

# CNH Industrial Tech Day – December 7, 2022 Edited transcript



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[video]

**Scott Wine**  
Chief Executive Officer, CNH Industrial



Well, good morning. I'd actually like to clap for all of you and really thank you for making the trip out to Phoenix to join us for this. But actually, and I'm going to talk a lot about firsts, this is our first ever Tech Day and we're thrilled that you're here to be a part of it. If you came in from downtown Phoenix like many of you did, you'll realize how big this city is. One thing about Phoenix, you can go a long way.

So what we've tried to do today is give you the opportunity to see our tech portfolio in its fullest right out here in these fields. It's going to start with a little bit of talking. I'm going to talk for a very short period of time because that's not the value of today.

What the value is, is to see what we're driving from what we told you at Capital Markets Day and where we're going with our tech stack and how that's going to drive and benefit customers. Speaking of customers, I think one of the highlights that you'll hear today, we've got Brady and his father Keenan Fahlman to tell you what they've seen using one of our autonomous products and how it works, and that customer-inspired innovation is so important to us, and I think you're going to see that infused throughout the day.

We also have the benefit of having our largest and probably most important dealer, Titan Machinery, David Meyer, and his whole Board of Directors is here, so if you get a chance to talk to them. A few other people, just

I'll give you the cheat sheet. If you get a chance to talk to John Preheim, it'll be the best time you spend all day. He was really one of the key parts of Raven that came in. Talk to Parag, of course. But really there's a whole team as you go through these stations that you're going to see really bring to life our technology that we're so excited about.



And really it's the idea of fusing our great iron and great technology. We talk about breaking new ground and it's interesting you realize we're a little bit being agile and adjusting here, we had 1.7 inches of rain on Sunday, Monday, and year-to-date they've had four. So put that into perspective of what it means for our equipment. But the team's done a really good job bringing that together.



But this corporate purpose we have around the breaking new ground and the words underneath it are important, because we don't say it, but it's customer inspired innovation is what the first word is. And then we talk about our commitment to sustainability and productivity. And if you've heard it from me once, you'll hear it a bunch of times, this whole game for us is around improving productivity and yield for farmers. And I think one of the things you're going to take away from today is how much value we can bring in those two areas, productivity and yield for farmers. That's where our investment's going.



And no greater example of that was the investment we made almost a year ago exactly when Dan and his team decided to come with us on this journey. And I think there was a lot of questions about Raven, and we'd had a long-standing relationship with them. But the value unlock that we've seen has been significant. And what's interesting and exciting for me is how much of that value is still yet to come. But the early wins that we're seeing are exciting and you'll see a lot of that today. It really is infused in almost everything you see, the value that we're getting from that acquisition.



And the value's important because we are in a difficult world. We've had a darn good year in many respects with financial results, but that's just the really hard work that Derek and his team are driving. But it's brutal out there.

Think about what we're seeing. We've got tremendous focus on sustainability all over the world. For those of you and from Europe, honestly, I don't think it's possible to be more focused on climate change than the Europeans are. A little bit less so here in the US, but tremendous opportunity, and I think you're going to see from us today how we can bring a focus on sustainability and value for our customers at the same time. And that value is we think about autonomy and precision, it helps offset some of the concerns we have, all of us, about getting the necessary labor. It's getting a little bit better, but we see inflation all over the place and we're trying to drive that. We've got solutions that can help people get by with less labor or less skilled labor, and you'll see some of that today.

We're working hard to offset inflation. We've got a very aggressive strategic sourcing program we're driving, and unfortunately or fortunately, we're actually pretty darn good at passing on price over cost. And Derek and Oddone will talk about how we're continuing to drive that value for shareholders along the way as well.

But at the end of the day, look at that picture on the right, we just passed over 8 billion people in the world sometime earlier this year. That's a lot of mouths to feed. There's not much more arable acreage, so our focus on bringing technology to bear to solve those problems is significant.



But it's not new. We've been at this for over 180 years. We brought the first twin rotor combine, we brought the first quad track tractor. We know how to bring these innovations to life and now for the last 25 years, it's been about bringing tech to life as well. So why don't you use today, what you're going to see, I've got a quick video that I'll play for you now to talk about the value that we've built over these 180 years and give you an idea of what's to come.

[video]



We are proud of our history and there have been a lot of firsts, but the focus that you're going to see today is about what we're bringing to the future. These advanced technologies cover all, and what you'll see and what we've tried to demonstrate is across this farming cycle that the values and the benefits we can bring. Bringing it to the farmers so they can see that technology coming to life as they're running their business, making it better and more productive for them.



You'll also see today in one of the significant investments that we're making in sustainable fuels. I could go on for a long time, so excited about what Derek and the team are driving with our partner, Bennamann, to bring the methane tractor to life. If you think about what we're seeing with fuel prices, with energy prices, and the idea to

drive a negative carbon footprint on a farm, it is really exciting and it's coming to life very, very quickly and going to be one of the most exciting things you'll see here today.



But you're also going to see just tremendous capability and technology. The tech stack is really coming to life and getting born and getting built.



The products you'll see, the technology, the benefits. Ultimately, the biggest takeaway I'd like. You can read the words on the slide. Obviously we got great technology, it's much more market ready. But what I think you're going to see is how much impressive and incredible capability we currently have. Yes, it's about where we're going and what we're doing, but when you see the autonomy, the automation, the way these machines work, the way we bring technology to bear for our customers, that's the exciting part. And if just one of you walks away and says, "Wow, I didn't realize that's what they did," then we win. Thank you for being here. Enjoy the day.

[video]

**Parag Garg**  
Chief Digital Product Officer, CNH Industrial

**PARAG GARG**  
Chief Digital Product Officer

Good morning and welcome. I'm Parag Garg, Chief Digital Product Officer at CNH Industrial. It is great to spend time with you again. We have so much to share with you today.

**Breaking  
New Ground**  
Innovation Sustainability Productivity

One: we continue to Break New Ground with customer focused innovations that are delivering the technology and value farmers seek.



Two: we are fully leveraging the Raven advantage as we accelerate our autonomy programs and enhance our tech-stack capabilities and deliver solutions faster. In just over a year, we have already developed and deployed cutting-edge technology to the market that is being scaled across multiple farming operations at an exceptionally fast pace.

And three: CNH Industrial is fulfilling our promise to have the best answers to agriculture's biggest challenges as our automation experience and autonomy technology enhances our leading brands and elevate farmers' productivity, sustainability and profitability.



Let me explain. What I've found exciting working at CNH Industrial is how uniquely positioned we are to shape an industry with the growing breadth and depth of choices we offer our customers and to rethink conventions of how farming gets done.



There has never been a time when farmers have had nothing to worry about. Farmers recognize that we are listening and responding to them with automation and autonomy solutions to improve the entire farming cycle. They appreciate how hard we are working to earn the right to be their trusted business partner. And we do this with our boots-on-the-ground approach.



In the late 1990's our brand Case IH was the first to introduce Precision Technology in agriculture to provide simple GPS guidance for tractors. This led to an agricultural revolution requiring every practice of farming to be more accurate and controlled. As the team and I have engaged farm operators, we feel the tremendous pride they have in being stewards of their land, making better choices to preserve their farms, and being able to carry on their family legacy.



**We help farmers farm profitably & sustainably**

Profitability increases when farmers use all their resources more efficiently, with less waste of seeds, fertilizers, pesticides and water consumption. Precision farming supports sustainability, reducing greenhouse gas emissions and the overall use of fossil fuels. This is truly a case where less is more.

Since I started leading Digital Technology Product Development over a year and a half ago, I've seen how our technology impacts farmers' processes through incredible precision. And here are some things I have learned along the way.



**Every farm has its own unique challenges**

Every farm has its own unique challenges. Therefore, we must continue to design and manufacture great iron connected with ground-breaking innovations. This means that everything we produce continues to have unmatched toughness to handle the unpredictable and adhere to the highest standard of quality.



**BREAKING NEW GROUND #TECH**

**CNH INDUSTRIAL**

Next, I've learned that the dedication from our employees is unparalleled. Our agile approach to developing technology in the field is important as we see the challenges of farming firsthand. As we work with farmers, the flexibility of our process and our team ensures we're getting the testing and feedback we need no matter what.

Last but not least, I've recognized that we're in an enviable position to develop next-generation technology today. When we say we're breaking new ground at CNH Industrial, we mean it.



**CONNECTED PLATFORMS**

**AUTOMATION**

**AUTONOMY**

**CNH INDUSTRIAL**

That brings me to today. I'm going to share the progress we are making in three key areas: Connected Platforms, Automated Solutions and Autonomy Developments. You'll also hear how investments in our tech culture will generate a consistent path forward for Ag tech development and further position CNH Industrial as an employer of choice and customers' best answer to agriculture's biggest challenges today and tomorrow.

Let me begin by defining a few terms that make-up our suite of Precision Technology. Connected Platforms help seamlessly connect farmers to their machines, fields, teams and partners so they are able to manage their operations and collect data from anywhere on any device.

Automation: it's when the operator is in charge of the machine but can transfer limited control for a specific function. You are going to hear and see a lot of automation at work in our equipment portfolio throughout the day.

Then there is Autonomy, where the machine accomplishes all its tasks without direct operator interaction.



So with that understanding, let's begin with Connected Platforms. For today's farmers having a digital experience is essential. The Connected Platform is at the center of how things work and is the heartbeat of the system. As automated and autonomous solutions are expanded through a suite of digital tools, we are focused on optimizing equipment productivity and job quality to ultimately improve profitability. We are providing a seamless, intuitive, comprehensive Connected Platform allowing customers to collect, store, visualize and analyze their farm operation data.

Our customers want to leverage data; they didn't sign up for a PhD in Data Analytics. The goal is to ensure data and software helps them make informed decisions that they can trust and execute. We are continuing to pursue an open digital ecosystem strategy. We believe in facilitating data flow from our platforms to all leading Ag digital platforms so farmers are able to control who they share their data with.

At Capital Markets Day, we shared that we are building a robust and flexible tech stack with ubiquitous farm management capabilities. We've been taking this even further. Our Connected Platforms are setting the foundation for our customers' day-to-day operations with automated technology. This involves moving from batch data to real-time data. When you're in the field, every minute counts. So, it is important to be able to use valuable inputs on tight timelines, or even in real time. We will continue to make advancements in all our Connected Platforms. Most notably we are giving richer analytics to our customers as they make data-driven decisions to react to future challenges.



Next, let's turn our attention to automation, where the machine operator has full control while being able to engage specific automated functions. The key message here is: currently we are delivering immense customer value across the segments, and we are poised to deliver a lot more value to the marketplace in 2023 and beyond. We are taking advantage Raven's cutting-edge guidance technology and integrating it with CNH Industrial's existing modular architecture. We're doing this with the goal of taking this flexible and robust tech stack and making it essentially tech-agnostic.



Let's dig a little deeper by examining the benefits our automation technology brings to the full-farming cycle, and let's start with tillage. Depth and quality of dirt are critical. With changing conditions throughout the field, it is just too much work to manually reset the till for each zone. Typically, farmers set their machinery and apply those settings across the entire area. This is problematic because calibration issues are more likely to occur, leading to underperformance.

Our tillage automation technology allows the operator to set tilling depth to an accuracy of one tenth of an inch as our sensor monitors and maintains the depth throughout the job leading to the best seedbed while maintaining an average speed of 10 miles per hour. Research has shown farmers can save 17% on fuel and yield nearly 3 more bushels of soy per acre as a result of automatic adjustments. In total, our tillage prescriptions enable farmers to earn over \$36 more per acre.

