

## AI-ML webinar audio

**Eric Lofgren:** [00:00:00] Welcome to acquisition. Talk a podcast on the management technology and the political economy of weapons systems acquisition. I'm your host, Eric Lofgren You can find this podcast and more information, including links, commentary, and articles on acquisition. talk.com. Thanks for listening. .

**Jerry McGinn:** [00:00:36] Good afternoon, everyone. I'd like to welcome you to today's webinar on artificial intelligence, machine learning challenging opportunities and DOD adoption, focusing on AML pricing. And and we're very excited to have an incredible panel of government and industry leaders to discuss these issues, whether it's about AI and ML.

Is that it's definitely not a buzzword. I define a buzz word as something that's talked about and overdetermined, the reason why I say that is government agencies are buying artificial intelligence capabilities now, and that is growing exponentially.

And some of the companies that. Here as in on the panel and in the audience, represent that that community and buyers like Ryan Connell from DCMA and other government folks that are also on this call are some of the customers they're trying to figure out how to buy it. It's not exactly like software.

And it's definitely not exactly like hardware. So how do you do that? So that's what the conversation, we're very excited to host that here for you all. two would set the table for us. Very honored to have Sharon Hayes, Dr. Sharon Hayes from LMI. She's the chief strategy and technology officer.

For LMI,

so to kick us off, I want to turn it over to Sharon, really excited to have you for this for this.

**Sharon Hays:** [00:01:48] Thanks so much, Jerry. It's really, it's my honor to it'd be here and to have the opportunity to co-sponsor this this panel discussion, which I'm really excited to, to listen in on, , I know that the panel is going to tackle a number of the challenges that exist right now, particularly in terms of pricing AIML and how the government buys it with an emphasis on DOD.

Although it's not just a DOD problem, obviously,

so it more at that intersection of services. Yeah. And and digital capabilities. And I think that's going to be such an important part of this conversation. How do you bring those two different groups together to actually solve the problems that AI and ML can solve? Because it's not a magic bullet.

And it really depends on having. The subject matter experts and the digital experts in the room together, talking together and understanding the true nature of the problems. So that's one thing I'm really anxious to, to hear this panel talk about. And the other has been

mentioned before, and the read ahead that some of you may have seen on the, on the panel discussion, there's the bright, shiny object syndrome going on with AI and ML right now.

You can buy it and it's gonna solve all your problems and it's going to be a miracle. And we all know, I think everyone probably that's listening knows that's not the case. But how we deal with that se perception is a challenge in and of itself. So I will turn it back over to you, Jerry, so we can get on with the great panel discussion that we're going to hear.

**Jerry McGinn:** [00:03:09] Great. Thanks, Sharon. I think you really did set the table for us And I'm pleased to introduce Ellen Chang is our partner in crime. On this event. We're very pleased to co-brands of Brent with warden aerospace.

It's a tremendous east and west coast. Organization does events focused around of interest to the aerospace defense community. And Ellen Chang is one of the, co-founders and managing partners of warden, aerospace. So over to you, Ellen.

**Ellen Chang:** [00:03:32] Wow. Thank you, Jerry.

And I see that Michael layman's on, the other half

**Jerry McGinn:** [00:03:36] in here.

**Ellen Chang:** [00:03:37] Yeah. So thanks. Thanks for having us. And I'm so super excited. To talk about this topic. . And in in prepping, the reason why this topic actually surfaced was because Andreessen Horowitz. Palo Alto based venture capital firms had written on the unit economics of artificial intelligence back in 2020 spring, a bunch of conversation or heated conversation around, the fact that AI companies are different or so they assert different than traditional software companies, software seemingly being more scalable because AI and invariably involves data.

Sometimes the data is not clean. So you have to clean the data. You have to then develop models. You might not have data to train the models. And then you have to validate the models, et cetera, et cetera. I'm not an AI specialist, so I'm not gonna put foot and mouth from that perspective.

But suffice it to say there was a lot of discussion around whether it's scalability, it's unit economics. And then I was talking to Eric Lofgren, who is a senior fellow with with Jerry Muggins organization center of government contracting. And we were talking about the pricing aspects of it and the gap that the fact that the government has a hard enough time getting its arms wrapped around software.

How is it dealing with pricing with AI of AI types of systems? And so I just want to, we've invited three different individuals or companies to talk about that since they do have experience here. So what I'm going to do is have each of the panelists introduce themselves as well as their organization, and to be able to set the foundation from which to then have further conversations on this topic.

So Sheldon, I'll start with you. How about introducing yourself as well as Darwin AI and what you're doing in.

**Sheldon Fernandez:** [00:05:24] Absolutely. And thank you for having me and thanks for all our attendees for joining us today. So Sheldon Fernandez, CEO of Darwin AI, we are a four-year-old artificial intelligence company actually based out of Canada Toronto, Canada we, our universe organically connected to the university of Waterloo, which is like the MIT of Canada.

And we've been working in aerospace and defense really since our inception collaborations with Lockheed Martin, with Honeywell aerospace. And we essentially have technology that illuminates the black box of artificial intelligence. So you'll often hear that one of the challenges of AI is that it can do all these wonderful things, but even the people that design it.

