had agreed to the ‘wheat deal’ on the first half of the board, it would have equated to 4,294,967,295 grains or approx. 107 metric tons of rice (each grain being about 0.025g). Possibly, an achievable amount – albeit large. The 2nd half of the board is where ex get’s going. Its’ 32 squares

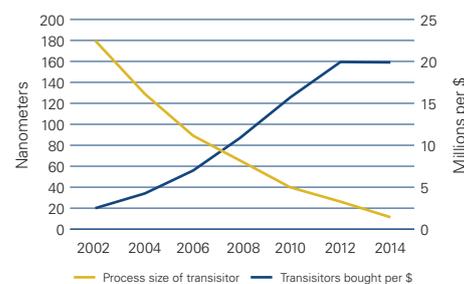
would equate to 460 billion metric tons, making the original 107 tons insignificant. The last square alone would equate to over 368 million tons.

So what’s the relevance? Well if we equate technology growth to the chessboard and Moore’s Law continues to hold, we are still in the 1st half of the board and so the developments that have been achieved to date, will pale into insignificance with those on the horizon – the big leaps are coming!

Back to **power, storage and bandwidth** – the enablers of this e^x growth.

The cost-performance of these three core digital technology building blocks has been improving at an exponential rate for many years.

POWER (PROCESSING SPEED & GRUNT):



> Using US figures (due to accessibility) the costs of computing power have decreased dramatically⁷:

- 2002–US\$40 per million transistors
- 2014–US\$0.05 per million transistors

For reference – a notebook with an Intel i7 processor has >1b transistors.

> Whilst concurrently the process size of the transistors has reduced:

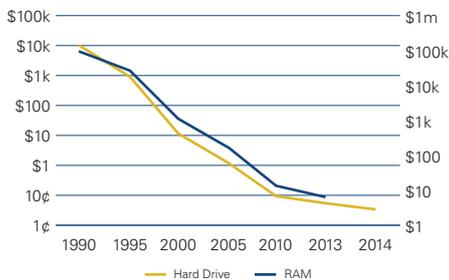
- 2002–180 nanometres (nm)
- 2014–14 nm

Nb. Re Process size – the smaller the size, the more transistors that can be embedded onto a chip and consequently the more computing volume available. But physics plays a role because using current knowledge/technologies, the miniaturisation process cannot go smaller than the size of an atom with a conductive gap between it and the next transistor.

This combination of reduction in size and cost, together with the uplift in computing power has amongst other things, driven

innovations in mobile computing and 'IoT' devices and been an enabler of the advancements occurring in cognitive computing and AI which we will cover later.

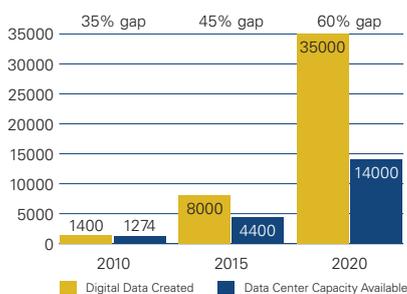
STORAGE:



- > Similar to POWER, the costs of hard drive data storage have dropped dramatically over the years⁸:
 - 2000 – US \$11.00 per gb
 - 2013 – US \$0.05 per gb
- > Similarly, the cost of RAM storage has dropped:
 - 2000 – US\$1,107 per gb
 - 2013 – US\$5.15 per gb

Such favourable economics have meant that: each new generation of computer, laptop or smartphone seems to have incorporated greater storage than its predecessor, at ever more favourable prices; and for the big-end-of-town, it is meant that it is commercially viable to store the zetabytes of data being generated in their enterprise or hosted data centres.

This idyllic situation is not perfect however because whilst there has been a steady rise in global storage capacity, the rate of growth is lower than the rate of growth in data being created. International Data Corporation (IDC) has estimated that⁹:



Data Source: IDC Digital Universe Study, 2011

- > from 2015 to 2020 the digital data being created will grow from 8 zetabytes (8 trillion gigabytes), to in excess of 44 zetabytes by 2020¹⁰; and concurrently
- > that the gap between data centre capacity and the amount of data being created – currently 45%, will grow to 60% by 2020.

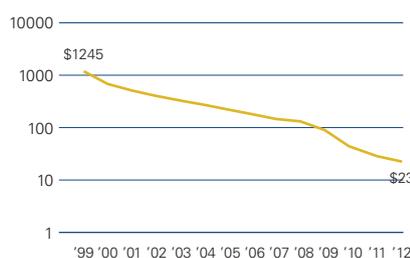
Whilst a large contributor to this has been replicated data (eg. movies, pictures, images, music, emails etc.) and transient data derived from movie, music and tv streaming etc. the laws of supply-demand must ultimately prevail and either storage costs will go up, data stored will go down (eg. through better filtering etc.) or new bulk storage alternatives will be developed (eg. holographic optical storage seems to have promise).

BANDWIDTH

The third of the pillars, bandwidth has similarly shown exponential cost-performance growth, as well as uplift in usage. From research conducted by Teleography, global bandwidth costs have – similar to the other 2 drivers – fallen from >\$1200 in 98/99 to <\$20 in 2013/14.

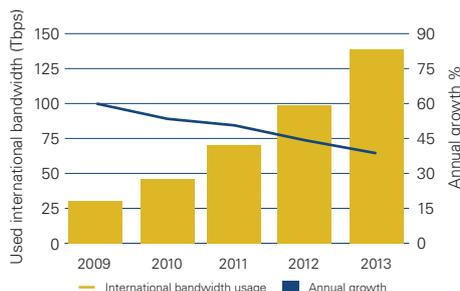
Concurrently (and naturally), bandwidth usage went the other way – rising in excess of 30% from 2009-2013.

Bandwidth cost performance 1999–2012
\$ per 1000 mbps



Data Source: Leading technology research vendor

International bandwidth use



The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.