In addition to this, we are in the customer testing stages for semi-autonomous tillage solutions. Why? Because these are applications that farmers most likely to want to automate.



Next onto planting. During the planting season, farmers generally have a 10-day window to get seeds into the ground. If they miss it, they lose profit. Therefore, they need a reliable solution. Each row on our planter robotically changes its seed rate to put seeds in the ground exactly where they need to be. Our patented speed adjusted vacuum fan and auxiliary alternator provide the optimal vacuum and power to the planter automatically without operator intervention.

This has led to a 17% seed savings for our customers and has increased productivity by giving operators the ability to drive twice the average speed compared to traditional planting technologies with improved seed depth spacing and seed-to-soil contact, ensuring early and uniform crop emergence. This leads to yield increases of up to 26%. This is another example of pairing great technology with great iron.



Next, we have application, which means spraying crop protection products. This is another example where CNH Industrial has proven to be the best answer to agriculture's biggest challenges. A typical farm can have upwards of 100 million plants. Raven's Vision Guidance System helps operators take care of every one of them, steering the equipment with a sub-inch of accuracy precisely down the rows.

Our automated sprayers have more than 125 individual microprocessors controlling up to 109 precision nozzles on a 135-foot boom. These microprocessors maintain coverage and prevent crop damage from over or under application at speeds over 20 miles per hour which is faster than any comparable solution. This has enabled our



customers to experience 15% less idle time, 10% product savings, and the ability to cover 20% more acres per day. While lowering machine hours, farmers are also reporting increased confidence and satisfaction and less stress to the operators. You'll see this in action at our demo stations this afternoon.



This brings us to the all-important harvest. Maximizing the grain harvest is one of the most critical operations within the farming cycle. Both quality and quantity of grain are crucial in generating revenue for farmers. In Brazil, we had a customer that didn't see the value of our Harvest Automation System until they turned it on. It saved them \$30,000 per year for each machine, reducing fuel costs and allowing them to cover more hectares per hour.

Our Harvest Automation reduces the number of functions that operators need to manage from twelve down to three, generating productivity benefits from both semi-skilled and fully skilled operators. Our technology measures everything: from ground speed, crop harvest conditions, to the quantity and quality of grain harvested. The automation system utilizes sensors including a multi-spectral camera with advanced artificial intelligence to optimize performance.

Every 20 seconds, our neural networks select the best action out of 280 million possibilities to maximize a farmer's harvest. Overall, the use of harvest automation has generated 33% less grain loss and 25% increased throughput. All as a result of automation technology designed to drive productivity, sustainability and profitability for our farmers. This is another area where we are in the customer testing stages for driver-assisted harvest solutions, because they could generate greater and consistent success for farmers.



Let's now take a look at the cultivation of hay and forage for animal feed, bedding and energy production, which is essential to our food and energy supplies. Operators need to minimize the need for manual intervention to monitor changes in field conditions. Our award-winning technology takes the guesswork out of the process and provides automatic steering speed and weight controls. The LiDAR system you will see in action today emits a laser pulse. The pulse is then reflected by the surface of the field and row. The processor then calculates the position and the shape of the row and then controls the position and speed of the tractor.

The sensors inside the baler chamber measure crop flow to fine-tune the steering and speed to even further maximize capacity inside the baler to achieve high-quality performance. Results have shown up to a 15% increase in productivity and a 7% reduction in fuel consumption with baling automation. Again, delivering solutions to farming's biggest challenges.



Finally, let's look at orchard / vineyard. When working with permanent crops like vineyards and orchards, farmers must not only take care of the individual fruits but leave the plants unharmed and healthy to produce again, and again. Our systems automatically adjust to the varying plant height and ground level and picking speed needed to ensure a quality yield and a repeatable crop. Our automatic system scans the harvesting job ahead 33 times per second. It monitors the plants and terrain a full 10 meters ahead of the machine and self-steers automatically along the crop canopy, even at high picking speeds.

The system is also equipped with infrared technology to work in even the darkest of nights since the characteristics of the fruit, specifically the sugar content, are often at their peak overnight. Customers have experienced tremendous sustainability improvements with 10% savings in herbicide, 35% fuel savings per acre, and a 35% reduction in CO<sub>2</sub>.



As farmers continue to reduce their costs and waste and increase yields, they see a significant difference in their productivity, sustainability and profitability while recognizing CNH technology has proven to be the best answer to agriculture's biggest challenges.



Our last segment is autonomy, which means the machine is able to accomplish all of its tasks without any operator interaction. The automation we are delivering for customers that I just spoke about are the key contributors on the journey to autonomy. We have plenty going on in the autonomy space.

Our investment in Raven gives us a solid jumpstart and a clear advantage as we are rapidly accelerating integration. We introduced the Case IH Trident 5550 applicator with Raven autonomy earlier this year. It is the industry's first driverless applicator which is the #1 fertilizer application farmers have requested. Later today you'll hear from our customer Brady Fahlman from Fahlman Acres who was one of our early operators of the product this year.



Also, we have Raven's autonomous grain cart solution. It allows a combine operator the ability to call a driverless grain cart tractor directly to the harvester to offload without a second operator. Two machines, one driver, twice the productivity.

There has been an incredible amount of progress this year on autonomy, and I'm excited to spend time with you in the field to show you what we've been up to! The Raven advantage is playing a major role in accelerating our autonomy program and enhancing our tech stack capabilities. We will continue to scale Raven's capabilities across multiple farming operations.



## Tech-Centric Culture

Up until now I've talked a lot about our technology, and it's great technology, but it means nothing without our talented teams and our tech culture. I believe it is important to share how our tech-centric culture plays a vital role in our ability to continue to drive results.


Precision Technology is a top priority, and our culture is prepared for that journey. We've embraced this mission model and are unified in our customer-centered purpose: building technology that breaks new ground for farmers. Our bedrock belief is if you start with the customer, understand their problems and make decisions in their best interest, you will end up in a great place.



## Our people and culture

Throughout the day, you will meet the incredibly talented and passionate people delivering these exceptional technologies. You will see first-hand how our people and our culture have their fingerprints all over the technology we bring to farmers and how it generates a positive customer experience.

With a larger team, we're innovating faster. Over the first 3 quarters, we have added 50% more global employees to our Raven Precision Technology focused team. We are going where the talent is. We will continue to build our pipelines as we increase our investment in our R&D centers and open brand new ones, through our robust internship programs, STEM outreach, and recruitment campaigns.



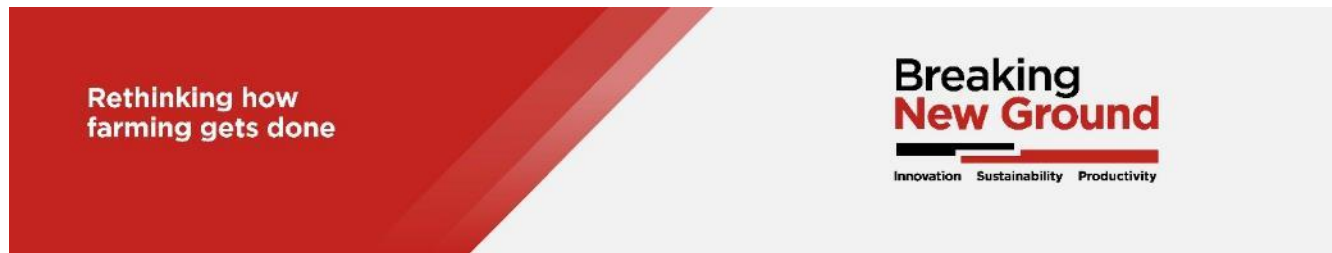
As a leader in Precision, it really makes me so happy to see how well the Raven integration has proceeded. It's the people and culture that has made it impossible to know where CNH Industrial ends and our Raven team starts. The one-team philosophy is focused on serving customers.

**“When used wisely, technology can enhance our humanity”**

Lady Suzanne Heywood, Chair, CNH Industrial

In closing: a few weeks ago, our Chair, Lady Suzanne Heywood, spoke at the Turin Polytechnic University, one of Europe's leading universities for engineering. She said: “When used wisely, technology can enhance our humanity”.

It is no secret: connected platforms, automation and autonomy will improve the lives and work of our farmers around the world. And CNH Industrial, through our people and culture, will continue to partner with farmers on every continent as they serve growing populations.



We will continue to lead in shaping the industry, and rethinking conventions of how farming gets done, and CNH will continue to prove to be the best answer to agriculture’s biggest challenges.

Now, let’s hear from some of our engineering leaders in our first panel. They’ll explain how we’re integrating and implementing this tech culture across our organization and give you a deeper dive into our technology. I look forward to spending time with you the rest of the day.

### Precision Tech Panel

**Mukesh Agarwal, VP of Precision Software and Cloud Applications, CNH Industrial**  
**Dan Eslinger, VP of Precision and Vehicle Electronics, CNH Industrial**  
**John Preheim, VP of Raven Product Development, Raven Industries**  
**Cherilyn Jolly-Nagel, Global Farmer Network**



### Cherilyn Jolly-Nagel:

Well, good morning, everyone. It’s a pleasure to be here. Now they really know how to throw a party here in rural Arizona. My name is Cherilyn Jolly-Nagel. I’m a farmer from Saskatchewan, Canada, where it is minus 30 degrees Celsius at home, when I left the farm. For those of you doing Fahrenheit math, that is minus a million degrees Fahrenheit! It is really, really cold at home, but productivity had dropped on the farm just enough that I could get away. So I’m thrilled to be here.

I farm with my husband. We are both fourth generation farmers and our families are farming some of the same land for more than 120 years. We grow chickpeas and lentils and we grow durum, which makes pasta, and we grow canola, which is a heart healthy oil. We have two children. We’re raising two tractor-driving, gun-slinging, dirt bike riding teenage daughters, and everybody in the Nagel family is having a great time farming and we’re all really excited about the future of agriculture. So, it’s my absolute pleasure to be here to help celebrate the Tech Day and selfishly, to help celebrate the innovation that is so important to farmers like me.



So, with that, please join me in welcoming our panelists for the Precision Tech panel. We have John Preheim, Vice President of Raven Product Development, Dan Eslinger, Vice President of Precision and Vehicle Electronics, and Mukesh Agarwal, Vice President of Precision Software and Cloud applications. Gentlemen, have a seat. This is the famous John that Scott was referencing this morning, so I get the first chance to visit with them. No pressure, John.

So, I thought we would start this morning by giving the audience an opportunity to get to know you a little bit. CNH Industrial has a tech culture, and that has to start with a tech focused leadership, so would each of you share your personal technological background and how that's relevant to your role in CNH? Mukesh, we'll start with you.

**Mukesh Agarwal:**

Well thank you, Cherilyn. Good morning. I'm Mukesh Agarwal. Look, at my core, I'm a software engineer. I absolutely love designing, developing, delivering purposeful software. Now, if that makes me a geek, I proudly respond to that. I have 30 plus years of experience at Microsoft, United Health Group and 3M driving innovation and engineering. The thing that really, really resonated with me is really the charter that CNH has. CNH's charter of feeding and building the world really relates to me. But beyond what I personally believe, there's also a great opportunity in agriculture right now. The ag segment has mounds and mounds of data out there and we are just beginning to scrape the surface of that, and that's the opportunity I see, of bringing that data to life and making sure that our farmers can drive the maximum productivity for their operations.

