PART III

FAST FORWARD

ADAPTING TO A DISRUPTIVE FUTURE

VOLUME 3

Mobil Delvac™

Brought to you by the editors of Newcom Trucking Group, in partnership with Imperial Oil Limited

AN INSIDER' VIEW OF THE COMING DECADE

From autonomous vehicles to electrification, industry experts shared their views on the future of trucking at the recent Surface Transportation Summit

WELCOME to the final part of our three-volume Fast Forward editorial series examining how to adapt – and thrive – in a future sure to continue to be shaped by disruptive technologies and monumental demographic changes.

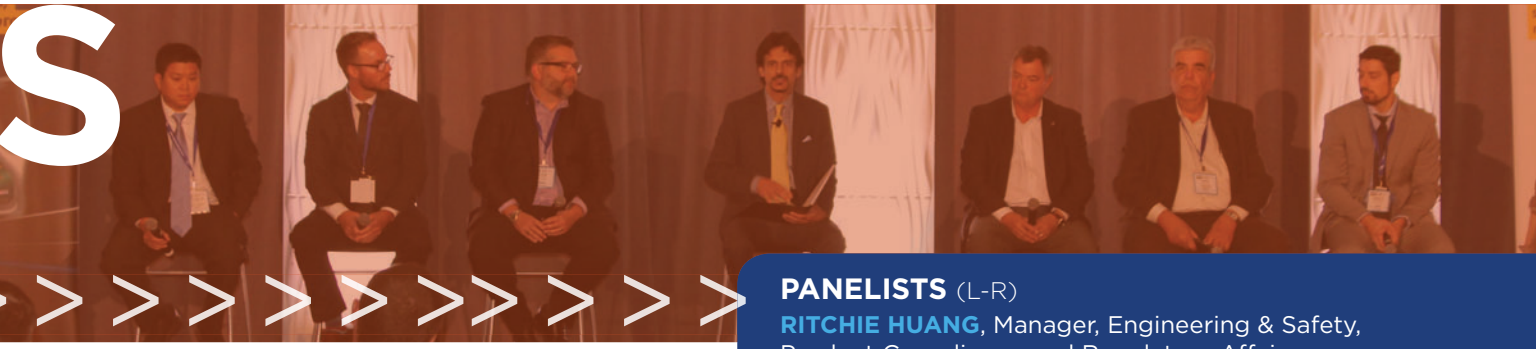
In our previous supplements we focused on familiarizing you with emerging technologies and how they will challenge your data gathering and security protocols as well as how they will reshape the driving profession. We also looked at how demographic changes will drive a rethink of human resource strategy with work-life balance given serious attention as a way to attract millennials and give long-time employees the flexibility they need to stay on the job. And we explored more new technologies focusing on apps that make life on the road easier and make the business case for investment in GHG reduction.

For the final part in the series we brought together at our recent Surface Transportation Summit industry leaders from the OEM, motor carrier, insurance and technology fields to share their ideas on the future of technology in our industry. I hope you will find their comments as insightful as I did. And since any technology will still require maintenance, we touched base with some of the best maintenance managers in the business to understand how the new technologies are holding up.

Once again I would like to thank Imperial Oil for its support of Fast Forward – a project now in its third year. We have learned a lot over the past three years about how our industry will change and how to adapt to this change.

I also encourage you to turn to the special Knowledge Centre entitled An Inside Look at the Future of Trucking we created for you on trucknews.com for more news stories, features and videos on the subject.

Lou Smyrlis, Managing Director, Newcom Trucking Group



PANELISTS (L-R)

RITCHIE HUANG, Manager, Engineering & Safety, Product Compliance and Regulatory Affairs, Daimler Trucks North America

JUSTIN BAILIE, President & Co-Founder, Rose Rocket

RYAN ERNST, Leader, Logistics and Distribution Practice, Strategy & Operations, Deloitte Consulting

LOU SMYRLIS, Managing Director, Newcom Trucking Group

PAUL KUDLA, Regional Vice President Canada, Volvo Trucks North America

RICK GELLER, MRC Transportation Practice Leader, Canada, Marsh Risk Consulting

MARCO BEGHETTO, VP of Communications and New Media, OTA & CTA

Q: *The last few years seem to indicate an incredible pick up in the pace of innovation and the introduction of new technologies – autonomous vehicles; platooning; electrification. What is driving this push towards new technologies?*

Kudla: We're trying to put technology into trucks now that helps the driver do a better job and be safer on the road. Also, the young folks love technology. We put technology into trucks that makes it more attractive to draw them into our industry, and it's starting to happen. People are starting to come to the industry and talk about what we're doing differently. So it's exciting times. I remember a hockey stick was your cruise control in the truck, and now we've got trucks that'll stop by themselves. It's pretty incredible.