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Easy to forget, broadband has only been with us in Australia since 2000 with speeds going from 256/64 kbit/s (download/upload) to our current peak speeds of >30mgbits/s (in some locations) and our average speed of 6/1 mgbits/s¹¹ (download/upload). It'll be good when average speed catches current peak! Like the supply-demand issues **Storage** is confronting, bandwidth has its challenges.

Simply put it is becoming so popular to upload and download data that a 'crunch' of sorts is a possibility.

By way of example – the rise of smartphone usage and IoT connections has placed pressure on wifi because wifi as a technology currently operates on a limited wave spectrum which is becoming very "crowded." Consequently a spectrum 'crunch' (ie. shortage) is being forecast which if it arises will result in performance impacts.

On the horizon are the short term fixes like: frequency sharing; better frequency management; and localised wifi receivership-cable re-routing (ie. that stadiums and similar do). Likely longer term fixes will come from opening up

other frequencies like mm-wave etc. Getting this sorted will be needed for the other exponential growth to be maintained. A chain is as strong as its weakest link.

FRONT 3 CONNECTIVITY/MOBILE

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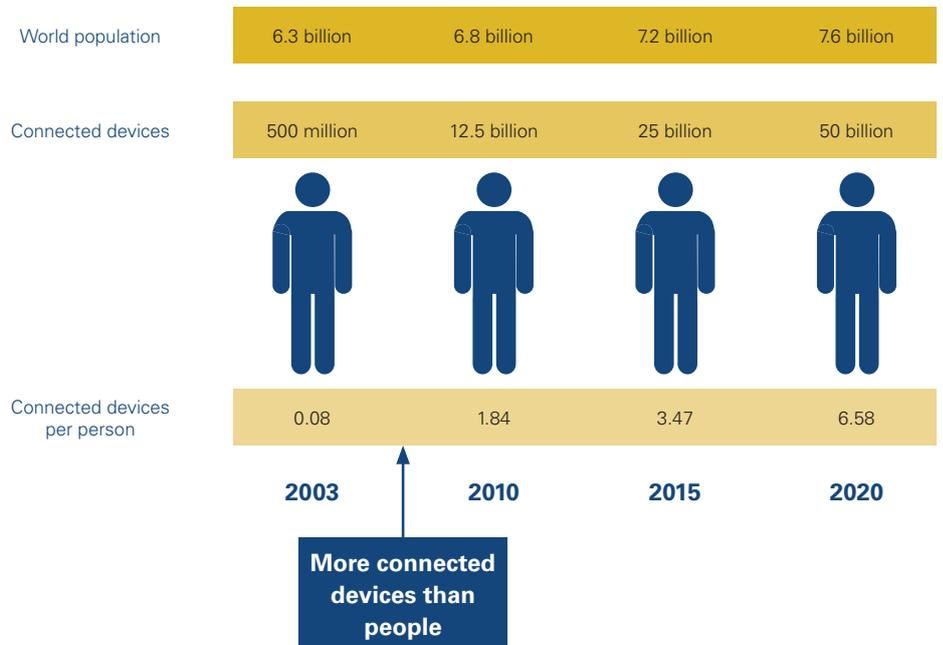
'Always on, always connected, always with me' has become the catchcry of not only the younger generations (Y & Z) but increasingly, most generations.

For many, connecting is the first thing done upon waking – 75% for 18-24yr olds; and 46% across all ages. In the 'all ages' category, 29% check SMS's first, 18% emails and 17% social media updates.

Over the course of the day, smartphones are checked – on average – twice every hour, every day. For 18-24 year olds, it is over 4 times per hour.

Always on, always connected!

CONNECTED POPULATION



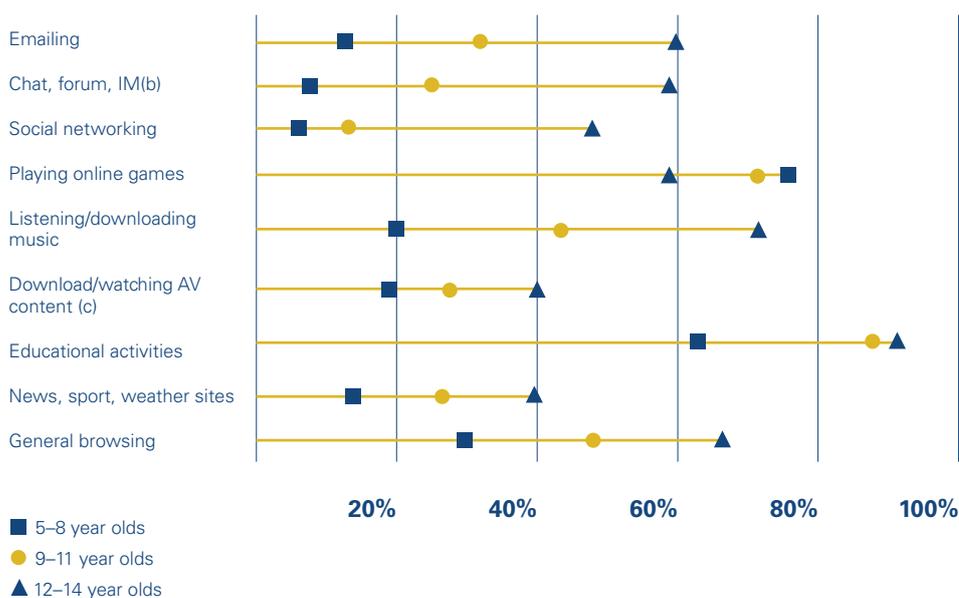
Data Source: Cisco and ISBG; As of 4/2011

Whilst connectivity has become ubiquitous for most of the world's population, the devices which connect to it have as well. Like the Swiss Army knife, these devices are dematerialising many other devices and businesses by converging the capabilities and services into the one device. This has resulted in increasing redundancy of these other devices (eg. ebooks, translators, calculators, compasses, gps's, torches etc.).

To illustrate how greatly technology (specifically connectivity) has permeated our lives consider –

In an ongoing study into how technology is changing childhood, AVG Research¹² has found that more 3-5 year olds can navigate a smartphone (47%), or play a basic online game (66%), than can tie their own shoes (14%), write their first and last names (38%) or know their home address (42%).