Don't really understand why it's doing what it's doing. And so based on years of scholarship from our academic team, we can, explain how that is actually unfolding, which has important implications for transparency and trust. And which, needless to say in the context of what we're talking about is very important.

So looking forward to the conversation today and, hearing from my fellow panelists as well.

**Ellen Chang:** [00:06:20] Okay. Yeah. Thank you, Sheldon Craig, how about you and algorithmia

**Craig Perrin:** [00:06:25] . Hey, it's Craig Perron with algorithmic. It's a pleasure to be on the panel today. Thanks. Thanks for having us. We're a provider of machine learning operations platforms that are used to put models into production. And we have experience in commercializing and, and operationalizing AI and ML in both the federal and commercial space.

**Ellen Chang:** [00:06:43] Diego do you want to amplify?

**Diego Oppenheimer:** [00:06:45] Great. Yeah. Craig here runs the federal practice for us. So he's a, the expert on this side, I'm the CEO and founder of algorithmic. And as he mentioned, we've been working with DOD and partners in the aerospace and manufacturing for a long time now.

And again, it's around how do you, we have a software platform that enables getting from models from the research lab, into like production operational systems and accelerating that.

**Ellen Chang:** [00:07:08] Gotcha. Thank you. And Ryan, please introduce yourself in your organization.

**Ryan Connell:** [00:07:13] Sure.

My name is Ryan Cornell. I work for DCMA is commercial item group. So DC Mays, the defense contract management agency. This team that I work for came out of the 2013 NDA officially became operational in 2016. Really our mission is to help army air force Navy.

They come to us that we're almost like an organic consultancy. So when they're having questions regarding buying commercial tech products or services they come to us, we help with some of their contracting paths forwards, and then what a fair and reasonable price to pay us for what we're buying.

And excited for the conversation today from an AI perspective for us, it's been a little theoretical so far. And same with software, but excited to put some theory to practice and excited to be on the panel with everyone.

**Ellen Chang:** [00:07:52] It'll be interesting to probably have Sheldon and Craig and Diego talk about it and then get your perspective Ryan. Cause I, I think it's from the DCA perspective you're almost doing some quality assurance around, how the contracts are actually being executed. So Sheldon, I'm going to start with you, you call yourself an explainable AI company, and I don't know if that means even more, maybe manual labor or content within what you do, but could you just talk through maybe the workflow and why do you agree with the assertion that AI companies are different than software and, help us understand a little bit more about how you go about your

**Sheldon Fernandez:** [00:08:29] business.

Absolutely. So first of all, I would agree that artificial intelligence companies and the workflow is different. And maybe just to clarify, when we talk about artificial intelligence today, we're generally talking about machine learning the second wave of artificial intelligence as it were.

And the crux of machine learning is that we are asking a machine to intuit behavior based on looking at tremendous amounts of data. Which is different from classical software that was programmed by a human being and works in a very mathematical, predictable kind of manner. The example I often give is, I have a two and a half year old who now can recognize, animals and he'll understand what a lion is, who understand what a cat is.

And we don't really understand how the human mind does that. All we know is that about 20 years ago, it was tremendously difficult from a theoretical computer science point of view to get a machine to do this. But of course, what changed was the theory of machine learning, which, became popular in the nineties, really got the number, they, the data.

And the computational power to bring it to fruition. And so now to get a machine, to recognize the lion, we give it, hundreds of thousands, if not millions, examples of a lion and using, the theoretical underpinnings of machine learning, it'll become extremely good at that task. The challenge is that we don't necessarily know how it's reached that understanding.

We don't necessarily understand why it thinks this is a picture of a lion and why it thinks this is a picture of a hamburger, a to anchor this in a very practical way. We had an autonomous vehicle clients in a slightly different space run into a very strange situation where their car would turn left with increasing statistical frequency.

When the color of the sky was a certain shade of purple.. And of course we, as human beings know that makes absolutely no sense, but that's what it was doing. And so we basically help them determine that they had trained the system in the Nevada desert when the color of the sky was the shade of purple and that's the correlation that had made.

So the challenge with explainability or this black box problem is if you don't know how something works. You don't know when it will fail. And if you don't know when it'll fail, there are all these exceptions lurking in the system waiting to manifest themselves with potentially disastrous consequences.

And so if you think about that contrast compared to classical software, A lot of the discussion goes around the data that you collect, is it biased in some way? There's a tremendous amount of effort that is spent there because the machine learning system is giving you insights, not about the real world, but about the data.

And then we talk about, having a machine learning system in some way, being deployed out into the wild, when it's non-deterministic meaning we don't completely understand how it work. And so what does that mean from a testing standpoint or workflow standpoint, a governance standpoint and all that behavior has important implications for how we think about AI, for how we develop against that.

And of course, for the economics behind it. So I'll pause there because I'm sure my fellow panelists have stuff to add, but that's the crux of the challenge we're dealing with and trying to solve for the enterprise, including defense

**Ellen Chang:** [00:11:28] well said, I'm going to invite Craig then given your position at algorithm Mia, in understanding federal contracts.