Huang: It's a big safety push. In the United States, the fatality rates are going up. I think for us that was the driving force behind it - understanding how we can improve safety for truck drivers and all those sharing the road with them. I think it's a really exciting time. We see a lot of new technologies such as long-range, medium, short-range radar; ultrasonic systems; machine vision, which is rapidly increasing with stereoscopic cameras; and all the sensors that help you see a 360 degree view. Daimler's made a push into crash avoidance with automatic emergency braking systems. That's the precursor to automation itself. But I think we have a long way to go. There are many steps that we need to take but I think the underlying reason that drives us this quickly is the safety side.

Q: *There also seem to be disruptive technologies emerging on the shipper side – for example, apps that connect small truck operators directly to shippers, bypassing the middleman. Traditionally commercial transportation has not been seen as a particularly innovative space. Why is it now attracting such innovation and rethinking of established business models?*

Ernst: I think what's come about is our expectations in our consumer lives. We have outpaced dramatically what happens from a business to business relationship. So if I want to order from a nice Indian restaurant a few blocks away from my house and I go to Uber Eats I can track it from the kitchen to my door, and then I don't actually have to do a physical transaction when the driver or the bike courier hands it to me. From the shipper perspective, I can order $20 Indian food with a better level of service than I'm getting from the transport industry for a $20 million shipment where I can't tell where it is at any given point. That's a disconnect. The knowledge and the technology are there. Getting that technology at an industrial scale within the transport industry is what's driving expectation and innovation.

Q: Given the pace of technological advances what challenges does this create for motor carriers and shippers in terms of evaluating new technologies and finding the resources to invest in them?

Beghetto: Certainly you have challenges for anybody who is trying to keep pace with the level of technology and automation. Market forces usually dictate this kind of stuff, though. I think in this industry it's probably going to be slow. Take ELDs for example. We are just a few months from having to comply with the US mandate to have ELDs installed but if you believe

"You can't sell, you can't market, you can't transport products without technology being a part of that entire process. The risk of not embracing that is becoming irrelevant to your customers."

– Bailie

certain polls, 50-60% of the trucking industry is still not in compliance, despite four years of warnings. And that's something as simple as ELDs. So a lot of this automation is going be slow to come by. One thing the Canadian Trucking Alliance has been pushing with government is incentives for early adopters of new technologies. If the government is serious about things like the environment and safety, then perhaps there should be some sort of incentivization for companies that are first out of the gates in terms of safety and the environment, because there are societal benefits there.

Ernst: I think from a shipper perspective it's about capabilities to value and mapping that back. So if it's big data it's ability for visibility; it's cold chain compliance. That gives me assurance to improve from a value perspective of the business. That drives back to a capability, and you map that capability to technology. Then the business case is fairly simple and you execute. The key is how to understand the myriad of technologies that are coming and the pace of which those technologies are coming. One of the biggest challenges right now is how to be a little bit ahead but not too far ahead in terms of that investment dollar, so that when you're done you're essentially not on antiquated technology before you even get started.

Q: *You believe that today every company is essentially a tech company. Tell us why you believe that and what is the danger for companies that don't think of themselves this way?*

Bailie: When I say, "Every company is a technology company" what I mean is that you can't sell, you can't market, you can't transport products without technology being a part of that entire process. So we all use technology as consumers and as suppliers. The risk of not thinking that way, or not embracing that, is becoming irrelevant to your customers. The big retailers are so frightened of Amazon right now that they are moving as fast as they possibly can to get as far ahead as they can before Amazon decides that their vertical is the one they want to dominate. And so they are going to have demands for their carriers to have technology that is compliant. As carriers you can't afford to be left behind in terms of technology. Your competitors will take your business.