**Cherilyn Jolly-Nagel:**

Great. Dan?

**Dan Eslinger:**

Yeah, sure. Thanks. Dan Eslinger. So grew up not too far away from you, Cherilyn, in southern Alberta, grew up around ag for my childhood. As I got out of engineering, spent eight years at Deere, so I ended up leading their StarFire GNSS receiver development before I left, starting as a software engineer there. Took 10-year break from Precision Ag and worked in aerospace, worked in multimedia, public safety, and came back in, and I'm really excited at this point. So I spent my time at Deere really watching the Precision market adoption mature and the technology mature and their robustness. In this 10-year intervening period, it's really come through that farmers now count on that technology, so it's really become an integral part of the operation. So I really do think that we're at an inflection point where we're poised to adopt even more operational efficiencies, more autonomy and more automation in particular as we drive more value for our customers in the fields.

**Cherilyn Jolly-Nagel:**

Thanks, Dan. John?

**John Preheim:**

Yeah, good morning. I have a slightly different background than Dan and Mukesh. I grew up on a small family farm in Eastern South Dakota. We raised livestock, cows and hog primarily, and we farmed crops, primarily corn and soybeans. I was driving a tractor before kindergarten and I loved every minute of it. All the way up through high school I was very actively participating, but I also had a very strong love of science and technology. I had a couple of brothers who really wanted to farm, so I decided to go for engineering.

There was no Precision Technology on our farm when we were growing up, kind of in its infancy stages yet, so I went to college to get an engineering degree and when it came time to start looking at what I was going to do for a career post-college I realized that 30 miles from where I grew up there was a little company called Raven Industries that focused, at least one division primarily, on Precision Technology for agriculture. So I ended up taking a job there and I've been there ever since. It's been awesome.

It's so easy to find purpose in helping feed the world. It's been awesome being able to continue staying close and connected to ag, watching my family, my wife's family use the technology we produce to help make them more efficient and profitable and it's been really amazing to see the journey from where we started when I got into Precision Technology. Guidance and steering was a very advanced concept at the time to now what we're going to see this afternoon with autonomy running out there. So it's just been a fabulous journey.

**Cherilyn Jolly-Nagel:**

I too remember the manual days, John. Mukesh, you mentioned mounds of data, how are farmers using this data today and how is CNH Industrial working to make that a better experience?

**Mukesh Agarwal:**

Well, thank you. Look, farmers that use Precision Technology, they use the data to track their machinery, connect with farms and drive operational efficiencies, which I want you to go back a little bit to what Parag said earlier. Parag said it best, farmers didn't sign up to become data experts. They didn't sign up to get a PhD in data analytics. So what are farmers trying to do? Farmers want to save cost, they want to save time, they want to increase the yield, they want to increase efficiencies, so that's where we come in. What we want to do is we want to take that mounds and mounds of data and convert it into actionable intelligence for them.



What we want to also do is provide them with a connected platform. And as you heard, connected platform is nothing but a suite of tools that allows farmers to connect with their crops, with their field, their advisors, their partners, with their equipment. What we are trying to also do is make sure that decision intelligence is at their fingertips, and then we want them to do all of this by providing them an easy-to-use interface so they don't have to muddle through complex interfaces. And then of course, we want to make sure that farmers are able to do all of this from any place, anytime from any device. That's what excites us.

**Cherilyn Jolly-Nagel:**

So Dan, there's certainly a spectrum when it comes to farmers, some of us are early adopters, some of us are on the other end where it takes a little more time to justify the value of it. So how would you communicate the in-cab technology to someone who is unfamiliar with Precision Agriculture?

**Dan Eslinger:**

So we find that we have to do that just as we interact and tell our families what we do outside. Not a lot of people are involved in agriculture, not nearly as much as there used to be. But the quick answer to it is that with a short period of time, limited training, you can take somebody off the street almost and put them in a cab and get them to where they're an adequate operator. When you start talking about our automation capabilities, I'd like to refer to them as our superpowers because that really takes somebody who's a rather adequate operator and it makes them an adept operator, meaning we can get the same quality as a very experienced operator out of somebody when they've used our automation capabilities.

So I can use a personal example of harvesting millet in eastern Colorado last harvest. I was out there with one of my colleagues. The farm we were on, the farm we were visiting, he had an emergency, had to go into town and so we took over his harvest operation for that day. And with my colleague, he had a very clean grain bin and he was very adept at operating the machine and that was part of his skill set. And when I looked in my grain bin, it was not nearly as clean of grains so there was going to have to be more reprocessing, which was not a great outcome for our customer there, for the farmer. But toggle the switch, engage automation, and all of a sudden my grain looks just as good as a very adept operator. So that was really awesome to see and a great outcome for the customer.

**Cherilyn Jolly-Nagel:**

Well Dan, I am not going to tell my father-in-law that there's an opportunity that technology will make me a better operator. It won't go well for me at Christmas. John, can you share with us from your perspective how the integration of Raven with CNH Industrial will drive value?

**John Preheim:**

So Scott mentioned earlier this morning, but we have a long history of partnership. It's a decades long journey we've been on, and the partnership was great. We're united with a common purpose, we're helping to improve farming, improve profitability, improve sustainability. We have that common purpose to start with. But now what we get to do, as we're bringing the organizations together, is really leverage our complementary strengths.

Historically, Raven's done very rapid innovations. We introduce new technology in the aftermarket, lets us stay with our innovations. You get immediate feedback from customers. We're going to hear from Brady later this morning about that. And then you have CNH with a strong strength in hardening the technology, getting it deployed, extremely broad global reach, a huge customer base, a lot of different platforms. And we get to bring those two together and that's why the three of us work so well together. What we get to do is really increase the cadence that we can deliver value to the customers.

**Cherilyn Jolly-Nagel:**

Mukesh, you had already talked about the connected platform, how is that going to enhance data visualization for farmers?

**Mukesh Agarwal:**

Yeah, a great question. Look, at the end of the day, visualization is the name of the game. Really, the center of the universe for the farmers is the connected platform. And what we do is empower farmers to be able to visualize all their farming operations. Things like how do I set up, how do I plan, how do I monitor, how do I analyze? That's what we do.

Let me just give you an example. We had a customer who called us and said, "Hey, you know what, you can show me during harvest season how my combines are operating, right? So great, I can optimize my combines, but can you also talk to me a little about my operator efficiency?" And we were able to use the data that we have and provide them that visualization. That drove tremendous value for the customer. So those are the sort of visualizations that really enhance the experience.

You all are going to be watching a bunch of demos today. I really encourage you to look at our tillage and planting demos where you're going to see how we take this concept of a prescription and how do we put that onto the machines. Those prescriptions can be easily generated by our systems or other systems, and we can put that on the machines. When you go into the harvest demo, you're going to see that how the setup plan and monitor allowed you to really see the yield from your harvest. So those are the sorts of things that you're going to see as visualizations.

**Cherilyn Jolly-Nagel:**

Yeah, I'm looking forward to the demos. Dan, I would say each piece of our equipment today now contains tens of thousands of dollars' worth of Precision Technology. Can you walk us through an example of all the technological components that would reflect that high-cost value?



**Dan Eslinger:**

Yeah, happily. And you're going to see some of those this afternoon in our planting station as well. So I'll use the tractor and planter combination that you'll be seeing later today as an example. So with that, the customer value, the farmer values, they can go and plant twice as fast so they can get through the field twice as fast,

saving 17% input cost of seeds and that also eliminates skips and doubles. For those of you not familiar with the skips and doubles, skip is where you miss planting a seed in a piece of earth or double is where you plant two seeds. Either way, it's a very poor costly agronomic outcome if you have either skips or doubles. But in order to accomplish that twice as fast and saving 17% seed, we need 60 computers. So 28 of those live on the tractor, 32 of those live on the planter, four of those are precision controllers and those have a technical stack of Android, Linux, real time operating systems assembly, C++, Java, 3D graphics engines. So we really have a complex technical stack, but if you're adept at using a mobile phone today, whether that be Android or iOS, you can get into the cab and be – and that's all hidden from you – and you can be an adequate operator. So lots of complexity made simple.

**Cherilyn Jolly-Nagel:**

Well, John, as operators, we come across so many different obstacles in the field. Some of them are permanent like power poles or trees, some of them are more temporary, maybe vehicles or animals. Can you share with us how CNH Industrial is going to use artificial intelligence to drive automation and autonomy?

**John Preheim:**

Yeah, of course. And as you and I probably know, even good operators sometimes miss those things. And my dad discovered if you start too young, you miss them a lot. Really, automation, autonomy – all of it – revolves around sensing and acting. Everything you're going to see today is based off that. We've been doing this for years. It's not new. Some of the stuff around perception for example, hopefully we're able to run it. The best in the industry vision guidance system that we have going the LiDAR following for windrowing, all of those require a lot of data, a lot of processing, but those aren't even using AI yet. We are using AI in some other products that we're going to get to see today. Harvest automation is an example. There's, I think, 280 million different configurations and they leverage AI to analyze the quality of the grain and make decisions on how to optimize the combines. There's an example of artificial intelligence being used.

But directly to your autonomy question, there's a few autonomy platforms running out there this afternoon that are also going to be leveraging artificial intelligence, and that's really around safety. So as you increase the number of sensors, as you increase the number of decisions that have to get made, the complexity becomes really significant and artificial intelligence is getting leveraged today in the field to solve those problems already.

**Cherilyn Jolly-Nagel:**

Yeah, I'm glad you brought up the safety aspect of that because that's a real challenge for us. Mukesh, we talked about the connected platform as the center of the universe, why does CNH use the connected platform as the major pillar for its Precision offering?

**Mukesh Agarwal:**

Yeah, I love that question by the way. Look, you heard John and Dan talk about the tech stack, about automation, about autonomy. These are some key investments that we are making. Let me just enhance that with some data.

We have, in the month of October, 25 billion, with a big B, pieces of data that we took from our machines and we processed it, we analyzed it, we stored it, we made sense of it. That's the scale of work we are doing. We have 63 terabytes of data from the last three years that has just telematics information. I was just, before this, checking with my team. There were 3.9 million calls that were made to our integration platforms. That's the sort of stuff that we are investing in. That's what gets me excited.

But let's say I put all of this aside, the investments that we are making today are focused on the customer. We are a customer-first company. We are focusing on customer needs of decision making. How do I help my customers make proactive and dynamic decisions? On collaboration, how can they maximize their connectivity with their partners and with their advisors? And last but not the least, maximizing the short seasons, 10-day planting season, how do I maximize their uptime so that way I know where the equipment is, how is it working, and how can the farmer connect with the machines and how can machines connect with each other? Those are the sort of investments that we are making.

**Cherilyn Jolly-Nagel:**

Well, Dan, let's talk about the embedded technology then. How is the embedded technology evolving?



**Dan Eslinger:**

Yeah. So we're making sure that we have development capability in house that allows us to go at a faster pace with higher quality and truly lets us own the customer experience. So we're not a technology for technology's sake company. We go and take that technology and solve true customer problems with it, and so it's the application of technology that's really exciting for us. So with our modular architecture, John and Mukesh are all marching forward to make sure that our aftermarket capabilities are strong as our factory fit, and those march together across our portfolio. So that's the evolution at this point.

**Cherilyn Jolly-Nagel:**

John, we'll throw the last question to you. There's certainly no shortage of places for the company to spend their time and energy and resources, so how will CNH Industrial prioritize those pieces of the autonomous puzzle?