And whilst a little dated, the types of internet activities being done by children.¹³



It is also apparent, that at a usage level, as tech comfort develops, the number of 'digital omnivores' seems to grow (ie. those that are comfortable switching between laptop, smartphone, tablet etc). Consider that, 28% of Australians in 2013 owned at least 3 connected devices¹⁴ which is up from 10%, 2 years earlier. What's more these omnivores freely switch between devices and often use them concurrently with each other and other technology like TV. Some commentators have suggested this figure might be much higher if you also include connected gaming devices.

In addition to this 'visible' level of connectivity, are the less visible – in the form of machine2machine connectivity that many of our smart appliances incorporate (cars, fridges, stereos, lighting systems etc.).

Not aware of the world of 'IoT' then you need to be – if it can be measured, tracked, monitored and fine tuned, then it

will likely be incorporated and connected in coming months or years¹⁵. For a sense of scale, consider that Gartner believes that 26 billion units will be deployed & incorporated by 2020¹⁶. By way of a more micro example, the smartphones we currently use have 7 connected sensors, our last had 2. "(TH expletive deleted) – my car, I'm told, can also be monitored from it's supplier and even 'shut down' remotely – the next one I'm told will self park." Progress!

If you are not beginning to consider the implications, let us point out that Financial Services is an information-based business – IOT is all about information. Consequently IoT presents incredible opportunities to tailor products/services, provide special offers etc. and concurrently incredible competitive threats for those that don't. Some simple scenarios to demonstrate –

- > Health insurance providers could offer discounts to customers who agree



First we shape our tools,
then they shape us.

Marshall McLuhan

- to interlink wearable & implantable devices that are able to provide evidence of regular participation in fitness activities, healthy lifestyles (eg, insulin, calories, vitamin D) etc.
- > Home and contents insurers – could track in real time contents (theft), electrical systems & smoke detectors (shorting and fire) etc.
 - > Life insurers could offer premium discounts to those using wearables that monitor against restricted activities (speeding, excessive alcohol, dangerous sports) etc.
 - > Financial advisers (augmented with smart systems) could provide real time monitoring and feedback of budgeting, financial goal progress, portfolio investment performance etc. eg. akin to what personal trainers do for our fitness. Think your clients don't want to be that up-to-date, think again!

Away from envisaging, if you want to consider what is happening right now – please consider:

- > Apple's iBeacon signals a move into electronic payments and notifications using M2M technology: <https://www.youtube.com/watch?v=0dfY13xCR4I>
How could it be used in FS? Beacon enabled ATMs; interlinked Ewallet; Office/Branch CRM systems; Customer analytics; Personalised services/products...
- > Google Glass is being used as a testing device for how wearables may be used and incorporated into financial space eg. <http://www.americanbanker.com/video/google-glass-whats-in-it-for-bankers1060233-1.html> or <https://www.youtube.com/watch?v=qyIxsGdVbJE>
- > Personal Capital (PFM/Robo site) has commenced developing wearable 'apps' – <http://www.investmentnews.com/article/20140717/FREE/140719919/wearable-devices-edge-into-the-adviser-space>
- > Fiserv (Global FS Tech firm) is also working on developing FS applications for wearables – <https://www.youtube.com/watch?v=46DXU3xUW0Q>
- > Insurance applications might look like these-<https://www.youtube.com/watch?v=Y7bbHiZhuT0>

Note – since writing this, Google has shelved its current glass technology but others have taken up the baton. See Fidelity's use of Oculus Rift's technology <http://usa.news.net/article/2303202/financial-planning-gets-a-dose-of-virtual-reality>

FRONT 4 ARTIFICIAL INTELLIGENCE (AI)

"First we shape our tools, then they shape us." Marshall McLuhan

In 2014 the airwaves were abuzz with the news that a Russian chat bot named 'Eugene Goostman' had for the first time beaten the Turing Test ('beaten' may be controversial). The test which is a means of determining whether a machine is able to exhibit intelligent behaviour equivalent to, or indistinguishable from that of a human, is considered an important milestone because at such point a cross over would exist between that which could be done by machines versus humans.

Controversy aside, what is significant is that the point predicted by Turing is getting closer. Such are the inroads being made into the fields of cognitive computing and cognitive analytics that we are inching ever closer to the time when man and machine will be able to interact in real time, using natural language (ie. as distinct from code) and where machines will appear to think for themselves. Not so sure, let us give a couple of insights.

Traditional data analysis that financial services firms have relied upon to drive their marketing campaigns, their product designs, pricing policies etc has been highly programmatically based ie. 'man instructing machine as to what to compute, in what format and across what data set.' As data sets have evolved in terms of volume, variety, velocity, veracity etc. the effectiveness of such traditional approaches is being constrained by how quickly the 'human' side can act (eg. react in terms of inputs, rule refinement, analysis and interpretation etc.), together with how well the 'machine' side can handle contextual factors, lack of structure etc.

Cognitive analytics and computing allows such constraints to be overcome by enabling the machine to do more

of the tasks with less reliance on preconfigured rules and programs. Simplistically, cognitive analytics are the tools that provide the answers to our questions, whereas cognitive computing is what these tools leverage to arrive at these answers. Cognitive computing comprises three main areas – machine learning, natural language processing and infrastructural capabilities.

- > Machine learning is a type of AI that provides computers with the ability to learn – without being explicitly programmed, by teaching themselves to develop and change when exposed to new data.
- > NLP (natural language processing) is another type of AI that deals with analyzing, understanding and generating the languages that humans use naturally, in order for man and machine to interact in the chosen form -written or spoken, using natural human languages instead of computer languages. NLP can account for differences in colloquialisms, nuances and contextual differences (no short order when humans sometimes find such tasks challenging – think of an overseas call centre).
- > Infrastructure capabilities concern the processing power and storage needs that are required for cognitive computing. The creation of faster processing chips, together with developments in parallel processing, cloud storage and the like, have been important enablers.

