

FINANCIAL ADVICE IN CANADA: A WAY FORWARD

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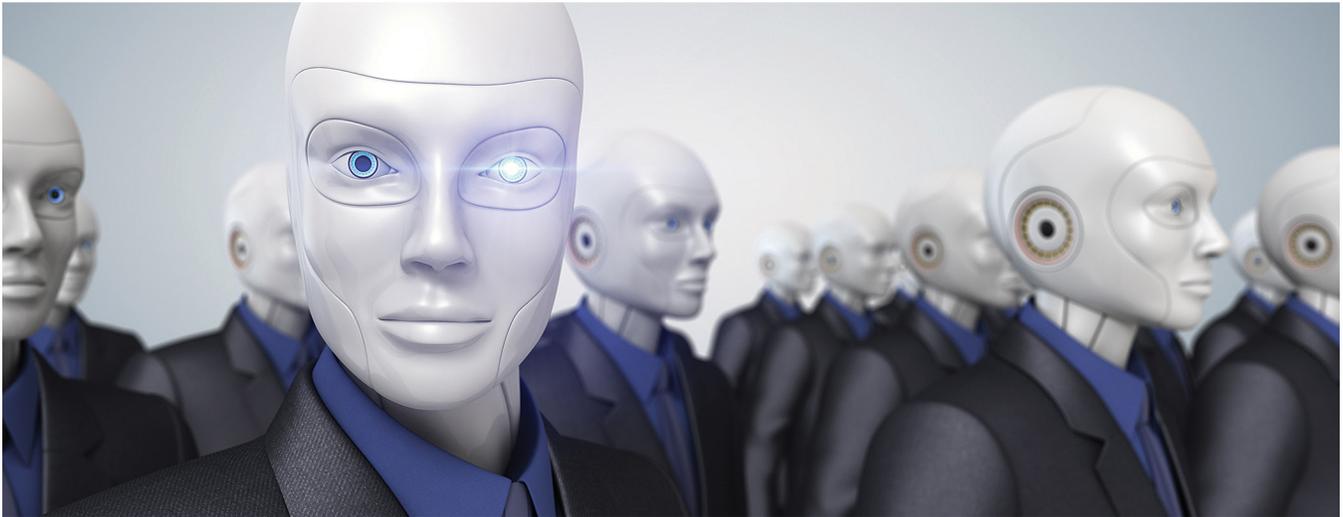
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INTRODUCTION

The very mention of robo-advisors seems to strike fear in the heart of the financial services industry, and comes with a popular narrative that suggests these are actual robots that not only look like humans, but are here for their jobs. There's also a sense that these "machines" require science-fiction grade technology, which will be impossible to regulate.

It's a schism that's purportedly pitted regulators against the start-ups developing these technologies, with industry caught somewhere in the middle and clients' needs lost along the way.

Yet while the prevailing narrative is compelling, our research has found it to be untrue.

In reality, all sides agree that digital technology creates an opportunity for better advice. The majority of the technology already exists, and would be able to augment the work of human advisors – not take it away. There are some tasks that are better performed by machines, while others only work in the hands of humans. If these are integrated into the financial services industry in the right way, the evidence suggests that they will lead to better outcomes for clients. And while regulators are often seen as a major roadblock to the implementation of new technology, much of what's needed to provide more digital services is already in place. What's missing is a framework and the motivation to make it happen.



OUR GOAL

The goal of this paper is to take stock of the current situation in Canada with regard to the digitization of advice and start to define a way forward. We sought to move away from the misleading descriptor “robo-advice,” and toward a new, more actionable model. It was our working assumption that there was room for all sides to come together as the financial advice field evolved, and to create a digital structure that would make use of the best both humans and machines had to offer. To further the discussion around digital advice and its role within the wealth management industry, we also felt it was important to begin to build a framework for its execution.

A “Turing Test” for Robo-Advisors?

Popularized by the term “robo-advice,” the application of digital technology to financial adviceⁱⁱ is poised to disrupt the profession and, by extension, clients, advisors, dealers, intermediaries, product providers and regulators.

Innovation and technology are not new to financial services or financial adviceⁱⁱⁱ. Given the complexity and the time-sensitive nature of most financial instruments, the industry has relied on technological innovation for growth and competitiveness for decades. What is new is the pace of innovation driven by the power and diversity of the new technologies. Today, the delivery of financial services isn’t just confronted with technological breakthroughs in Artificial Intelligence or Big Data; it is simultaneously confronted with breakthroughs in AI, Big Data, Social Media, Analytics, UX, Blockchain, Biometrics, the Internet-of-Things and more.

“We tend to overestimate the effect of a technology in the short run ...

To be clear, the purpose of this document is not to predict technological breakthroughs in the distant future. The current pace of change is so rapid that predictions beyond six months are probably a waste of time. Since 2014, the robo-advice industry has already been through a number of significant pivots^{iv}. Today’s innovators evaluate their impact in weeks and months; therefore, we will restrict our conversation to a five-year planning horizon. We believe it is almost impossible to imagine, with precision, where technology might take the industry beyond that time horizon. Keep in mind that for some traditional industry players, five years is a relatively short planning horizon but to the technologists, it can feel like forever.

... and underestimate the effect in the long run,” Roy Amara.

It is also important to note that this document aspires to define what the future for digital financial advice **should** be as opposed to defining what it might be. Technology is a tool – nothing more. It doesn't wake up in the morning hoping to disrupt. It facilitates innovation only when people – humans – use the tool to pursue their ambitions. One of the things that still differentiates us from machines is a conscious ability to thoughtfully and imaginatively choose those ambitions. We can either wait for the technological options to overwhelm us or we can seek to define, in advance, the best use of those tools.

With all of that in mind, we set out to define a five-year aspiration for the application of digital technology to prudent and valued financial advice. There are several myths we were able to dispel as a result of our research, which we hope will form the basis for a discussion about what's needed to facilitate a higher level of digital adoption. We've nicknamed it Next Gen Digital Advice.



OUR METHODOLOGY

When we say “we,” we are referring to a broad spectrum of thought leaders in the Canadian industry. Under the auspices of the Chatham House^v rules, we engaged bankers, dealers, start-up executives, vendors, consultants, regulators, academics, students and advisors in this discussion^{vi} over the summer and fall of 2017.

We invoked the Chatham House rules to ensure an open and honest dialogue without ambiguity. Given the range of participants (including some who are die hard competitors), we had expected, and encouraged, a diversity of conclusions. We were pleasantly surprised by how quickly the participants reached a consensus. The implications for specific competitors, product lines or market segments were different but many of the core principles turned out to be similar.

We also looked to parallels in other digitized industries^{vii} in an attempt to help imagine what “could be.”

Our Deliverables

1. **Tidal Forces** – we identified eight macro themes or “tidal forces” that we believe guide the development of digital advice in Canada in 2017 (see below).
2. **Next Gen Digital Advice Principles** – we drafted a straw man for the design principles that we believe should be respected in a Next Gen offering. A detailed description of the principles is in Appendix 2.
3. **Next Gen Digital Advice Processes** – we identified the key processes that must be addressed in a Next Gen offering. A detailed description of the processes is included in Appendix 3. We relied on academic and empirical research to identify the core outcomes that must be addressed in a Next Gen offering, if it is to deliver customer value and impact. We refer to these outcomes as High Impact Wealth Management and a description is included in Appendix 4.
4. **Next Gen Digital Advice Architecture** – we created a draft architecture for Next Gen Digital Advice as a tool for facilitation and discussion. A detailed description of the architecture is in Appendix 5.