**John Preheim:**

Yeah. So today, we're going to see three autonomous applications out in the field. The first one is the autonomous grain cart. Some of you have probably seen already. The autonomous spreader that got unveiled this year at Farm Progress Show. And then the first peak for everybody here, we're unveiling our autonomous tillage platform, assuming it stays sunny and windy. I'm hoping it stays sunny and windy so I can get into the field to do field work, but I am today. How we prioritize those, we really focus on what customers are most willing to adopt first and minimize impact to their workflow. As we look at autonomy, we know there's going to be changes to workflows for the customers. Again, I suspect that Brady's going to talk about this today. It's a lot of stuff that we've worked with him on, how we can minimize workflow impacts as autonomy becomes prevalent. So, prioritizing based off that and what the farmer's most comfortable with and our close ties to farmers enable us to make those decisions.

**Cherilyn Jolly-Nagel:**

Very good. Well, that is all the time that we have, gentlemen. Join me in thanking our panelists. Thank you for your time.

Up next, we welcome Scott Harris, Case IH brand president to welcome to the stage another Saskatchewan farmer.

**Customer Interview**

**Scott Harris, Brand President, Case IH**  
**Brady Fahlman, Fahlman Acres**



**Scott Harris:**

Good morning. I'm Scott Harris, brand president, Case IH & Steyr. And now we're going to change it up a bit. Instead of hearing from us at CNH as has been foreshadowed by Scott and others, we have a unique

opportunity to hear directly from a grower who's been using some of our advanced technologies. His insights are really meaningful and will help develop a really clear understanding of exactly how impactful these emerging technologies are, but maybe more importantly, how growers' current operations are impacted and maybe modified to really capture the entirety of the value proposition that these new technologies represent. So all the way from Holdfast, Saskatchewan, Canada, Case IH and Raven customer Brady Fahlman. Brady?

Hi, Brady. Have a seat. Brady is a long time fifth-generation farmer, Case IH and Raven customer, as I said, and he farms his original family homestead in Holdfast. He and his team are really progressive operators, early adopters of technology, particularly as it relates to addressing some of the labor challenges that are so pervasive in our industry today. So Brady, so happy to have you join us. Thanks for being here.



**Brady Fahlman:**

Yeah, thank you. I also think it's very cold in Saskatchewan, so it's an absolute pleasure to be in Phoenix for five days. But yeah, like Scott said, I'm the fifth generation of my family farm up in Holdfast. I grew up in Holdfast – town of 100 people. Had a fairly typical small town upbringing. My mom is a teacher; she taught me kindergarten, grade one and grade two. Dad's a farmer. And I pretty much spent my younger years having free reign in the skating rink and riding around with dad in pieces of equipment. So after high school, I attended Lethbridge College for two years and then I came back to farm full time in 2009. So that was the start of our growth period I guess, for our farm. We picked up 10 quarters of rented land that year, and then in 2019, we had the opportunity to purchase 13 quarters from a neighboring farm, which was our cousin. And inside that 13 quarters was one of our original family homesteads.

So right now, we farm all three of our original Fahlman homesteads. And then this summer, we had the opportunity to pick up another 22 quarters going into spring of 2023. So that puts us at our current size of about 13,000 acres. And then alongside Dad and I, we have three full-time guys, Nolan, Kelly, and Jason. My girlfriend is part of the team. She does all of our grain marketing. And my younger brother, Landon, my brother-in-law, Kyle, and my uncle Tim, come and help us out during the busy times.

**Scott Harris:**

What a great legacy, Brady. Tell us and share with us a little bit about how you're using automation and Precision Technology today and how they impact your operation.

**Brady Fahlman:**

Yeah. So, using Precision Technology or really any of the latest tech products is not something that's new to us. It's something that I learned from my dad by watching him through his farming career and he instilled that in us. So across our fleet, Patriot sprayers, AIM Command FLEX, Viper 4 monitors and field hubs to get the data out of the sprayers and into our office. We have two 580 quad tracks that just hit our dealership actually up in Davidson. So we're looking forward to getting those into our operation. And then 50 series combines with Harvest Command, and the Harvest Command is something that had a real immediate impact on our farm.

As I said before, my brother-in-law likes to come out and help us for harvest and he doesn't come from a farming background at all. So he's a very inexperienced operator, we'll say. But having that Harvest Command there, we had the confidence to know that throughout the day the combine was going to adjust, the quality of the grain was going to stay right where we wanted it. And it made it easier for Kyle too because it was one less thing for him to worry about. All he really had to do was worry about driving it and trying not to hit anything. So it got him comfortable very quick and then we could teach him more after that. And then we use AFS Connect to bring it all together. It doesn't matter how much data all of our pieces of equipment produce in the field if we have nowhere to put it, so we can look at it, analyze it and use it to drive our management decisions, it all doesn't really matter. So we use AFS Connect and then for us, the next natural step is autonomy.

**Scott Harris:**

Awesome. Well, let's dig a little deeper into autonomy and what does it look like for you today? And maybe more importantly, tell us a little bit about the process of implementing it on your farm.

**Brady Fahlman:**

For sure. So, autonomy is something we've sat around, talked about, discussed how it would work in our operation and something we've been very, very excited about and have been waiting for to get it out. So when we had the opportunity this year to demo the Trident with the Raven Autonomy, we were very excited. So for us, a lot of the conversation around autonomy is focused on labor. And it's true, seasonal labor for us is hard to find. And when you throw in tight weather windows and tight application windows, it's even harder to have that labor ready when we actually need it. So autonomy to us, is just a necessary next step to improve the efficiencies of our farms. So if we can get guys out of the cabs and we can use our labor that we have already more efficiently by supporting this equipment and just feeding the equipment, sprayers with chemical and water, getting the grain off of the fields fast enough to make sure our combines run efficiently, that's really what we're looking for and where we see autonomy fitting in our farm.

**Scott Harris:**

Yeah, excellent. So there are implications to the support operations to implement autonomy effectively?

**Brady Fahlman:**

Yeah, absolutely. As the equipment's gotten so good and gotten so big, we are more focused on logistics and support of that equipment. So when you take a guy and tie him up in a cab for 12 hours, we're just not using the labor that we have efficiently. So that's a big reason of why we want it on our farm.

**Scott Harris:**

Yeah, really clear. So in our last couple of minutes here, what is your outlook on the future of automation and autonomy on the farm?

**Brady Fahlman:**

So, I've been asked this question a few times about the future of autonomy and to me, I was able to sit this fall in the driver's seat of my half ton and click play on the GCS. And I watch that Trident go up with nobody in the cab and drive up and down the field. And it was the best moment that I've had in my short farming career to see something that we've talked about and actually get it onto our farms. So to me, the future is now. I don't want to look at stuff anymore, I want it now. And what you guys are going to see out there – Dad and I had the opportunity to go out there yesterday and look at all the different stations out there – and Harvest Assist, and we're seeing sprayers that are doing precision spot spraying and over at the tillage, and we're talking with all those guys and everybody out there about the different ways we can implement this in our farm and different uses. And it's just incredibly exciting.

But what I can say is everybody's excited. My dad who's farmed forever, to our youngest guy, Nolan, who's 29 years old, we're all excited about the future and we're ready to go though. We're ready to get this autonomy, we're ready to get the tech, we want it on our farms, everything out there, we can see the benefits and how it's going to help us, and we just want it really, as fast as we can get it and as much as you guys will give us.

**Scott Harris:**

Yeah. Very good. Outstanding. Thank you, Brady. Tell us just briefly, and maybe your dad might be better to answer this question, but how would your operation look differently today without the technology? How did it look before and compare it to what you've got today?

**Brady Fahlman:**

Yeah. So for me that is a tough question to answer because I've actually never run a piece of equipment without auto-steer in my life. But dad and I talk quite a bit about it, he was saying this morning about dragging a tire in the field on his first sprayer and that's how they lined it up or using the full markers and they'd turn around at the end of the field and it would be blown away.

So we talk a lot about where we've come from and how much more manual labor there was, how much more work there was, how much more taxing it was on them. And we've got it pretty easy right now with the line of equipment, I guess. But we wouldn't be capable of doing the amount of acres and the efficiency of what we're doing right now, but to take the next step, and not even for growth, but even to do a better job of what we're

doing right now, autonomy and all this tech, to us, it's necessary for us to be better. And like I said, everything out there brings value, and it just gets me very excited.

**Scott Harris:**

Yeah, right on. Thank you, Brady. Speaking of automation, our next panel of speakers is going to dive deeper into automation, talking about building smarter iron. So stick with us and you'll find out how we're applying Precision to all stages of the crop cycle. Thank you, Brady.

**Smart Iron Panel**

**Darin Krantz, Head of Precision Technology, CNH Industrial**  
**Monte Weller, Product Line Director, Global Crop Production and Hay & Forage, Case IH**  
**Lars Sorensen, Global Product Manager for Combines and Headers, New Holland Agriculture**  
**Cherilyn Jolly-Nagel, Global Farmer Network**



**Cherilyn Jolly-Nagel:**

Well, thank you to Brady for a great introduction to this next panel. It is technological advancements that are inspiring CNH Industrial's proven iron platform. In the early days, the driver, farmers, would have to manually be responsible for the setting of each piece of equipment. I know my grandpa, my dad, and even me, I'm clearly older than Brady because I do remember the time, having to manually set all of those adjustments, get in and out of the cab to detect and determine the problem and manually make all of those adjustments.

So today we are going to welcome our panelists and we're going to talk about the operation efficiencies that have been gained through this type of technology and how important it is to us. Join us on stage, gentlemen.



We have Darin Krantz, head of Precision Technology Business. Monte Weller, Product Line Director, Global Crop Production, and Hay and Forage for Case IH. And Lars Sorensen, Global Product Manager for combines and headers for New Holland Agriculture. So, thanks everyone for being here. Lars is our combine expert, so we'll start with you, and we're going to talk a lot today about the future of technology in equipment, but CNH Industrial has a history in the harvesting space that is worth noting. Do you want to comment on that?

**Lars Sorensen:**

Yeah, sure. CNH Industrial has pioneered many game-changing technologies through time. We were the first to introduce twin rotor technology and we did that as early as 1974. We were also the first to introduce single rotor technology already in 1977, and we have been leading both segments ever since. And today I'm proud to say that our combine portfolio offers farmers more choices than any other one can do out there from very, very big capacity record breaking combines to small conventional TCs.

**Cherilyn Jolly-Nagel:**

So that's a bit about the combine history. Darin, could you share with us how CNH has participated in the tractor segment and how that has evolved with the integration of technology?



**Darin Krantz:**

Yeah. Similar to combines, CNH has a long history of tractor leadership dating back over 150 years to the days of steam power tractors. And in addition, CNH has a long history of Precision Technology leadership dating back over 25 years ago to when the first Precision Technology division was formed. And I think it's important to understand, I think historically, people have thought of those things as two totally separate items, tractors and Precision Technology. And today, when our equipment leaves our factory, we ship fully integrated solutions. And what I mean by that is, for example, you see this Case IH quad track tractor behind me here. When we ship that tractor from our factories, it leaves with a fully integrated display, capable of not only machine functions but Precision Technology functions. A GPS receiver capable of sub inch repeatable accuracy, a telematic system for full connectivity and a tractor automation system that optimizes the engine and transmission for maximum efficiency and fuel saving. So, in summary, the lines of technology and equipment are blurring.