No mention of AI could be made without referring to IBM's Watson because what Apple's 'Siri' did to further the area of voice activated search, Watson is doing for the wider area of AI. You will no doubt recall Watson's winning Jeopardy in 2011. For the uninitiated, in Jeopardy contestants are presented with answers (often heavily disguised using language trickery) and must identify the question. To win requires not only wide ranging factual recall but also language mastery and the ability to quickly process thoughts. Cognitive computing and analytics played a major role in delivering these 'skills.' See <https://www.youtube.com/watch?v=Puhs2LuO3Zc>

Since 2011, the team behind Watson have opened it up to commercial application

and after focusing initially on the medical space, have expanded into the financial space. One only needs to consider one of their stated goals to envisage what this could mean¹⁷:

"Watson is being designed as the ultimate financial services assistant, capable of performing deep content analysis and evidence-based reasoning to accelerate and improve decisions, reduce operational costs, and optimize outcomes.

In a bank, an advisor can use Watson to make better recommendations for financial products to customers based on comprehensive analysis of market conditions, the client's past decisions, recent life events, and available offerings."

Still not so sure, practical evidence of AI's future influence can be seen in:

- > The JV between IBM's Watson & DBS Bank, illustrates how banks are progressing in their incorporation of AI <https://www.youtube.com/watch?v=rxxNP0SZ6LU>
- > Google Brain clip gives a good demonstration of NLP in action and how it accounts for unclear 'human' inputs – <https://www.youtube.com/watch?v=RupYIW4EiM>
- > Fingenius is developing AI platforms that can be leveraged by FS firms. Here's an example of their 'concierge' AI being used by a Bank <http://vimeo.com/97339100>
- > In the area of investment selection and geopolitical scenario evaluation you need to see what the team at Kensho are developing: <http://www.finovate.com/europe14vid/kensho.html>
- > In the area of creating financial adviser support, the team at Yseop are building AI support tools for FS firms https://www.youtube.com/watch?v=RCyv_xlaahg
- > The Spanish Bank BBVA is working on its online virtual systems – <http://www.downvids.net/lola-future-bbva-on-line-virtual-banking-assistant-372079.html>

If you're wanting to expand the thinking one more notch, whilst we aren't covering virtual reality and augmented reality, it's highly likely that firms will seek to cash-in on the 'gamer' market (ie. who operate in virtual worlds) by creating avenues



You are what you share.

C.W. Leadbeater

for dealing with the firm through virtual branches, offices etc.

- > Fidelity is working on bringing virtual reality to investments: <http://www.nasdaq.com/video/financial-planning-gets-a-dose-of-virtual-reality-with-3-d-program-518524035>
- > For deeper insight try Phillip Rosedale (co-creator of 2nd Life) and a leading thinker/ practioner: <https://www.youtube.com/watch?v=vgu1UmdUDvY>
- > Epagogix Illustrates how AI is serving beyond quantitative areas by using algorithms to assess a film's likely box-office take based on plot, setting etc. www.epagogix.com

FRONT 5 SOCIAL MEDIA

"You are what you share." C.W. Leadbeater

Unless you've been on Mars, you will have observed, or been a contributor to the greatest sociological phenomenon in the history of humanity – the emergence, proliferation and take-up of social media (Facebook, Twitter, LinedIn etc.) and the volume of user-generated content and peer-to-peer interaction that it has produced. Online communities are rivalling many physical communities for the depth and scope of interactions between their members – albeit with differing levels of cohesiveness.

Social media comes in many forms:

- > Social network sites like – Facebook, LinkedIn and Google+;
- > Review & rating sites –Womo, TripAdvisor, Yelp, Google+Reviews;
- > Media sharing sites like Flickr, Youtube, Instagram and Slideshare;
- > Blogsites like Wordpress, Blogger and microblog sites like Twitter; and
- > Crowd contributed knowledge centres like Wikipedia, Linux (the software Android is based on), Ask and Quora.

From a financial services perspective there are several aspects to social media that firms need to be cognisant of:

The need to incorporate it into the communication & sevice mix due to -

- a) the astounding reach and influence it can have on client purchase decisions.

In a study by LinkedIn & Cogent Research¹⁸ it was identified that 96% of the online population use social media in one form or another. More importantly in a separate study by Cogent¹⁹ of 4000 US investors with > \$100k of investible funds, it was found that:

- > 70% of affluent US investors have made an investment decision based on information they have learned from social media;
- > 34% use social media specifically to help inform their personal finance and investment decisions; and
- > That 25% of High Net Worth individuals (>\$1m in investable assets), seek investment advice from social media.

b) Not only will investors look for advice through social media channels but the LinkedIn-Cogent study⁴ found a disconnect between investor's preparedness to engage through social media and what adviser's do. The survey identified that 87% of advised HNW investors are social media users and 69% are active on LinkedIn but of these, only 4% currently interact with their adviser on social media versus 52% who would value it. Alignment seems an imperative.

Firms need to also consider undertaking 'social listening' (ie. to social chatter on the various social networks). SL involves tapping into the 'voice' of the consumer whereby gaining an understanding of what they (and others) are saying about the firm, the issues and questions they are raising, who is being listened to (influence), who is vocal but not being listened to etc. SL allows the firm to react to and anticipate concerns and opportunities. Whilst not dissimilar to 'aural' listening except in form, it does differ in that it encompasses the multiplier effect (ie. many voices at once with greater reach):

- > Where a 'complainer' would once tell 8-10 others, social media has given them the leverage to tell hundreds/ thousands;
- > Where a disenchanted customer would simply leave a firm and tell no-one, now they might post 'why' to hundreds/ thousands of others; and

- > Where a firm is maligned and doesn't know it, the damage can be significant and costly to reverse (eg. Protest song against United Airlines breaking a guitar²⁰ which resulted in United Airlines getting >10m negative views).

In a similar vein, firms need to consider other 'data mining' initiatives like what level of influence they have and how it can be improved, who key external influencers might be that they could connect with etc.