THE “TIDAL FORCES” GUIDING NEXT GEN DIGITAL ADVICE IN CANADA

1. The future of financial advice is a human advisor complimented by digital collaboration.

There will always be room for human advisors in this equation, because there are certain things machines simply cannot do^{viii}. A digital platform will not be able to hold a client’s hand when the stock market drops by 20 per cent, for instance, or truly understand what someone is saying by reading between the lines. Those are things that would fall under what Daniel Kahneman^{ix} calls the human brain’s System 1. In his work, the Noble Prize winner explored the two modes of thinking most people deploy and described them as System 1 and System 2.

- “System 1” is the automatic, intuitive mind that lets us navigate the world easily and successfully. It moves quickly and effortlessly between thoughts, can be highly visual and is a great storyteller. It is also prone to bias, can sometimes make unwarranted leaps in logic and struggles with complex options.
- “System 2” is our controlled, deliberative, analytical mind. It works with data and logic to perform complicated actions. In some circumstances, System 2 is also used to manage System 1. The challenge with System 2 is that it requires sustained focus and effort – thereby limiting how often it can be used over the course of a day or week.

For financial advisors, System 1 allows them to interpret requests from clients, probe to ensure understanding and simplify complex topics. System 2 is what they use for the heavy lifting – activities such as analysis, due diligence, exceptions and complex calculations – all of which can be delegated to machines and automated (if they have the right data). Research is beginning to show that the combination of a human with a digital assist, is more effective than either one by itself^x. We might think of it as (system) 1 + (system) 2 = 4.

The ideal scenario appears to be one where human advisors use digital techniques to assist with the System 2 processes, which means that part of what we need to figure out is what exactly needs to be automated and what doesn’t. The goal in using the technology is to augment or “nudge”^{xi} what advisors can do in furtherance of stronger client outcomes.

It needs to be acknowledged that technology will eliminate the advisor from a growing number of routine tasks, like rebalancing a portfolio or determining an optimized asset mix^{xii}. But technology also means advisors will be able to manage more clients more effectively. For example, an existing dealer, who is still very early in the deployment of digital advice technology, has reduced the client onboarding process from 30 minutes to six – freeing up 80 per cent of the time previously dedicated to this task, in order to do something more useful, like finding new clients and helping current clients through crisis. A human will also have to look at algorithm-generated recommendations before anything goes to a client to ensure it's actually the best option. And as the role of the advisor changes, advisor licensing and training will also need to change^{xiii}.

2. Digital offers an opportunity for stronger client impact. Period.

The consensus among our workshop participants suggests they believe integrating digital technology into the world of wealth management will lead to a more wholesome outcome for clients. While some participants worry, in a practical sense, about what this evolution of their industry may mean, they agree in theory that there are simply some things machines can do better than people. The use of technology can lead to cheaper^{xiv}, more efficient outcomes for clients, who will also get the added benefit of ease of access. With digital solutions, clients can stay on top of their finances, remain on track and disciplined^{xv}. They can also get answers to their questions much faster than they would if they had to book an appointment with their advisor. The use of technology also provides an opportunity to incorporate a financial education component when the programs are designed, which would lead to more informed clients, able to make better decisions or ask more relevant questions.

In addition, the automation of the advice processes will lead to standardized, predictable recommendations – something the industry has struggled to achieve with human advisors^{xvi}. The question of the value of digital advice needs to be re-framed to ask what clients need, not how to digitize an advisor's brain.

3. The required technology is not disruptive – it is generally proven, likely economical and widely available.

The pace of innovation in the tech world is so fast that we can only reasonably look a few years out if we are trying to determine what technology is needed to make Next Gen Digital Advice possible. While new iterations of current technology will continue to evolve^{xvii}, the basic technology is already in place, and is often already being used to similar ends. For the purpose of our discussions, we looked at three categories of technology.

- “Plumbing,” which refers to technologies in place today, widely adopted by the industry and proven to be scalable.
- “Emerging,” which refers to technologies in place today but not widely adopted by the industry and not proven to be scalable.
- “Stealth,” which refers to technologies in place today in other industries but not widely adopted by the financial services industry.

Illustration 1: The Technology Landscape (2 yr. view)

(The technology required to implement Next Gen)

Next Gen Architecture	Plumbing Technologies	Emerging Technologies	Stealth Technologies
Client Request & Onboarding	<ul style="list-style-type: none"> • Cloud 	<ul style="list-style-type: none"> • Digital onboarding 	<ul style="list-style-type: none"> • Chatbots • Social media data aggregation
Algorithms & Processes	<ul style="list-style-type: none"> • Mainframes 	<ul style="list-style-type: none"> • GPUs • Psychographics 	<ul style="list-style-type: none"> • Account aggregation • Risk & scenario analytics
Inspiring Action	<ul style="list-style-type: none"> • Smartphones 	<ul style="list-style-type: none"> • Social media • SMS • Web chat 	<ul style="list-style-type: none"> • Personal Dashboards • Always there (24/7, anywhere, anytime)
Ongoing Engagement, Life's Changes	<ul style="list-style-type: none"> • SQL 	<ul style="list-style-type: none"> • AI/Machine learning 	<ul style="list-style-type: none"> • "Emotion" predictors • Goal based reinforcement
Data Driven Requests	<ul style="list-style-type: none"> • Local servers 	<ul style="list-style-type: none"> • Cloud storage • IoT devices • Crowd sourced data 	
Supply Chain	<ul style="list-style-type: none"> • "Lean" manufacturing platforms 	<ul style="list-style-type: none"> • APIs • AI 	<ul style="list-style-type: none"> • Account aggregation
Transaction	<ul style="list-style-type: none"> • Trade execution 	<ul style="list-style-type: none"> • Personal Dashboards • Client portal 	<ul style="list-style-type: none"> • MY device (Always there and always in my pocket)

The participants in our workshops noted that across the matrix of technologies and Next Gen architecture, none of the required technologies would be considered leading edge by today's standards^{xviii}. They identified the key technologies, in terms of enhanced client outcomes, as the Cloud, digital onboarding, psychographic profiling tools, the ability to interact through social media, AI, online portals, account aggregation and lean digital manufacturing.

They also noted, however, that at this point most of these technologies are applied in isolation and their power will really only be recognized when they are integrated into a comprehensive platform^{xix}.

The main concerns at this stage appear to be around data security and privacy, which cut to the root of trust. The lack of proper infrastructure to be able to share information between players and current regulatory silos also poses a data aggregation challenge, given the time and cost it would require.

4. Our current regulations are not a barrier – with a few exceptions, firms are free to use the current technologies to deliver enhanced advice.

The assumption has long been that regulators were an obstacle for digital progress and needed to “get out of the way.” But our research found that many of the processes companies are looking to automate are already happening. Firms can currently, for instance, use technology to onboard clients. There are no regulatory impediments to that work, and the rules remain clear: If the advice generated by an algorithm is wrong, the firm using it is liable, just as it would be when a human advisor makes a mistake.