And I imagine you can talk to. Algorithmic is offering and how similar it is to what Sheldon described, but also perhaps based on your background how have you negotiated with the federal government, I guess in terms of the contracts you have? What works and what doesn't

**Craig Perrin:** [00:11:52] work? Yeah, for algorithmic, it's easy.

We're lucky we provide infrastructure that runs the models and the AI, and we get to watch our partners and our competitors and others or the model builders of the world have to deal with the complexity of doing business with the government on their IP. And it's very challenging for especially small businesses that may have innovative approaches to deploying AI and machine learning models or building those models in that, you can.

Go pursue a bunch of research and R and D money, for example from the feds. And that's a real clear path to get funding, to build out your ideas and your products, but you have an intellectual property risk or, intellectual property sharing requirements that come out of those things and sometimes make that hard for small companies to do flip over to the traditional way of buying software.

Government buy systems, it buys, things like Titan and, bases and products and trucks and stuff like that, which are going to be powered by AI or use AI to do that. But you know, you have to address this question of how you embed your AI powered, resources within that kind of system.

And so there are challenges, for how, companies by AI that the, the ideal that we talk about a lot is getting it to where you can buy AI by the drink. If you think about what people want. Out of machine learning out of AI, it's not necessarily all the guts and the software and the models and the training and all the things that goes into it.

But it's the inference, it's the output you want to, the purpose of using an AI, if you're in the treasury department to find fraudsters and money, launderers just not to play with software it's to find the fraudster. And some sort of mechanism by which, you can pay for the results, I think as a needed innovation and I'm not quite sure, what's the right way to get to it.

But I do think it will help spur investment in AI if there's a way to do that.

**Ellen Chang:** [00:13:34] that's an interesting approach would I guess I'll throw this out. There would companies, and maybe it's only the early, I guess the leading edge companies might invest that time to commit themselves to results because there could be so many.

Different perspectives on whether or not something's a good result or not. I could see risks there. Like how do you propose getting over that

**Craig Perrin:** [00:13:55] hump? Yeah, definitely. Definitely not a clean, clean path forward in terms of procurement. If you take the, use the concept of a marketplace that says, Hey, you know, if you're a technology company, you can bring your bring your IP to this federal marketplace agencies may or may not use it, may decide to deploy it, have a way of monetizing the use of the technology itself versus the, the acquisition of the software, there's a way to do it using that kind of marketplace concept.

I don't know if, if the forest ready to roll with that, or if contracting mechanisms are in place that will allow that to happen. Yeah.

**Ellen Chang:** [00:14:30] Maybe that we turn that over to Ryan. What did, what are your perspectives then? I'm not exactly sure how DCM. Get involved with all of that, but what are your perspectives?

**Ryan Connell:** [00:14:40] Yeah. Just, Ryan's thoughts on this, i, and I think everyone's hit on it already. We don't really know yet. And so what we do know is valuation of software products. What we do know is valuation of companies, we know how to value a company, right?

People do that all the time. Be it an AI company, we do like a multiple of revenue or EBITDA, and that's how we determine the value of the company. And we're pretty good at, I shouldn't say pretty good at, but in the commercial space, there's ways to value intellectual property. And so those three areas are what kind of runs through my mind as, software products, valuing company and valuing IP that we've I'll say figure it out.

And so applying some of those same techniques to trying to value AI is at least what's going through my mind. And Greg hit it with valuing results, and I like to look at it as, the way the FAR [Federal Acquisition Regulation] is set up now, traditional defense contractor on a greater than \$2 million award, you're going to be asking for cost information.

But is that the right way to get to valuing the capability or that result or whatever it is you're looking for? Ryan's answer probably not, you start looking at some of the far alternatives and you get into pricing analysis techniques or things like commercial. And certainly there's an argument that AI capabilities would fall into the definition of commercial depending on how that's set up.

And so then you start applying these price analysis techniques to this, and that's when you get into the exact conversation, what's the marketplace, like what are capabilities that I'm getting? What's the value that I'm getting out of it? One of the things that, that constantly goes through my mind.

Yeah. And those that are on the phone that are much smarter with AI tech can correct me if I'm wrong, but I constantly view the idea of AI as a way to add efficiencies to whatever we're doing. We're even making things faster. We're saving money or making more intelligent decisions. One of those three things, and those all have a value.

And so if something is faster for me, there's a value that's worth. And if something saves me money, that's a very obvious value that's worth. And certainly as a buyer, I wouldn't want to pay more than whatever it's saving me for a product. So that's one way to look at it. I don't love the cost method personally when it comes to AI, just from, my initial brainstorm, like the idea that it costs you a lot of money to have to ingest data and make sense of it.

I don't know that's a good representation of what it's worth at the end of the day when there's an output. So I, I hang my hat along on the value that capability and trying to, determine fair and reasonable price.

**Ellen Chang:** [00:16:53] I did have a question on that because I feel now you're part of the commercial item group.

So you might have a propensity to understand how commercial systems work, where it is on value, but I feel the government tends to do just about everything based on cost. The whole system is one big management accounting system. And so from that perspective, then what do you, what would you offer, do you think that the industry will just get going initially?

And I think this is what's happening initially based on, Hey, I'm going to buy this money hours of AI, and I guess the company would have to assert that yeah, based on this project, this is how long it'll take, this is what we're doing. And therefore it's a fair cost. And maybe at the lower end of a contract, lower end value contract, like something below a million, it doesn't really matter.