Q: *You believe that as an industry we've become savvy in identifying technology shifts and the change they can bring but the timing of the transition remains a mystery. Why is that and what do we need to do to better understand "timing"?*

Geller: I think over the last 20 odd years or so people have become very adept at watching market shifts and transitional shifts, and looking for potential hazards and dangers associated with their business. That seems to have been put aside for the time being with the new technologies. There is a plethora of it and there's just a huge volume of data coming at people, and timing is absolutely critical. It's important to understand how that technology stream plays out, and how to leverage it that so that it complements your business model. Act too soon and you end up exhausting resources. Think of the dot-com companies that got taken out in the 2001 technology crash. A lot of their technologies eventually became profitable again but it was a case of them acting too soon and exhausting their resources. Yet wait too long and you can miss the revolution. There's a number of video rental companies which missed streaming, as an example.

So it really is about timing. There are two things we need to look at differently when it comes to new technologies. First is that you've have to look at them as an ecosystem. It's not just the technology itself. You've got to look at the broader ecosystem that that technology is going to be operating within. Is the ecosystem required for the new technology already there? A good example of that is LED light bulbs. There's no change required with using them. You just take out the old incandescent bulb and put in the new LED bulb. So the challenge to getting that new technology to market is pretty low. Compare that to changes required in moving to electric powered versus combustion engines.

The second thing is that with emerging technologies especially there could be two ecosystems that are going to operate in parallel. There is the existing technology and then there's the emerging technology. And the question to be determined is what are the challenges for bringing that new technology to market, versus how much room for improvement is there in the existing technology? If there's a lot of room for improvement with the existing technology it's going to take a lot longer for the emerging technology to take hold. That's something you need to factor in to your business plans.

AUTONOMOUS VEHICLES

Q: *We have been hearing a lot over the past couple of years about autonomous vehicle technology – some of it fact, some of it closer to fiction. Set the stage please by giving us a realistic picture of what is possible today in terms of commercial vehicles.*

Kudla: If you get into an airplane today, probably 99% of the flight is done by computer. The technology is also there now to run trucks autonomously. But the day I get on a plane and the pilot phones in and says, "Hey, I'm in Toronto today but you enjoy your flight back from Montreal" I'm not getting on that plane. In the same way, to have a truck running on the road without a driver in it, that concerns me. There are several of the OEMs running trucks in mines, with no driver. That's great where there's nobody going to walk out in front of you or a car cut in front of you. I don't think the infrastructure is ready to go fully autonomous.

Q: *What do you see as possible within the next five to ten years. How fast can this technology move?*

Huang: I would agree that we don't see the driver really being out of the picture for a very long time. There's definitely a need for the driver to monitor these types of systems. We look at automation as building blocks and it's a very slow process, going through engineering, analysis, and testing. You do hear a lot of hype about fully automated vehicles being on the road within the next five years. We don't believe that. We don't believe that driverless trucks will be here any time soon. I think the reason being is that there's not enough safety data out there. For us it's critical that we have safety benefit calculations to understand how these trucks will reduce crashes, and how they will impact society overall. We interface a lot with our customers, and I think they also play a big role into how this timeline will play out.

We did have the first automated truck in the US and it was the first licensed truck on a public road. But the purpose of that exercise was a proof of concept for us. It was to understand where automation could take us. It wasn't necessarily a demonstration of where our products were going to go. It was to understand safety, efficiency, and driver acceptance. I think that's important for driver acceptance in this era. Do people believe in it? Do they feel comfortable with it? And will they operate it? Will they take part in this evolution?

We also opened up our test track in Oregon. The reason for that test track is to verify extreme cases with automated vehicles and automatic emergency braking systems. There are a lot of issues that we'll run into -- cut ins, hard braking maneuvers. So there are a lot of things we feel we need to go through as an organization, as an industry, working with regulators as well, to really understand the safety of these trucks. To us, there's no timeline. I think the timeline is when we can determine an acceptable safety threshold, and that's partly a societal and partly a governmental decision. We have to figure out what level of safety is appropriate for these products to be on the road.