As a result of that liability tract, there isn't much regulatory concern over the perceived lack of audit trail with digital advice. Regulators wouldn't approve the algorithms, just like they don't currently regulate the position of “financial advisor”^{xx}. In fact, Next Gen may actually be a better option, because it can provide a digital recording of what was presented to the client and why, instead of the “he said/she said” situation you'd get with a human advisor.

Regulators we spoke with generally felt this was more of a business issue than a regulatory one, since it should be up to individual firms to figure out the regulations that govern their business models – just as they do today with other human-centric issues.

There were three exceptions, or questions, regulators felt needed to be considered for Next Gen Digital Advice to move forward:

- **Exception #1: Open Data^{xxi}.** Digital pivots on data and the fences built around “proprietary” data will limit the effectiveness of the algorithms – there is much that can't be done today because tech firms can't access the data they need to create the right solutions. Open shelf data is also needed to make sure the algorithms are legitimate and verifiable. This poses a challenge, but also an opportunity for regulators to encourage innovation.
- **Exception #2: Advice is not regulated but placing the trade is.** As it currently stands, the term “financial advisor” is not a regulated or uniform designation outside of Quebec. Anyone can call himself or herself an advisor – whether they are working with digital technology or not. However, to work, digital needs an electronic hand off between regulatory regimes for the trade engines to remain compliant (and cost effective).
- **Exception #3: While our regulations per se aren't an overwhelming issue, our current regulatory silos are complex, slow and expensive for start-ups to navigate.** The fragmentation of various functions between and across different regulatory platforms makes creating innovative solutions that are broad enough in scope to be multifunctional and take into account the entirety of a person's financial circumstances and needs very difficult.

5. Just how much the industry will be disrupted, and by whom, matters.

It's important to note that while we see technology disrupting the financial services field and creating the hybrid model described above, not all disruption is created equal. While "disruption" has become a popular term widely touted as a prerequisite strategy in the digital space, our observation is that the Canadian robo-advice field displays the attributes of "architectural innovation," a term attributed to Professors Rebecca Henderson and Kim Clark^{xxii} - which may offer insights into the popularized "disruptive innovation" coined by Professor Clayton Christensen.

The fundamental components of financial advice have not changed in 50 years and the new technologies aren't leading to a fundamentally new product or innovation. However, they do offer an opportunity to realize dramatic efficiencies and heightened performance.

Professors Henderson and Clark note that architectural innovation occurs when the ways in which components of a system are integrated change without a fundamental change in the components themselves. Incumbent firms often struggle with architectural innovation due to embedded processes that have led to success. These process changes may be subtle, but have significant competitive implications.

For Next Gen, the incumbents have to figure out how digital advice can benefit their business model and provide the services their clients need – and they have to do it quickly. They currently have an opportunity to shape how digital will be integrated into both their own individual businesses and the industry as a whole, if they choose to take control of the narrative now. Incumbents that do control the narrative and engage in architectural innovation may be able to avoid the disruption that Professor Christensen describes, in which a new trajectory of customers supplants the previously desired group of customers, ultimately leading to the failure of incumbent firms.

Things move quickly in the digital field, and if the incumbent firms don't act, someone else will^{xxiii}. Desperation can drive innovation and the start-ups can't afford to coast. By embracing the new technologies, today's start-ups can disrupt simply by moving much, much faster than their larger competitors.

6. The current inertia, amongst all the stakeholders, is difficult to explain.

Given that many of the perceived barriers to Next Gen Digital Advice are not really barriers at all, and considering the speed of innovation on the tech side, it becomes difficult to explain why there is such inertia around moving digital advice forward. In 2016, the robo-advice industry in Canada had a market share of approximately 0.02%^{xxiv}. The players needed to bring Next Gen Digital Advice to the next level don't appear to be very far apart, so we must look at what's holding them back and what it will take to encourage them to issue the call to action. That could mean having big banks integrate digital infrastructures into every aspect of their operations, or regulators taking the opportunity to lead some of the change (open data, for example). Start-ups, for their part, need to focus on the business side of their firms as well as the technology, and understand what's needed from a regulatory and business model perspective to make this work. Why these stakeholders remain sluggish is something that needs to be studied further^{xxv}.

Part of the inertia seems to stem from the fact that while the players have more in common than not, they don't necessarily trust each other. Much of the fear and distrust of the technology, it appeared, came from a lack of understanding and communication about what the technology offered and how it could be deployed – although it was also clear that, if implemented, it would change some of the advisors' current roles and lead to job

losses. And while most industry and technology participants identified the regulators as a barrier, the regulators themselves were mystified by that perception. The perceptions held on both sides with respect to Next Gen Digital Advice appear to be focused on the short-term challenges of implementing new technology versus the long-term implications of a viable technological solution. Such short-term biases may be reinforcing the tension across industry players and preventing the clients from benefitting from a superior offering.

If the sides don't find a way to work together, digital advice won't reach its full potential and it will be the clients who will lose.

7. The economic incentives need more research.

The industry is unlikely to adopt and champion Next Gen Digital Advice unless it makes business sense.

As it stands, it's lucrative for incumbents to manufacture and sell products under the current model. Clear numbers are needed to show the relationship between the cost of implementation and the impact on the business models, as well as clients' best interest versus the industry's best interest.

In addition, further research could prove invaluable as firms deal with a looming perfect storm – fee compression, shifting demographics, unrelenting regulatory changes and an erosion in the number of human advisors as the baby boom advisors look to their own retirement. In this context, technology could be viewed as a savior, rather than a threat.

8. Barriers to digital adoption by clients need to be addressed.

In retrospect, one area not explored in sufficient detail during this process was the issue of digital adoption by the end users – the clients. In their 2016 paper entitled “Fintech Disruption”^{xxvi}, consultants CGI suggested that the biggest obstacles to the adoption of fintech solutions by clients were a lack of trust, perceived complexity and risk aversion. They noted that incumbents were in the best position to overcome these obstacles and that the fintechs needed to seek out partnerships to do the same.

We would suggest that none of these obstacles are insurmountable and that, over time, technology has proven to be an effective tool at bridging trust, complexity and risk.

We believe further research in this area may allow the industry to “skate to where the puck is going to be, not where it is.”



OUR CALL TO ACTION

If the financial services industry is ripe for disruption, and if, as we have found, the sides are as close together as they appear, the adoption of digital advice should happen more swiftly than it is.

But while we are theoretically close to a system where advisors combine their abilities with advanced digital tools to provide the best and most cost-efficient advice to their clients, questions remain.

As discussed, inertia remains a key problem. The stakeholders must come together to truly integrate digital advice into the industry, and they are not communicating effectively at this point. Conversations need to be had by everyone impacted by these changes: industry, technology start-ups, regulators and also clients.

A framework needs to be developed for the rollout, implementation and management of these solutions, so that all players can move past the inertia that's resulted from a lack of leadership in this overall space.

There also needs to be more research into possible incentives – economic or otherwise – to make the adoption of this new system both feasible and worthwhile for the start-ups, regulators, and perhaps most importantly, the incumbents who may, at this junction, feel they have little to gain from helping to disrupt the industry.

It's also worthwhile to get consumers and advisors involved in the discussion, and look at areas where Next Gen can be a win/win for both clients and the industry, such as technology that pushes relevant financial insights to consumers and nudges them to save.