But if this starts to escalate into 20, 30, 40, \$50 million contracts, the pencil sharpeners come out and you have to really scrutinize what the price cost is. What are your perspectives on what I just said

**Ryan Connell:** [00:17:48] there?

Yeah. I think there's definitely a culture. I'll say a culture of cost.

I It's just the traditional method of doing buying and the government. And traditionally that was the model, right? You look at 1960 and GPS was a top secret military program and DOD was the creator of the coolest, newest technology that was happening in the world. And you fast forward to today and that's just not the way it is.

Sheldon Diego or the other developers of the coolest, newest technology. And we're trying to figure out a way to adapt it. And we have to shift that culture, shift, that mindset to being able to leverage what exists in the commercial marketplace. And a lot of that mean, I I think there's authorities out there that exist.

I shouldn't say, I think I know there are which allow you to get to pricing as opposed to cost. And commercial is a big one. So the second something meets the definition of commercial, which I know is a big, long convoluted definition, right? Then you're able to get to price analysis as opposed to cost analysis.

There are other regulations that exist. So for those and I would imagine that a lot of the AI companies meet this definition, but there's a definition of a non-traditional defense contractor, which effectively means you haven't had a fully CAS [Cost Accounting Standards] covered contract in the last year. And contracting officer has the authority to apply commercial acquisition procedures to their, procurement, just because of who they're doing business with, as opposed to it even meaning the different definition of commercial.

So I there's authorities out there. Whether or not they're, being used to their fullest and maximum practicability. That's just a cultural thing, but I think the regulations exist to allow the adaptation of price analysis in this.

**Diego Oppenheimer:** [00:19:15] I actually really like how Ryan framed.

It's like the value at the end and, working backwards is how we approach it. So again, what, because we focus on operationalizing ML and AI, the main thing is what are we operationalizing? What are you going to get out of it? And you you played down your understanding of this Ryan, in my opinion, because it really is that right.

It's optimization. It's next best decision-making. And these things actually can be quite easily tied to, definitely in the commercial space to a result, right? So if I can reduce fraud by 0.5%, and that saves me \$10 million a day which is actual use cases in banking, now I have a framing of, okay, what's the cost of not doing.

There's no ROI on that. But I also have an understanding of, if it takes me \$20 million a day to save \$10 million a day, that makes no sense. And the work backwards method in analytics in particular, I think is is a really good framing.

It does become hard, I think in like very long-term projects inside, government where, the timeframe might be like five years Hey, we're going to go build this out, this whole thing.



And but I think there's. In government contract where this is actually pretty easy math, right?

Like you say, look, we understand that we're going to go, we need to reduce fraud as Greg was mentioning the sec and we can use this data analysis and we believe that we can do this by X percent. And if we do that, the benefit to the government is of Y and therefore, we understand where our cost structure needs to be under. Working the other way, where it's just like purchase technology, and then figure out ROI at the end of the of the story is a losing proposition in my opinion, and, becomes very wasteful.

It also delays the whole process because you're, there's a discovery process there. So focusing on the use case, this is what needs to get done today. And then we can expand from there backwards. The math is not that hard.

**Ellen Chang:** [00:21:04] Yeah, good point. I want to pull on Sheldon a little bit since you've talked about the example with the car thinking, anyways, your example earlier, so how do you value your services?

Are you cost or budget or are you, how do you do price discovery

**Sheldon Fernandez:** [00:21:20] with the customer?

It's a great question. And it was, and it parallels what Ryan and Diego said. It was only when we started translating. This nebulous concept of explainability into improved prediction in a concrete case that the customer could wrap their heads around and say, okay, this is the ROI I'm getting that the real commercial engagement happened.

So for example, just like Diego mentioned fraud, we do a lot of work in manufacturing. What we're actually finding is that many companies, because of the risk, they're actually focusing on their internal processes first that they can control that they have a lot of data for before they put something out in the wild.

And so the first question is if I can detect a defective part 40% earlier in the workflow or the process, what does that mean to you economically? And we go through a very traditional pricing exercise of ROI on that point. But the second order of questions that are coming out from that now are.

What is the cost to you of an incorrect prediction or what is the cost when AI doesn't get it right? And that's where the ability to explain becomes so important, right? And there's two elements to this the cost of getting it wrong. Number one, and the benefits that explainability can help and really getting you that level of precision.

So you don't have a catastrophic use case, but the second one that we're now feeling is the regulatory impact of requiring transparency. We're seeing this in GDPR, in Europe, we're seeing this now in Canada, in the U S for certain critical systems. To use AI, there's ramifications about, I need to show a certain level of transparency.

And so that's where, it becomes a question of, without this transparency, I can't use artificial intelligence in a significant way. And so what's the cost to me of not having it as an option.

That's part of the analysis as well. Again, tanker in a concrete example a few of our DOD clients are looking at using artificial intelligence for control systems actually controlling flight and so forth.

And they're better than traditional systems because of their ability to handle non-linear cases and so forth. But they're now starting to ask the question, what are the requirements from DOD and the JAIC [Joint Artificial Intelligence Center] and so forth on being able to explain this decision? And if we don't get out in front of that, we're not gonna be able to use the system.

