

Fidelity Connects

Innovation in Canada: Technology and health care trends

Max Adelson, Equity Research Analyst

Pamela Ritchie, Host

Announcer: Hello and welcome to Fidelity Connects – a Fidelity Investments Canada podcast – connecting you to the world of investing and helping you stay ahead.

Technology and health care harmoniously go hand in hand. Without the proper medical devices, many life-saving medical procedures could not be performed. And since the COVID-19 pandemic, a modern merger of these two sectors - telehealth - has flourished.

But with telehealth comes cloud computing and cyber security - the latter being of focus by tech companies this year as Russia's war in Ukraine has caused an increase in ransomware attacks.

Equity Research Analyst Max Adelson who focuses on health care and tech sectors, joins the show today. The equity research analysts at Fidelity Canada focus on specific sectors, providing research and analysis to portfolio managers.

Today, with host Pamela Ritchie, Max unpacks what's driving the health care and tech sectors and shares key trends and opportunities he's focusing on looking ahead.

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Pamela Ritchie: So, Max, you are a technology, a health care analyst but on a very cloudy and almost thunderstormy day in Toronto, you mentioned to me that you started out as a meteorologist, so I'm kind of fascinated about how that started. Why were you interested in that at the beginning?

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Max Adelson: That's a great question. How did I go from meteorology into financial markets? Well, it started with my journey through university. I went into a meteorology program at McGill University and, in that program, I ended up meeting a very interesting fellow who listened to me talk about the weather and he said, you know, there are a lot of similarities between the weather and financial markets. You have a million variables coming together and you've got to come up with a forecast, a result of something that happens. He said, you might really like this investing practice. So I tried it out, thought it was incredible, had the chance to learn so much about so many different things and we're going to talk about a lot of different topics today.

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Pamela Ritchie: We are. There's a lot of different things. Let's go into within technology, health care as well. What would you say broadly are making the headlines? There's a lot of subindustries in there and it's almost too broad to put them into those two sector groups but give us a sense of what are the top line issues right now.

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Max Adelson: That's a great question, Pamela. As a technology and health care analyst, there's no shortage of different areas. I can explore anything from software, hardware, semiconductors, payments, medical devices, pharmaceuticals, biotech, the list goes on. The hardest thing I have to do in my day-to-day is allocate my time. Generally, what I'm looking for is the intersection where we see the greatest incremental rate of change and that often happens at the confluence of multiple trends. In 2020, the biggest thing impacting financial markets was the global pandemic and that extended into 2021. But now we're here in 2022, and what's making headlines are things like the war in Eastern Europe, food and energy shortages. Now we're talking about inflation, potentially recession, and that means that my job has never once been boring.

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Pamela Ritchie: I'm sure. As you say, the confluence of just so many different factors and pieces of information. Are there certain areas, though, that perhaps through the last three years and before have actually remained in focus, particularly sort of technology and software?

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Max Adelson: Absolutely. Maybe the biggest trend, the one that most are familiar with at this point is the development of cloud computing. Cloud computing has been going on for over a decade now to the point where the largest companies we have in the world, Amazon, Microsoft, Google, they're all major players in cloud. At this point, the trend is beginning to be understood.

What's harder to see is levels of innovation occurring below that. What's perhaps less talked about is the development of leading-edge semiconductors. Few years ago, we were able to achieve a sub 7 nanometre node, that's a major advancement from the previous generation of 10 nanometre nodes. These kind of chips can hold 60% more logic density than their predecessors and have major impact on power saving that's transformed devices like the iPhone or Android in your pocket all the way to the data centres that are used in cloud computing themselves.

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Now, the pandemic was something that occurred right on top of this and it supercharged some big trends that were occurring, like video conferencing, e-commerce. But now as we go into 2022, those things are changing. One that's perhaps remained a constant is cybersecurity. You talked about it a little bit earlier. As a result of the war and underlying trends, we've seen an increase in the number of ransomware attacks. These are often things that don't necessarily make headlines. Companies don't want to talk about them too much but they're happening more and more frequently.

In fact, I read a really interesting book on this recently. It's called *This Is How They Tell Me the World Ends*. It's by Nicole Perlroth. Great read. My favourite quotation out of it was this, "There are only two types of companies out there: those who have been breached and those who don't know yet that they've been breached."