OUR SPECIFIC RECOMMENDATIONS

For Industry: Do whatever it takes to create a sense of urgency. Move this topic to the top of your planning agenda. Ask yourself: “What will it take to create an extraordinary customer experience?” - and be prepared to ask that question of one of the start-ups. Talk to the vendors providing your technology and make them a part of the discussion. Speak with your clients as well, to find out what would make their experience better. Start training your advisors for a “hybrid” world. Double-check that your current inertia isn't borne of a sunk-cost bias or the assumption that the status quo will continue on the same, inevitable trajectory.

For Regulators and Policy Makers: Continue with the sandboxes and the outreach programs. Pursue “open data” with a sense of urgency. Continue to hold industry accountable for strong client impact. Double-check that your current assumptions aren't borne of a sunk-cost bias or the assumption that the status quo will continue on some inevitable trajectory. Signal that you're open to a discussion around integrating digital technology into advisor services and the customer experience.

For Technologists and Vendors: Move out of your silos and look at what it will take to move to a platform solution.

For Start-ups: Keep pushing your agenda forward. Expand your services and processes along an exponential path. Don't allow the incumbents to coast - but don't assume they are the competition either. They may be your future partner. Speak with those incumbents about what they need, and make sure you're developing tools they actually require.

For Academics: Research, research, research - specifically in the areas of behaviour, adaptation, resilience, algorithm integrity and the economics of Next Gen Digital Advice. Help the players be mindful of the risks of failing to act, and take advantage of your status as an objective third party to help build the framework that can move this evolution forward.

For the Scotia Digital Banking Lab: Continue with our mandate to conduct both academic and practitioner-oriented research on Fintech, foster student engagement at Western University and beyond, develop cutting-edge educational material, and engage with established players in the field, start-ups and with regulators.

A key component of our mandate at the Scotiabank Digital Banking Lab is to engage thought leaders in a dialogue on the various FinTech disciplines. To that end, we welcome hearing your views on this topic.

Please forward your feedback to digitalbankinglab@ivey.ca.

OUR TEAM

Chuck Grace is a 35-year veteran of the Canadian financial services industry. As a member of the finance faculty at Western University's Richard Ivey School of Business, he teaches courses on both institutional and personal investing. He also serves as an Associate Director with the Scotiabank Digital Banking Lab, as a Faculty Director for the Ivey Field Project and chaired Ivey's advisory council for Household Finance research. When not teaching, Chuck stays grounded in the realities of Canada's wealth management industry as Managing Partner and President of Bigger Picture Solutions Inc., where he provides strategic consulting to firms attempting to thrive in this highly competitive arena. Prior to pursuing his passions for teaching and consulting, Chuck held a progression of senior management positions with one of Canada's largest insurance and wealth management companies. He has a BA from Western University and the CMA, CPA and CMC designations. Chuck can be reached at cgrace@ivey.ca or 519-661-2111.

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ABOUT THE SCOTIA DIGITAL BANKING LAB

The **Scotiabank Digital Banking Lab** at Ivey Business School was set up in April 2016 based on a \$3-million pledge over 10 years by Scotiabank. The Lab's purpose is to engage with the digital transformation that affects the financial sector, and become a leading voice in the fintech space. The lab conducts both academic and practitioner-oriented research on fintech, fosters student engagement at Western University and beyond, develops cutting-edge educational material, and engages with established players in the field, with startups, and with regulators.

APPENDIX 1: WORKSHOP HIGHLIGHTS

Scoping Workshop (June 2017): Highlights

In June 2017, a group of industry thought leaders was invited to participate in a workshop for the purpose of defining the scope for Next Gen Digital Advice. The participants concluded that, when defining a digital advice platform that will meet the definition for Next Gen, we should include:

- Onboarding
 - Goals
 - Needs Analysis
 - Risk Profiling
 - Cash Flows and Savings Discipline
 - Account Aggregation
- Recommendations
 - Asset Mix
 - Rebalancing
 - Portfolio selection
 - Product selection
 - Trade Fulfillment
- Performance and reporting
- Tax Loss Harvesting
- Insurance and catastrophic loss
- Debt Management
- Client Communication (including seamless access to humans and other professionals as required or requested)
- Integrated Compliance

Business planning, business finance, charitable giving and high net worth estate planning need more discussion and were therefore not included in the present scope.

A more detailed explanation for each area is included in Appendix 2.

The participants also drafted a list of Next Gen Guiding Principles in Appendix 3.

Technology Workshop (September 2017): Highlights

Participants in the technology workshop represented a spectrum of technologists currently providing technology services to incumbents and emerging players – within the Canadian financial services industry and elsewhere. The participants concluded:

- The technology needed to achieve Next Gen Digital Advice is already here; it's just not applied.
- Adoption appears to be an issue of willingness rather than technical challenges – creating infrastructure to share/aggregate data is expensive, with little upside for those who currently hold the data, and little market demand.
- Security and data integrity is key. The lack of proper infrastructure (to be able to share information between players) is also a problem.
- Regulatory silos pose a data aggregation challenge.
- The technology can augment what advisors (or other experts, like doctors) do, not replace them. Humans will always have a place.
- Part of the issue is identifying what needs to be automated and what doesn't. Are we disrupting or automating? At this point, it appears to be automating.
- Blockchain and biometrics don't appear to be part of the discussion at this time (within the two-year horizon).
- Data security is too big an issue to fall under compliance – it needs its own category. No one will engage with these platforms unless they feel safe. Data integrity is key to make these solutions work and for people to be comfortable enough to use them.
- Regulation is a key issue from a data perspective – a lot of these solutions can't happen while the incumbents control the data and refuse to share (or are unable to compile it because the cost would be so huge).
- Infrastructure is an issue as well. Should a consumer not be able to use a password to access all my banking and investment information in one place?
- Financial education needs to be addressed. People need to understand what they are using/what choices they are making. Can a financial education component be built into the technology? Is it necessary? How much does the customer really need to know? Will clients just trust the algorithm if it doesn't explain its process?
- Delivery should be looked at more carefully and requires a human touch as much as onboarding does.

Regulatory Workshop (September 2017): Highlights

Participants in the regulatory workshop represented a spectrum of federal and provincial regulators, SROs and dealer/advisor advocacy groups. The participants concluded:

- The current regulations are not a big barrier to the adoption of Next Gen Digital Advice.
- It's up to businesses in all industries to figure out the regulations that govern their business models – that's a business issue, not a regulation issue. Some "robos" are focusing on the technology to the exclusion of the regulatory aspects but they have a responsibility to do both.
- The regulators acknowledge the fragmented structure of the regulatory system in Canada can be a challenge. But they also feel it's up to the businesses to figure it out. It may be time-consuming and challenging for start-ups – but it's the same playing field that non-digital advisors navigate.
- Many of the barriers are a result of company policy and inertia, not regulation. They have more to do with competitive choices companies make, or things they don't want to spend money on to automate (like a signature).
- Consumer behaviour could be a barrier – i.e. the adoption of digital advice.
- It's important to verify the validity of the data the algorithm is based on but that shouldn't necessarily be an impediment. Today, the liability for the data rests with whoever provides it. That won't change with Next Gen.
- Open access to data is key.
- Next Gen algorithms need to be sophisticated enough to operate with data that isn't necessarily wholesome and still be able to work - just like human advisors do today.
- The participants asked, "What's holding Next Gen back?" Possibly inertia, mostly likely lack of economic incentive to get incumbents moving?
- Part of the problem seems to also be that none of these groups are talking to each other and no one is in charge – a lot of what the technologists want to do and what the regulators can do isn't that far apart.