So it's also the cost of not doing it as Diego mentioned, that's one of the driving factors as well.

**Ellen Chang:** [00:23:35] I think the department is having a problem describing how they're going to test intelligent systems. Maybe the models are easier to test, but when it's something is doing, being being tested like a five-year-old, it actually achieves the goal, but it's not, they're not sure how it achieves the goal that they don't know how to actually go and test the system.

Is that what you're seeing?

**Sheldon Fernandez:** [00:23:54] Yes. Yes. Yeah, because it, again, sometimes AI will get the right decision, but for the wrong reasons, we developed a system to detect COVID, but about a year ago, and this was purely an open source effort, it's called COVID net. You can find it online. And in the early days, the system was looking to see if the human being was lying on a hospital bed that would actually show up in the CT scan or the x-ray.

And that would be a towel to the system that they were likely sick. And so it would get it right or when it would have a statistical reason to get it right. But that's not connected to why somebody has COVID. So being able to illuminate the reasoning. Is as important as did you get the right answer. And we're seeing that from a testing perspective and the reliability that's required, especially in these critical systems and there's an economic case to be made for that level of testing.

**Diego Oppenheimer:** [00:24:38] , I was going to one. Sheldon's doing kind of like the, the really exciting kind of explainable stuff, like there's a whole boring aspects which is what we do of the management of costs and an infrastructure of actually deploying AI.

And it really comes down to more it governance principles, how do I pass through security? How do I make sure the systems are secure? How do I make sure that they can be accredited? How do I make sure that the, the infrastructure costs don't fly out? How do I know where the models are being called and who's using them and it's the right people.

And these are things that are more attached to traditional. Software problems, at the end of the day AI is different in the sense that it's data powered, but it is software it's probabilistic instead of deterministic, but it's probabilistic software.

And so it has a lot of the same conditions of its governance and are required. And that goes into the costing, right? Like I need to be able to get into the system and then you'll be able to run it. I need to make sure that, if I need, 4,000 machines, I know that's the cost of those 4,000 machines.

And I can control that cost as it goes up and down and, am I using cloud computing or do I need to buy racks of hardware to run it? And so there's this, I say it's the boring part because it's the stuff we do. In terms of like that its governance who called what, when and why which is a layer that is completely on par with what Sheldon's talking about.

But you need to take care of both when you're thinking out it's not just about the consequences of if it goes wrong or not running, but like, how do we run this, right? How do we actually operationalize this and actually get that right.

**Sheldon Fernandez:** [00:26:06] Diego, there. There's a saying in golf, right? A drive for show putt for dough the boring stuff may not be that exciting, but to your point, it's actually where the problems lie.

And if you want to trade places with, I'm happy to consider it,

**Ellen Chang:** [00:26:18] I guess. Ryan, anything to add to this conversation?

**Ryan Connell:** [00:26:22] No, actually I actually took down some interesting notes. So this is great. I love the idea of like probability hadn't really thought about it. And as Sheldon was talking, I was thinking about like more like a risk matrix, like chance of something not working and then the impact if it doesn't work for.

And I think that's all things that are worth considering as you're trying to determine that ultimate value at the end of the day, Diego mentioned, something that might save you \$10 million. If there's a 50% chance it fails and that ruins your company and you go bankrupt, then, certainly something to think about as you're trying to value the capability in and of itself.

Yeah. I

**Ellen Chang:** [00:26:52] feel like for a budgeting decision, I need a I guess a simulation, a Monte Carlo simulation. It's is this thing worth this or that, depending on some sort of simulation that you run.

**Diego Oppenheimer:** [00:27:02] Yeah. So there's actually a pretty very high level. If you think about a risk framework, there's three categories to a risk framework that you can think about. There is the what's called kind of reputational risk, right? Something goes wrong and it's bad. There's and that could be to an organization, being fined to a government, making a bad, bad decision, there's a reputation where there's an operational risk, directly tied to, you know what Brian said, this goes wrong and I lose, a ton of money or, I make a, the actual operational is those two are think of them as on the left side, on the right side, there's the foot something called strategic risk. What happens if I don't do it?

So if you go way too hard on the protecting for the operational risk and the kind of like brand risk or, like the, like you will restrict the ability to deliver something or innovate or get on it. And if you go to, if, if you go too much and that's the strategic risk, if you go too much towards the strategic risk pendulum, then you opening yourself up to operational and like brand risk brand being, not, like just like reputational risks. So it's interesting. You have to like and we've seen this in financial services has actually happened quite a bit where they use models. In a bunch of different places something's gone wrong.

They've tightened the hatches so much that now they've exposed themselves to strategic risk and not being able to take advantage of it. And so this is like a framework or a pendulum that, you have to get. Like you can't go towards one side, you can't go towards the other, but that's one way of framing the risk behind kind of machine learning efforts.

**Ellen Chang:** [00:28:33] Yeah. Thank you. I'm going to read one of the questions that we have in the chat, regarding the cost price analysis topic, what role do you see third-party financing solutions playing and how we can deliver value to the government.