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Pamela Ritchie: That is so fascinating. I'm going to pick up a copy of that because I need to take a look. I was always wondering and as you say, a lot of times companies won't say ultimately whether they have or they haven't. Tell me a little bit about how some of this is not seen. I mean, you sort of mentioned there's a lot of stuff going on underneath. Tell me a bit more about that. What are we not seeing but is very much happening?

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Max Adelson: There's so much that we're not seeing in software. In cyber in particular, having a proper defence is like having a lock on your door at this point. You just can't live without it and it's getting more and more complex. I'll give you an easy example of this. When everyone went home and had to get a laptop connected to their corporate network, suddenly there's this explosion in the number of endpoints that's known as these devices that can access a corporate network. Everyone had to have antivirus, antihacking, antispymware type tools installed on those devices. That's something that might be an application that runs on your computer that if you ever press control/alt/delete, you could see it running in the background but you never really interact with it. There are so many processes like that occurring all the time. We think generally the growth of cloud computing is going to continue, and so the innovation curve for software will continue. It's just a question of how appreciated is that trend at this point.

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Pamela Ritchie: In the last four days, we've seen the Speaker of the House in the U.S, Nancy Pelosi, land in Taiwan. We know that Taiwan Semiconductor is one of the hugest producers. We've also seen the U.S. pass a semiconductor piece of legislation that took a long time but they eventually did it. Tell us the role, ultimately, of what's going to happen now. What, ultimately, does this sort of allow for?

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Max Adelson: I wish I had the crystal ball to be able to predict the future perfectly. It's much like the weather where we have some ideas of what the variables look like. Semiconductors have been talked about like the new oil. It's just something that is so critical. In any device, we're going to be including more and more semis. For instance, in an electric vehicle we're going to be including many more than what existed in internal combustion engines. The demand for these products is going to continue to go up. Like I said, innovation curve is generally quite steep, so having the latest, leading-edge chips is a competitive advantage. It's so much of a competitive advantage not just for corporations but for governments that this is going to be critical in geopolitics going forward. We've already seen some headlines of that nature, like you mentioned, and there are some companies that are heavily in focus for this.

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Pamela Ritchie: We'll just sort of frame the telehealth discussion or the discussion of health privacy, companies being able to diagnose and having an ability to merge this health care online and through the cloud, ultimately. There clearly are endless possibilities. What are the stumbling blocks there? I presume there's a privacy issue that is a concern there but how else has this been navigated? Are you seeing real, meaningful progress that's sort of ongoing or is it one big leap to that type of health care and we're not going to keep moving with that as we don't need to anymore?

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Max Adelson: Health care in Canada and the United States looks quite different, as you know. We have very different systems. In the U.S., health care is roughly 20% of GDP and it's a major source of incremental spend. It's grown in excess of GDP pretty well consistently for the last 20 years. So, major companies are looking at ways that they can tap into this market. Amazon made a very high profile acquisition a couple weeks ago in the telehealth space. We've seen a lot of companies try to innovate in this area in order to bring down the total cost of care. That includes everything across the space from pharmaceuticals, biotech devices, managed care. It's impacting pretty well everyone. Now, what you're referring to, virtual care, the number of patient visits that are not physical exploded during the pandemic but generally, most of that has reversed. For the most part, what we see is most patients want to still see their doctor in person. That means, just like retail, the answer is some kind of omnichannel, both a physical and a virtual presence.

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Pamela Ritchie: Interesting. You mentioned pharmaceuticals. Let's take a look at what is changing within that landscape. In Canada, there's the legalization of cannabis for certain types of pain management. It's also in the U.S. Does that change things in some notable way at this stage or is that still pretty far down the road?

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Max Adelson: That's a great question. In Canada, we've had a medical cannabis market for many years and our stock market has a lot of cannabis producers in the health care index. That's unique. That's not like what exists in the U.S. where it's primarily biotech, pharmaceuticals, medical devices. So what I talked about earlier, the biggest investments tend to occur where there's an intersection of major changes. Three years ago in Canada, we moved to a legalized adult-use cannabis framework and a lot of change happened around that time. There's also been an evolution of cannabis in the United States. For the most part, we haven't seen Big Pharma get heavily involved. We know they're watching closely and there's a lot of reasons for this. But the other changes occurring are innovations in the areas of pain management and dealing with both the mental and physical health consequences coming out of the pandemic.