Q: *There's that famous line from that Kevin Costner baseball movie, "If you build it, they will come." Is this the case with autonomous vehicles? From the motor carriers that you speak to, do they see this as viable technology right now? What do they tell you in terms of what they need to see before being willing to invest in such technology?*

Beghetto: In terms of what carriers are looking for, the ones I've spoken to and the position that the CTA has adopted is, we don't even like to think of this stuff as autonomous. The term that gets thrown around a lot is ADS, Advanced Driver Assistance systems, which is exactly what they are. We don't believe the driver's going anywhere. Much to the point that was previously made, I think the evolution in the trucking industry will follow the same trajectory as we saw in the aviation industry, where the truck operator is akin to what a pilot is.

The first autopilot was invented in 1914. Here we are, over 100 years later, and we still have pilots on airplanes, and I'm sure everybody would prefer it that way. Same in the trucking industry. There is so much more to the function of a truck operator than just holding the wheel, which autonomous technology won't solve. There are weight balances, there's

"Technology ought not to be the doer. The people are the doers. Technology is the monitor. And right now, a lot of the systems are trying to make technology the doer and make the people the monitor, and we're not good monitors.
– Geller

paperwork, there's dealing with customs officials, there's dealing with first responders, there's chaining your tires in Prince George.

Q: *Which types of fleets do you see being most willing to adopt autonomous vehicles?*

Kudla: Generally, first adopters for anything that can be perceived as green, and that's where the autonomous vehicles and platooning come in, are the private fleets or the suppliers to the private fleets. They're generally responsible to a board or to the general populace, because they're well-known in their industry. So they emphasize safety. I remember when ABS first came out. Some of the major private fleets in Canada jumped right on because they recognized it as an opportunity not to be sued. They look at it as not only good public relations, but as good safety. It's their name running up and down the road.

Q: *For a new technology to take hold there are a number of complementary elements which need to come into play: infrastructure, services, standards, regulations. When you consider the current excitement in discussions about autonomous vehicles, are we being realistic about the challenges posed in trying to bring these elements together in a timely fashion? Don't these elements typically operate on different timelines?*

Bailie: There is concern that there may be a slow down between Chicago and New York because of ELD implementation. So does Amazon say, "It's okay. We're just going be a day slower to deliver?" Or do they have the power to push the envelope? Will big business have the leverage to get past the red tape? I think consumer demands drive all, and it's really reverse engineered from that. So I'm pretty bullish on this moving quicker than I think my fellow panelists do because I believe that large companies wield levels of power we probably haven't seen in a very long time.

Geller: It's hard not to get excited about it. In about 135 years we've gone from the first car to driverless trucks. Having said that though, I think we do need to recognize that there's a whole host of things that have to be put into play. Not the least of which is some improved communication systems. When that autonomous technology has to make a decision, I don't really want to see that little hourglass spinning. And there's price points, too, and that factors into consumer demand.

One of the things that's fundamental to all of this is that technology ought not to be the doer. The people are the doers. Technology is the monitor. And right now, a lot of the systems are trying to make technology the doer and make the people the monitor, and we're not good monitors. There's a plethora of test results that support that. I really think we need to determine just who's role is which.

Q: *Does autonomous vehicle technology make for a grey area right now when it comes to liability in the case of an accident. If an autonomous vehicle is involved in an accident do we have a clear understanding how liability would be assessed?*

Geller: The short answer is no. The easiest way to understand it is this: First of all, for the most part nobody connects computers to injuries and property damage. They think of data that may be liable. But now we're talking where computers are going to be directly connected to injuries, to property damage, and from a policy maker standpoint, there's nowhere to draw an analogy. There's nothing. It's a void. And that's ultimately where it's anybody's guess which way it will go. When you're looking at liability in terms of the operation of the motor vehicle, we have 100 years of analogy to at least start with. How do we adapt those regulations or those judicial decisions to address the issues of autonomous vehicles?

PLATOONING

Q: *Let's move on to platooning. What is possible through platooning technology and what benefits does it deliver?*

Huang: We are testing platooning technology to get a real world understanding of what is to be gained. We know that fuel efficiency is a key component but a lot of the work that has been done has been on test tracks, and they're not real world situations. So for us now, it's getting these trucks in the field. It's important to be working with customers. If it's something they see as a potential technology that would benefit them, that factors in to the equation. The other aspect of platooning is safety. We believe comfort can be increased and fatigue can be reduced for the driver in the following vehicle. But, again, it takes a lot of verification for us to understand the true benefits.