And maybe I'll start with maybe Craig, if we can start with you,

I

**Craig Perrin:** [00:28:53] mean, I think, the thing that we're going to see, I think for the near term, in terms of, the actual models and the innovation happening, we're going to see that coming out of consulting firms and small, innovative businesses that are focused on specific niche areas.

I'm using computer vision to identify faces or, military equipment or things like that. I think, for the foreseeable future, like we see with, JAIC, you've got the award to Booz Allen, the \$800 million contract for war fighter models. They're, hard work building that.

And I think that's what we're going to see. So I'm not sure from a third party financing perspective of services, that there's a path there. Certainly it couldn't hurt. But because it's, I think ultimately most AI development for the next we'll call it next three to seven years is going to be really more services contract focused.

I'm not sure. We'll see much of that. Does that answer the question?

**Ellen Chang:** [00:29:46] I think it does. Does anybody else have a comment there?

**Craig Perrin:** [00:29:48] Yeah. Certainly.

It's all financing is key to survival as for small startups. And I think probably, I actually, if you think about the BAA pipeline and the R and D pipeline, the feds are spending all told over a billion dollars in this coming budget year, just on AI, R and D yeah, it [third-party financing of DoD AI/ML products] could make sense.

But it's, I don't see it. I'm thinking of it. Maybe this is a function of my history in the industry. I'm thinking of it as as an aspect of, like lease financing for hardware and things of that nature. So I'm not seeing it from that perspective, but, I think there's, there are ways to get

creative about juicing that AI ecosystem of companies and inventors that are out there to get them to build solutions for government and financing is definitely going to be a part

**Ryan Connell:** [00:30:31] of that.

**Ellen Chang:** [00:30:32] Given the conversation we have, and in terms of thinking about the framework and explaining or assessing value of AI, I put myself in the position of, the government trying to come up with a budget, for something.

And because there's so much change in this sector right now, it's probably hard to put, maybe that's why the services contracts are the starting point, because it's, maybe the risk is it's easier to bound that risk but just given that backdrop, I guess, Ryan, I'll start with you. What would you advise government entities?

How would you advise them to think about AI? How would you know how would you even advise them to think about a budget?

**Ryan Connell:** [00:31:12] Yeah. Certainly not an easy question. I think I looked through the list of registering on today's call and to no surprise.

It was mostly industry and AI companies. And, to me, that kind of indicates that we're from a buyer standpoint ahead of the narrative a bit where you have a whole bunch of people on the phone that want to know how to price their product. And there's not a whole lot of people on the phone that are buying yet.

And I think it's great. It's great that we can have that collective narrative and try to figure out the right answer to what something's worth, collectively as this becomes a more prevalent technology from just the standpoint, you know, I think one of the bigger hurdles that we need to figure out and it's been racking my brain and it doves into salt, dovetails into software too, is the product versus service conversation.

Are we actually buying a service or are we buying a product or buying capability? Or how do you wanna frame. It, it matters when you're talking about the commercial definition. It matters when you're talking about price analysis. And I think the easy sort of dichotomy and the easy example I can lay out is, agile software development, you do things set up in sprints.

The preferred method of contracting is modular. So you're talking, six month option years where you're just sorry, six months options where you want someone to do this level of effort. And you're basically doing a cost-based price analysis where that employee should be getting this much dollars per hour, et cetera, et cetera.

But at the end of the day, if you don't have usable capability, what's that worth. And to try to balance those two, topics, it's very difficult. The nice part about the modular contracting is you end up kind of incentivizing performance because if they don't do something in six months and they probably won't get the next option here. It's really difficult to be able to in advance determine value of what that sprint might be and put that contract at a certain

price that is reflective of that without really a previous sprint or knowing what's going to be delivered at the end.

So when you think about it from a service perspective, I think there's a lot of I wanna say nuances or challenges there on trying to achieve paying for value. While also knowing that you're actually buying hours.,

**Sheldon Fernandez:** [00:33:06] I think we have I think Ryan's clarification between product and service is one that we feel significantly.

We've sold products to organizations that, are far along far enough along the machine learning journey where there's immediate value and they can quantify it. But they're in the minority. I would say, where, we have the most success is when we're selling an outcome and selling an efficiency, which is both product and services.

And I think most AI companies are struggling with the question of, are we a product company or are we an AI consulting company? And given the adolescents, let's say of artificial intelligence in general, you have to provide some of that service capability to elevate your product. So right now it's both and it's a necessary.

I won't say evil, it's just a necessary byproduct of trying to drive the innovation. So they see those outcomes. I'd be curious as to what Diego and Craig have to say.

**Diego Oppenheimer:** [00:33:56] Yeah. I generally again, from our perspective, it's much more infrastructure and software related to a lot of times the services is just to get there faster, right?

We know what we're doing, we've done it before, we can come in, we can help. And so it's software plus services and the services are just an enabler of making sure that the software gets to the ROI that that you want the other, I think Ryan mentioned, I agree a lot with Ryan today.

The like the modular piece really, I think is important. This is just experience that I've had. In different, if you have a project that's long, right? Like in each, you have these very long time claims and they're not broken up. Like people change.

There's literally it's by design, right? There's change of guard and change of priorities and change of projects. I think even DARPA's faster, like it's every two years. And so these programs, if you don't modularize it and have a general north star, but break them down into small pieces that you can execute on immediately and provide value.