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Another major issue the industry is dealing with right now is the opioid epidemic. Sadly, this is at the point now where there are very few families in North America who won't be touched by this. We've had over 800,000 excess deaths in the United States due to opioid overdose since 1999. One hundred thousand of those have occurred in the last year. By 2032, we're likely to see another half a million deaths which will make opioid overdose a greater source of excess deaths than the COVID-19 pandemic. Industry also has a role in solving this and attitudes are changing. We've seen major settlements for players who have been involved in the opioid supply chain. Some of those are very interesting settlements, actually. They involve donations of drugs that are used to help deal with opioid overdose.

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However, pharma, as you know, is very focused on IP, intellectual property. They need to be able to patent something in order to see the returns out of it. Cannabis is naturally occurring. The most common active ingredient out of cannabis is THC. There happens to be 21 individual cannabinoids in each plant but THC is the most common. This is naturally occurring. It's very hard for them to achieve intellectual property and, as a result, there's a little more interest from the big consumer companies in cannabis than there is from Big Pharma.

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Pamela Ritchie: You mean like sort of large liquor companies, that type of thing?

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Max Adelson: Absolutely. The biggest foreign investor in the cannabis space in Canada happens to be a company based out of New York State. Constellation Brands has made a multi-billion dollar investment in a local grower called Canopy which is now one of the top five licensed producers in Canada. We've seen another large, over a billion dollar, investment from big tobacco into a local player in Canada. What we're watching for is how can they turn this industry from something very nascent into something that looks more like perhaps big tobacco, perhaps big consumer products. The market in Canada is constantly shifting.

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Pamela Ritchie: It's local, isn't it? We've had sort of a federal ruling in Canada but it's still a local story, even municipal, isn't it?

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Max Adelson: Yeah, absolutely. I've been fascinated to learn about the cannabis industry over the last few years. It's gone through several booms and busts and it's amazing because for a product with such a stable demand base, the perception of what the market looks like is changed dramatically over time. In Canada, we've moved to this federal legalization framework but like most health care in Canada, it's regulated at the provincial level which means the distribution and retailing of cannabis looks different across provinces. In Quebec, for instance, cannabis is sold through the SAQ. In Ontario, in contrast, cannabis is distributed through the provincially owned distributor called the Ontario Cannabis Store but it's retailed through local outlets.

At the start of federal permissibility, we only had 40 cannabis stores in Ontario. Producers, consumers were not too happy about that. Since then permitting has ramped up. We now have nearly 1,500 stores in the province. But like you said, the accessibility can vary. Happens to also be permitted by the municipality which means that you may have municipalities with no cannabis stores and then some like Toronto, where it feels like they're on every corner.

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Pamela Ritchie: So it's interesting. Canada has sort of its own story and the United States is sort of going state by state as well. So it's somewhat of a local story, if you will, depending on which state. Would you say there's any clear direction on where this goes at this stage or is it still very much like interregnum trying to develop itself.

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Max Adelson: I wish I had that answer. You know, I love forecasting the weather. I love forecasting financial markets. I don't really love what forecasting what happens in Washington. That is maybe the most complex thing I've ever come across and I'm not a political expert. What I can say and I've observed is that the perception in the industry ebbs and flows with the sentiment around the move to U.S. federal legalization. When the Democrats swept the elections in 2020, there was a lot of speculation that they would quickly move to put this at the top of their legislative agenda. So far, it hasn't made the top five. It may at some point.

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What I can say for certain is that the popularity of cannabis amongst Americans continues to rise. We're now at around two-thirds of citizens who support the use of adult-use cannabis. We have over half of U.S. states now with a medical program and nearly a dozen states with adult-use programs. So the accessibility of cannabis continues to go up in the United States but critically, because it's still federally illegal – it is a schedule 1 drug – the product cannot pass international boundaries or state boundaries. So, instead of looking at one major market like we have in Canada, we're looking at 30 or so individual markets with their own unique dynamics.