APPENDIX 2: NEXT GEN DIGITAL ADVICE GUIDING PRINCIPLES

To Meet the Definition of Next Gen Digital Advice, participants concluded that a digital/hybrid offering must, at a minimum, respect the following principles:

1. All processes will be sufficiently easy and intuitive that interaction with an advisor or service representative is not required, unless requested. Recommendations are presented in a transparent and easy to understand format.
2. Client communication will be personalized and provide seamless access to advisors and other professionals as required or requested. Communication will be, at a minimum, two-way, and include an option for advisors or service representatives to proactively anticipate communication requirements before the client initiates them. Clients can initiate access to an advisor or service representative in a manner and time that is convenient for them. All communication with the client is in plain language and jargon-free. Access to market intelligence and financial literacy resources is quick and simple.
3. Recommendations and actions will conform to all regulatory requirements. Processes will include real time escalation of compliance infractions before or as they are transacted. All client data and recommendations will meet the industries best practice thresholds for privacy and security.
4. Algorithms used to generate recommendations will be open to the appropriate professional bodies for review and approval. In addition to numerical integrity, the review will include independent verification that the algorithms and recommendations are free of bias.
5. Portfolio and product recommendations will be “open shelf,” support “client's best interest” and meet the regulatory requirements for “suitability.”
6. Clients will retain explicit ownership of their data while firms retain responsibility for ensuring the integrity and accuracy of all data used to derive platform-generated recommendations.
7. Access will be device and media agnostic and ensure the broadest accessibility available.
8. Recommendations will be data-driven, but material recommendations will be subject to a human override before a recommendation is shared with a client or a transaction is processed. When the platform generates a recommendation, prudent steps will be taken to ensure the client understands the options and the implications of their decisions.

APPENDIX 3: NEXT GEN DIGITAL ADVICE PROCESSES

High Impact Wealth Management (The client view perspective)

In defining the processes to be addressed by Next Gen Digital Advice, the workshop participants began with the client's perspective – and specifically with empirical research that identified practices or processes that generate a tangible impact on client outcomes. We describe “the list” as high-impact wealth management, and we define it as an inventory of activities or habits that have been empirically^{xxvii} proven to generate wealth in the “real world.”

When you look at wealth management objectively, the vast majority of investors who have traditional needs (i.e., a house, kids, vacations, retirement) are well served by a fairly simple list of habits that are based on common sense. Some investors who have unique needs will encounter complicated issues, but for the vast majority of investors, it does not need to be that way.

The list is not sexy. It does not encompass a covert secret, jealously guarded by the affluent or by a cabal of financiers with inside knowledge. The list probably will not sell a lot of newspapers or generate an unusual return on investment for asset managers. For most real people, the list will look surprisingly like “common cents.”

High-Impact Wealth Management^{xxviii}

“Common Cents” Strategies

1. **Start with the end in mind.** Most people save to finance a need, want, or dream. They measure success by their progress toward, or achievement of, their goals; it is therefore critical to have clarity around these goals, which create the context for everything that follows. The financial services industry sometimes refers to this approach as goals-based investing.
2. People who **save** are wealthier than people who do not save. More specifically, a savings **discipline** has been proven empirically to be the cornerstone for wealth accumulation, especially in the low-yield, volatile markets since 2008. Nothing that follows will add value unless you have savings.
3. Returns are generated by the investment portfolio's **asset mix**. At its simplest, this mix represents the choice between equity investments and fixed-income investments. For real people, it does not need to be more complicated when viewed in the context of specific goals (see above). Large, sophisticated institutions can find it advantageous to pursue specific investment styles, product structures, superstar managers, market timing, or currency overlays; however, these items have minimal, if any, impact for retail investors.
4. **Risk**, for real people, is about behaviour. Volatility, standard deviation, value of risk, betas, and black swans all work well in academic literature, but retail investors simply want to know one thing: “Will I be okay?” How investors define “okay” and the actions they take to achieve a position they are comfortable with are prone to behavioural bias, which can lead to poor investing decisions.
5. Minimize **fees and taxes** because, as a result of compound interest, every dollar paid to either your asset manager or the government is \$7 less for your retirement. The math is not complicated, nor should it be controversial.

6. Avoid **catastrophic risk** – that is, risk that could impede your wealth – by acquiring insurance for unforeseeable events that cannot be self-insured and could decimate your wealth. Included in this category is documentation such as marital contracts, wills, and powers of attorney that can help preserve wealth in a worst-case scenario.
7. **Seek good advice.** People who use advisors are two to three times wealthier in the long run. Good advisors help define goals, encourage saving, mitigate behavioural risk, and recommend how to reduce fees and taxes. Good advisors also help steer clients through the administrative complexities of our financial services industry. The key is defining, and then finding, a good advisor.

Next Gen Digital Advice Processes

To Meet the Definition of Next Gen Digital Advice^{xxix}, participants concluded that a digital/hybrid offering must deliver, at a minimum:

1. Electronic Onboarding and Trade Fulfillment:

The onboarding, or life cycle-triggered processes, will facilitate data capture, signatures, approvals, compliance requirements and cash handling electronically. All required disclosures and confirmations will be facilitated electronically. Processes will facilitate trade fulfillment consistent with professionally defined, best execution practices.

2. Goals Based:

Processes will include a specific determination, confirmation and approval of the client's goals. All recommendations will conform to the client's goals and will allow for client customization (Socially Responsible Investments, for example).

3. Full Financial Needs:

The platform will generate a financial needs analysis of the client's current and projected situation, in the context of the confirmed goals. It will allow the client to explore, either by themselves or with trusted advisors, a variety of options and the implications of each option. Household debt will be included in the needs analysis process with recommended repayment plans based on both objective and behavioural components. Recommended repayment plans will align with client's goals and objectives.

4. Risk Profiles:

The platform will generate risk profiles that objectively balance tolerance, capacity and required risk characteristics that include both objective as well as psychological points of reference.

5. Holistic View:

The platform will aggregate, and then integrate cash flows, historic and projected, into the needs analysis. The facilitation of savings discipline will be intrinsic to all recommendations. Processes will include the ability to aggregate and maintain third party information for the purpose of facilitating holistic, client centric decisions.

6. Asset Mix:

The platform will generate asset mix recommendations that are customized to each client, plan and account, in alignment with the client's objectives and risk profile. It will include the ability to digitally rebalance portfolios at the client, plan and account levels, in an economic and timely fashion. Rebalancing will be based on the client's desired thresholds and frequency but will at a minimum include annual rebalancing.

7. Client reporting:

The platform will provide a holistic client view (Dashboard) that is customizable. Performance reporting will incorporate transparent, auditable data points and will include a line-of-site analysis relative to the client's goals. Proactive alerts will be triggered when results drift offside from goals. Reporting and data points will be available to all stakeholders including clients, advisors and other professionals, simultaneously.