Q: *Do you see platooning as the technology most likely to take hold in the industry? Why?*

Kudla: Yes. Platooning is, right now, the technology focus for most of us OEMs. You can platoon with another truck right now. The technology is there to do it right now. It's just

understanding the safety factor and getting drivers trained that remain to be done. Consider we've trained drivers till now to back off so they are not close to the truck in front of them. Now we're telling them to save fuel, get right on him. To introduce new technology in an industry where the average age is above 50 and get their mindset changed will be difficult. But we are doing it already and there are distinct advantages.

"Legislators don't know what's going on. They're just asking questions right now. Security is a big issue. It's a big thing on legislators' minds."
– Beghetto

Q: *Can you see a near future where it's not only technologically but also legally possible for there to be a driver in the lead vehicle and no driver in the following vehicles? Is this a possible answer to the driver shortage or is that wishful thinking?*

Geller: Is it possible? Yes. Is it likely? Again, I think we're going to find that the technology's not the doer. The person is the doer and the technology should be the monitor. Let's put that aside for the minute and let's assume that the stars and the moon align and we do away with the driver. There's still the infrastructure. There are regulatory issues. Is this something that you're going to let on a two-lane highway and have five trucks in a row? Because you don't want to be the vehicle that's behind this combination. And that's one of the dangers of all of this, frankly. We keep hearing about how it's going to reduce collisions or it's going to eliminate collisions and all that. Experience has taught us that that's usually not the case. New technology usually changes the nature of collisions. Overall, the number of collisions has remained static for quite some time.

ELECTRIFICATION

Q: *A few years ago, when diesel prices were high, the talk in the industry was all about natural gas, particularly because natural gas was in plentiful supply. Natural gas is still in plentiful supply but is not creating the same excitement as before. Recently the talk seems to have switched to electrification. Considering the vast amounts of R&D truck makers invested in natural gas, why the switch in focus to electrification? What benefits does it bring?*

Kudla: It is the natural next step for the OEMs. The battery technology is getting better. Tesla is telling us daily that they'll have a truck that'll run on battery power. And I don't believe it'll be fully electric like the buses are. I believe it will be some kind of hybrid. Several of the OEMs are working towards this and electrification is coming fast.

Q: Does it not have many of the same obstacles to wide market penetration that natural gas did – namely high initial costs, lack of available infrastructure and low diesel pricing at the moment?

Huang: There are obstacles that we face. The infrastructure; the charging; the range; market acceptance. We have a local delivery truck that will be running around New York City with UPS to understand in the real world the performance of these systems. The goal with investing in electrification is that it's a more sustainable type of technology in the long-term. We don't think that the industry is going to switch overnight to electrification. There is going to be diesel. There is going be natural gas.

Q: *Marco, you have the fun task of dealing with legislators as part of the OTA and the CTA. What's it like dealing with them on these issues? Are they forward-thinking enough that they're really looking into this stuff? Are you finding that you have to educate them a lot? What's the discussion like with them?*

Beghetto: They don't know what's going on. Recently I spoke in front of the Senate Committee on Transportation specifically on this topic, and they just don't know. They're just asking questions right now. And they're gathering information. And they're trying to come up with a forward-looking plan that involves not just the federal government, but the provinces. As we all know, that's a challenge in and of itself. Manufacturing standards staying aligned with the United States is another challenge. Updating infrastructure. The disruption on labor is a big deal. That was one thing they kept throwing back at me. What impact is it going to have on labor? They talked about liability and compliance issues, sizes and weights. Security is a big issue. It's a big thing on their minds. Cyber-terrorism, and how we prepare for that. And these are the questions that we as an industry, along with government and stakeholders, are going be answering, or trying to answer, over the next 5 to 10 years.