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Pamela Ritchie: That's fascinating. How is it in other parts of the world? When you look at Europe, for instance, what are the differences or different speeds at which they're adopting?

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Max Adelson: That's a great question. There are a handful of countries outside of Canada that have an adult-use framework in place. Canada was one of the early adopters. It's certainly a test case for big global companies to try to understand what adult-use legalized framework looks like. Three years on, we're still learning. In Europe, there are a number of medical programs that are in development. They're fairly small at this point, but the largest country that's talked about moving to adult-use cannabis is Germany and speculation is that anywhere between 2024 and 2027 is when they might move to a legalized framework. Then you've got to ask a lot of other questions. How does it get sold? Is it sold through many different retailers? How tightly is it controlled? Can it be purchased in multiple quantities? In Canada, at least in Ontario, you cannot purchase more than a specified amount of cannabis when you go to the store and you also can't buy it in a bar.

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Pamela Ritchie: It's for a small quantity, personal use, that kind of thing. A couple of questions rolling in here, Max. Let's sort of round out the discussion of the cannabis industry, where it's going and what stage it's at. This question is, are there ESG issues in the cannabis industry?

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Max Adelson: Absolutely. Absolutely. There are issues under all three variables, environmental, social and governance. I can start with environmental. Industry is always looking for the most efficient path to market. As a result of significant capital raising and uncertainty over the size of the market in Canada, a lot of dollars that were earmarked for the U.S. actually went into building capacity for cannabis growing in Canada. That's starting to reverse. Since 2020, we've seen a 7-million-square-foot reduction of greenhouse growing capacity, 3-million-square-foot reduction of indoor grow, nearly 450,000-acre reduction in outdoor grow.

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What's happening is industries rationalizing back to the most efficient producers and who can produce the product at the lowest possible cost, which should be the lowest environmental impact as well. I could also speak to the governance issues as well. A lot of these companies came from various backgrounds. The entrepreneurs who started them came

from different industries. There's nobody who's had a career in cannabis because it's so new and as a result, the governance frameworks were fairly undeveloped. We're now in the process of that changing. Now that there's more active involvement from major industry players, like we mentioned earlier, the governance frameworks are starting to look more like those companies over time.

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Pamela Ritchie: That's fascinating, watching some of that develop. This is kind of going back to the original discussion looking at technology, where the focus is ultimately. This is asking about where tech is in terms of the market. Is tech at the bottom? Is it time to get back in? Your investing advice is being requested here. I'll see how you answer that.

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Max Adelson: The beauty of tech is that it serves so many different industries. It's not like talking about oil where chances are the fortunes of every oil producer in the world fall and rise together. Whereas in tech, you can have companies selling into the oil industry who in 2020 couldn't make a single sale because everyone was trying to cut costs there. Or you could have tech companies selling to start-ups. In 2020 when there were so many new start-ups, that was like shooting fish in a barrel. The end market exposure of the technology companies has to be scrutinized really closely.

Looking at who their customers are is really important at this point because the subsector trends are dramatically different. Further to that question, when we think about technology, often think about the big companies like Amazon, Microsoft, but perhaps the lesser known ones are the semiconductor companies that I spoke about. There are major hardware companies that are involved in tech and then the payments players, too, are also considered tech companies like Visa, MasterCard, etc.

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Pamela Ritchie: E-commerce is obviously something we've been talking about and all been engaging in for years at this stage, especially through the pandemic, obviously. Any changes to that? Any switches? Again, it's just as omnichannel as it needs to be. Have we made a full-time sort of shift to that? How do you see growth there going forward?

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Max Adelson: E-commerce is fascinating. This is something that's been in development for over 20 years now but various points in time it becomes more prominent, less prominent. I start with the framework of looking at where we are right now. The most advanced country in the world in terms of e-commerce is actually China. Nearly 40% of retail sales in China are e-commerce enabled. The United States is way, way, way behind, below 20%. There was a lot of growth in that category in 2020 when everyone was forced to go home but it's generally come back in in the last 12 months. It's rebalanced a little bit. Now, it's much higher than where it started. E-commerce continues to grow but it's it hasn't accelerated like it may have been anticipated a year or so ago.