8. Fees and Taxes:

Recommendations will optimize for cost efficiency with respect to all fees incurred by the client. Recommendations will optimize for tax efficiencies through vehicles such as RSPs, RIFs and TFSA's. Tax loss harvesting will include automated scenario planning, triggered for use in discussions with the client's professional tax, legal and accounting advisors.

9. Risk Management:

Asset protection, insurance and catastrophic loss recommendations will be generated as part of the financial needs process. Recommendations will be consistent with the processes identified above.

10. Analytics:

The platform will use information from both inside and outside of the organization to anticipate and prompt client action. Analytics will be used to personalize, in a timely manner, the experience of the client, empower the client-advisor relationship and facilitate achievement of the client's goals. Data analytics will be used to inform and anticipate client behavior that is counter-productive to the achievement of their goals.

APPENDIX 4: THE NEXT GEN DIGITAL ADVICE ARCHITECTURE

One of the goals of the Next Gen project was to craft a framework or architecture that could be used to sponsor a dialogue about the future of digital advice in Canada.

The framework below is offered as a catalyst to help facilitate that dialogue. It is not a literal template that could be used as a blueprint, process diagram, data base architecture or wireframe.

Rather, it is more of a story board that we hope will allow professionals and individual stakeholders to fill in the blanks with their own unique strategies – and we invite you to do so. It might be used best as the first step in a Design Sprint or a brainstorming exercise.

Please direct any queries, suggestions or critiques directly to the authors.

Illustrations 1 and 2 provide a pictogram of our vision for Next Gen Digital Advice. There are essentially 6 key components.

1. The **Request for Action** refers to the initial query or request from a client. At this stage the client experience can either be through their advisor or self-serve through technology. The stage is typically defined by a clarification of the client's request (needs vs. wants), gathering the appropriate data to begin the process and completion of any compliance requirements such as Know Your Client or Anti-money Laundering documentation. The goal in this stage is to complete as much as possible electronically but to also facilitate suggestions from the advisor. In some cases this stage may proceed straight to a digital onboarding process – i.e. opening an account. See Illustration 1.
2. In the next stage – **Assembly** – the digital platform creates the scenarios, options and recommendations, through the algorithms. The algorithms pull the required data from a variety of sources including both traditional sources such as back office records and new sources such as social media (see back office). Many of these processes will probably automate what we have referred to the System 2 structures. See Illustration 2.
3. During the **Hand Off** stage a number of interactions can occur beginning with the presentation of the options and recommendations – either through an advisor, third party expert (e.g. accountant) or self-serve. In some cases, a pause for coaching or **literacy** may be required or encouragement to proceed – a **call to action**. Inevitably there will be recommendations or transactions that do not unfold “as planned” and human interaction will be required to resolve the issue. At this stage, once approval from the client has been received, a transaction would be generated and confirmation/disclosures delivered electronically.
4. The Back Office component includes engineering, procurement and safety. **Engineering** is the design, construction and maintenance of the algorithms. In some cases the algorithms may be proprietary to the firm but in other cases they may be open sourced or sourced from a partner or third party. **Procurement** refers to the sourcing and curating of the data elements required by the algorithms. Again, the data includes both traditional sources such as back office records and new sources such as social media. In addition, machine learning, for example, provides an opportunity to generate new data elements. **Safety** refers to the standards controls required for compliance, data integrity, codes of conduct etc. Most of these sub-components will be invisible to the client and even the advisor.

5. In Next Gen, there is an option for the algorithms to create prompts or suggested requests for the client. The pictogram refers to these as **System 2 Generated Requests**. Examples might include system generated prompts on birthdays, when a marital status changes or on the birth of a child. In our vision for Next Gen, these prompts would be sent to both the advisor and the client simultaneously. This component could be further refined by including “nudges” that encourage productive, high impact behavior – such as savings disciplines.
6. **Return to the Beginning** – inevitably, over time, the client’s status will change, new and sometimes unexpected events will occur and it will be necessary to revisit the client’s plan and generate any new Requests for Action. We don’t mean to portray financial advice as a linear process nor a simple one – it’s not. In fact, given its inherent complexity, we would suggest that the application of the new technologies provides an opportunity for more timely and dynamic feedback than can be productively be deployed by human advisors today. With the new technologies stages 1 through 6 could unfold in minutes and hours rather than days and weeks.

Illustration 1



THE DIGITAL ADVICE FACTORY

Digital Advice
Platform

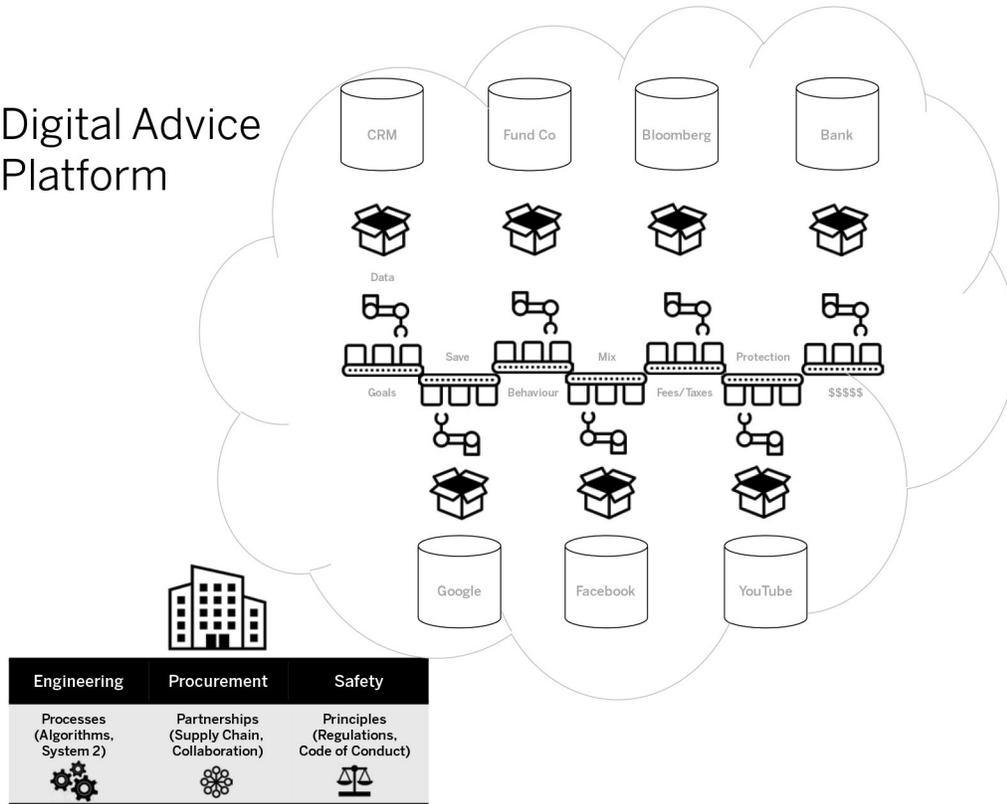
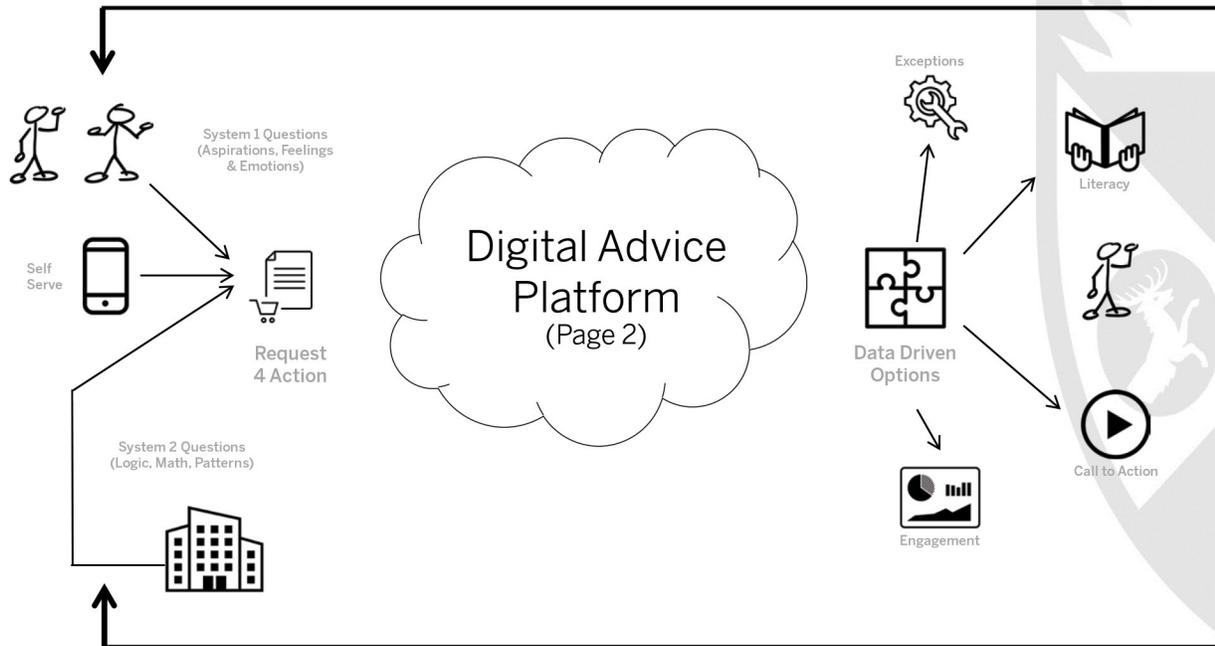