BY JIM BRAY

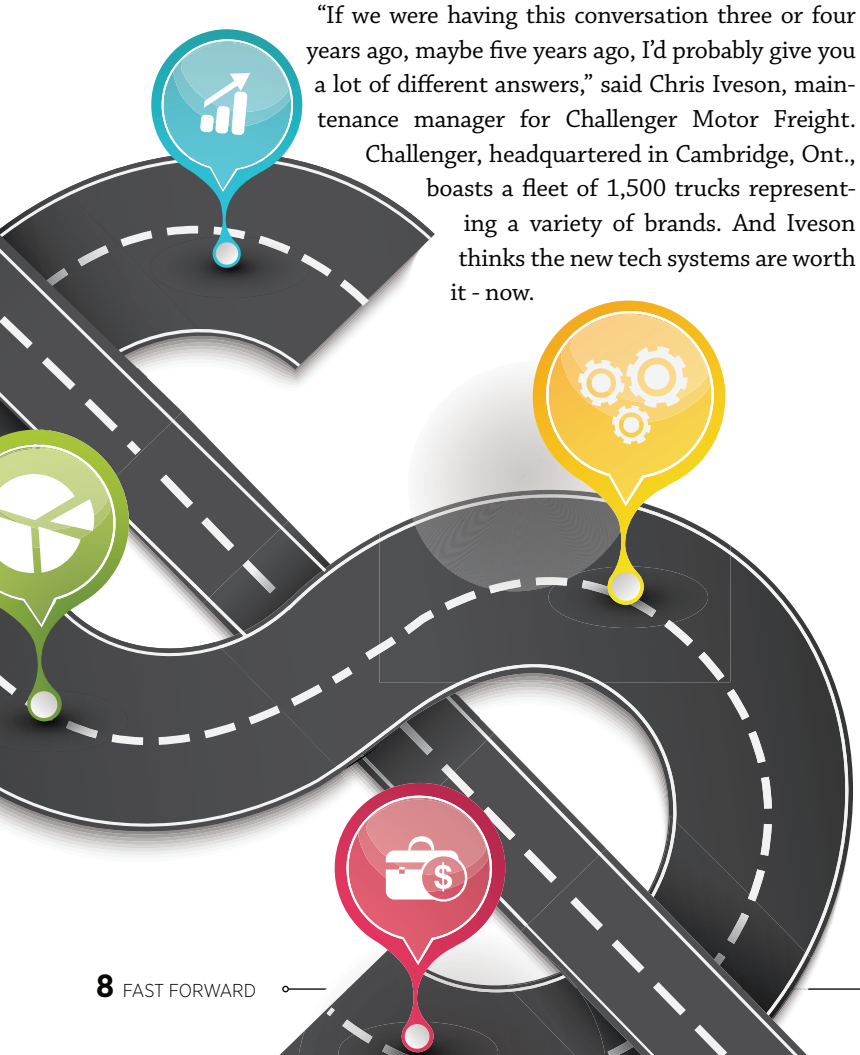
ADOPTING NEW TECHNOLOGIES

New tech helps your fleet stay safer, but is it worth the investment?

Disc brakes, lane departure warnings, adaptive cruise control, trailer tails. These are just a few of the newer technologies designed to help you keep your trucks on the road safely and ever-more-efficiently.

But how do you keep them on the road, and is keeping this high-tech stuff in good repair worth the effort and expense?

"If we were having this conversation three or four years ago, maybe five years ago, I'd probably give you a lot of different answers," said Chris Iveson, maintenance manager for Challenger Motor Freight. Challenger, headquartered in Cambridge, Ont., boasts a fleet of 1,500 trucks representing a variety of brands. And Iveson thinks the new tech systems are worth it - now.



Shifting priorities

When it comes to automated transmissions, for example, Iveson said that "Five, seven years ago they were a thorn, they really were. Today, they're seamless, they work perfectly." Ditto for collision avoidance systems.

"When they first came out, they were kind of an afterthought. Today, they're seamless, they work beautifully." It's the same with emissions control systems. "When we first switched over to regeneration using diesel exhaust fluid, things did not work very well," Iveson said. "Today, the systems work very, very well."

According to Jim Pinder of the Erb Group of Companies, automated transmissions not only work beautifully now, but they can be tweaked relatively easily. Pinder, who's corporate fleet director for the Baden, Ont.-based business, said the transmissions give them extra flexibility because "as they continue to improve the shift patterns and quality, we can upgrade the electronics."