**Cherilyn Jolly-Nagel:**

It truly is unbelievable when you take a look at the picture that you were referencing and think about sub-inch accuracy, so really think about that when you're going through the demo days. Monte, from a crop production standpoint, applications of fertilizer, herbicides and pesticides, those are some of the most important ways that farmers like me can improve our yields. How is CNH Precision Technology integrated with Raven to make those processes more efficient?



**Monte Weller:**

Thanks Cherilyn. Our newest sprayers have integrated with Raven technology to make spraying and spreading easier. What you're going to see today out in the demos is how this Raven technology is integrated onto our sprayer platforms, but it really starts with the most precise nozzle control systems in the industry. And our customers that have utilized this advanced spraying technology have told us that they've seen up to 10% product savings in their operations. And what that means today is that savings with record high input costs today is dollars back to their bottom line, and our innovative camera-based vision guidance and automated end-row turning technology that we have embedded on to our sprayers today, not only reduces crop damage as a sprayer travels down through the field, but also – probably more important – is it reduces the driver fatigue after hours and hours in a cab, this really reduces the drivers' fatigue.

And finally, we've also heard that sprayers accumulate machine and agronomic data via our real time connected portal. But then we also know that when you ask and then we're seeing customers demand for having multiple vehicles in the same field running at the same time. This technology suite not only now is bringing much more productivity gains of having two or more machines running in the field and up to 20% gain in productivity and 15% less time, you've heard, idle time. That means more acres per hour, more acres per day, more acres per season, productivity.

**Cherilyn Jolly-Nagel:**

Monte, I'm really glad that you brought up the driver and operator fatigue. Labor shortage is a real issue on our farms today, and so the operators of those high-speed machines are going for hours and hours on end, and it can be a real marathon as we come up against weather conditions. So those efficiencies really cannot be underestimated from my perspective.

Lars, let's go back to the harvesting capabilities. How is CNH leveraging technology to further augment the harvesting capabilities specifically when it comes to combines?



**Lars Sorensen:**

Sure. Again here, CNH was first with the first intuitive and proactive harvest automation system and in the other panels, the other speakers have been talking a lot about technical background on harvest automation. I'm going to try and give a little bit of customer perspective here. When you set up a combine, there are 280 million ways of doing it and as crops, terrain, weather varies through the day. Ideally, you should be changing your settings all the time. No one does that. It's too stressful, no one can keep up with it. So, what we have done with harvest automation, we've taken all that away from the operator. So now the combines are being fed data about what goes on inside the machine and it's making adjustments every 20 seconds. That optimizes productivity of course, efficiency, fuel use per ton, losses out the back of the combine, the quality of the product, everything related to harvest.

And this makes even an experienced operator less stressful. It's less stressful to run a combine that's automated than it was before. But the big advantage is really, you can put anyone into a combine today and they can be as productive within 10 to 20 minutes of instruction as an experienced operator. That's a big breakthrough. Another area we are pushing forward in is data collection. We have introduced near infrared sensor technology in our combines now, so we are actually measuring the quality of the crop, not only the quantity, and that gives us the ability, with this data, to write very accurate prescription maps for the fertilizer systems coming after the combine.

**Cherilyn Jolly-Nagel:**

Well, we have a highly competitive farm family and so to be able to compare those efficiencies might be a really fun game at harvest if we're not stressed out enough. Darin, how does connectivity and digital services transform the role of CNH equipment in our operations?

**Darin Krantz:**

Yeah. Let me try to take that question in two different parts. Let me talk about connectivity for positioning and connectivity for machine monitoring. First off, connectivity for positioning. Our GPS receivers that I referred to earlier communicate with over 120 satellites across four different constellations to give you accuracy within a couple of meters. We further refine that accuracy down to the sub inch level with CNH's own RTK+ network consisting of over 1,700 ground reference stations covering over 1 billion acres. This is the largest agricultural network of its kind, not rivalled by any other OEM.

Secondly, connectivity for machine monitoring. Fundamentally, what we're talking about here is the ability to send data wirelessly to and from the machine. Gone are the days of manual data transfer where I have to take a USB stick or compact flashcard and literally drive it many miles to the machine and back to get and receive data. Now that our machines are connected to the cloud, that allows us to access that data anywhere, at any time, with any device.

**Cherilyn Jolly-Nagel:**

Very good. So Monte, we've talked about spraying applications, we've talked about combining applications. Let's go back in the season and talk about planting and can you share with us some of the new technology involved in the planting piece of that puzzle?

**Monte Weller:**

Certainly. Planters are a great example of how we're leveraging our exclusive partnership with other industry leaders developing their capabilities of their components to work seamlessly with our in-cab display for an exceptional customer experience straight from the factory. Our customers often tell us they want one display to be able to manage all their tasks and their operations from a fingertip control standpoint. So this really speaks to our open, customer-centric, tech culture, really bringing our customers the most beneficial, smartest agronomic planters in that demand. Because we know farmers have a very tight window of opportunity in the spring to plant their crop and they have one chance to get it right.

**Cherilyn Jolly-Nagel:**

That's correct. In fact, I would argue that Mother Nature is one of our business partners and she's not always very nice to us. I've sent her many text messages that she's not responded to, and we are up against a really tight timeframe for each one of those particular seasons. It all has to run perfectly. Darin, there's a lot of trends in agriculture. What trends are you seeing that can be solved with precision technology?

**Darin Krantz:**

Yeah. I'd say there's three fundamental trends that we're seeing today. Farm consolidation – larger farms, lack of skilled labor, as well as rising input cost. And I'm proud to say, we have technology solutions in production today to address all three of those areas. You'll be hearing more about that this morning, seeing those solutions out in the field this afternoon.

**Cherilyn Jolly-Nagel:**

Very good. Lars, how will harvest automation continue to evolve going forward?

**Lars Sorensen:**

We're working on several fronts, but let me share two of them here with you today. We have harvested everything that goes on inside the combine and of course, the primary function of a combine is to collect crop, but the combine's also spreading biomass behind it. It's getting rid of all the material we don't want in the tank and to make sure that this is spread evenly, an operator today has to be on top of that all the time because again, conditions are changing, crops are changing, weather is changing, the wind is changing. So, it's fair to say today, it's done suboptimal. So, what we have done is built a system that fully automates the residue management by putting radars on the back of the combine. We can now monitor the biomass that's thrown out at the back of the combine. If we see an uneven load on one side or the other side, the combine will start making adjustments immediately.

This system's so innovative that we awarded a silver medal at AgriTechnica in 2022. We're very proud of this progress here. And again, we're first in the industry to be doing this. The other area that's very exciting for us in terms of automating or making it autonomous is of course, the technology coming from Raven. Raven has really filled a gap for us on the combine side with the autonomous grain cart. And we are very, very excited to have that as part of our future development into more autonomy and more automation on the combine. And I hope everyone will be as excited as I am, when you see it out here, it'll be running, the combine will call in the grain cart, they'll start the unloading. Unfortunately, we won't be in the field because of the conditions, but you can see how it works. And when the combine is empty, another button is pushed and the grain cart will leave and go to a predesignated area to unload. So that's very exciting technology and we're happy to have it here.

**Cherilyn Jolly-Nagel:**

Monte, Lars has alluded to residue management, and this is the terminology we use in the industry, but residue makes it sound like this is something we don't want when really, it's a nutrient management. We highly value what comes out of the back of the combine. It provides essential nutrients for the soil and it's important for us as farmers to have a beautiful seed bed come the next season that we plant. So, residue management, the higher the yields, the bigger the crop, the more management we have to do around that residue. So, it has become an increasing challenge for us as farmers. And once the harvesting season is over, there are farmers who start shifting their focus towards tillage as a management skill set. How is automation going to make that process easier for farmers?

**Monte Weller:**

Obviously, you heard from some others today, but Case IH offers a tillage automation that enables the operator to easily set up, control and monitor their tillage equipment from the cab of their tractor like they've never been able to before and really manage those tough residue conditions. But tillage settings can be automatically adjusted on the go for the optimal agronomic performance. And what this has done is really opened a whole new paradigm and Precision Farming arena called prescription tillage. And you're going to see this firsthand today out at our demos, and our on-farm research has showed that with prescription tillage really increase their productivity by up to 10%. When it comes to acres, that means 8 more acres per hour, more acres per day.

But also we've seen fuel savings by up to 17% and improved yields and return on investment from up to \$36 per acre. So, this is a real new technology, and we're extremely excited in the field today to give you a firsthand look and sneak peek of this technology. Not only this automated technology, but the first of what we're going to show you with autonomy and tillage and what it means for us in the future. So, you do not want to miss this demo today.

**Cherilyn Jolly-Nagel:**

Thanks, Monte. I think even our non-farm in the audience can relate to fuel efficiency as being a pretty big efficiency gain for us. So that is all the time that we have today. We are going to turn the stage over for a discussion on sustainability.

**Sustainability Session**

**Stefano Fiorati, Head of Zero Emission & Advanced Drivetrain, CNH Industrial**

**Mario De Amicis, Head of Electrification Portfolio Management, CNH Industrial**

**Kelly Manley, Chief Diversity & Inclusion, Sustainability and Transformation Officer, CNH Industrial**

**STEFANO FIORATI**

Head of Zero Emission & Advanced Drivetrain

**MARIO DE AMICIS**

Head Electrification Portfolio Management

**KELLY MANLEY**

Chief Diversity & Inclusion, Sustainability & Transformation Officer

**Stefano Fiorati:**

Good morning, and it's great to be here. I'm Stefano Fiorati, Head of Zero Emission and Advanced Drivetrain. Before starting, I want to introduce you to the two colleagues with me today, Mario De Amicis and Kelly Manley.

**Alternative Fuels**



Alternative fuels are critically important to unlocking an on-farm circular economy. They give farmers the possibility to turn traditional farm waste into fuel, provide them with enough power for their equipment, their home – and their entire operation. And they unlock new revenue streams where farmers can sell excess fuel or power to other farmers or even to the power grid. With emission free, net-zero impact tractors, farmers will improve the quality of the products they produce – the food we ultimately eat.





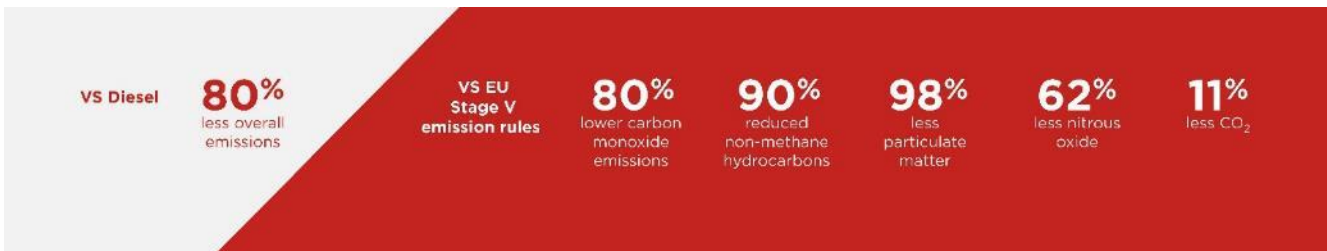
With our partner Bennamann, we have created an end-to-end solution for farmers to make fuel grade methane right on their farm by converting waste. For livestock farmers, and dairy farmers in particular, slurry can be used to create methane.

I'm excited to announce the final step that makes this a circular process for farming. It's a major milestone in our clean energy journey. I'd like to announce the New Holland T7 methane power tractor. The first ever liquid methane powered tractor! And now I'd like to show you the benefits it delivers.