It actually becomes really hard, even just from a, even if all the money in the world was available, right? It becomes really hard because things change over time. And at the speed that the AI and machine learning world is moving, right? Like a four year, a four year program, we're going to be light years ahead next year.

The technology is going to change and stuff like that. And so the modularizing,. Like, you know, I think getting really concrete on use cases, I'm getting really concrete on the ROI of that use case and driving to delivery of that use case as quickly as possible with the

combination of product and service and building off of that success is the formula that works.

It works in enterprise. It work. There's no reason why it wouldn't work for government. The only problem that I see here, and again, I'm not an expert in this. In government, you need to go ask for a bunch of budget upfront, and you need to get that all in and it needs to get approved.

And there's not this like way of like coming in halfway through the year and saying, okay, we're going to assign this to this project, get a result, then increase it like that. Previous planning at a high level, on a two year analysis or a three-year analysis, it becomes really hard to combine the agility and the ability to execute with like the budgeting process.

**Sheldon Fernandez:** [00:36:01] I would add to that and I agree, Diego, a model we've seen work very effectively as almost an ideation, POC or project, that you iterate on. It's very clear ROI. It's quantifiable. There's a lot of data. And the effect that we see that has is yes, it'll show a quick win, but it almost socializes the organization to the AI workflow questions that they need to start thinking about longterm.

That'll surface a question in the organization of how do you think about data governance? How do you think about collection? How do you think about privacy of data? We feel this as a Canadian company with ITAR [International Traffic in Arms Regulations] restrictions inside. And so it leads to a broader discussion of what's our AI strategy.

And you can help them be a thought leader in that respect. But to your point, the challenge is overlaying that with a longer-term budgeting process, we've had some success with almost a gating mechanism. There's an initial ideation POC, Hey, if we show these results, which we agree upon up front, we're going to move to the second one and third one.

And in combination that gets you up, that large number that you're trying to ask for upfront.

**Ellen Chang:** [00:37:00] I think it's interesting that what you say, Sheldon, because and just in my work I've been dealing with. A couple of organizations trying to get their arms around their own digital transformation.

And at least for the Navy organization, there's a lot of questions left unanswered as to what certain, at certain levels of organization, what they need to do. So I be curious to hear from any of you, the services product model in that I believe the services piece is going to have to remain around for some time because the receiving government entity just doesn't have the capacity to know how the skill sets.

To actually operationalize, the software product. They just, they, they're still learning data science. Like they, they D they just don't have any comments to what I just said.

**Diego Oppenheimer:** [00:37:45] The services are a great thing. They're accelerators. Like we have to this is not a, especially if you tie it to results, the there's just a high motivation on the vendor side to make this a huge success.

When you're saying, Hey, we want to get to this. This is what the objective is. And it's on you to succeed here. And we're going to give you these tools, but you bring in your know-how, your software, your services, your people. And if you get to this milestone, we get to this next thing, and then we get to this next thing.

There's a ladder there. That is hugely motivating. We, I know, I can't speak for Sheldon, but I'll tell you for my company, we would jump into that deal in a second because we can we know we can do success. We know we can be successful and we know what it takes to do it.

**Sheldon Fernandez:** [00:38:25] And it's also the learnings that you get by being in combat with the client and learning about their business. It's, we're the AI experts. We're not the experts at, sonar recognition or signal analysis for this particular use case. And to your point on the services is going to be there for a while.

I, the analogy I sometimes give, people that are not in our field is imagine the internet in the early nineties, when only a small group of niche individuals knew that. These numbers flying over telephone wires, we're going to transform things, but everybody else was just, what is this what's going on?

How does this work? That's where we are with artificial intelligence. And it's an accelerator. I completely agree Diego. If you can drive your clients to success, why not do the services? You'd be, unreasonable not to, or outsource it to somebody who's going to get the learnings.

**Ryan Connell:** [00:39:07] Yeah. And I think there's a way to frame it from a buyer's perspective where instead of I want your company to go spend two years trying to figure this out and you're paying for no kidding level of effort to do kind of what Diego said and have this ladder approach to capability and, achieve this.

And here's what you're going to get for that and achieve this. And here's what you're going to get through that. It better defines planned outcomes. Cause at the end of the day, I think the downside with what I had started off by saying is you could end up that two years, you paid however much it costs and you have no capability.

And so that's that's the nervous part of being a buyer in that situation where you're just putting someone on contract for hours.

**Ellen Chang:** [00:39:43] Yeah. So maybe that translates into how are these projects and programs managed and, in a way so that I feel like it's on the customers, it's the onus is on the customer to get value out of their contract.

So how, I guess from a service provider's perspective, how do you enable that? But on, from the government perspective, they do have to put in the mechanism from which to realize that value.

**Craig Perrin:** [00:40:05] There's no line item to be innovative, and then

**Ryan Connell:** [00:40:07] in a hurry or whatever it is,

**Ellen Chang:** [00:40:08] right.



One question though, I'm going to read this out. If the government is going to constraint a solutions to be transparent and explainable, does this preclude all neural network solutions or the government going to require causal experimentation to make outcomes explainable.