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Now, from here, there's going to be a lot of variables that drive it. E-commerce has to stand on its own two feet, be economic, which means people need to have devices that are connected to the internet. Okay, check mark there. Everyone now pretty well has a data plan. That means they can buy stuff off their phone. They can engage more with the

internet than they had before with their desktop computer. We also need advancements in logistics and this is a big topic right now. For a long time we had supply chain crunch. It was very hard to get goods imported into the country or get them around the country. That was a big bottleneck to e-commerce adoption as well. The more investment there is in this last mile delivery and setting up dedicated e-commerce operations, the more the business will be economic and likely there will be growth from that. But that's a big question and you've got to follow the big logistics players to get a good handle on that.

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Pamela Ritchie: It's still expensive, that final mile, for sure. This is a question, I don't know if it's an area you particularly follow, how has the online betting industry fared since becoming legal in many states and how investible is the space at this stage?

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Max Adelson: Online gaming, I've done some work on that. It's a really interesting space. Both Europe and United States, now Canada, we have an online betting framework. What we've seen is a lot of volume has tended to congregate in several players. A few key companies have dominated big parts of this market. From a market structure perspective that makes them really interesting because they happen to have these network effects. Network effects are very virtuous from an investor perspective. But the category itself has to be looked at under a consumer discretionary type of framework. There are people who consider gambling as part of their necessity for life. It's a form of entertainment but in large part it is considered a discretionary item. The fortunes of the consumer will be very tied to the fortunes of online gaming and gambling.

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Pamela Ritchie: When will the cannabis industry become profitable?

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Max Adelson: That's a great question. There are a few players who have found ways to...

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Pamela Ritchie: Some must be, yes.

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Max Adelson: There are some players who have found ways to generate profits here. There are many players who haven't yet found a pathway to doing it. It's going to be interesting to see how the market develops over time. We have over 150 growers in Canada. That's probably too many. There's going to be, I think, a lot of predictions around what it looks like could be something like the beer industry where there are a few players that are responsible for the majority of volumes and then you have this big tail of craft brewers. Craft brewers don't compete on price. They compete on the quality and uniqueness of the product. We just need to see a little bit more development of the market. But as I said earlier, there is capacity coming out at this point which means that eventually the supply and demand is going to balance at an acceptable level of profit. We just can't answer exactly when that's going to happen.

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Pamela Ritchie: Fascinating. Ultimately, if you go back to sort of drug companies competing, I mean, you mentioned that the patenting obviously is part of how drug development happens. I mean, that's a massive sort of entree into being able to develop a drug. Are there ways of patterning certain types of cannabis, of offerings that will be, perhaps, for pain relief and that kind of thing? Is there some way they can patent some things?

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Max Adelson: That's a really interesting question. Like I said, there's 21 individual cannabinoids. Some of them more rare, some of them can incite hunger or suppress it. They can create the feeling of sleepiness. These are actually desirable traits. The pathway to getting there, it's possible that some of that could be made into a patent. It may end up being more like a trade secret. Even last week, I was tracking a really high profile IP case in the United States where a very significant therapeutic had its intellectual property ruled to be not exclusive. Judge made a decision that invalidated something called a polymorph patent. This is one way of patenting a drug in the United States. Polymorphs are very rare. To see this kind of ruling come back as an invalidation, that probably means that Big Pharma is going to have to be more careful about what they invest in to make sure that what they're doing is novel and considered innovative or not considered obvious.

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There is this issue of anybody who's working with the cannabis plant, can they arrive at some of these individual cannabinoids in a way that can be considered obvious or someone who is, quote, skilled in the art could achieve? If so, it may be difficult to achieve really strong exclusivity over those molecules. That's why, like I said, we see more interest from the consumer industry in cannabis than necessarily Big Pharma.

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Pamela Ritchie: It's fascinating. It's so interesting to get your thoughts, well, namely on the weather ... no, but seriously, on technology and the intersection of technology with the health care industry writ large. Fascinating to catch up with you, Max. All the best. Thanks for joining us here in August.

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Max Adelson: It's a pleasure. Thanks a lot, everyone, and thanks to Pamela for hosting.

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