Firms/sites that you should look at to understand such areas better, include:

- > Firms utilising social media listening for stock/market predictions: www.telligence.com²¹, www.dialogix.com.au, www.quantopia.com and www.dataminr.com.
- > Firms that are focusing on 'crowd' based solutions like 'peer-to-peer', 'collaboration' and funding include: collaborative investing – www.estimize.com, www.covestor.com; lending – www.societyone.com.au; and funding – www.crowdfundit.com.au, www.kickstarter.com.
- > Firms using big data to create personalisation in basic financial products include: www.simple.com, www.mint.com, www.moven.com.

Social media has also given rise to increasing customer collaboration. Firms that collaborate with customers and communities, are able to refine their product/service offer and raise the profile of their brand. Social forums can also be used to drive innovation by either being a sounding board or a an originator of ideas. Whilst 'big' business has jumped at this, we have not observed many smaller financial services players that have similarly sought to engage the "crowd."

- > NASA has struck up a relationship with the ideation platform Marblar to crowdsource product ideas from a number of its patents;
- > Fiat in 2009 created an ideation competition to crowdsource development of a new car – the Mio was the result; and even
- > The Irish Government used ideation to identify business opportunities that would lead to job creation by running an ideation competition.

At the very least, the crowd you should be engaging with for ideation, is your customer base. They will likely have ideas you haven't considered and importantly will have seen your service from the other side. Consider workshops, reward programs for ideas etc. or even social media based engagement which offers the potential to secure others inputs.

FRONT 6 GLOBALISATION

Globalisation is the shaper of societies, political agendas & commerce. Many factors influence it and many areas are influenced by it. Technology can be seen as one of the most potent enablers and drivers of globalisation, with the internet and mobilisation having possibly the most profound effect of any technologies that have preceded it (including the printing press, transport, radio/tv etc.).

From a financial services perspective, we need only look at the economic integration of countries and institutions that was made transparent through the GFC, when 2 US Hedge Fund manager's collapse had a contagion-like effect on the global banking system. The subsequent response by the global community, to introduce and enforce compulsory capital adequacy provisions on financial institutions (Basel III etc) is illustrative that governments and companies are working more closely than ever before.

This **thought starter** will not dwell on the effects of the GFC in detail because for many readers they will still be raw and readily evidenced in most portfolio performance histories that commenced prior to 2008.

Additionally, whilst a range of macro-level developments like Basel III should be on all of our radars, it is the micro level developments – indeed micro-micro developments that are intriguing to us at PHAROS. I say 'intriguing' because some of these developments have the potential to contribute to evolutionary change but some just may bring about (or at least contribute to) revolutionary change. Kind of like Lorenz's butterfly effect, wherein a proverbial butterfly flapping its wings in the Amazon, causes a hurricane in Texas. What are some of those capturing our attention you ask?

- > Offshoring or outsourcing of administrative functions. The big end of town has long availed of chasing profits by firstly centralising job functions to obtain scale economies, then outsourcing locally and then outsourcing to overseas centres to avail of lower comparative costs or enhanced skills base. One only has to look at the offshoring that is being done by large Financial Services players of their call centres, back office processing, accounts and more recently their data mining, to see that this is a trend that will continue until Australia's cost base equalises that of India, Vietnam or the Phillipines – which is not foreseeable.

We the smaller players can and should be learning from this. Sure, for nationalistic reasons its good to argue for maintaining jobs locally and to use the added justification that clients don't want us to ship any of their 'data' etc. overseas, or have any of their service being dealt with by 'foreigners' but such perspectives are rapidly eroding through the familiarisation and increasing satisfaction levels these very same clients are experiencing through other service interactions (eg. Telstra, the Banks, Insurers, Woolworths etc.). In addition technology safeguards are such that most reputable players constrict employees in what they can bring into their centres, take out of them, access etc. and importantly much of the data we handle is an amalgamation of other financial services firm's data which is likely being offshored.

What should you be considering?

- Meeting note transcriptions: can be done overseas for \$1 per page and are currently more accurate than the electronic options like Dragon Naturally Speak 13. Please don't let me hear that you don't transcribe and copy in clients to meeting notes.
- Data entry: overseas data entry can be undertaken for as little as \$10-12 per hour versus our rates of \$30+. If you do an inventory of how much basic data processing you are undertaking that is often being replicated across platforms, product providers etc, a financial case will likely be readily made.

- Paraplanning: 2 years ago we would have been staunchly advocating that overseas operators didn't have the skills and qualifications to do this function. In the past 6mths we have reviewed 2 providers who have CFP and PS146 level staff, have strong competency with XPlan and Coin. Costs range from \$15-25ph versus \$50+ph locally. Companies you could begin considering: *JC Consulting Asia*²², iPraxis ...
- SMSF admin. A number of the larger local providers already outsource to India and Vietnam. If your business has a large volume of new funds (hundreds+) especially with non-platform based assets, it might be worth following their lead. Companies you could begin considering: *Sundaram, TD Outsourcing*...
- As has been mentioned under a previous topic, functions like web design, logos, marketing capaigns, software design etc. can benefit from jumping on the globalisation conveyor because it opens up a world of competent and available resources – at highly competitive prices. We have used and see the benefits of joining the "crowd sourcing" trend and recognise that "crowd everything" deserves its own Paper, some sites worth considering include:
 - **Idea generation:** Ideastorm, innocentive, OpenIDEO, ideaconnection
 - **Code generation:** Topcoder, hackerrank.com, elancer; freelancer; getacoder; guru.com;
 - **Datascience analytics:** Kaggle for datasciences; Tongal for advertising; samasource.org (for microwork)
 - **Website/Logos etc.:** crowdSpring, DesignCrowd, 99Designs
 - **Product development:** Hyve, Quirky
 - **Labour:** oDesk; eLance;
- > Many global players continue to 'eye-off' our superannuation system and the wealth it is creating as an opportunity. Where once, such players may have

sought to get a local presence through large scale acquisition (eg. ING, AXA, Daichi, Aviva etc.), or expensive ground-up builds, access to our market may be more cost effectively attained via technology (platform, pfm engines and robo advice tools etc.), or via global brand leverage and new age marketing campaigns (social media based, viral marketing etc.). It's not too much of a stretch imagining:

- Google entering into the Financial Services space through Google Wallet, with products being repackaged from an existing bank/insurer etc, or brought in via free-trade access from OS. They certainly have the trust and connection with the Gen X's and Y'ers to leverage off. Such an entry would be even more appealing if they acquired/partnered and Australian'ised one of the better US 'Robo' or PFM engines (eg. Personal Capital) and if coupled where their AI developments would make them formidable. Imagine a Google combining with a Telstra, enabled by PC.
- US technology provider – Fiserv could easily leverage off their US based investment platforms (their systems underpin over 75% of US Managed Account provider's products); they have several different UMHA and Wrap-type platforms; they have account aggregation tools (Cash Edge and Alldata) that seem to have an advantage over Yodlee's recently Australian debuted, screen scraper based account aggregation system (not aware of Yodlee – you should check them out too); and their Advisor Vision financial planning tools appear more advanced than XPplan and Coin based on our superficial review. Were they to combine and Australian'ise their tools, they could certainly enter into the silicon-assisted DIY space and partner locally into the 'validator' and 'delegated' advicespace.

Fiserv is the closest we have come across to a firm that has the vision and building blocks to create a global multi currency, multi tax, entity agnostic, account aggregating, multi asset and debt platform that could underpin the provision of true wealth planning for the global citizen/investor.

THE POINT OF CONVERGENCE – THE 'PERFECT STORM'

Unlike your traditional notion of a 'perfect storm' wherein the elements collide on a coastal community or some such, this technological 'perfect storm' is set to unleash on traditional consumer behaviours, their decision making frameworks and in respect the financial services advice space – on what services people want, when they want them and at what price.

The internet is empowering everyone with a connection and a device. Where consumers have long been content to accept an adviser's acumen advantage and engender them a level of trust, the internet is eroding any informational asymmetries we may have held and concurrently increasing the transparency. This should be welcomed!

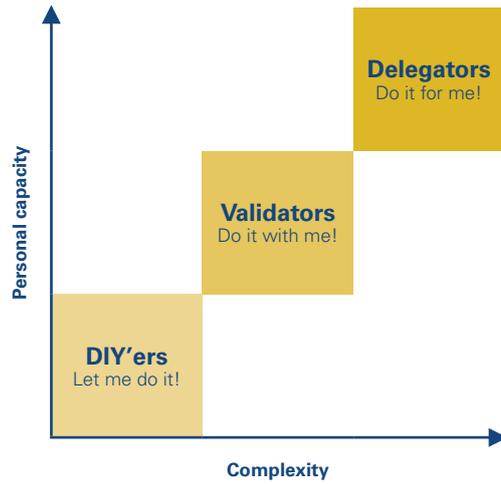
In this 'new age,' either before or after meeting with you, clients will likely have conducted gigabytes of researching, comparisons and checking on what they think they need/want, on whether any recommendations you have made sound right, on whether your firm is right for them and even whether your reputation is up to scratch.

Their reviews will have included your website (heaven forbid if it's not modern, user appealing etc); your internet profile; the forums you contribute to and the value your contributions are accorded; the blogs you write and the quality of the views you estoll; the experience level other users of your service give to you etc.

We hear you saying – "I'll check out cause I've a small digital footprint!" Think again. Maintaining a low profile will be akin to saying "you haven't caught on," or "you've nothing to add," or worse still "you've something to hide."

Like it or not, the digital revolution is changing consumer behaviour and how we react will determine how we prosper.

It may have been Cerulli that awakened us, or it might have been divine thought but just over a decade ago we formed a view that that investors would depart from the traditional complete delegation of their financial services needs and split into 3 camps:



- > **Delegators:** time poor, complex circumstances/needs, low levels of financial services acumen OR lack of time/inclination to increase knowledge & capabilities, suffer informational overload and want to avoid it.
- > **Validators:** interested in participating in, or doing part of the process but wanting reassurance that what they are doing is right for them. Wanting to learn.
- > **DIY'ers:** self confident and wanting to take control of their financial affairs. Willing to develop skills & knowledge.

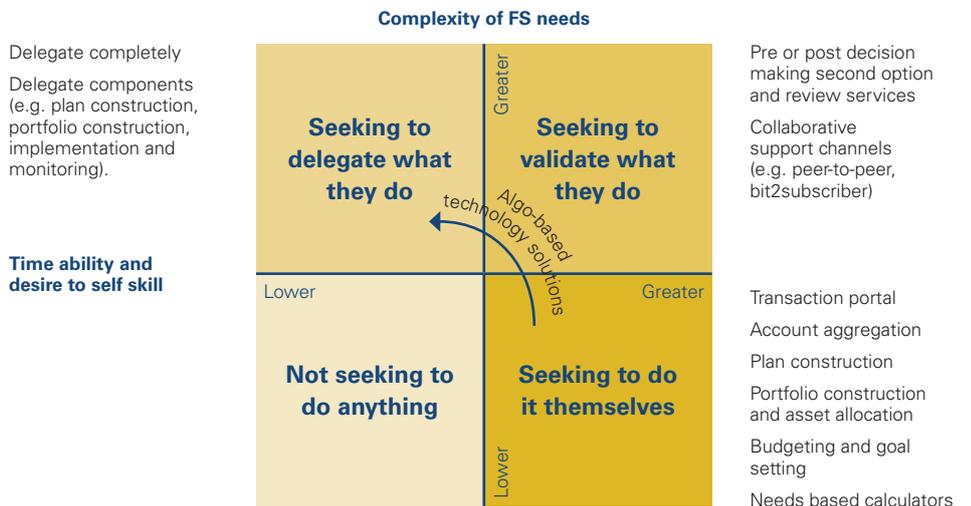
We still think this holds and is clearly evidenced by many of the published surveys which portray an increasing number of investors being categorised as 'self-directed.' Whilst your own quick search will reveal many such survey findings, a recently conducted survey by ASIC & Sweeney Research²³ that looked at 'financial attitudes and behaviour tracking' of Australians under the umbrella of 'financial literacy' found that investors

looking to purchase, obtain or make changes to financial products would in 30% of cases seek a professional planner's input, whereas 28% would rely on newspapers and 21% on family and friends.