[video]



Wow! This is a T7 is a 270-horsepower tractor that delivers the same power, torque and capabilities as a diesel machine without the need for any extra tanks. Now let me walk you through some numbers.



Methane generates 80% less overall emissions when compared to diesel, and when compared to the limits allowed under European Stage V emission regulation. The level of non-methane hydrocarbons is reduced by 90%, particulate matter is down by 98%, nitrous oxide by 62%, and CO<sub>2</sub> by 11%.

The T7 builds on our existing compressed natural gas tractor the T6 Methane Power – which can be bought today. The T7's liquefied natural gas tanks can hold four times more fuel than when filled with compressed natural gas. Meaning our customers can complete any mission – including the most power intensive operations – without needing to stop and refuel.

One of the challenges with methane is the very low boiling point for the liquid natural gas. And to keep the full gas tank cool our jointly-developed cryogenic tank technology keeps the liquid methane cool even when not being used. The technology in this tank is more often found in space craft, than in farming. So we can all say that it is out of this world.



To get you all closer to this story, I want to introduce you to Kevin and Katie from Trenance Farm in Cornwall, England. They are tenant farmers and are facing increased regulations, energy and fertilizer costs. Together with Bennamann we've implemented our process here. So Kevin and Katie are converting their slurry into methane and fertilizer. And they are using a generator powered by their methane gas to generate an off-grid farm.

This has all radically reduced their energy costs –satisfying 84% of their dairy's electricity demands. And it has delivered a 787 ton per year CO<sub>2</sub> benefit. In other words, this system has prevented the same amount of CO<sub>2</sub> escaping into the atmosphere as that generated by some 100 Western households in a year.



This tractor tech means Kevin and Katie can and will take full advantage of the circular farm economy. Creating a more profitable and sustainable business. And both of these tractors, the T6 and T7 can be fitted with the latest precision tech to drive further productivity benefits.

While I am primarily talking about methane today, we continue to explore multiple avenues. We're also investing in R&D on hydrogen, ethanol and other alternatives. As the accessibility of alternative fuels grows, we will provide equipment that can run on them. Not only giving farmers choice but adding value for them and making their work ever more sustainable.

Thank you all, and I will give the floor to Mario.



**Mario De Amicis:**

Thanks, Stefano. Good morning, everyone. As Stefano just said, our farmers are looking for sustainable energy solutions that provide a strong return on investment. And all of our customers need to ready themselves to comply with emerging regulations. Those which are either being introduced or planned in line with the Kyoto Protocol, the Paris Agreement, and COP27.

To cope with this market demand, our electrification roadmap will offer a range of products from e-power generators up to full electric vehicles. Our vision for a net-zero future includes electrified vehicle technologies that also represent the next step in the company's de-carbonization strategy.

We don't just consider electrification as an alternative. It is a means to further improve the performance, efficiency, and sustainability of internal combustion engines. We are developing our technology to offer different features for different missions in both agriculture and construction.

In agriculture, the key customer needs are: higher productivity and higher outputs. Through electrification, we provide higher productivity through reduced operating costs, and lower risk of soil and crop contamination. Electrification has proven benefits: It provides sophisticated vehicle controls that are ideal for autonomy and other intelligent solutions.

We are innovating in three directions:

**Light Electrification:** on-board electric power generation connected to the internal combustion engine. This can also be used for electrified implements.

**Medium Electrification:** hybrid electric propulsion systems that use an internal combustion engine and electrified driveline – which delivers higher driveline efficiency and better traction on top of the advantages of “light” electrification.

**Full Electrification:** battery electric tractors with no internal combustion engine deliver all the benefits of “medium” electrification alongside zero emissions.



We're really proud of two key developments in this space for Agriculture. First is E-source: an external generator that provides energy to power electric implements. I'm referring to sprayers, trimmers and many others. A tractor equipped with E-source can handle both standard and electric implements. In field operations e-implements deliver a 35% reduction in fuel consumption and CO<sub>2</sub> and 45% lower noise. Additional benefits include less oil contamination in the field, improved machine control and safer operation versus the equivalent mechanical / hydraulic implements.



And today we are excited to share with you a world premier: The new T4-Electric Power utility tractor – which you will see here today. It is a full electric tractor with no internal combustion engine. And there are many benefits: battery powered, incredible responsiveness, amazing drivability with smoother shuttling and gear shift, reduced noise and operating cost up to 90%. It has the same tractor feel but thanks to better drivability and enhanced comfort it reduces strain during repetitive operations, such as loader work.

As I mentioned before: this technology enables autonomy. And we will offer electrification technology combined with autonomous features through our investment and partnership with Monarch. Monarch's autonomy on our New Holland T4 Electric Power will improve our customers' productivity through autonomous mowing, transport, and spraying, to name but three tasks. It will ease the strain of farm work thanks to follow-me mode and gesture control. The operator can control certain tractor functions while standing on the ground. For example: moving the tractor forward and into reverse as well as raising and lowering the front and rear linkage. We'll also have mobile first digital application, enabling broader control, vehicle status, and fleet management.



In the future, these solutions will all work in harmony. For low-power demand applications - full electrification is likely to be best suited. For highest-power demand, hybrid powertrains running with renewable fuels are the best solution. The development of this combined portfolio of technologies is a key element in our zero-carbon commitment.

For this to succeed, we need to carry on innovating for our customers. These solutions can only work if our customers decide to use them. So our partnership with them is key to making all of this a success. Thank you, everyone. Now I leave the floor to Kelly.



**Kelly Manley:**

Thank you, Mario, thanks, Stefano.

As you've just heard now and in all the presentations and panels this morning: Sustainability is a big part of our legacy and essential to our future. When we think and act sustainably at CNH Industrial, we're doing so in a way to address circularity and continue to reach the highest Environmental, Social and Governance levels of our suppliers, our employees, investors, the wider community, and of course, our customers.



As mentioned at Capital Markets Day, we're aligning with the Science Based Targets initiative, which expands our goals and ambition, and increases the focus of our sustainability strategy on reducing carbon emissions in three key areas: our operations, our products, and with our customers. Stefano and Mario did a great job highlighting our company's opportunities for alternative fuels and electrification.



These innovations and the sustainable solutions they deliver for our customers cannot be understated: we're aiming to reduce the average lifetime emissions of our equipment dramatically. And we're doing so in a way that deliberately delivers our customers a variety of solutions that meet their needs, without sacrificing any of the performance they depend on.

As Mario described, our path forward on electrification is an exciting one. Beyond electrification, and as demonstrated earlier today, all our products are evolving in ways that improve performance, fuel costs, and efficiency, and that will result in reducing the carbon footprint and related impact of our products.

The dramatic advances in automation and machine guidance, the continuous improvement in machine optimizations, and the future incorporation of alternative fuels, are all significant improvements that add up to real results for our customers. All these innovations combine to deliver significant emissions savings across our fleet, and more importantly, these solutions will deliver customers with the choice they need with emerging technology while also reducing their footprint.



Yet our industry's greatest opportunity for limiting carbon emissions is related to our customers work and how they grow their business. That means that there is a much greater – 10 times in fact – opportunity beyond the use of our products to support our customers and the balance of carbon and emissions in our environment.

I'm most excited about the Precision and autonomy solutions that you've been hearing about throughout the morning. Whether it's automation, connected platforms, autonomous tillage, precision spraying, precision seeding, or other developments in the works, each innovation translates into real-life benefits for our farmers, their yields, lower emissions, less waste of fertilizer and crop protection products and, ultimately a more sustainable outcome for everyone.

As mentioned earlier, at CNH Industrial we strongly believe in a vision of circularity for sustainability. And to briefly touch on Stefano's comments with regards to Bennamann, we see a new way forward for sustainable agriculture and for our customers that is naturally self-sustaining and delivers wins on multiple fronts in multiple ways.

We are in the business of breaking new ground, delivering the power of choice to our customers, and leading by example in our operations, through our products, and with our customers. Now I'd like to leave the stage to my colleagues Derek Neilson and Oddone Incisa to talk about the Business Impact driving all of this.

## Business Impact

**Derek Neilson, President, Agriculture, CNH Industrial**  
**Oddone Incisa, Chief Financial Officer, CNH Industrial**

**DEREK NEILSON**  
President, Agriculture

**ODDONE INCISA**  
Chief Financial Officer

**Derek Neilson:**  
Good morning, everyone.

So at this stage, you have already gained a lot of insight into the many ground-breaking technologies we have in the marketplace and the strengths of our Agriculture business. Oddone and I would like to close this morning's session by sharing with you how all of this comes together and how it reflects on our overall business.



We believe what really sets us apart is how we are focused on using all of this technology to unlock value for our customers, which in turn has a positive impact on our dealers and stakeholders everywhere. Now our growth potential is tied directly to several key factors.



To begin with: our global presence is one of our greatest strengths. We are always close to our customers, supporting them directly in 180 markets through 6,500 sales and service points, with 29 manufacturing facilities and 18 research and development centers and with more than 100 technology partners.



Following on from this, every farm has its own unique challenges making our customer base very diverse in terms of farm type, farm size and technology requirements. And for that we have a complete and competitive portfolio providing real choice for a wide range of farmers.



And finally: our organization is fortified by a culture that enables our people to be truly customer-focused. For instance, when we are supporting Brazilian farmers, we have our local experts in the region with our dealers to best understand their business needs, be it soil, crops, climate or whatever farming practices they choose to use. By understanding this we can really bring the best solution for our farmers, which in Brazil is clearly evident when you look at our Customer Net Promoter Scores which are the best in the industry. And this in turn is reflected in our market performance. And this is just one example of how our scale and our global reach really can deliver tangible results.

Farmers are demanding technology

Now let's talk technology. At our Capital Markets Day in February of this year, we shared that the addressable market for Agriculture equipment machines and related parts and services is over \$100 billion. However, as our Precision Tech solutions will continue to increase efficiencies and reduce waste in farmers' operations, we will start to take advantage of other profit pools.

For example, if we look at the US alone, farmers' total expense, according to the USDA, is estimated to be several hundreds of billions of dollars in 2022. So, by focusing on reducing these significant expenses, we are confident that we can grow our business further in what we expect to be a growing addressable market for us going forward.

AG Precision Technology Revenues

~\$900M  
FY 2022 est. net sales contribution

10-15%  
CACR across next 2-3 years

~\$1B  
est. net sales contribution in 2023

With regards to speed of transition, if I look at a recent McKinsey study of more than 1,300 US farmers provides some additional data points. Amongst those growers interviewed almost a quarter say they will purchase Precision Technology in the next 2 years. This research confirms that the demand for technology is growing and will drive replacement demand for Agricultural equipment.

And when this all rolls up within our Ag revenues for 2022, we estimate that Precision Technology will account for over \$900 million. And we expect that number to continue to grow at about 10% to 15% annually, and in the near term we expect to deliver in excess of \$1 billion in 2023. So to give a little more color on some of these numbers, I would like to pass over to Oddone, who can take us through with some more detail.

First 9 months of 2022 - AG segment

net sales up  
23%  
at constant currency

adjusted EBIT margin at  
13.9%  
up 0.7pp YoY

24%  
gross margin

**Oddone Incisa:**

Sure Derek. Let me start with where we are today and highlight the work we have, or Derek and his team, done so far. We are coming from a place of strength. If we look at the first nine months of 2022, for Ag segment alone, we continued delivering solid year-over-year growth in net sales as well as strong year-over-year growth in our EBIT margin. This year, we have already reached the highest profitability ever for our agricultural business. This has been achieved by a combination of product mix, volume, price realization across the regions, and we plan to grow further with a higher proportion of technology solutions.