Pinder said that one of Erb's early automated trannies – a 13-speed unit – was put into the company founder's truck, but "he didn't like the way the bottom end of the transmission was shifting." Thanks to its flexibility however, "we were able to go in and change the electronic package and make it shift in accordance with how he wanted it."

Pinder noted that Erb's automated transmissions have turned out to be extremely reliable.

"We haven't had any major issues," he said, mentioning that since so much of the tweaking

potential is electronic, "those technicians that are familiar with a laptop and can follow a software package are able to handle (it) with no problem at all."

He added that, since the bottom end of the transmission still has the same hard parts - bearings, gears and stuff - as a manual transmission, the result for Erb has been "a really good transition."

Those are the brakes

Rosenau Transport, based in Edmonton, Alta., also reports good success and few hassles – now, at least – from the new technologies it uses. According to fleet manager Cory Shymanski, "the only bad thing that we've found, with disc brakes for example, is that in Alberta you have to pull the wheels for the yearly inspection. That's the worst part of it."

Rosenau has been using disc brakes for about five years, and during that time Shymanski has noted they don't like to get dirty.

"They have rubber boots on them and you have to inspect the rubber boots to make sure that nothing's cracked or broken," he said, "because as soon as you start getting dirt inside there you've got problems." Because of that pesky reality, disc brakes don't work well when the unit goes off the asphalt.

"When you get that much mud and crud on them, they don't like that," he said.

On the upside, Shymanski noted that "disc brakes don't have to be changed as often as drums."

Rosenau also uses Bendix' Wingman collision mitigation system, which includes adaptive cruise control as part of the package - and while it's performing well now, such wasn't always the case.

"We had some problems for sure, but I think it was more just due to installation," Shymanski said. "We had some installation problems, a lack of knowledge when they put it on at the OEM level. But once we got past that it seems to be working fine."

Shymanski noted that part of the issue may have been that their original installation was "kind of the first level of the Wingman system" and noted that it has evolved so much since then that they'll be ordering the system with some of their new trucks "once I get a little more feedback from other fleets to see how well they're working. We just want to make sure that all the glitches are out, just like with any technology or anything new coming in."

Therein lies a tail

Erb started installing Trailer Tails in 2014, when they became legal in Ontario, and Pinder said they're now on about a third of its trailers. And while the fleet is continuing to evaluate their impact on its operational efficiencies and life cycle cost, "owner-operators like (them) as they see that the reduced fuel cost goes directly to their bottom line, with no added costs."

He also pointed to how the add-ons improve safety, because the reduced road spray from the trailer lets vehicles passing them see better.

"We have included washing the trailer tails as part of the overall maintenance program," he noted, "as that extends the life of the trailer tail components."

While adding new technology can definitely add costs to the initial equipment investment, it appears that using the technology creates savings over time, not only in maintenance costs but elsewhere in the business as well.

"Where it has added cost to some processes," Challenger's Iveson noted, "other departments are feeling the effects of it. For example, our safety department is seeing less accidents, so that budget gets lowered. So, for the overall company, I believe the new technologies are definitely providing us with better fuel economy and safer trucks."

> **"While adding new technology can definitely add costs to the initial equipment investment, it appears that using the technology creates savings over time, not only in maintenance costs but elsewhere in the business as well.**
>
> –JIM PINDER, THE ERB GROUP OF COMPANIES

Challenger also uses the new tech stuff as a way to increase its commitment to its staff, Iveson said, "to change the amount of training that they get on a much more regular basis."

He noted it isn't enough to have someone come in to provide training sessions once in a while these days, so now they have each of their maintenance and parts staffers spend an hour per week, on the time clock - which Iveson noted works out to 52 extra hours of study a year – to do learned management systems training.

"It improves their skills and knowledge and lets them be successful with a lot of the new technologies out there," he said.

The bottom line about whether this stuff is worth the extra hassle?

"Don't fear the new side," Chris Iveson advised. "It's not the dark side."

He noted that a lot of the new technologies got their share of bad press when they came out - and he admitted that, for early adopters such as Challenger, it really was a tough learning curve back then. "But it's not an issue today," he said, "and we're seeing improvements in maintenance schedules because of the new technology."

Which, of course, is one of the rationales behind it in the first place.