**Sheldon Fernandez:** [00:40:25] Yeah, I can start. That's obviously the problem we're trying to solve right through our technology is off offer explanations for neural networks.

And even the explanation though, is a statistical explanation. That's the important thing to understand. That's the whole challenge with neural networks. They're so fantastically complex that much like the human brain. We don't know why they do certain things. So the question we're grappling with in the context of legislation and regulatory requirements is what does it mean to explain.

What are you actually explaining and to whom and under what circumstances are you obliged to give that explanation, and there's various drafts of legislation. Some say only when it's a critical decision that affects the human being. In some way, the legislation we have in Canada right now is very restrictive and not yet a law, which is anytime an automated decision is made, which would make AI completely untenable.

So there we're working through what that means and most people feel we'll get to a middle ground where you are giving a reasonable explanation for a critical decision, because this technology is just too powerful, not to be used in many circumstance.

**Craig Perrin:** [00:41:27] That's a good, that's a good point.

A good observation. I think about adoption generally in the community. We're going to see, augmented intelligence before we see artificial intelligence. I think, the concept of human or human in the loop is just going to remain, part of the picture, going forward.

And the other aspects of it, explainability and the statistical model that says here's what went into making a decision here are the weights and the biases is part of the, is part of the picture, but not part of the total trust picture. And, just kinda go back to maybe slide number one in today's meeting, right?

Is that there's not going to be any adoption of AI unless there's trust. Of the AI. And that trust comes from several different areas. Explainability, statistical modeling of the decision is important, but also what we call **interpretability, which is what's the context for this model? How is it used? How was it created?**

**Who's who is involved, right? Who else is trusting this model?** When you've got a set of operators, making decisions, in a combat type of scenario, sometimes you don't have time to look at the statistical weights and biases. You just know that, Hey, Jane uses this one, so Joe's going to use it too.

And you layer on top of that, the accountability Of model usage after the fact if you can go back in after the fact and say, you know, on this date, this app made this decision. You call this API that uses model that uses data to make a fraud decision or a loan decision, or what have you. You're going to get a higher level of trust, in the Encore there.

And I think those three things come together to, are going to have to come together before we're going to see, large scale adoption of AI in many

**Ryan Connell:** [00:43:00] contexts.

**Ellen Chang:** [00:43:02] So that, that's a good framework. I think we have time for maybe just one more question here and let me read it out.

And for those of, the panelists it's in the Q and a box for non-commercial items, DOD generally play pays cost plus, or a fixed price. That's it guess at cost. Plus they can't do cost benefit analysis because they can't quantify the benefit the way you would say for fraud detection. So the DOD doesn't really know the value of readiness or can't monetize improvement provided by some new ML tool.

So will the providers of ML tech be willing to participate in this nebulous market? I feel like you are, but what are your

**Craig Perrin:** [00:43:40] comments? I was going to say, I think I can tackle that real quick and then maybe ping the next question real quick as well, too. Because the cost of building AIML, a lot of it is the data.

The training, the development, the model building the science, the math you're going to see more providers of ML technology participating in the, the BAA [Broad Agency Announcement] pipeline, the R and D pipeline. You're going to see, I think more contracts led for services. Like we talked about to create, to make creative things because most small companies are not willing to take the risk on, on, the government buying or not buying a product.

They may build on spec. But a lot of that is because of the, the effort and the complexity, it's 90% right, develop, train, get it ready to go 10%, push the button and make it happen. But it's that 10% that makes all the difference. If you don't operationalize all that innovation.

You're not really getting anything out of it. So I think ML technology providers will be able to parse it, participate on the R and D side more than in the treating it like commercial products. And that's going to impact how this market grows in the federal space.

**Ellen Chang:** [00:44:46] Any other comments from the others, Ryan or Sheldon,

**Ryan Connell:** [00:44:49] just a blanket, easy one. But, I challenge, and I'm not saying that everything that's AI is commercial, but as far as the very framework of the question itself talks about how it in general, it should be considered commercial if not go to your HCA [Head of Contracting Authority].

So it's pretty well laid out the expectations in my mind congressional intent and where we have with us code. I'd have a tough time, seeing some of these, maybe it's specific military unique, but you're talking about just creating artificial intelligence that can be adapted for both military and non-military capability.

So I would like to see examples that maybe wouldn't be commercial and are forced in the cost type pipeline, but that's it for me.

**Craig Perrin:** [00:45:23] I mean, Chat, smart chat bots are one thing. And, targeting systems that pick where to drop in artillery, shell or

**Ryan Connell:** [00:45:29] another, right? Yeah. I think the dichotomy there,

**Ellen Chang:** [00:45:32] I'm going to end it right here.

I just wanted to thank Sheldon and Craig and Ryan for being part of the panel. And hopefully we can continue to have this conversation and help all the, both the company side, as well as the government side, figure out, how do we meet in the middle here and cause this AI revolution to happen.

Thank you again. Thank

**Ryan Connell:** [00:45:50] you. Thank you, Helen. Bye.

This concludes another episode of acquisition. Talk, if you have comments, interview recommendations, or just want to chat, please contact [us@acquisitiontalk.com](mailto:us@acquisitiontalk.com). Thanks again. And until next time. .