Similarly, in the case of those running their own Self Managed Super Funds (whose average account size is several times larger than any other superfund category @ circa \$1m), Westpac in its **Self-Managed Super Behavioural Report**, cited that over 60% of Trustees report that they do not use a financial planner/adviser²⁴. Startlingly, 43% said they had never used one and 18% say they had in the past. However the worst finding of all to me was that 59% of the self-directed trustees surveyed, agreed with the statement that "I find it very hard to trust any financial professionals these days," compared with 32 per cent of respondents happy to take advice.

Now before you commit seppuku or worse still wish it of us, statistics can always be fashioned to support a thesis. All we ask of you at this point is to consider 'why there is a move from paid, delegated advice to self directed' and what role you can play to fit in with such a transition.

In making this point, we believe you should be considering your strategic planning against the following 2x2 schematic which revolves around two axis: 1) the relative complexity of the investor's financial service's needs; and 2) the time availability the investor has to look after their FS needs and their inclination to learn the necessary skills etc.



- > In the lower right quadrant, you have the 'DIY'ers.' Those with the confidence and control needs to undertake the planning, management & execution of their financial services themselves.

For these people, getting access to the tools and information they need is an attractor. To reach such a group, you could possibly consider offering them access to your tool boxes (eg. plan construction and management software, platform access, risk profiling tools etc.) and your knowledge base (eg. research reports, economic updates, product comparisons etc.). Currently DiY'ers are more than likely to be skewed towards the Gen Y and Xers but increasingly expect to see 'time-enabled' retirees join the move.

- > In the upper right quadrant you have the 'Validators.' They want to participate, they want to become skilled but they want someone to bounce their plans off, or review what they have done or are doing. Such a group will be weighing up the information they obtain from the 'net' and the 'crowd,' as well as whatever you provide. For this group, offering a specific 2nd Opinion-type service might be attractive. But other ways to connect with them and meet their needs include: participating in related chat forums; creating communities of interest via LinkedIn, Google communities etc.; and offering and promoting webinars.
- > The upper left quadrant is where our traditional 'Delegators' reside. Time poor, happy to outsource, this group will likely be combatting time constraints, complex circumstances etc. Getting them and keeping them will still necessitate personalisation and relationship management but increasingly it will also require conforming to how they want to be dealt with, what level of oversight/input they want and what 'components' they want to delegate. Boomers and Silent generations will make up a big section of this group and as such some behavioural changes will be less rapid than with say the DIY'ers & Validators.

This however is just the calm before the real storm that might potentially unfold, if all of these factors do

converge. As with all industries, financial services is about to be disrupted. At the heart of the FS disruption will likely be a range of software enabled services that are sometimes – albeit incorrectly in our minds – jumbled together as RoboAdvisers. We think a more suitable generic term might be 'automated, algorithm enabled FS services' which could be condensed into 'Algo-based' or somesuch.

Whilst our next **Thought Starter** will consider the topic more fully, we believe there are distinct sub classifications of these software enabled, technology solutions providers and in turn sub categories of sub categories:

- > **The Portfolio construction and management providers:** these firms utilise algorithms to determine optimum portfolios for investor's circumstances based on asset allocation, holdings and the like. In most instances, the algorithms incorporate auto-rebalancing, tax harvesting, fee minimisation and the like. Some factor in 'held away' assets (ie. assets held outside the service).

Within this category there are the providers to whom you 'delegate' your portfolio, others that provide guidance but no and/or limited execution and others that collate and offer 'crowd' views. Many of the first two groups of providers, use ETF's as the investment option and their algorithms are based on principles of modern portfolio theory and the like. The latter are also more likely to focus on direct equities.

These providers have typically focused on 3 entry points:

- Price: they are typically offering their service/product in the sub-50 basis point bracket;
- User appeal: slick user interfaces that are intuitively simple to navigate, coupled with smart aggregation – integration to make them user friendly; and
- Offer itself: they are being designed to appeal to investors who want to delegate, or get guidance on, running a part or all of their investment portfolio.

> **Personal Financial management**

providers: these firms focus on financial planning in one form or another eg. retirement planning, event or goal based planning, budgeting etc. They offer services akin to a typical planner but with lower customisation, less options (eg. range of investments), less soft-skills and usually without full consideration of other life matters.

Within the category, there are similarly differences, with some providers offering “in-house” portfolios (ie. akin to the those mentioned above), some augmenting their offer with carbon based support (ie. on-line adviser, on-line chat/help etc.), some offering the full gambit of planning versus others specialising in say budgeting & accounts etc.

These providers have typically focused on some key points of appeal:

- Access: they have determined there is a significant number of people that either – can’t access an adviser (price, location & time), don’t want to (trust, perceptions of conflict, personality), or can’t find one that will fit in with how they want to be dealt.
- Digital aware: there products/ services are typically constructed to have digital appeal and meet the needs of the tech savvy, interconnected consumer.
- Price: they are typically sub 100 basis points including online support.

Note: we have discounted a group of providers that might be called **Traditional advice providers with E-capabilities**. These firms have in the main supplemented their usual advice offer and processes with some form of E-enablement eg. skype meetings, WhatsApp chats, URL linked tasks (risk profiles, goals checkers etc.), account look-up etc.

As such, they are ‘wolves in sheep’s clothing.’ Whilst sharing some of the FS DNA of their ‘algo enabled’ cousins, many (not all) are simple next step digital offers. This said a journey starts with the first step.