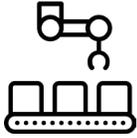
Illustration 2



THE DIGITAL ADVICE ARCHITECTURE



Digital Advice Architecture Mapping

Stage	Description	Target Technologies	Target Processes
	Request <ul style="list-style-type: none"> Client meetings (self serve or hybrid), needs analysis, data collection, AML, KYC, & request for action. 	<ul style="list-style-type: none"> Cloud Digital Onboarding Chatbots Social Media 	<ul style="list-style-type: none"> Onboarding Goals Financial Needs Risk Profiles Holistic View incl. financials, cash flows and debt
	Assembly <ul style="list-style-type: none"> Automated assembly of the recommended solution, data driven, following the HIWM habits and processes in Appendix 2 & 5. 	<ul style="list-style-type: none"> Mainframes GPUs Psychographics Risk & Scenario analytics Acct Aggregation 	<ul style="list-style-type: none"> Asset Mix Fees Taxes Risk Mgmt incl. Ins.
	Hand Off <ul style="list-style-type: none"> Client meetings (self serve or hybrid), options, recommendations, literacy. 	<ul style="list-style-type: none"> Cloud Storage IoT Devices 	<ul style="list-style-type: none"> Client Reporting
	Call to Action <ul style="list-style-type: none"> Placement of the trade, permission to act, behavioural nudges. 	<ul style="list-style-type: none"> Smart Phones Social Media SMS Web Chat Personal Dashboards Always There Client Portal MY Device 	<ul style="list-style-type: none"> Trade Fulfillment Implementation Plan
	Exceptions <ul style="list-style-type: none"> Identification and correction of things that haven't unfolded as planned. 		

Stage		Description	Target Technologies	Target Processes
	Engineering	<ul style="list-style-type: none"> The design, engineering and maintenance of the algorithms used for assembly. 	<ul style="list-style-type: none"> SQL Machine Learning Emotion Predictors Goal Based Gamification 	<ul style="list-style-type: none"> Analytics including asset mix, due diligence, scenario generation, fee optimization, tax optimization, profiling and nudging
	Procurement	<ul style="list-style-type: none"> The sourcing and curating of the data required to fuel the algorithms. 	<ul style="list-style-type: none"> Lean Mftg APIs AI Account Aggregation 	
	Safety	<ul style="list-style-type: none"> Compliance, data integrity, quality control, codes of conduct and principles in Appendix 3. 		

APPENDIX 5: REFERENCES AND NOTES

Please note that the authors reference the articles and sources below in order to emphasize and provide context for some of the conclusions in this paper. The references are not intended to represent an exhaustive literary examination of the topics suitable for academic purposes.

i Developed by **Alan Turing** in 1950, the Turing Test is a test of a machine's ability to exhibit intellectual behaviour resembling that of a human. Turing introduced the test in his paper, "*Computing Machinery and Intelligence*," while working at the University of Manchester (Turing 1950; p. 460). The manuscript opens by proposing the question "Can machines think?"

ii Before defining digital advice, it is important to define advice. For the purposes of this document, "advice" encompasses financial planning, insurance, investment, taxes literacy, cash management and debt. Retirement planning, business planning, business finance, charitable giving and HNW estate planning require more discussion and are therefore not included within the scope at this time. In defining the scope of wealth management and "advice," the participants started with the components of financial advice included in the 2014 **Advocis/PWC** report entitled *Sound Advice, Insights into Canada's Financial Advice Industry*.

iii In their *FinTech Advisor Service report* (Fall 2016), **INVESTOR ECONOMICS** cites Fund wrap rebalancing, innovations in the online/discount brokerage channel, automation for discretionary retail investment managers and ETFs as recent technological innovations in Canada.

iv Since Jan. 1, 2016, the nascent Canadian robo-advice industry has announced significant changes to funding, strategy, products or services at a pace of one per month. Fundamental changes to strategy have included a shift from B2C to B2B, international expansion and multi-million dollar funding agreements with incumbent firms. Source: Authors' notes.

v When a meeting, or part thereof, is held under the **Chatham House Rule**, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed.

vi In addition to numerous one-on-one conversations, three workshops were hosted over the summer and fall of 2017. The first workshop engaged industry executives and thought leaders to help delineate the definition, scope, processes and principles of Next Gen Digital Advice. Subsequent workshops engaged technology leaders and regulatory experts to confirm the scope and then help identify the barriers to and implications of Next Gen Digital Advice. See **Appendix 1** for a summary of the workshop conclusions.

vii For example, the media industry has faced substantial disruption as a result of social media platforms and the digitization of news. The low cost platform of digital news has changed the economics in which larger media conglomerates have operated. Telecommunications provides another example of low cost digitization alleviating entry barriers. The substantial number of "cord cutters" is changing the nature by which television is consumed as consumers seek streaming services from alternative sources. In a 2016 article entitled *The Industries that are being most Disrupted by Digital*, a survey of more than 2,000 C-level executives revealed Media and Telecom as the industries most disrupted by digital.

viii In their 2016 paper entitled *Future of Digital Financial Advice*, the **Center for Financial Planning** estimates the probability of a fully digitized experience at 33%. They identified four scenarios for the future of digital advice – three of which incorporate some form of a hybrid approach.