When we look at this growth path, we focus on our Gross Margin. Our products, thanks to technology, are delivering greater and greater value to our customers, and we're able to capture that value by offering more premium-priced equipment. We have consistently grown tech-related revenues over the last 10 years, first through retrofit and now more and more through factory-fit solutions.

AG Precision Tech

**~\$900M**

FY 2022 est. net sales contribution

- Factory fit components & Software
- Aftermarket retrofit
- Raven independent sales
- Unlocking premium features
- Tractor, sprayer, combine, & implement sales

Let me be clear: the \$900 million, and maybe it will be a little more than \$900 million, that Derek mentioned as revenue components for 2022 comes exclusively from Precision Tech components. So we are including in this number: factory fit components that are used for precision applications, we are including aftermarket components that are retrofitted to existing machines by our dealers, we are including technology that is sold by Raven to third party OEMs or to independent dealers, and we are including fees paid by customers for unlocking or enabling some of the premium features that we are providing with our technology. What we're not including in this number is the revenue from the sale of the multiple classes of equipment, which nowadays would be hardly salable without the technology.

**2x growth in the last 2 years in Precision Tech**

**10-15%**

CAGR across next 2-3 years

And on that note, over the last 2 years, we have nearly doubled the estimated net sales contribution from Precision Tech. Going forward – Derek said it – we expect to grow it 10% to 15% annually.

Our commitment to investing in the future of the Agriculture segment

2022-24 R&D and Capex of **\$4B**

Year-to-date **\$750M** invested

To support this growth, we have stepped up our Capex and R&D expenses. We said at our Capital Markets Day and we are confirming today, we are committed to invest around \$4 billion in the next 3 years, which is double what we were investing in the 3 years prior to 2021. As this year of September, we have invested some \$750 million in Agriculture alone and we are on track to meet our commitments on R&D.

We have advanced this with the Raven acquisition by acquiring knowledge and experienced resources. Over the last 9 months, we have added more than 50% employees to our Raven Precision Technology team. And, as you heard today and you will see in the field, we are excited to cultivate more and more of that talent because we need it for our growth.



Sale of premium equipment with leading edge tech

Will contribute to the growth in EBIT margin to  
**14.5-15.5%**  
by 2024

Growth in margins with technology and the increase in investments that I was talking about are fully reflected in our plan that we presented in February to get to a 14.5% to 15.5% EBIT margin by 2024. With the numbers, we are demonstrating that we are delivering on that plan.

And now back to you Derek.

Great Iron & Great Technology

**Derek Neilson:**

So clearly our ongoing efforts to further integrate Great Iron and Great Technology are truly paying off. And this is really driving growth in new equipment purchases and replacement demand.

Factory Fit  
+  
Retrofit = ↑ Increased adoption  
of Precision Technology

Now installing Precision Technology before equipment leaves the factory is a strategic advantage that only an OEMs possess. However, many farmers cannot afford to buy new equipment every year. So, to grow the adoption of Precision Technology, we have to continue to offer retrofit solutions. This in turn allows us to significantly improve the capabilities of existing machines and help farmers do more without having to always purchase new equipment.

Freedom for farmers to farm their way

And again, this is another example where we will be sure to do business in a way that is not only profitable for us but also fair for our farmers. And when you roll up at the end of the day, we're laser focused on one really important thing for our customers: that is to ensure they have the freedom to farm their way.

And speaking with farmers around the world, we know many want to own the technology, and our customer-centric approach will ensure those right choices are made.



In parallel to this, enhancing the digital capabilities of our dealers is one of the key pillars of our strategic plan as we support our customers every day in the field. If you look at our dealers, most of them have already installed control rooms on their premises and are adding data analysts and service personnel dedicated to support Precision Technology. The need for increased connectivity also opens up new opportunities for additional service revenue streams, especially through retrofitting this capability to older machines and creating and securing loyalty in our parts and services business.

But humbly as we know, like every business, we are not experts in every area. And that's why we continue to look outside for solutions also. Oddone will give us an insight into exactly how we're structured to do that within the group.



**Oddone Incisa:**

One of the ways we maintain our competitive edge is through our strategic investment arm, CNH Industrial Ventures, which we have established with the goal to accelerate new technology adoption and capitalize on the many start-ups and many disruptive innovations we have on the market. Recognizing that sustainable development of the agriculture industry requires a broader ecosystem approach, we are building a broader network of partners. So far, our investments and collaborations are focused on Alternative Propulsion, Digital, Autonomy, Robotics, and Artificial Intelligence.

Today we have a portfolio of investments, including Monarch Tractor, we have the founder here today, an electrified agricultural start-up, and Bennamann, for fugitive gas solutions, both of which you will see here today. Our latest partner, which I am pleased to announce today, is Stout, a US-based startup focused on smart implements for Agriculture powered by artificial intelligence. Our cooperation with these partners and their existing platforms will help accelerate our development and their development of further solutions that allow farmers to do more with less and more sustainably.

**Derek Neilson:**

So to close, we are committed to expanding our already formidable portfolio by continuing to automate across each step of the crop cycle. Much like you will see in the field today. We will then sell these innovations through an increasingly tech-savvy dealer network.

And as a pioneer in Agriculture, dedicated to serving our customers, we will continue to deliver on our purpose – that is what you read around you today: Breaking New Ground with Technology. Thank you.

At this point in the proceedings, again, I'd initially like to thank you for your attention today. I know it's been a relatively long morning. I'd also like to thank our team. I think their passion and commitment to the journey that we are on comes through in bundles. Again, I really appreciate the efforts and energy that they've put into today's event.

## Question & Answer Session

**Scott Wine, Chief Executive Officer, CNH Industrial**  
**Oddone Incisa, Chief Financial Officer, CNH Industrial**  
**Derek Neilson, President, Agriculture, CNH Industrial**  
**Parag Garg, Chief Digital Product Officer, CNH Industrial**  
**Kelly Manley, Chief Diversity & Inclusion, Sustainability and Transformation Officer, CNH Industrial**

**Kristin Owen, Oppenheimer**  
**Steven Fisher, UBS**  
**David Raso, Evercore ISI**  
**Tami Zakaria, J.P. Morgan**  
**Nicole Deblase, Deutsche Bank**  
**Lawrence De Maria, William Blair**



**Kristen Owen:**

If we look at the four buckets that you've highlighted that are included in that \$900 million of Precision Technology today and how you're thinking about the 10% to 15% growth rate over the coming years, what buckets would you highlight as being those with the greatest opportunity where you see maybe outside growth relative to that 10% to 15%? And if I could ask you to double-click on some of the unique business models that you could see in those buckets.

**Scott Wine:**

Well, I mean obviously we think we can grow all four pretty significantly. The near-term opportunity is the aftermarket. Raven was so good at that. We know how to do it. We've got a broad geographical distribution as Derek talked about, so that is really good. But as Oddone and I talked about when we first acquired Raven, the real value unlock is when we fully embed their autonomy capabilities across our platform. And that's going to be a couple of years from now, but that is the tremendous growth. Derek, why don't you just talk about what you're most excited about?

**Derek Neilson:**

Yeah, I mean genuinely I'm excited about all of the opportunities. We're not prioritizing or focused on one of them. There's a huge park out there of used equipment that we can take real significant advantage of. The vast majority of our heavy equipment leaving the plants today is 100% enabling Precision Technology. So there really is a huge breadth of opportunity across all of them. Again, we are betting in all of those and expecting to grow significantly in all of those going forward. The 10% to 15% again will be something that will grow for sure to the next years. We're confident in that as a minimum.

**Steven Fisher:**

Thank you. Just to follow up on the 10% to 15%, it seems like it starts off at maybe the lower end for 2023 to get to that \$1 billion from the \$900 million plus and then accelerates over the next couple of years after that. Can you just talk about what drives that acceleration over the next couple of years?

**Scott Wine:**

Well, remember this journey that we're on and then Parag started, I mean it's about taking our tech stack, which I wouldn't call it, maybe fragmented. Is fragmented the right word, Parag?

**Parag Garg:**

Somewhat fragmented. Diverse, I would say diverse.

**Scott Wine:**

Diverse, somewhat fragmented, and really taking that and making it really, really good. That doesn't happen overnight. And trust me, if it could happen faster, Derek would've made it happen faster. Because he's asking every single day, "How do we go faster? How do we do more?" But as that tech stack comes together, it unlocks tremendous value. It unlocks value with automation, with autonomy, with better precision capability, just better solutions across the portfolio. But we just can't get there overnight. So therefore, that's when the real value unlock comes from 2024 and beyond when that really brings to bear for our customers.

**Steven Fisher:**

Got it. The follow up on that is how do you juxtapose that with the farm cycle, given that it's a really robust time right now for farm income? And how do you think about that accelerating spend and farmers wanting to spend more 2-3 years out when it may not be as robust?

**Derek Neilson:**

Yeah, I mean let me just go back to the initial question for a few seconds. We said \$900 million plus. We've still got 24 days to go in a year and we expect it to be a large plus. We can't just say the fact that all of this good technology and good stuff is happening and still a very complicated business environment. Supply chains still constraining a lot of plants to shut machines. And again, we are actively resolving that and we've got a huge portfolio of products that as well. So one could argue we could go above \$1 billion this year if we could get enough products in customer's hands because the need is there as well. So again, the technology will naturally be constrained by some other factors, but we are confident as we get those products in the hands of our customers and farmers that we'll grow well in excess of \$1 billion.

The growth within itself, in terms of the users, we are very customer-centric. So you can bluff what you're going to give the customer and all the fantastic thing you do. If they don't appreciate real value, they're not going to pay for it. And the value they pay is based on the return they get as well. We are laser focused on prioritizing the right things to bring the right solutions for our customers across the globe. We are confident with that approach, like Oddone said earlier, we've increased our revenues by 50% in the last couple years by taking that approach. I don't think we have to change path or do anything significantly different we're doing. We just need to keep in that path, keep religious in that path and keep executing the plan that plan we presented to you guys back in February this year. Again, the results are there, and we are confident it will come even more significant in the future.

**Parag Garg:**

Yeah, I would just add that you're going to get the opportunity to see the value of the automation we give to our customers today and we're giving them a tremendous amount. You'll get to see that firsthand and then you'll get to see the progress on what that journey towards autonomy looks like. And you'll see that in some of the stations. So the upside is there, the opportunity is there, but we deliver an incredible amount of value to our customers across the farming cycle today, and we're going to just see more features and opportunities that unlocks for them.

**David Raso:**

The balance sheet, assuming you have a big cash flow number for the fourth quarter, but assuming you hit that and any update on that would be great, but the balance sheets can have very little net debt on it at the end of the year if you hit those numbers. You mentioned some of the investment opportunities. They seem small. I'm just curious if you're getting any purchase options with those investments, and how should we really think about utilizing that balance sheet if we do indeed start next year with very little net debt?

**Oddone Incisa:**

Yeah, I mean we said we can be opportunistic in acquisitions if we have the right case and the right opportunity. We don't have anything large in sight or anything in the size of Raven, but we have continuous discussion with the companies we invest on and we have other investment coming up to line. You say very small for the time being, but they can evolve.

**Derek Neilson:**

But I would add to that as well we have some phenomenal products. Again, we said in February in terms of our product roadmap with indicated technology and precision, we have some phenomenal products coming the next two or three years. So again, we're looking for opportunities outside and how we can spend some of that cash,

but we are really focused on bringing those products to market. That's going to be the core of success going forward.