As an appetiser into our next **Thought Starter** let us share with you a couple of the main players in this space and give a

brief insight into what they offer – in each instance we urge you to conduct your own reviews and stress this is a snapshot into a rapidly unfolding space:

Personal Capital: has developed an offer that combines pretty interesting technology (silicon) with carbon-based advisor support (ie. real people). The site uses an underlying and related company’s software – Myvest’s Strategic Portfolio Services – to aggregate platforms (eg. Wraps, UMAs, UMHAs, SMAs etc.); has incorporated Yodlee to sync data with financial institutions and aggregate it; and has built some terrific client friendly dashboards that allow them to get holistic wealth views or drill down to the stock level.

Many of the client interfacing tools are free but you are required to electronically link your various accounts to get any reporting options (good source of data from which to signal an adviser make contact). The firm also offers proprietary model portfolios which are accessible through the paid advice side. Speaking of the adviser side, the focus seems to be on delivering low cost models and consequently uses a combination of direct equities (ETF-like selection to give spread) and passive ETFs etc. The cost is 0.89% scaling down to 0.49% which gives both access to an Adviser, the models (with trading/holding costs absorbed) and the full reporting.

It does have weaknesses, amongst them – asset allocation is rigidly linked to their 5 types (not customisable); it doesn’t recognise all accounts and companies held; and the registration process requires the inputting of security logins to all those firms and accounts you want to be synced to.

Wealthfront: is a robo-type portfolio management system that uses MPT, together with the investment guidance of Burton Malkiel to construct ETF based portfolios for clients based on their risk profile. The service focuses heavily on: keeping portfolio costs down; utilising algorithmically controlled tax loss harvesting to maximise efficiencies; investing in growth stocks; and optimising the asset allocation to the various ETFs.

For investors seeking enhanced tax optimisation, Wealthfront has constructed 2 pseudo-ETFs of 500 and 1000 stocks which are continuously reviewed for harvesting opportunities at the individual stock level. Overall, fees are attractive with the 1st \$15k free and 0.25% above this. In addition there are the inbuilt ETF fees which seem to average 0.15%.

It has few-no portfolio customisation options for individual tweaking. Kind of like the traditional 'delegation' model but via silicon based algorithms. It only manages what it is given – ie. no recognition of outside assets, account aggregation etc. Advice is made available via a customer service team but is focused on issues associated with monies being invested.

Betterment: a robo-advice type portfolio management tool that is also MPT based but commences with a focus on an investor's goals, then risk profile etc. The site incorporates terrifically simple and appealing user interface. Progress against goals are tracked and where behind, users can get some simple silicon based advice on what can be done to get back on track. Goals can be attributed different risk profiles but progress can be amalgamated into the one 'dashboard.'

Investments are placed into portfolios of ETFs that are commensurate with an investor's risk profile. Tax loss harvesting can be selected and for portfolios over \$500k investors can get some customisation. The fees of the service are 0.35% scaling down to 0.15% in addition to the ETF fee being absorbed by the portfolio.

Suited to lower sophisticated investors with smaller account balances who are seeking to delegate the portfolio management and investment selection.

Quovo: is developing a software platform that both aggregates and normalises a client's assets including their 'held away' assets (ie. those you are not managing). This is important for any of you that have experienced problems in aligning reports from various sources on the same data (eg. platform reporting rarely seems to reconcile with planning software reporting – never I hear you say). In the

US, Quovo is able to aggregate data from over 18,000 financial institutions to provide detailed performance reports, asset allocation reviews, and even simulated market stress testing.

Motif: combines 'crowd think' with thematic based portfolio construction. Motif allows investors to construct their own themed portfolio of up to 30 stocks or ETFs (eg. oil, renewables, technology etc). For investors devoid of ideas or limited in knowledge, Motif offers 150 or so model portfolios. The cost \$9.95 per motif (yep – \$9.95 trading cost to buy 30 stocks that can be actively rebalanced, or have individual stock trading, both of which come with an additional cost of 9.95 and \$4.95 respectively). The 'crowd think' comes in the form of the site's incorporated chat rooms and wide social network.

The site itself has lots of investing filters to help screen stocks, incorporates simple sliders for weighting and rebalancing decisions etc. It's not in Australia yet but we believe they are looking to expand outside US.

Learnvest: commenced with basic online budgeting software (aimed at female market) and supplemented this with portfolio construction and asset allocation tools. The site combines really simple and attractive user interfaces, uses Yodlee to prepopulate users accounts (Nb. they can be populated manually). Program access costs are: \$30mth for the budgeting planner; \$50mth to access a 5 year goal based planning tool; and \$70mth to access the portfolio builder software. Personalised advice via an online planner can be accessed for a fee.

With this appreciation, let us take you back to our 2x2. You may have noted the arrow crossing three of the quadrants. We did this for a reason – 'silicon-based' solutions are going to become more and more prevalent in our space and importantly, more and more accepted. You can "bah-humbug" all you like, but if you really open your eyes, ears and minds to what is happening in other industries, it's not a leap of logic.

Keep two things in your mental framework: we're in the first half of the



If we each exchange a dollar, we will still only have a dollar.

If we each exchange an idea, we will both have two ideas.

Tony Hartley

chessboard; and customer behaviours are a changing....

Yes, how many times can a man turn his head

Pretending he just doesn't see?

The answer my friend is blowin' in the wind,

The answer is blowin' in the wind.

In closing this piece, let us acknowledge that many advisers will not be concerned with these developments due to their:

- > faith that their existing client base is locked into their customer value proposition;
- > being at the twilight of their careers and consequently less inclined to worry about gradual atrophy of client numbers, or lower meeting-conversion rates; or
- > their belief that "people buy from people" and consequently silicon will never be a rival.

Maybe they will be proven right – they have been over the last 3 decades we have been involved in this industry.

To the rest – especially those building a business for the future, we hope you will start your own enquiries and research. As with any such process, don't just read a report, engage a consultant, or watch a video clip – jump on a plane and arrange meetings with the people shaping the future. Warren Buffett said in his 2008 Berkshire Hathaway address "the most important investment you can make is in yourself."

If evolutionary change becomes revolutionary change, you want to be well prepared.

**Thanks for reading –
we would welcome your
views. Criticism is easy,
contributing is harder
but more rewarding...
We're always open to
a chat.**

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