- ix Please refer to *Thinking Fast and Slow* by **Daniel Kahneman**, Doubleday Canada, 2011.
- x Authors **McAfee and Brynjofsson** discuss at length the intersection of System 1 and System 2 in their book *Machine Platform Crowd*, W. W. Norton & Company 2017.
- xi Nobel prize winner **Richard Thaler** championed the concept of “nudging” in his studies in behavioural economics. Numerous examples of “nudging” are attributed to the finance industry including the UK government’s 2012 policy of auto-enrolment for private pensions, where people have to opt out rather than opt in, and which has led to considerably higher private-sector, pension-saving participation. Refer to *Nudge: Improving Decisions About Health, Wealth and Happiness*, Thaler and Sunstein, Penguin Books, 2008.
- xii To the extent that an advisor defines their value proposition by one of the System 2 processes, there is a distinct possibility that the number of required advisors, in Canada, will shrink. At the **Money Management Institutes Wealth Summit** in October 2017, panelists estimated the shrinkage at 25%, over 5 years.
- xiii It would appear that we are currently training new advisors predominantly in the areas most susceptible to digitization. For example, at present, the **Canadian Securities Course** (CSC) allocates 85% of its curriculum to System 2 activities (www.csi.ca), the **CFP Core planning areas** allocate 82% to System 2 activities (www.fpsc.ca) and **CFA curriculum** allocates 36 of 37 study sessions to System 2 activities (www.cfainstitute.org)
- xiv At \$80 a month, or \$960 annually, it could be argued that Nest Wealth has established the new benchmark for the value of advice. In the US, Charles Schwab’s Intelligent Advisory platform (a Robo/Human Hybrid) is priced at 28 bps to a maximum of \$3,600 annually.
- xv In their paper entitled *Beyond FinTech: A Pragmatic Assessment of Disruptive Potential in Financial Services*, the **World Economic Forum** concluded that FinTechs had seized the initiative by defining the direction, shape and pace of innovation, that they were reshaping customer expectations and setting new and higher bars for user experience.
- xvi In their 2017 paper entitled “Do As I Say”, authors **Grable, Hubble and Kruger** noted that amongst a sample of professional financial planners, the primary driver behind asset mix recommendations was not such things as investor knowledge, risk tolerance, risk capacity or liquidity needs (for example) but a clients age – and in particular the controversial age-based allocation heuristic: *Allocation to Equities = 100 - Client Age*.
- xvii For example, a January 2016 article by **Fulvia Montresor** for the *World Economic Forum* estimated that by 2025, 10% of people will wear clothing connected to the internet and that 3D-printed cars will be in production. She noted that the United Nations has set a goal connecting 100% of the world’s inhabitants to affordable internet by 2020, up from 43% today, and references a study out of the University of Oxford that suggests a 58% probability that the occupation of ‘personal financial advisor’ will be automated.
- xviii An August 2017 *Discussion Paper* from the **European Banking Authority** noted that across 16 innovative technologies, the typical application rate for the technology was 5% to 10%. The EBA’s list of innovative technologies was consistent with our workshop participants’ conclusions and none, by themselves, are disruptive.
- xix Authors **McAfee and Brynjofsson** discuss at length the impact of platforms on modern day business strategy in their book, *Machine Platform Crowd*, W. W. Norton & Company 2017.

xx In his September 2017 article in the Globe and Mail, **Greg Pollock**, CEO of Advocis, notes “the provision of financial advice is not legally recognized as a professional activity and is not afforded any title protection whatsoever. This puts the public at considerable risk, not only of receiving questionable financial advice, but also of falling victim to fraudsters posing as legitimate advisers.” Source: www.theglobeandmail.com.

xxi In their *August 2017 consultation paper*, the **Canadian Department of Finance** has asked for comments on “open banking” – a framework under which consumers have the right to share their own banking information with other financial service providers. The authors would note that, in order for Next Gen Digital Advice to be effective, this same provision would need to extend beyond the banking sector to include such areas as insurance and investment funds.

xxii In a *Harvard Business Review* article dated December 2015, authors **Christensen, Raynor and McDonald** discuss “disruptive innovation” noting that disruptive innovations originate in low-end or new-market footholds and don’t catch on until quality catches up to their standards. The authors would note that while Canada’s robo-advice industry has initially targeted the “millennials”, their quality matches anything produced by the incumbents, thus far. In contrast, Harvard Professors **Henderson and Clark** describe “architectural innovation” as innovations that change the architecture of a product without changing its components (such as Next Gen Digital Advice). Henderson and Clark note that “established firms find it difficult to recognize and hard to correct.” (See *Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms*). Professor **Joshua Gans** attempts to bring the two competing views of disruption together in his book “*The Disruption Dilemma*” (MIT Press, 2017) and concludes that “successful firms and their investors can calm down. This does not mean they can relax; there is always much to be done. But academic research and market experience demonstrate that the fear of the inevitable and imminent disruption is unfounded.” The authors would suggest that Next Gen Digital Advice represents a little of both innovation camps. We don’t care what you call it, but we do believe now is most definitely not a good time to relax.

xxiii In their *World Wealth Report 2017*, **Capgemini** notes that 56% of global high net worth customers would be open to working with the BigTechs – Google, Amazon, Facebook and Apple. They also note that hybrid-advice solutions are making a big impression on the same customers.

xxiv Source: *FinTech Advisory Service – Canada*, Fall 2016, **INVESTOR ECONOMICS**

xxv A report commissioned by the **Innovation Policy Lab at the Munk School of Global Affairs** in 2015, entitled *Current State of the Financial Technology Innovation Ecosystem in the Toronto Region* notes, “Canadian financial institutions have not been as effective as their competitors in other international centres ... at developing strong partnerships with FinTech startups. Even where relationships exist, they tend to be located at the margins of the financial institutions’ main operations.”

xxvi Source: *FinTech Disruption in Financial Services* (2016), CGI.com

xxvii The empirical research encompassed a broad spectrum of academic and credible industry studies, however, the core research was a study entitled “*Retail Financial Advice: Does One Size Fit All?*” by authors **Foerster, Linnainmaa, Melzer and Previtero**, published in the *Journal of Finance* in August 2017. Further research is included in a working paper entitled *The Cost and Benefits of Financial Advice*, March 2014, by the same authors. For more information on this study and the other sources for High-Impact Wealth Management,

please contact the author directly at cgrace@ivey.ca.

xxviii The term *High-Impact Wealth Management* was derived from a 2016 project at the **Ivey Business School** that examined best practices in wealth management from a practitioner, regulator and academic perspective, in Canada and Australia. The project culminated in an extensive series of cases, companion readings and teaching notes known as the *Jenny and Andrew case series*, available through Ivey Publishing at <https://www.iveycases.com>.

xxix In defining the scope of wealth management and “advice,” the participants started with the components of financial advice included in the 2014 **Advocis/PWC** report entitled *Sound Advice, Insights into Canada’s Financial Advice Industry*.