**David Raso:**

If there's nothing large on the horizon right now and you're doing \$2.5 / \$3 billion of EBITDA, even one turn of EBITDA is a sizeable number. Can you state a little bit if there are no large acquisitions on the horizon, are you going to let the balance sheet sit the way it is or there are other things that we could do?

**Scott Wine:**

We've been pretty clear. If you go back to Capital Markets Day about how we intend to use our capital. We're going to first invest in growth, profitable growth for our customers and for us. We're going to pay a solid dividend, we're going to maintain our equity, how we're viewed from the debt markets. And we're going to return cash to shareholders. But acquisitions are part of our growth story. We've not been bashful to date, and we won't be bashful going forward about buying something when it really accelerates our ability to deliver value for customers. And our Board's been really supportive of that. I mean we are not trying to protect, we're just trying to deliver more profitable growth and more value for customers and we think they're very synergistic. We talked about our investments to date and we'll continue to do that, but I don't lay awake at night worried about how much cash is on the balance sheet because I'm very confident we're going to put it to use.

**David Raso:**

And quickly, I just want to make sure for the targets for 2024, are some of the R&D expense increases from the last 3 years just from - is that incremental news that is more of an expense than you originally said?

**Oddone Incisa:**

The number we talk about today are the numbers that we had in the plan and we are working in that ballpark.

**Tami Zakaria:**

I'm curious, what's the margin profile of the \$900 million Precision Ag revenues, and do you expect it to grow as the base scales?

**Scott Wine:**

It's funny, we had a healthy discussion about how we were going to answer this question and I was just kind of looking at which one of these guys going to answer this. Because I think we came up with a very eloquent... Go ahead.

**Derek Neilson:**

I'm optimistic. He's pessimistic. So I'll let the pessimist go first.

**Oddone Incisa:**

As you can expect, the margin profile of that \$900 million is higher than the average margin profile that we have in Agriculture. To a factor of, and we came with a formula yesterday of 1.5 times. So that's what we are seeing then depending on the components, we have different components there. We have factory fit, we have aftermarket, we have other components that have different margins. But roughly we can ballpark. We can work with that. Of course, and I say it in the presentation, once we have more technology to our equipment, then the overall equipment becomes more valuable for the customer and we can get higher pricing. We are not putting that part of increased revenues, if you want, on the base equipment into that number. That's the big debate that we have been having over time is the first time we talk about a number for technology because it is always a bit uncertain how you measure it. We want it to be very clear on what we put inside and what is excluded from there.

**Derek Neilson:**

And again, just to compliment that. You guys and gals are going to sit in a \$350,000 piece of equipment today and drive it like an expert and you're going to run 30% more effectively and efficiently than people drove it 2 or 3 years ago as well. If you can really unlock that amount of value for customers, they'll pay minimum 30% plus for those type of solutions. Again, if you're given very niche, very small, very particular savings, then you can command margins accordingly. If you can really unlock these huge value bills, the margins are really, really, really positive. So it can be well in excess at 30%. But again, we debate is it 31%, 32%, 33%? Honestly our attention is focused on unlocking value for our customers and then the margin for sure will come in after.

**Tami Zakaria:**

Got it. That's super helpful. And one more question. You've had relationships with other companies in the past for your Precision Ag solutions. Now that you have Raven in house, are there any immediate offerings you can bring in house or are you try trying to stay with the existing relationships and build new stuff with Raven in your portfolio?

**Scott Wine:**

We have had and continue to have a great relationship with Trimble, if that's your question. So I mean let's just get that out there. Rob Painter and I have regular conversations. They're an important part of our business. They're important to our customers. But with Raven, we have a lot of the similar capabilities and we have to kind of manage through that. Both are a key part of our future growth.

**Nicole DeBlase:**

Can you just clarify on the Raven aftermarket solutions? If that can be applied across the entire installed base, so all different brands of equipment. And secondly, when you think about the \$900 million and the trajectory for the future, how much of that today would you classify as recurring revenue? And is there a target for recurring revenue over the medium or long term? Thank you.

**Derek Neilson:**

I'll do the first part. Yes. The answer is simply yes. I mean, if we can take solutions and put them on any piece of equipment to unlock value for customers, then we'll do that. We're not in the business of restricting only for our products and trying to penalize farmers that use a ton of equipment. Again, if you look at many farmers today, they have mixed fleets. Again there's farmers that go very specific in one brand, but there's many, many, many farmers that have mixed fleets. I think it would be a shame if we restricted our technology to only the products that we paint in our colors. We want to give them the best experience. Again, that is an opportunity for sure.

I'll have the return revenue and then Oddone will probably tell me off. I mean honestly, everyone measures it differently. Everyone measures by different upside down inside out and comes with different permutation numbers. The simple fact is it's a huge pot of opportunity. Like I said, hundreds of billions. So again, we try not to lose time in trying to calculate this mythical recurring revenue, what's in what's out to 3 decimal points. We focus on value for our customers, profitability for our business, and growth for both parties, including our dealers as well. And if we keep down that path, we'll take full advantage of that opportunity set as well without losing an obscene amount of time and trying to calculate what's in, what's out and shake it all about.

**Scott Wine:**

Yeah, I mean I think what you've seen is tech companies make a big pronouncement about their annual recurring revenue because everybody thinks it's safe. Well, when you're in our business, if you have a parts contract with a customer, that's annual recurring revenue. Does it have anything to do with tech? No. What Oddone has built over many, many years in Financial Services is we have the ability to get paid by customers any way they want. If they want to pay us on a subscription basis, we can do it. If we want another recurring revenue contract. But as Derek pointed out, all of our focus is adding value to the customer. We're not going to tell them how they want to pay us. What farmers want is productivity and yield, and you make productivity harder to get if you start making them pay on a per-acre basis. We're just trying to make sure we can unlock that value better than anybody else in the industry and let them pay us how they want to pay us.

**Derek Neilson:**

I mean, good example is that TomTom in your car. 10 years ago, you plugged the TomTom into your car. If somebody said back then you're going to pay recurring revenues on the TomTom, you would look back and say, "It's insane." It's now integrated in every vehicle we drive today. Although this technology's going to go exactly the same pace in the ag space. I'm sure it'll be an endless debate.

**Lawrence De Maria:**

You talked about mixed fleets and all the connected software. I mean growers now are using JD Ops, they're using Field View. Do you need to gravitate growers to your connected software for farm management in order to win? And how are you going to do that?

**Scott Wine:**

It's all about providing the best solution. I mean the work that Parag and his team are doing, I mean it's ongoing regular work is how do we give the most value to customers? We talked about open architecture and we are

committed to an open architecture environment. We want to make it as easy as anybody else. If they want to use a Case IH combine in their JD Ops, let's make it easy for them. If they want to bring in a John Deere tractor into our system, we'll make sure that it works. But we are trying to make it as easy as possible for our customers to unlock value from whatever equipment they have. And I think that's where you'll see our solutions going.

**Derek Neilson:**

And again, if there is a restriction, it's not coming from our side. Like Scott said, I mean we want to allow our farmers to farm their way with choice. We don't want to dictate farmers how they should farm. I mean you bring it up here today. I mean fourth generation farmer, they know how to farm. They don't need us in this stage to tell them how to farm. I mean if you look at our history and our heritage, we put the best of all breeds together and give that best solution to the customers. That's not going to change. If there's some restrictions in how we can access that data, it certainly won't come from us.

**Parag Garg:**

I think you'll see it in the field today on all the different stations. But from tillage to harvest, we offer great digital solutions to ensure that our farmers have the digital tools they need to combine with the iron. And to your point, if they want to farm in a mixed fleet or a different environment, we give them all the tools necessary to support those worlds too. We're not locking people in and we're ensuring that they have the best quality products and the best technology to farm the way they want to farm.

[end of meeting]

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All statements other than statements of historical fact contained in this transcript, including competitive strengths; business strategy; future financial position or operating results; budgets; projections with respect to revenue, income, earnings (or loss) per share, capital expenditures, dividends, liquidity, capital structure or other financial items; costs; and plans and objectives of management regarding operations and products, are forward-looking statements. Forward looking statements also include statements regarding the future performance of CNH Industrial and its subsidiaries on a standalone basis. These statements may include terminology such as "may", "will", "expect", "could", "should", "intend", "estimate", "anticipate", "believe", "outlook", "continue", "remain", "on track", "design", "target", "objective", "goal", "forecast", "projection", "prospects", "plan", or similar terminology. Forward-looking statements, including those related to the COVID-19 pandemic, are not guarantees of future performance. Rather, they are based on current views and assumptions and involve known and unknown risks, uncertainties and other factors, many of which are outside our control and are difficult to predict. If any of these risks and uncertainties materialize (or they occur with a degree of severity that the Company is unable to predict) or other assumptions underlying any of the forward-looking statements prove to be incorrect, including any assumptions regarding strategic plans, the actual results or developments may differ materially from any future results or developments expressed or implied by the forward-looking statements. Factors, risks and uncertainties that could cause actual results to differ materially from those contemplated by the forward-looking statements include, among others: the continued uncertainties related to the unknown duration and economic, operational and financial impacts of the global COVID-19 pandemic and the actions taken or contemplated by governmental authorities or others in connection with the pandemic on our business, our employees, customers and suppliers; supply chain disruptions, including delays caused by mandated shutdowns, industry capacity constraints, material availability, and global logistics delays and constraints; disruption caused by business responses to COVID-19, including remote working arrangements, which may create increased vulnerability to cybersecurity or data privacy incidents; our ability to execute business continuity plans as a result of COVID-19; the many interrelated factors that affect consumer confidence and worldwide demand for capital goods and capital goods-related products, including demand uncertainty caused by COVID-19; general economic conditions in each of our markets, including the significant economic uncertainty and volatility caused by the war in the Ukraine and COVID-19; changes in government policies regarding banking, monetary and fiscal policy; legislation, particularly pertaining to capital goods-related issues such as agriculture, the environment, debt relief and subsidy program policies, trade and commerce and infrastructure development; government policies on international trade and investment, including sanctions, import quotas, capital controls and tariffs; volatility in international trade caused by the imposition of tariffs, sanctions, embargoes, and trade wars; actions of competitors in the various industries in which we compete; development and use of new technologies and technological difficulties; the interpretation of, or adoption of

new, compliance requirements with respect to engine emissions, safety or other aspects of our products; production difficulties, including capacity and supply constraints and excess inventory levels; labor relations; interest rates and currency exchange rates; inflation and deflation; energy prices; prices for agricultural commodities; housing starts and other construction activity; our ability to obtain financing or to refinance existing debt; price pressure on new and used equipment; the resolution of pending litigation and investigations on a wide range of topics, including dealer and supplier litigation, intellectual property rights disputes, product warranty and defective product claims, and emissions and/or fuel economy regulatory and contractual issues; security breaches, cybersecurity attacks, technology failures, and other disruptions to the information technology infrastructure of CNH Industrial and its suppliers and dealers; security breaches with respect to our products; our pension plans and other post-employment obligations; political and civil unrest; volatility and deterioration of capital and financial markets, including other pandemics, terrorist attacks in Europe and elsewhere; our ability to realize the anticipated benefits from our business initiatives as part of our strategic plan; our failure to realize, or a delay in realizing, all of the anticipated benefits of our acquisitions, joint ventures, strategic alliances or divestitures and other similar risks and uncertainties, and our success in managing the risks involved in the foregoing.

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